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*International Conference
Book of Abstracts*

Global Innovations and Challenges: Integrative Approaches for Environmental Sustainability

[GIC: IAES 2024]



Organized by

JANKI DEVI BAJAJ GOVT. GIRLS COLLEGE, KOTA

Agriculture Forum for Technical Education of Farming Society (AFTEFS)

VITAL BIOTECH EDUCATION GROUP, KOTA

on

12- 14 November, 2024

at

JDB GOVT. GIRLS COLLEGE, KOTA

- **Prof (Dr.) Vijay Devra**
- **Dr. Jitendra Mehta**
- **Prof (Dr.) Poonam Jaiswal**
- **Dr. Krishnendra Singh Nama**

VITAL BIOTECH PUBLICATION

**INTERNATIONAL CONFERENCE ON
GLOBAL INNOVATIONS AND CHALLENGES: INTEGRATIVE
APPROACHES FOR ENVIRONMENTAL SUSTAINABILITY
GIC: IAES 2024**

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In collaboration with

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Under the aegis of

IQAC, JDB GOVT. GIRLS COLLEGE, KOTA

12th-14th November, 2024

Editors

Prof (Dr.) Vijay Devra

Dr. Jitendra Mehta

Prof (Dr.) Poonam Jaiswal

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Head, Production (Higher Education and Professional) & Publishing Director

Dr. Jitendra Mehta

Product Manager

Dr. K.S Nama

General Manager

Jaya Mehta

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Office Address:

VITAL BIOTECH PUBLICATION

772, Basant Vihar, Kota,

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डॉ. ओम प्रकाश बैरवा, भा.प्र.से.
Dr. Om Prakash Bairwa, I.A.S.



आयुक्त
कॉलेज शिक्षा विभाग
राजस्थान सरकार
Commissioner
College Education
Government of Rajasthan

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MESSAGE

It gives me immense pleasure to extend my warmest congratulations to Janki Devi Bajaj Government Girls College, Kota, for organizing the International Conference on “**Global Innovations and Challenges: Integrative Approaches for Environmental Sustainability**” from November 12-14, 2024, in collaboration with the Agriculture Forum for Technical Education of Farming Society (AFTEFS). This relevant and significant initiative provides an opportunity for talking about important developments, regulations, and difficulties in the environmental field that have an impact on all facets of our society and future.

This conference's focus is ideally suited to the global effort for sustainable development and creative approaches to environmental stewardship. It is encouraging to witness leaders, scholars, and specialists unite with a common goal to address important environmental concerns and investigate integrative strategies that can help us move closer to a more resilient and sustainable world. The souvenir of this conference will no doubt be a valuable resource, capturing the insights and expertise shared by participants and serving as a beacon of knowledge for future initiatives in environmental science and sustainability.

I believe that the important discussions, new partnerships, and substantial solutions that will result from this conference will significantly further our environmental goals. My sincere gratitude to all of the participants and organizers, and I look forward to seeing the positive outcomes of this gathering.

I wish the conference great success and an enriching experience for every participant.


(Dr. Omprakash Bairwa)

Principal
JDB Govt. Girls College,
Kota

ब्लॉक नं. 4, डॉ. आर. के. शिक्षा संकुल, जे.एल.एन. मार्ग, जयपुर-302017 (राज.)
Block No. 4, Dr. R.K. Siksha Sankul, J.L.N. Marg, Jaipur-302017 (Raj.)
Phone : 0141-2706847, E-mail : cce_raj@yahoo.com

कल्पना देवी
Kalpana Devi



विधायक
लाडपुरा, कोटा (राजस्थान)
Member of Legislative Assembly
Ladpura, Kota (Rajasthan)

क्रमांक : MLA0/24/DOC/ 650

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:: शुभकामना संदेश ::

जानकी देवी बजाज राजकीय कन्या महाविद्यालय, कोटा द्वारा IQAC और एग्रीकल्चर फोरम फॉर टेक्निकल एजुकेशन ऑफ फार्मिंग सोसाइटी (AFTEFS) के तत्वावधान में 12-14 नवंबर 2024 को होने वाले "वैश्विक नवाचार और चुनौतियों: पर्यावरण स्थिरता के लिए एकीकृत दृष्टिकोण" विषय पर आयोजित यह महत्त्वपूर्ण सम्मेलन न केवल पर्यावरण एवं संबंधित क्षेत्रों में ही नवीनतम प्रगति और चुनौतियों पर विचार-विमर्श का अद्वितीय मंच प्रदान करेगा, बल्कि भावी पीढ़ियों के लिए स्थिरता और नवाचार के नए रास्ते भी खोलेगा।

मैं पर्यावरणीय क्षेत्र में हो रहे सकारात्मक बदलावों और नवाचारों पर अपने संदेश को साझा करने के लिए अत्यंत प्रसन्न हूँ। इस प्रकार के विचार-विमर्श से न केवल हमें नए समाधान मिलेंगे, बल्कि हम अपने आने वाले पीढ़ियों के लिए एक सुरक्षित और स्थिर पर्यावरण का निर्माण भी कर पायेंगे। मुझे पूरा विश्वास है कि इस सम्मेलन की स्मारिका, सभी शोधकर्ताओं, विशेषज्ञों और सहभागी गणमान्य व्यक्तियों के लिए प्रेरणादायक सिद्ध होगी और हमारे संयुक्त प्रयासों के प्रति सामूहिक प्रतिबद्धता को सुदृढ़ करेगी। साथ ही पर्यावरण के क्षेत्र में नवाचार को बढ़ावा देगा।

आपके इस प्रतिष्ठित आयोजन के लिए मेरी ओर से हार्दिक शुभकामनाएँ और मंगलकामनाएँ।

Kheni

(कल्पना देवी)

प्रो० अजय विक्रम सिंह चन्देला
प्राचार्य
जानकी देवी बजाज राजकीय कन्या
महाविद्यालय कोटा, राजस्थान

Old Lines, Umed Bhawan, Khedli Phatak, Kota-324001 (Raj.)
☎ (O) 0744-2325322 📞 9214067802, Help Line No. : 7240300200
📧 office.kalpanadevikotah@gmail.com

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Prof. Kailash Sodani
Vice-Chancellor



NAAC 'A' GRADE

Vardhman Mahaveer Open University, Kota

21-10-2024

Message

I am happy to know that the International Conference on "Global Innovations and Challenges : Integrative Approaches for Environmental Sustainability" is being organized by Janki Devi Bajaj Govt. College, Kota during November 12-14, 2024.

It is an emerging topic that will not only be beneficial for the students and teachers but also for the entire society. I am sure that the College through such conferences will continue to serve its significant role in the field of higher education.

May God give strength to continue the College to flourish and reach new heights. My heartfelt best wishes for the success of the Conference.


(Prof. Kailash Sodani)

RAWATBHATA ROAD, KOTA - 324010

www.vmou.ac.in vc@vmou.ac.in ksodani@gmail.com
(O) 0744-2471254 (Fax) 0744-2472525

प्रो. आशु रानी
कुलपति
Prof. Ashu Rani
Vice-Chancellor



डॉ. भीमराव आंबेडकर विश्वविद्यालय
(पूर्ववर्ती आगरा विश्वविद्यालय)
आगरा - 282 004 (उ.प्र.)
Dr. BHIMRAO AMBEDKAR UNIVERSITY
(Formerly : Agra University)
AGRA - 282 004 (U.P.) India



Message

It is with great enthusiasm to learn that an **International Conference** on “**Global Innovations and Challenges: Integrative Approaches for Environmental Sustainability**” is being organized by “**Janki Devi Bajaj Govt. Girls College, Kota**, under the auspices of the **Internal Quality Assurance Cell (IQAC) and the Agriculture Forum for Technical Education of Farming Society (AFTEFS)**, scheduled for **November 12-14, 2024**.

As we navigate an era defined by rapid technological advancements alongside significant environmental challenges, it is imperative that we unite to explore innovative solutions. This conference will serve as a vital platform for interdisciplinary dialogue, convening thought leaders, researchers and practitioners from diverse fields to share insights and best practices.

The discussions will emphasize integrative approaches that transcend traditional boundaries, fostering collaboration and co-creation of knowledge. By leveraging the power of innovation and nurturing partnerships, we can develop sustainable practices that not only address contemporary challenges but also lay the groundwork for a healthier planet for future generations.

I am confident that the interactions among esteemed personalities at this conference will inspire actionable insights and drive meaningful change toward a sustainable future. I extend my warmest welcome and congratulations to all participants, whose expertise will catalyse new collaborations in emerging areas.


(Ashu Rani)

प्रो. एस. के. सिंह
कुलपति
Prof. S.K. Singh
Vice Chancellor



राजस्थान तकनीकी विश्वविद्यालय, कोटा
RAJASTHAN TECHNICAL UNIVERSITY, KOTA

No:RTU/VCS/F(1)/2024/

Date: 15.10.2024



MESSAGE

It is my distinct honor to extend my warmest greetings to all the participants of the International Conference on "**Global Innovations and Challenges: Integrative Approaches for Environmental Sustainability**," organized by **J.D.B. Girls College, Kota**. This event brings together scholars, researchers, and professionals from across the globe, committed to addressing the complex and environmental challenges facing our world today.

In a time marked by rapid technological advancements and environmental worries, this conference provides an essential platform for sharing innovative research, inter-disciplinary insights, and collaborative solutions that promote sustainable development.

Environmental sustainability is not just an academic interest, but a shared responsibility. It is imperative that we explore solutions that harmonize innovation with ecological integrity, and this conference represents a critical step in that journey. I am confident that the discussions and knowledge exchanged here will lead to meaningful advancements in environmental sustainability.

I extend my heartfelt gratitude to **J.D.B. Girls College, Kota** for organizing this prestigious event, as well as to all the speakers, participants, and sponsors for their contributions. I wish you a productive and inspirational conference, and I willingly await the positive impact that will emerge from your collaboration and discussion.


(Prof. S.K. Singh)
Vice Chancellor

Rawatbhata Road, Kota (Rajasthan) 324010, INDIA
website : www.rtu.ac.in Email : vcoffice@rtu.ac.in, vc@rtu.ac.in Phone No. 0744-2473001



Prof. (Dr.) Geetaram Sharma
Assistant Director Regional
College Education Department,
Government of Rajasthan,
Jaipur

—: शुभकामना सन्देश :-

यह जानकर हृदय अतीव उल्लास और उत्साह से आपूरित है कि जानकी देवी बजाज राजकीय कन्या महाविद्यालय, कोटा राजस्थान " वैश्विक नवाचार और युनौतियां – पर्यावरणीय स्थिरता के लिए समन्वित दृष्टिकोण " विषय पर अन्तर्राष्ट्रीय संगोष्ठी आयोजित कर रहा है। यह सुविदेत है कि पर्यावरणसंरक्षणसापेक्ष विकास ही विश्वमंगलमूलकविकास का प्रतिमान है। पंचकोशीय विश्व का समग्र योग-क्षेम पर्यावरणीय घटक पृथ्वी, जल, वायु, आकाश और अग्नि के परस्पर सापेक्ष समन्वय से ही संभव है। इसलिए पर्यावरण की सुरक्षा वस्तुतः जीवन की सुरक्षा है तथा पर्यावरण क्षति करना या क्षति होते देखना आत्मघात जैसा ही है। विकास हमारी अपेक्षा है और पर्यावरण हमारा अस्तित्व। इन दोनों की सुरक्षा की एकमात्र विधि है – विकास का पर्यावरण समन्वित दृष्टिकोण या धारणक्षम विकास। धारणक्षम विकास प्रतिमान भारतीय मनीषा की उस सुपरिचित और सुपरीक्षित समग्रतापूर्ण जीवनदृष्टि से अभिप्रेरित है जो "सर्वं खल्विदं ब्रह्म" इस दार्शनिक विचार के अनुसरण में सम्पूर्ण चराचर जीव जगत को एकात्म मानती है। एकात्मता का यह विचार अब मात्र दार्शनिक विचार नहीं रह गया है अपितु आधुनिक क्वांटम फिजिक्स भी अब यह स्पष्ट घोषणा कर रही है कि ब्रह्माण्ड मे भिन्न भिन्न दृश्यमान अवयव एक ही चेतन तत्व में व्याप्त हैं। व्यष्टि समष्टि और सृष्टि के रूप में व्यक्ताव्यक्त समस्त मानव, प्रकृति, पर्यावरण, पारिस्थितिकी तन्त्र परस्पर अन्तः स्यूत और परस्परसापेक्षी हैं इसलिए हमें विकास की सम्पूर्ण संरचना, आर्थिक नीतियाँ तथा तकनीकी तन्त्र इस तरह विकसित करना होगा कि सीमित साधनों का मितव्यतापूर्ण प्रयोग करते हुए समग्र विकास भी हो सके तथा पूरी प्रकृति का जननी के रूप में देखने की भारतीय ऋषियों की दृष्टि का भी अभिनन्दन हो सके। विश्वास है कि इस अन्तर्राष्ट्रीय संगोष्ठी में वैचारिक मन्थन से विश्वमंगल के लिए उपादेय अमृत अवश्यमेव उद्भूत होगा। मैं संगोष्ठी की सफलता हेतु शुभकामनाएँ समर्पित करता हूँ।

'सर्वे भवन्तु सुखिनः सर्वे सन्तु निरामयाः ।
सर्वे भद्राणि पश्यन्तु मा कश्चिद्दुःखभाग्भवेत् ॥

(डॉ. गीताराम शर्मा)
सहायक निदेशक
कॉलेज शिक्षा, परिक्षेत्र कोटा



प्रो. (डॉ.) अजेय विक्रम सिंह चंदेल
प्राचार्य
जानकी देवी बजाज राजकीय कन्या
महाविद्यालय, कोटा

शुभकामना संदेश

मुझे यह बताते हुए अत्यंत हर्ष एवं प्रसन्नता हो रही है कि जानकी देवी बजाज राजकीय कन्या महाविद्यालय, कोटा एवं एसीकल्वर फोरम फॉर टेविनकल एजुकेशन ऑफ फार्मिंग सोसाइटी (AFTEFS), कोटा के संयुक्त तत्वावधान में तीन दिवसीय अंतरराष्ट्रीय महासम्मेलन का आयोजन महाविद्यालय परिसर में 12-14 नवंबर 2024 को किया जा रहा है। यह हमारे लिए प्रतिष्ठा और गौरव का विषय है कि इस अंतरराष्ट्रीय महासम्मेलन में देश-विदेश के विश्वविद्यालयों, महाविद्यालयों एवं अन्य संस्थाओं से 700 से ज्यादा विद्वान एवं बुद्धिजीवी शिक्षक प्रतिनिधि भाग लेंगे और पर्यावरणीय स्थिरता के लिए समेकित दृष्टिकोण पर गहन चर्चा एवं विचार-विमर्श करेंगे।

12-14 नवंबर 2024 को आयोजित होने वाले इस अंतरराष्ट्रीय महासम्मेलन का मुख्य विषय "वैश्विक नवाचार और चुनौतियाँ: पर्यावरणीय स्थिरता के लिए समेकित दृष्टिकोण" रखा गया है जो आज शिक्षा जगत में पृथ्वी और इसके पर्यावरण के भौतिक, रासायनिक एवं जैविक संरक्षण का प्रासंगिक विषय है। इस विषय पर देश-विदेश के व्यावसायिक एवं अकादमिक क्षेत्रों से वैज्ञानिकों, विद्वानों, बुद्धिजीवियों एवं शिक्षक वर्ग से प्रतिनिधियों के दर्जनों उच्च कोटि के आलेख इस महासम्मेलन में प्रस्तुत किए जाएंगे व उनका प्रकाशन उच्च स्तरीय शोध पत्रिका में किया जाएगा।

वैश्विक महामारी कोरोना के पश्चात यह अंतरराष्ट्रीय महासम्मेलन कई अर्थों में महत्वपूर्ण एवं उल्लेखनीय होगा। यह महासम्मेलन पर्यावरण और संबंधित क्षेत्रों में प्रगति, नीतियों और चुनौतियों पर विचार-विमर्श का अनूठा मंच प्रदान करेगा साथ ही यह महासम्मेलन न केवल विशेषज्ञों और शोधकर्ताओं के बीच ज्ञानवर्धन का माध्यम बनेगा, बल्कि भविष्य की पीढ़ियों के लिए भी पर्यावरणीय स्थिरता और नवाचारों का पथ-प्रदर्शक सिद्ध होगा और पर्यावरणीय क्षेत्र में नवाचार तथा स्थिरता की दिशा में हमारे प्रयासों को नया आयाम देगा।

इस अंतरराष्ट्रीय महासम्मेलन में आने वाले सभी प्रतिभागियों का हम हार्दिक अभिनंदन करते हैं और आयोजन को सफल बनाने में महाविद्यालय आईक्यूएसी टीम, सभी विद्वान शिक्षक साथीगण, एएफटीईएफएस टीम तथा अन्य प्रत्यक्ष व अप्रत्यक्ष रूप से लगे सहयोगियों के प्रति कृतज्ञता व्यक्त करते हैं। विद्वान व बुद्धिजीवी शिक्षकों के इस महाधिवेशन एवं महाकुंभ की पूर्ण सफलता हेतु मैं इस महाविद्यालय परिवार की ओर से असीम और अनन्त हार्दिक शुभकामनाएँ प्रेषित करता हूँ।

साभिवादन।

प्रो. (डॉ.) अजेय विक्रम सिंह चंदेल

FROM THE DESK OF THE CONVENER



It is a great honor and privilege to welcome all distinguished participants to the International Conference on “Global Innovations and Challenges: Integrative Approaches for Environmental Sustainability,” organized by Janki Devi Bajaj Government Girls College, Kota, in collaboration with Agriculture Forum for Technical Education of Farming Society (AFTEFS). Scheduled from November 12-14, 2024, this conference presents an exceptional opportunity to explore recent advancements and challenges in the realm of environmental sustainability.

Our conference theme aligns closely with the global imperative for sustainable development and innovative solutions. By bringing together scholars, decision-makers, and business leaders, we hope to establish a vibrant platform for sharing ideas, establishing partnerships, and imagining a sustainable future.

The conference proceedings, which will document key insights and contributions, promise to be a valuable resource, offering perspectives that can inspire further research and initiatives in environmental science and related fields.

I extend my sincere appreciation to all contributors, organizers, and participants for their commitment to this vital cause. Wishing everyone a meaningful and successful conference experience.

A handwritten signature in black ink, appearing to read 'Vijay Devra'.

[Prof. Vijay Devra]

Professor of Chemistry & IQAC Coordinator

Janki Devi Bajaj Government Girls College, Kota



Prof (Dr.) Poonam Jaiswal
Coordinator
Head of Department,
Department of Botany
Janki Devi Bajaj Government
Girls College, Kota

Message

It is my proud privilege to welcome delegates from across the country to the International Conference on Global Innovation and Challenges: Integrative Approach to Environmental Sustainability. This conference, organized by Janki Devi Bajaj Government Girls College, Kota, in collaboration with AFTEFS, marks a significant milestone in our dedication to women's education and research in Environmental Sciences.

I am delighted that this platform brings together eminent scientists, young researchers, professionals, policymakers, and stakeholders to share their views and ideas. Our college provides an ideal setting for academia to converge, share research outputs, and foster meaningful collaborations.

This conference aims to stimulate innovative approaches to tackle environmental challenges. I am confident that the exchange of knowledge and expertise will yield fruitful outcomes.

Once again, I extend a warm welcome to all delegates. I assure you of a pleasant and academically enriching experience during your stay with us.

Dr Poonam Jaiswal



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9784677044

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**AGRICULTURE FORUM FOR TECHNICAL EDUCATION
OF FARMING SOCIETY (AFTEFS)**

KOTA, RAJASTHAN

MESSAGE FROM CONFERENCE DIRECTOR & SOCIETY PRESIDENT



Dear participants and honored guests, On behalf of Agricultural Forum for Technical Education of Farming Society, Kota (Rajasthan), we take great pleasure in welcoming you to the International Conference on “Global Innovations and Challenges: Integrative Approaches for Environmental Sustainability” to be held at Janki Devi Bajaj Govt. Girls College, Kota from 12th to 14th November. This conference provides an important platform to discover the latest innovations and research in agriculture and

allied sciences.

The objective of this conference is to unite global experts to explore innovative solutions and address challenges in environmental sustainability. Through interdisciplinary collaboration, it aims to foster integrative approaches combining science, policy, and community action to advance sustainable development, promote biodiversity, reduce carbon footprints, and build resilient ecosystems.

At this conference, you will gain valuable insights from internationally and nationally renowned experts on agricultural technology, data analytics, automation, and other related topics. We hope this initiative will generate new opportunities for ideas and collaboration.

Your participation and contribution is extremely important to us and we look forward to setting new standards in this field with you.

Thank You.

Dr. Jitendra Mehta

PRESIDENT, AFTEFS

VITAL BIOTECH, KOTA, RAJASTHAN

MESSAGE FROM CONFERENCE CO-CONVENER & SOCIETY VICE PRESIDENT



On behalf of the AFTEFS, it is my great pleasure to welcome you to the International Conference on GIC-IAES-2024, hosted by J.D.B. Govt. Girls College. This conference brings together some of the brightest minds in the field of environmental science, policy, and sustainable development to discuss and exchange cutting-edge ideas and innovative solutions to address the pressing environmental challenges of our time.

As we stand at the crossroads of a rapidly changing global environment, it has become increasingly evident that environmental sustainability requires a holistic, integrated approach. The focus of this conference is to explore innovative, interdisciplinary solutions that can drive long-term sustainability in our ecosystems, economies, and societies. Through this platform, we aim to foster dialogue and collaboration among researchers, policymakers, industry experts, and activists to identify new paths for achieving environmental resilience.

The theme of this conference encourages a multidisciplinary exchange of knowledge, with the goal of creating practical, scalable solutions to global challenges such as climate change, biodiversity loss, and resource depletion. We believe that the future of sustainability lies in the collective power of innovation and the shared commitment to addressing the urgent environmental concerns that affect us all.

I would like to extend my sincere gratitude to all the distinguished speakers, presenters, participants, and volunteers who have contributed to making this event possible. Your enthusiasm and dedication to environmental sustainability are the driving force behind this conference, and we are excited to witness the thought-provoking discussions and collaborations that will emerge over the coming days.

I hope that this conference will not only inspire new ideas but also forge lasting partnerships that will lead to meaningful, positive change in the field of environmental sustainability. Together, we can contribute to building a more sustainable and equitable world for future generations.

Thank you, and I wish you all a fruitful and enriching experience at GIC-IAES-2024.



Dr. Krishnendra Singh Nama

VICE PRESIDENT, AFTEFS
KOTA, RAJASTHAN

MESSAGE FROM FOUNDER & CEO VITAL BIOTECH



On behalf of VITAL BIOTECH, I am delighted to extend my best wishes to the Janki Devi Bajaj Govt. Girls College, Kota for organizing the International Conference on Global Innovations and Challenges: Integrative Approaches for Environmental Sustainability, to be held from 12th to 14th November, 2024.

This prestigious conference, under the esteemed **Agriculture Forum for Technical Education of Farming Society (AFTEFS)**, is a landmark event that brings together global experts to address the challenges and opportunities in agriculture and allied sciences. It offers a unique platform for knowledge exchange, collaboration, and exploration of innovative technologies that will shape the future of agriculture. The focus on cutting-edge innovations is timely and essential in today's rapidly evolving agricultural landscape.

At **VITAL BIOTECH**, we are committed to fostering technological advancements in agriculture, and we strongly believe that conferences like this are key to driving progress. The dialogue and ideas generated here will not only impact scientific research but also have practical applications for farmers, industries, and policymakers, helping to improve productivity, sustainability, and food security.

I am confident that the discussions and presentations will inspire new approaches and solutions to the pressing issues faced by the agricultural sector today. We look forward to seeing the ground breaking innovations and fruitful partnerships that will emerge from this event.

Wishing all participants, speakers, and organizers great success in making this conference a grand success and a beacon of knowledge for the global agricultural community.



Best regards
Ms. Jaya Mehta
Founder & CEO, VITAL BIOTECH
Kota, Rajasthan, India

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GIS: IAES-2024/312	E-waste Management: A Paradigm Shift Needed	
		Surendra Kumar Bagaria
GIS: IAES-2024/313	Environmental Effects of E-Waste: Present scenario in India	
		Surendra Kumar Verma
GIS: IAES-2024/314	Public-Private Partnerships (PPPs) for Sustainable Development	
		Dr. Sunit Meel
GIS: IAES-2024/315	Sustainable Development: Challenges and Goals	
		Dr. Sucheta Gupta
GIS: IAES-2024/316	Sustainable Development and Business Strategies: An Exploratory Study	
		Dr. Shailendra Singh Charan
GIS: IAES-2024/317	Sustainable Economic and Business Strategies: A Path to Resilient Growth	
		Dr. Vineeta Arora
GIS: IAES-2024/318	Tackling Environmental Health Risks through Natural Farming	
		Dr Deepa Swamy
GIS: IAES-2024/319	The Role of AI (Artificial Intelligence) Technology in the Environmental Conservation	
		Dr Bhartendu Gautam

GIS: IAES-2024/320	Exploring the Phytochemical, Antioxidant, and Anti-microbial Activity of Wheatgrass Juice Fortified with Tuh malanga seeds	Dr. Sonal Prasad
GIS: IAES-2024/321	Local Development in a Global World: Challenges and Opportunities	Dr. Vinod Kumar
GIS: IAES-2024/322	Environment Resources Management and Role of Indian Government	Vivek Kumar Nagar
GIS: IAES-2024/323	Use of Citric Acid Functionalized Fe ₃ O ₄ Nanoparticles as Magnetically Separable and Reusable Heterogeneous Catalyst for Efficient and Sustainable Synthesis of Medicinally Privileged Heterocycles	Sarita Khandelwal, Saraswati Agarwal, Yogesh Kumar Tailor
GIS: IAES-2024/324	Climate Change and Water pollution: Status of Glaciers as per the Current Report of Central Water Commission	Dr. Rohit Kumar Meena, Dr. Pinky Meena
GIS: IAES-2024/325	Emerging Technologies and Advancements for Enhancing Our Ecosystem	Dr. Rajpal Singh
GIS: IAES-2024/326	Species Diversity and Distribution Pattern of Big Size Trees in Jhalawar District of Rajasthan	Ramniwas Vaishnav and Dr. Prahlad V.C.
GIS: IAES-2024/327	Reviewing the Potential of Ethanol Based Flex Fuels in Sustainable Transportation	Anju Agrawal
GIS: IAES-2024/328	Assessment of Water Quality in the Metal Mining Area of Rajsamand	Sneha Keelka, Pallavi Kaushik

GIS: IAES-2024/329	Sustainable Strategies in Business and Economics: A Blueprint for the Future	Dr. Suresh Choudhary
GIS: IAES-2024/330	AI: The Modern Frankenstein	Uzma Khanam
GIS: IAES-2024/331	Green Fuel: An Alternative to Traditional Fossil Fuels	Zulfiya Sheikh
GIS: IAES-2024/332	Economic and Business Strategies for sustainability	Rakesh Meena
GIS: IAES-2024/333	Sacred Groves of Sawai Madhopur district of Rajasthan: An Ethnobotanical Study	Prashant Rao
GIS: IAES-2024/334	Ecorestoration Using Karanj (<i>Pongamia pinnata</i>): An Amenable Oilseed Tree with Apposite Phyto-Plasticity on Kota Stone Minespoil in Rajasthan (India)	S. Kala, B.L. Mina, H.R. Meena, Shakir Ali, Ashok Kumar and I. Rashmi
GIS: IAES-2024/335	Particle Size Effect on Assessment of Heavy metals Associated with Road Dust at an Industrial City Kota, Rajasthan	Bhairu lal Kahtik Naraniya, Bharat Singh Meena, Uttra Chandrawat, Manju Meena
GIS: IAES-2024/336	Environment and Sustainability; - Through the Perspective of Arts and Literature	Dr Santosh Jain
GIS: IAES-2024/337	Evaluate the Effect of Some Heavy Metals on Seed Germination of <i>Raphanus sativus</i> Variety Pusa Himani in Laboratory	Dr. Rajshree Gupta

GIS: IAES-2024/338	Seasonal Phytoplankton Community of Nakki Lake, Mount Abu
	Kinjal Makwana and Pravina Rathore
GIS: IAES-2024/339	Scientific Innovations for Environmental Sustainability
	Kamala Ratnoo
GIS: IAES-2024/340	Microwave Assisted Digestion for Lead analysis in Yoghurt Samples using Atomic Absorption Spectrophotometer
	Monika Dakshene, Arti Bansal, Garima Chawla, Renuka Jain
GIS: IAES-2024/341	Perovskites for Dye Degradation: A Promising Avenue for Environmental Remediation
	Dr. Uttra Chandrawat, Dr. Manju Meena, Dr. Bharat Meena, Sanket Kumar
GIS: IAES-2024/342	Conservation of The Great Indian Bustard in the Sorsan Region of Rajasthan: Threats, Recommendations, and Measures
	Roopal Jain and Dr. Smriti Johari
GIS: IAES-2024/343	Role of Change Management Strategies in Implications of Governance Policies
	Dr. Shweta Swami
GIS: IAES-2024/344	Global Challenges and Local Solutions: Empowering Communities for Sustainable Development
	Rajendra Prasad Meena
GIS: IAES-2024/345	Studies on Plant Diseases of Various Crops in Agriculture land of Jaipur Division
	Hemlata Khatana and Dr. Mamta Choudhary
GIS: IAES-2024/346	Challenges of Using Plastic on Environmental Health
	Dr. Bharati Veerwal

GIS: IAES-2024/347	Global Challenges and Local Solutions
	Urmila Meena
GIS: IAES-2024/348	Innovative Agricultural Machinery for Sustainable Development in Rajasthan: Addressing Environmental and Resource Challenges
	Suman Chaudhary
GIS: IAES-2024/349	A Comprehensive Evaluation of Environmental Accounting Practices in Emerging Countries with Special Reference to Selected Indian Companies
	Sunil Kumar Kumawat
GIS: IAES-2024/350	Cultivating Health: Addressing Environmental Hazards through Natural Farming Practices
	Dr. Aparna Kumawat
GIS: IAES-2024/351	India: Environment Laws in India
	Dr. Gunjika Dubey
GIS: IAES-2024/352	Eco-Synergy: Integrating Biology and Sustainability for a Resilient Future
	Anita Kumari
GIS: IAES-2024/353	Role of Regional Rural Banks in Sustainable Rural Development
	Balmukand Meena
GIS: IAES-2024/354	Challenges and Local Solutions of Digital Divide and Technology Access
	Mukesh Panecha
GIS: IAES-2024/355	Environmental Degradation: A Major Issue
	Mrs. Rajbala

GIS: IAES-2024/356	Building Capacity for Environmental Protection and Sustainable Development through Education	Dheer Singh
GIS: IAES-2024/357	Sustainable Development: - Challenges and Opportunities for Innovative World	Priyanka Jagarwar
GIS: IAES-2024/358	Eco – Textiles for Sustainable Development	Dr. Anjali Sharma
GIS: IAES-2024/359	Adaptation of Flora and Fauna in Response to Global Change	Sunayana Singh
GIS: IAES-2024/360	MNREGA, Social Audit and Rural Development: A Study of Some Selected Gram Panchayats in Kota District	Meena Kumari Meena
GIS: IAES-2024/361	Green Chemistry's Significance for a Sustainable Environment	Dr. Suraj Prakash
GIS: IAES-2024/362	Education and Capacity Building as Pillars of Sustainable Development	Prof. Geeta Sharma
GIS: IAES-2024/363	The Environmental Reconsciousness in Bishnoi Community	Dr. Manju Bishnoi
GIS: IAES-2024/364	Ecological Issues: Economic Viability and Societal Responsibility	Dr. Manju Lata, Dr. Priyanka Yadav

GIS: IAES-2024/365	Economic and Business strategies for sustainability	
		Abha Agrawal
GIS: IAES-2024/366	Economic and Business Strategies for Sustainable Tourism: Approaches for a Greener Future	
		Ayushi Agrawal
GIS: IAES-2024/367	Environmental Sustainability	
		Priyanka Yadav
GIS: IAES-2024/368	Equilibrium isotherm and Thermodynamic study of Ni (II) onto Agriculture soil	
		Deepak Hada, Shweta Saxena
GIS: IAES-2024/369	A Study on Environmental Sustainability	
		Dr. Savita Chaudhary and Amita Nehra
GIS: IAES-2024/370	Assessment of Antifeedant Effect of Annona Seed Extracts Against <i>Callosobruchus Maculatus</i>	
		Mosmee Meena and Surabhi Shrivastava
GIS: IAES-2024/371	Balancing Innovation with Sustainability: A Path to a Greener Future	
		Poonam Maini
GIS: IAES-2024/372	Green Method of Synthesis the Novel Multi-substituted 3-(4, 5-diphenyl- H-imidazol-2-yl)- H-indole Derivatives by Using Efficient Amberlyst A- 5 Recyclable Catalyst	
		Dr. Narendra Nirwan
GIS: IAES-2024/373	Impact of Textile Effluent on Ground Water of Pali	
		Dr. Kamlesh Gaggar

GIS: IAES-2024/374	Impact of Tourism on Environment
	Rohitash Yadav
GIS: IAES-2024/375	Role of Chemistry in Environmental Sustainability
	Dr. Kanchan Verma
GIS: IAES-2024/376	Leveraging Ancient Wisdom for Environmental Sustainability
	Dr. Rajni Meena, Lokesh Kumar Meena
GIS: IAES-2024/377	Environmental Health Hazards and Organic Farming
	Dr. Neeta Garg
GIS: IAES-2024/378	Global Challenges and Local Solutions
	Babu Lal Jat
GIS: IAES-2024/379	Nanosensors in agriculture: Recent Aspects and Scope
	Dr Swati Bugalia
GIS: IAES-2024/380	Impact of Covid - 9 on People with Mild Dementia
	Dr Anubhuti Tiwari
GIS: IAES-2024/381	Natural Farming with Sustainable Development
	Anita Yadav
GIS: IAES-2024/382	QuEChERS-Quick, Easy, Cheap, Effective, Rugged and Safe Approach for Pesticide Detection in Fgriculture and food Products
	Arshad Hussain zafri

GIS: IAES-2024/383	Impact of Soil in Catchment Area of Moral Dam: A Survey
	Dr. Vandana Ankodia
GIS: IAES-2024/384	Exploring the Biochemical Mechanisms of Biodiesel Production from Microalgae
	Komal Sharma and Mrs. Jyoti Pathak
GIS: IAES-2024/385	Law, Policy, and Governance for Environmental Protection: A Political Review
	Dr. Jyoti Deval
GIS: IAES-2024/386	Study of Science and Technology from a Social and Cultural Perspective
	Alka Jangir
GIS: IAES-2024/387	Economic and Business Strategies for Sustainability
	Himanshu Garg
GIS: IAES-2024/388	Quantitative Study of Regional Disparity of Financial Inclusion among the districts of Rajasthan
	Rahul Verma
GIS: IAES-2024/389	Fiscal Consolidation in Rajasthan: An Empirical Analysis
	Chetna Vijay
GIS: IAES-2024/390	Effect of Heavy Metals on Haematological Parameters of Mouse
	Dr. Jaishree Daverey
GIS: IAES-2024/391	The Importance of Urban Forests & Green Spaces in Carbon Budget in Indian Cities
	Robin Kumar Saini , Poonam Jaiswal
GIS: IAES-2024/392	Environmental Governance in India: Challenges and Issues
	Deva Ram

GIS: IAES-2024/393	Urban Planning and Design with an Approach in Sustainable Urban development	Nirmala Meena
GIS: IAES-2024/394	Functionalized Polysaccharide based Hydrogels as High-Capacity Adsorbents for Dye Removal from Aqueous Solution	Renuka Jain
GIS: IAES-2024/395	Integrating Green Finance for Sustainable Economic Growth: Challenges and Opportunities	Ms. Manvi Shekhawat
GIS: IAES-2024/396	Village Tourism in India: Opportunities and Challenges	Dr. Khushboo Niyarta
GIS: IAES-2024/397	The Role of Capacity Building in Promoting Sustainable Development in Developing Countries	Dr. Dhanwanti Bishnoi
GIS: IAES-2024/398	Biodegradable Plastics: Innovations, Applications, and Environmental Impact in the Pursuit of Sustainability	Charu Agarwal
GIS: IAES-2024/399	Collaborative Approaches to Sustainability in Business Ecosystems: Strategies for Enhancing Resilience and Innovation	Kirti Raman
GIS: IAES-2024/400	Health Benefits of Economically Important Cruciferous Vegetables	Pratibha Payal
GIS: IAES-2024/401	The Gandhian Approach to Sustainable Development: Relevance and Application in Contemporary Global Challenges	Dr. Binu Kumawat

GIS: IAES-2024/402	Impact of Environmental Disturbances and Community Hygiene on the Spread of Malaria Falciparum	Dr. Smriti Johari, Kusum Lata Vaishnav, and Dr. Surabhi Chittora
GIS: IAES-2024/403	Survey on the Prevalence of Mosquito Borne Diseases in the Slum Areas of Kota (Rajasthan)	Dr. Smriti Johari and Dr. Surabhi Chittora
GIS: IAES-2024/404	Heterosis studies for different qualitative and quantitative traits in bottle gourd genotypes	Tanvi Mehta, DS Duhan, Nidhi Sehgal, Sudesh and Ravi Gautam
GIS: IAES-2024/405	Impact of branding and packaging on consumer buying behaviour for basmati rice	Pooja Rani
GIS: IAES-2024/406	Studies on Genetic Variability in Spinach Beet (<i>Beta vulgaris</i> L. var. <i>bengalensis</i> Roxb.)	Abhishek, Shiv Pratap Singh
GIS: IAES-2024/407	MHD flow of Kuvshinski Fluid Through Porous Medium with Temperature Gradient Heat Source	Annu Banshiwal
GIS: IAES-2024/408	Empowering Local Communities to Slove Global Problems	Priyanshi Jeliya
GIS: IAES-2024/409	Impact of Wetland Loss on Heron Species	Pooja Goswami, Dr. Meenakshi Mayangar
GIS: IAES-2024/410	Need of Local Solutions for Sustainable Development	Dr. Shraddha

GIS: IAES-2024/411	Variability Studies in Bottle Gourd [<i>Lagenaria siceraria</i> (Mol.) Standl.] under Semi-Arid Conditions of Haryana
	Nidhi Sehgal, VPS Panghal, DS Duhan, Dev Vart Yadav, Vinod Kumar and Tanvi Mehta
GIS: IAES-2024/412	Influence of different irrigation regimes and foliar application of nano urea on productivity of potato (<i>Solanum tuberosum</i> L.)
	Himanshu and Hans Raj
GIS: IAES-2024/413	Role of Ancient women in Environmental Conservation
	Dr. Anju Mittal, Dr. Anita Surana
GIS: IAES-2024/414	Challenge and Future aspects: Chemical Waste Management of Agriculture
	Kavita Singh Choudhary
GIS: IAES-2024/415	Sulfonic acid-functionalized Silica Coated Magnetic Nanoparticles as a Novel and Efficient Catalyst for the Cost-effective Synthesis of Medicinally Privileged Spiroheterocycles
	Yogesh Kumar Tailor, Sarita Khandelwal
GIS: IAES-2024/416	Removal of organic Pollutants Using Green Synthesized Metal Nano-catalysts
	Ajay Rathore, Naveen Mittal*, Vijay Devra
GIS: IAES-2024/417	Mechanothermally Mediated Dual Calcination Synthesis of ZnO doped Zn(NCN) Nanocomposites as Robust and Efficient Photocatalyst for Degradation of Pollutant
	^a Parmeshwar Lal Meena, ^{a,b} Lata Kumari Chhachhia, and ^a Ajay Kumar Surela
GIS: IAES-2024/418	Multicomponent Synthesis of Structurally Diverse and Drug-like Spiroheterocycles with Privileged Substructures using a Green Bio-organic and Recyclable Catalyst in Aqueous Medium
	Asha Verma ¹ , Dinesh Kumar Arya ²

GIS: IAES-2024/419	Title: Zero-Budget Natural Farming: A Pathway to Sustainable and Low-Cost Agriculture
	Pooja S Beleri
GIS: IAES-2024/420	A Review on Morphometric Analysis Based Sub-basins Prioritization of Mahi Upper River Basin Using Geospatial Approach
	*Suresh Chandra Jat, P. K. Singh ² , Nirmalya Kumar Nath ¹ , Abhinav Kumar ¹ , Pritam Das ¹ , Hasmukh Kumar ¹
GIS: IAES-2024/421	A Review on Evapotranspiration Estimation in Agricultural Water Management
	*Leena Rani Mishra ¹ , P. K. Singh ² , Nirmalya Kumar Nath ¹ , Abhinav Kumar ¹ , Pritam Das ¹ , Sachin Suryawanshi ¹
GIS: IAES-2024/422	Smart Metering Mechanism in Planter for Sustainable Development
	*Er. Narendra Kumar Yadav ¹ , Dr. Sanwal Singh Meena ²
GIS: IAES-2024/423	Knowledge And Usage Of Energy Conservation Equipment And Methods By Rural Families
	Meenu, Dr. Binoo Sehgal
GIS: IAES-2024/424	Future of Farming: Leveraging AI, ML and Remote Sensing for Sustainable Development
	Hari Krishna. B ¹ , Machanuru Ravi Teja ² and A. Sai ram ³
GIS: IAES-2024/01	सहायक प्राध्यापक, राजकीय महाविद्यालय, ओसियां जय नारायण व्यास विश्वविद्यालय
	इंदु बाला कुमावत
GIS: IAES-2024/02	जलवायु परिवर्तन के सामाजिक आयाम
	डॉ. प्रियंका जैन

GIS: IAES-2024/03	वैश्विक नवाचार और चुनौतियाँ :प्रौद्योगिकी और इंजीनियरिंग समाधान
	Manoj Kumar
GIS: IAES-2024/04	पर्यावरण और जल प्रबन्धन
	प्रो. (डॉ) अनीता गुप्ता
GIS: IAES-2024/05	भारतीय समाज पर वैष्ठीकरण के प्रभाव का एक समाजशास्त्रीय अध्ययन
	डॉ.हरिचरण मीना
GIS: IAES-2024/06	मेघदूत में पर्यावरण-प्रेम
	Dr. Seema Choudhary Professor (Sanskrit) Government College, Bundi (Rajasthan)
GIS: IAES-2024/07	पर्यावरणीय स्थिरता के लिए एकीकृत दृष्टिकोण का विकास
	Megha Gupta
GIS: IAES-2024/08	कला द्वारा पर्यावरण संरक्षण
	सोहन लाल बलाई
GIS: IAES-2024/09	वैश्विक कला बाजार और भारतीय कला की चुनौतियाँ
	डॉ. आशीष कुमार श्रृंगीए डॉ. सतीश शर्मा
GIS: IAES-2024/10	चौमूं तहसील के कृषि प्रारूप पर नगरीकरण का प्रभाव:
	Shaitan MalJat

GIS: IAES-2024/11	जलवायु परिवर्तन तथा पर्यावरणीय प्रभाव
	प्रधान सिंह मीना
GIS: IAES-2024/12	मेवाती लोकगीतों में पर्यावरण-चेतना
	रामजीत यादव
GIS: IAES-2024/13	सांस्कृतिक धरोहर का सौंदर्यआत्मक मूल्य सामाजिक परिदृश्य की कलात्मक यात्रा
	ध्रुव
GIS: IAES-2024/14	भवभूति प्रणीत उत्तररामचरित में पर्यावरणीय संचेतनता
	डॉ. वर्षा खण्डेलवाल
GIS: IAES-2024/15	हिंदी उपन्यासों में पर्यावरण विमर्श-
	डॉ प्रणु शुक्ला ,सहायक आचार्य हिंदी
GIS: IAES-2024/16	पर्यावरण पारिस्थितिकी एवं सतत पर्यटन विकास
	प्रो. डॉ गजेन्द्र सिंह,
GIS: IAES-2024/17	प्राचीन भारत में पर्यावरण संरक्षण के लिए कानून, नीति और शासन
	मिथलेश सोलंकी
GIS: IAES-2024/18	मानवता, प्रकृति और उर्दू साहित्य में पर्यावरणीय चेतना"
	Dr. Shahnaz

GIS: IAES-2024/19	सतत विकास और अक्षय उर्जा	
		लेखक शीशराम
GIS: IAES-2024/20	वैश्वीकरण, आर्थिक विकास और बाज़ार अवसर	
		प्रो. (डॉ.) जयराम बैरवा
GIS: IAES-2024/21	‘जयशंकर प्रसाद के साहित्य में प्रकृति प्रेम’	
		Anju Sharma
GIS: IAES-2024/22	मनरेगा, सामाजिक लेखापरीक्षा और ग्रामीण विकास : कोटा जिले की कुछ चयनित ग्राम पंचायतों का अध्ययन	
		Meena Kumari Meena
GIS: IAES-2024/23	पारिस्थितिक स्त्रीवाद (इको-फेमिनिज़्म)	
		डॉ. मीनाक्षी चौधरी
GIS: IAES-2024/24	पर्यावरणीय वकालत में काव्य और साहित्य का योगदान	
		कमलेश कुमार जोशी
GIS: IAES-2024/25	वैश्विक स्थिरता की दिशा में बंजर भूमि का प्रबंधन: टोंक, राजस्थान में चुनौतियाँ और अवसर	
		डॉ नरेन्द्र कुमार चंदेल
GIS: IAES-2024/26	अलवर प्रजामंडल की पर्यावरण संरक्षण नीतियाँ	
		Manoj Kumar

GIS: IAES-2024/27	हिंदी उपन्यासों में पारिस्थितिक संकट	
		श्री रामकेश मीना
GIS: IAES-2024/28	राजस्थान के कोटा जिले की रामगंजमंडी तहसील के खेड़ली गांव में जलग्रहण क्षेत्र प्रबंधन में जीआईएस तकनीकी के उपयोग द्वारा भौगोलिक अध्ययन	
		संजय सिंह गुर्जर, डॉ. एल. सी. अप्रवाल,
GIS: IAES-2024/29	डिजिटल सरकार और सतत विकास	
		श्री पदमाराम जाखड़, श्री गुमानाराम
GIS: IAES-2024/30	पर्यावरण नीतियां : सरकारों के सामने चुनौतियां	
		लाल चन्द मीणा
GIS: IAES-2024/31	माउंट आबू	
		सीमा चारण
GIS: IAES-2024/32	जिला का फतेहपुर में वायु प्रदूषण की समस्या	
		डॉ. नोहू कुमार
GIS: IAES-2024/33	पर्यावरण संरक्षण और सामाजिकता	
		दिनेश
GIS: IAES-2024/34	राष्ट्रीय राजमार्ग एवं चित्तौड़गढ़ में पर्यटन की संभावनाएं	
		निर्मल कुमार देसाई

GIS: IAES-2024/35	पर्यावरण विषयक वैदिक मनीषा
	डा. पूजा बुन्देल, अर्चना भार्गव
GIS: IAES-2024/36	अंतर्राष्ट्रीय पर्यावरण समझौते और राष्ट्रीय गवर्नेंस: कार्यान्वयन एवं बाधाएँ
	डॉ. निधि यादव,
GIS: IAES-2024/37	पर्यावरण संरक्षण एवं भारतीय संविधान
	डॉ. सुनीता मीणा
GIS: IAES-2024/38	पर्यावरण संरक्षण के लिए अलवर प्रजामंडल की नीतियाँ।
	मनोज कुमार
GIS: IAES-2024/39	जलवायु परिवर्तन का भारतीय कृषि पर प्रभाव व राजस्थान राज्य की वर्तमान स्थिति
	डॉ. सीमा वर्मा डॉ. रजनी तसीवाल डॉ. अभिलाषा जैन
GIS: IAES-2024/40	आधुनिक हिंदी कविता में अभिव्यक्त पर्यावरणीय चेतना
	डॉ. मेघराज मीना
GIS: IAES-2024/41	प्रकृति पर मानव का दृष्टिकोण
	श्री रामा केश मेहता
GIS: IAES-2024/42	जयशंकर प्रसाद के साहित्य में प्रकृति प्रेम
	अंजू शर्मा

GIS: IAES-2024/43	पर्यावरण संरक्षण एवं भारतीय संविधान	
		डॉ. सुनीता मीणा
GIS: IAES-2024/44	चौमूं तहसील के कृषि प्रारूप पर नगरीकरण का प्रभाव	
		शैतान मल जाट
GIS: IAES-2024/45	जलवायु परिवर्तन के सामाजिक आयाम	
		डॉ. प्रियंका जैन
GIS: IAES-2024/46	पर्यावरणमूलक प्राचीन भारतीय कृषि विज्ञान (कृषिपराशर के विशेष संदर्भ में)	
		डॉ. समय सिंह मीना

PART- A

Isolation and Characterization of Fungal Endophytes from Medicinal Plant *Lavandula officinalis* L. with Plant Growth-Promoting Potential

**Sokhibjon Abdusamatov^{1,2}, Dilfuza Jabborova^{1,2*}, Jitendra Mehta³,
Krishnendra Singh Nama⁴, Megha Barot^{5,6}, Baljeet Singh Saharan⁷**

¹Faculty of Biology, National University of Uzbekistan, Tashkent 100174,
Uzbekistan

²Institute of Genetics and Plant Experimental Biology, Uzbekistan Academy
of Sciences, Kibray 111208, Uzbekistan

³Plant Tissue Culture Laboratory and Department of Biotechnology, Vital
Biotech Research Institute, Kota- 324009 (Rajasthan), India

⁴Department of Botany, Lzebra College, Kota, Rajasthan

⁵Research and Development Cell, Parul University, Vadodara, Gujarat, India

⁶Department of Environmental Science, Parul Institute of Applied Sciences,
Parul University, Vadodara, Gujarat, India

⁷Department of Microbiology, Chaudhary Charan Singh Haryana
Agricultural University, Hisar 125 004, India

* Corresponding Author: Dilfuza Jabborova. Email:

dilfuzajabborova@yahoo.com

This study isolates and characterizes endophytic fungi from the lavender plant (*Lavandula officinalis* L.) to evaluate their antifungal activity and plant growth-promoting properties, marking one of the first such investigations in our country. Nine endophytic fungi were isolated using standard microbiological methods and tested for enzyme production. Results revealed protease and lipase activities among isolates, with notable cellulolytic activity demonstrated by filter paper degradation. Among the isolates, four were selected for further analysis. Isolate LR3 showed the highest endo-1,4- β -glucanase and exo-1,4- β -glucanase activities, producing enzyme levels 4.22 times greater than the control. Isolate LS2 followed with activities of 3.72 and 2.63 units/mL, while LR2 also displayed some endo-1,4- β -glucanase activity. The most active isolates, LS2 and LR3, were selected for further study. When tested against pathogenic fungi, most endophytic isolates displayed activity against *Verticillium dahliae* and various *Fusarium* species, although they showed no activity against *Fusarium oxysporum*.

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Overall, the study highlights lavender-associated endophytic fungi as potential bioinoculants to support sustainable lavender cultivation.

Keywords: Lavandula officinalis L., endophytic fungi, antifungal activity, phytohormones phosphate solubilization

GIS: IAES-2024/02

Nanomaterials and their Multifunctional Applications

Prof H.C. Anada Murthy

School of Applied Sciences, New Guinea University of Technology
Papua (New Guinea)

The prime objective of this lecture is to bring awareness to the students on the latest discoveries and advances in the field of nanomaterials dealing with the synthesis, functionalization, morphology, physio-chemical properties of 1D, 2D and 3D advanced materials and their interdisciplinary applications towards the waste water management-in treating the pollutant dyes and heavy metals, biomedical applications-in treating various diseases and energy applications- in providing alternative energy storage and conversion devices. It also reveals the significance of understanding the synthesis methodologies in tuning the nano-size properties of inorganic materials using various parameters to functionalize to specific applications in varieties of sectors covering energy, environment and health. In addition, multifunctional applications of nanomaterials for environmental remediation, biomedical and energy applications will be summarized. The applications of inorganic materials such as in catalysis, photocatalysis, electrocatalysis, sensing, antimicrobial, anticancer, antioxidant, therapeutic, cytotoxic, drug delivery, nanomedicine, food packaging, batteries, fuel cells, solar cells, capacitors, supercapacitors will also be presented. The recent research and development of inorganic nanomaterials will be summarized from the perspective of their multifunctional nature.

Green Methods in the Synthesis of Organophosphorus Compounds with potential Bioactivity

Dr. György Keglevich, PhD, Dr Habil, DSc

Professor of chemistry, Department of Organic Chemistry and Technology, Faculty of Chemical Technology and Biotechnology, Budapest University of Technology and Economics, 1521 Budapest, Hungary. E-mail:

keglevich.gyorgy@vbk.bme.hu

The microwave (MW) technique has become an important tool in organophosphorus chemistry. In this lecture, the advantages of MWs in different reactions are surveyed allowing green chemical accomplishments. The first case is the MW-assisted direct esterification of phosphinic-¹ and phosphonic acids,² along with phosphoric ester-acids³ that all became more efficient in the presence of an ionic liquid catalyst. The O-alkylation of phosphonic acids and phosphoric ester-acid derivatives under MW irradiation is also a useful technique.⁴ The interconversion of phosphinates and phosphinic amides was also elaborated.⁵ Alcoholyses and hydrolyses of P-esters were also investigated and optimized.⁶⁻⁸ A valuable finding of ours is that in the Hirao P–C coupling of >P(O)H reagents and bromoarenes applying Pd(OAc)₂ as the catalyst, the slight excess of the >P(O)H species may substitute the usual P-ligands in the tautomeric >POH form.⁹ Ni-catalyzed cases will also be shown. The latter variation involves a brand new mechanism assuming a Ni(II) → Ni(IV) transition.¹⁰ Heterocyclic derivatives were also involved in P–C couplings to provide P-functionalized species with cytostatic activity.¹¹ MWs may substitute catalysts, in certain reactions, such as in the Kabachnik–Fields condensations of amines, aldehydes and >P(O)H reagents. A series of new α-aminophosphonate derivatives were prepared that displayed significant anticancer activity on certain cell cultures.¹²⁻¹⁴ β-Aminophosphonic derivatives were also prepared and derivatized.¹⁵ The utilization of the Pudovik reaction in the synthesis of α-hydroxyphosphonates and their derivatization,¹⁶ as well as the preparation of hydroxy-methylenebisphosphonates (dronic acid derivatives)¹⁷ as biologically active substrates or drugs in the treatment of bone diseases will also be discussed. Phosphonoyl-functionalized hydroxyphosphonates were

also synthesized.^{18,19} The hydroxyphosphonates were converted to the mesyloxy derivatives.²⁰ Flow chemical accomplishments of a few reactions mentioned above, *e.g.* esterifications, alcoholyses and hydrolyses are also presented. It is also the purpose of this paper to elucidate the scope and limitations of the MW tool.

GIS: IAES-2024/04

Think Locally Act Globally with Reference to Bioprospection of Ethnomedicinal Plants of India

Prof. Nawal Kishore Dubey

Centre of Advanced study (CAS) in Botany, Institute of Science, Banaras
Hindu University, Varanasi-221005, India

*Corresponding Author email: nkdubeybhu@gmail.com

Ethnomedicines have played tremendous role in discovery of novel lifesaving drugs to combat chronic diseases. Several novel lead compounds like morphine, cocaine, codein, digitoxin and quinine have been discovered from the ethnomedicinal plants to combat pain, fever, alzheimers, malaria and to boost intellect as well as immunity. Ethnomedicinal wisdom, which is still a key player in achieving sustainable health management by maintaining health security as well as well-being, is currently facing different challenges such as biopiracy, standardization, clinical trials as well as collection and quality assurance of raw materials. Every nation has sovereign right over its biodiversity which is frequently violated by the act of biopiracy or gene robbing. There are many examples of exploitation of traditionally used medicinal plants by the biotechnologically rich but biodiversity poor countries. *Pentadiplandra brazzeana* from tropical Africa, *Vinca rosea* from Madagascar, *Curcuma longa*, *Azadirachta indica* and *Withania somnifera* from India are some classical examples of biopiracy. Due to recent developments in gene technologies, many biotechnologically rich but biodiversity poor countries are involved in the act of biopiracy by illegally patenting the traditional knowledge of other countries. Hence bioprospection would help the native countries in legal exploitation of the bioresources by preventing the act of biopiracy. Hence, bioprospection is a burning issue for biodiversity-rich countries like India, China, and tropical African nations to

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document their bioresources as well as to identify their useful plants, related phytochemicals and genes controlling them. Incorporation of modern technologies along with the digitalization of traditional knowledge and their bioprospection may overcome the associated challenges.

GIS: IAES-2024/05

Ecosystem Restoration: Integrative Approach to Sustainability

Dr. Maheep Bhatnagar

M.Sc., Ph.D., Dip. Endocrine Pathology (Eng.), FWCCMB (France), FIANS (India), FNESA(India), FSSE, FZS (Eng.), FRPMS (Eng.)

Former Professor and Head, Former Dean and Chairman, Faculty of Science
Mohan Lal Sukhadia University, Udaipur

Email: m.maheep@gmail.com

In 1972 UN general assembly declared June 5th as World Environment day and the first slogan was “Only One earth”. Later this platform was established as place to discuss problems related to air pollution, plastic pollution , killing of wild animals for their body parts and sustainable consumption, increasing level of sea , food security, climate change and their impacts along with creating awareness about these possible dangers. UN has declared year 2021 to 30 as a decade of Ecosystem restoration. In coming years UN has set up a goal to achieve sustainable development goals, involving its members and their people to reverse the effects and damages done in the past by climate change. Considering the important role and inclusion of our young generation a especial program is launched “ Survey for youth” aim of which is to increase the awareness about ecosystem restoration. How they feel, what are their expectations and how they conceive to overcome problems related to degrading ecosystem. All type ecosystem can be restored like- Forest, farmlands, cities, wet lands and oceans. Healthy ecosystem which has more biodiversity supports more sustainability for example provide more fertile soil wood and fishes, storage for greenhouse gases etc. Reason for ecosystem degradation is not one and their for its impact is also different. But we must understand that in no case we can bring the ecosystem back to its pristine state, but if remove the pressure or cause of pressure, the nature wili recover at its pace. If we are

able to create awareness to even a small minority of young people, it will create a world of difference.

GIS: IAES-2024/06

**Stressors Synergy and Counterbalancing Mechanisms
Regulate Ecosystem Responses to Human Perturbations in
Large Rivers**

Prof. Jitendra Pandey

Ganga River Ecology Research Laboratory, Environmental Science Division,
Centre of Advanced Study in Botany, Institute of Science,
Banaras Hindu University, Varanasi- 221005, India
e-mail: jiten_pandey@rediffmail.com

Large rivers are highly susceptible to urban-industrial and other forms of pollution. The impact of these stressors is often assessed in terms of the “changes” in selected water quality attributes. These determinants are helpful in establishing causal connections but fail to address how river ecosystems are “responding” to those changes under multiple stressors interplay, an issue ecologically relevant in establishing mechanistic linkages essential to explore adaptive management strategies of large rivers. Uncertainties especially persist while extrapolating point source trajectories to ecosystem scale fluxes and feedbacks. To address these issues, we performed basin-scale field and incubation studies in the context of multiple perturbations and compounding stressors synergies. Our decadal scale observations show: (a) mechanistic connection of atmospheric deposition-driven terrestrial carbon transport to coastal ocean through river continuum; (b) C-eutrophy coupled stressors synergy-driven development of hypoxic patches during summer low-flow enforce positive ecosystem feedbacks approaching toward the tipping point to constrain resilience; (c) some stressors induce counterbalancing effects suggesting caution on riverine C-budgeting and transport in a climate change perspective and sustainability of large rivers.

Keywords: *Atmospheric deposition; Climate change; Ganga River; Ecosystem feedback*

Sustainability in Global Supply Chains: Current Approaches, Challenges, and the Road Ahead for the Developing Markets

Prof. Anjali Awasthi

Institute for Information Systems Engineering (CIISE)
Concordia University, Montreal (Canada)

Sustainability in global supply chains is vital to minimization of costs, effective use of labor resources, and minimal negative impacts on the environment. In this talk, I will present the key trends and practices in global supply chain sustainability management. How to measure global supply chain sustainable performance? Which approaches can be used? How sustainability performance measurement varies across different business sectors? Which factors play a key role for developing markets? I will also identify the challenges in sustainability implementation, present best practices, and map the path forward for benchmarking. A case study for agri-food supply chains will be provided.

Ensuring Agricultural and Environmental Sustainability Overcoming Climate Change Impacts

Prof. Padmanabh Dwivedi

Head, Department of Plant Physiology
Institute of Agricultural Sciences
Banaras Hindu University
Varanasi 221005, India
Email: pdwivedi25@bhu.ac.in

Issue of climate change encompassing global concerns such as enhanced levels of greenhouse gases, carbon dioxide, nitrous oxide, methane and others have led to an increase in global temperature, which is crucial for agriculture and the environment. Agriculture faces major abiotic stress challenges in the form of drought, heat waves, salinity and heavy rains resulting in crop yield losses as well as economic losses to the farmers. Coupled with the influence of temperature and humidity variables, the disease and pest dynamics have threatened crop productivity thereby increasing the vulnerability of crops to biotic stresses. Mitigation and

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adaptation means are vital to address these challenges for sustainable agriculture and safe environment. Agricultural practices like traditional and agro-ecological approaches can help enhance soil health, water management besides carbon sequestration. Measures such as crop insurance and improved irrigation techniques present the potential to increase productivity, resource use efficiency and resilience to biotic and abiotic stresses. The lecture deals with major threats for the environment and agriculture in the global climate era including impacts on human health, and strategies to combat such challenges to keep up the pace of socio-economic balance ensuring the sustainability.

GIS: IAES-2024/09

Green Audit & Green Campus: Need of the Hour

Narendar Bhojak*

GCRC, P.G. Department of Chemistry,
Govt. Dungar College (NAAC 'A' Grade),
MGS University, Bikaner 334001, India
Email: narendarbhojak@gmail.com

Green auditing is one of the most important area not only important for industrial organization but for academic institutions too. The aspects, principle and procedure for Green audit is essential to be understood and applied at institutional level, it will be helpful for students learning perspective as well as from environmental monitoring point of view. In the present research simplified approach has been designed, developed and encapsulated particularly for academic institutions. Few examples based on the principals of Green chemistry have been explored for the purpose. In recent past the concept of Green auditing has become one of the key factor and essential component for different kinds of rankings like NAAC, NIRF, QS, AAP etc. The paper also describes a general procedure and methodology which can be applied by any institute to perform Green auditing at campus in order to turn the campus Green. It includes the concepts of energy audit, bio waste, e-waste management and water auditing.

Key words: Green audit, energy, e-waste, water

**Sustainable approaches employing carbon dioxide:
Renewable applications & synthetic explorations**

Prof. (Dr.) Devdutt Chaturvedi*

Department of Chemistry, School of Physical Sciences, Mahatma Gandhi
Central University, Motihari-845401(East Champaran), Bihar, India.

E-mails: devduttchaturvedi@gmail.com; devduttchaturvedi@mgcub.ac.in

The production of carbon dioxide around the globe resulting the emergence of global warming day by day. Burning of coal, vehicles fuel, natural gas and nuclear explosions also generates carbon dioxide in the environment, has been the major constituents which majorly influences the global warming. This burden of carbon dioxide in our environment necessitates the need of transforming carbon dioxide into greener valuable products. Also, carbon dioxide has been playing an important role in balancing our environment through photosynthesis in plants.

In recent years, carbon dioxide has been employed as a cheap and safe alternative eliminating the use of harmful reagents such as CO and COCl₂. Recently, carbon dioxide has frequently been employed as a green reagent in its various conditions and forms for the syntheses of structurally diverse biologically potent scaffolds employing diversity of starting materials, reagents and catalytic systems. In the present talk, I will focus some of the greener applications of carbon dioxide as a source of renewable energy & its synthetic utility.

Adaptive Evolution in Microbial Populations as a Model for Environmental Resilience

Mudita Goyal

Harvard University, Cambridge MA 02138, USA

muditagoyal2002@gmail.com

Microbial adaptive evolution provides a powerful model for understanding environmental resilience, as microorganisms can rapidly adjust to diverse stressors like pollutants, temperature shifts, and nutrient fluctuations. This review integrates perspectives from chemical biology, molecular biology, microbiology, cell biology, and environmental science to explore microbial adaptability across genetic, cellular, and community scales. Genetic adaptations, such as mutation accumulation, horizontal gene transfer, and gene regulation, allow for flexible and rapid responses to environmental challenges. Complementary cellular mechanisms, including metabolic plasticity and stress-response pathways, further support survival under dynamic conditions.

At the ecological level, microbial communities demonstrate resilience strategies through cooperation and genetic exchange, which stabilize ecosystems under stress. Advances in multi-omics, synthetic biology, and computational modeling have provided tools to deepen our understanding of microbial resilience, enabling precise manipulations for ecosystem management applications. These approaches also facilitate the engineering of resilient microbial communities for bioremediation and pollution degradation, linking scientific insights with sustainable solutions.

This interdisciplinary review proposes a unified framework for microbial resilience, positioning microbial adaptive evolution as a scalable model to address urgent global ecological challenges. This approach not only highlights microbial adaptive potential but also suggests pathways for leveraging these adaptations in strategies that enhance ecosystem stability amidst environmental change.

Keywords: *Microbes, adaptive evolution, resilience, sustainable solutions*

Environmental Sustainability in Aerospace Applications

Vimal Jaiswal

Principal Engineer, CT Engineering Ltd. UK

jaiswalvk@yahoo.co.in

The aerospace industry has substantial effect on our environment due to greenhouse gas emissions and other pollutants like NO₂, NO_x and particulate matter (PM). It accounts for almost 2.5% of global CO₂ emissions. Growth in economy, and power of expenditure have increased air passengers and goods transport by two folds in the last decade. To make the environment as well as the industry sustainable, Aerospace Industries Association (AIA) with major aviation industries like Airbus & Boeing, along with governing bodies like European Union Aviation Safety Agency (EASA), Federal Aviation Administration (FAA) have come together to work on new research and technological development to reduce the carbon footprint of aviation industry on the environment. This paper reviews the latest technological developments by world renowned industries working in this field and their challenges. Zeroavia is working on Hydrogen-Electric engines for zero-emission flight. Lilium, Vertical Aerospace, Volocopter are working on air taxis for sustainable air mobility using high energy density batteries. Many aviation industries are researching on Sustainable Aviation Fuel (SAF) replacing traditional jet fuel. Aerospace professionals talk about light weight structures made of high strength and high stiffness carbon composite materials. Now a days, industries are designing for recycling & reusable products. The SpaceX is developing a fully reusable rocket. To reduce the emissions and the fuel burnt, industries are working on long foldable wings, laminar flow wing design. Engine manufactures like Rolls Royce, GE, Safran, Pratt & Whitney are developing efficient engines to improve performance and hence reduce emissions.

Keywords: *aerospace, emissions, air-transport.*

**Antioxidant, Antidiabetic and Antimicrobial Properties of
Lansium domesticum Correa (Meliaceae)**

Sruthi Gopan M^{1*} and Dr. Sudha Bai R²

¹Research Scholar, PG and Research Department of Botany, University College, Thiruvananthapuram, Kerala - 695 034

² Professor and Research Supervisor, PG and Research Department of Botany, University College, Thiruvananthapuram, Kerala - 695 034

*[Email:sruthigopan.m@gmail.com](mailto:sruthigopan.m@gmail.com)

Lansium domesticum is an exotic fruit having 2 varieties, *Lansium domesticum* var.*domesticum* and *Lansium domesticum* var.*pubescens*, commonly known as Duku and Langsat. The fleshy translucent portion of the fruit is edible. The antioxidant properties of fruits are studied by DPPH, FRAP, NO, H₂O₂ and O²⁻ scavenging assays. The methanolic extract of Duku fruit pulp shows high antioxidant power than methanolic extract of Langsat fruit pulp with lower IC₅₀ values. Alpha amylase and Alpha glucosidase inhibition assays are analyzed to determine the antidiabetic properties of both the fruit pulp samples. In the present study, the methanolic extract of duku fruit pulp has high ability in inhibiting the enzyme alpha amylase and for alpha glucosidase it is the methanolic extract of langsat fruit pulp. Both the samples exhibit significant level of inhibitory activity near to the standard acarbose. The antimicrobial properties of methanolic extract of duku and langsat fruit pulp and fruit peel are studied using 8 bacterial strains which include intestinal pathogens and 6 fungal strains with standards. The fruit pulp and fruit peel of both methanolic fruit sample shows zone of inhibition at different concentration against different bacterial strains includes-*Enterococcus faecalis*, *Staphylococcus aureus*, *Streptococcus mutans*. The methanolic fruit peel and pulp samples also shows antifungal activity at different concentration against *Aspergillus niger*, *Candida albicans*. Both the fruit pulp shows clear zone of inhibition at 25,50,100 µg/ml concentration against the *Fusarium* *sps*. The presence of various phytochemicals in the fruit samples are responsible for its high antioxidant, antidiabetic and mild antimicrobial properties.

Keywords: *Lansium domesticum*, Antioxidant, Antidiabetic, Antimicrobial.

Carbon Capture and Utilization (CCU) Technologies

Palak Sanadhya

Department of Chemistry

Indian Institute of Technology, Bombay

22b2729@iitb.ac.in

Carbon capture and utilization (CCU) technologies are pivotal in reducing global carbon emissions, addressing climate change by converting CO₂ from waste into resources. This paper delves into cutting-edge advancements in CCU, focusing on the chemical transformation of CO₂ into high-value products like fuels, chemicals, and construction materials. The study emphasizes key catalytic mechanisms involved in CO₂ reduction, including electrochemical, photochemical, and thermochemical methods, each requiring distinct catalysts and energy sources. We analyse recent innovations in catalyst design, particularly the use of transition metal complexes, metal-organic frameworks, and hybrid materials that offer high selectivity, stability, and conversion efficiency. Additionally, challenges such as energy demand, catalyst degradation, and the critical role of renewable energy inputs are addressed to ensure sustainable outcomes. Beyond the technical aspects, this research also considers the economic and environmental impacts of scaling up CCU technologies, assessing their potential to contribute to a circular carbon economy. By providing insights into current trends and future directions, this work aims to support the development of viable CCU processes that could transform CO₂ into valuable commodities, thereby advancing global initiatives towards carbon neutrality and sustainable development.

Keywords: *carbon capture, CO₂ utilization, catalytic reduction, renewable energy, circular carbon economy.*

Ameliorative Impact of Neem on Food-Induced Diabetes in Human

Rashmi Kiran, Dr. Kanhaiya Singh

Research Scholar Department of Botany,

Veer Kunwar Singh University, Ara

Assistant Professor, Department of Botany, A. S. College

Bikramganj Veer Kunwar Singh University, Ara

Email id: rashmimahi2020@gmail.com

Diabetes, particularly Type 2 diabetes mellitus (T2DM), has emerged as a global health concern, largely attributed to unhealthy dietary habits and sedentary lifestyles. Among various natural remedies, Neem (*Azadirachta indica*), a traditional medicinal plant, has gained significant attention due to its therapeutic properties. The potential ameliorative effects of neem in managing food-induced diabetes, emphasizing its role in regulating blood glucose levels, improving insulin sensitivity, and reducing complications associated with diabetes. Neem is known for its rich bioactive compounds, including flavonoids, glycosides, and triterpenoids, which contribute to its anti-hyperglycemic and anti-inflammatory properties. Various studies have highlighted neem's ability to enhance insulin secretion, modulate glucose metabolism, and protect pancreatic β -cells from oxidative stress. The clinical trials and experimental research, showing how regular consumption of neem leaves or neem-based supplements can mitigate the effects of high-caloric and sugar-rich diets, which are primary contributors to food-induced diabetes. Neem's ability to reduce lipid profiles, prevent diabetic neuropathy, and alleviate the inflammatory response in diabetic patients will be discussed. The molecular mechanisms through which neem influences key metabolic pathways, including the AMPK (AMP-activated protein kinase) signaling pathway, which plays a critical role in maintaining glucose homeostasis and energy balance. While neem has shown promising results in animal studies and preliminary human trials, its widespread adoption in clinical practice requires further validation through large-scale randomized control trials. An understanding of neem's potential as a complementary therapy for diabetes management and encourage interdisciplinary research into developing neem-based interventions for food-induced diabetes.

Keywords: *Neem, Diabetes, Amelioration, Insulin, Glucose*

Nontraditional Starchy Sources for the Sustainable Synthesis of Bioplastics Materials

Aishwarya Sharma* and Nisha Rana**

Swami Vivekanand Subharti University, Meerut

Email: nisharana.zoology@gmail.com

The growing concern of global society about the environment, specifically the use of ecologically friendly products, has caused renewed interest in bioplastics, particularly the utilization of non-traditional starchy feedstock. These crops, including corn and potatoes, have been identified and used more frequently than other biofuels since they are 100% regenerating and more known. They also face the disadvantage of competing for food stocks and agricultural land. Furthermore, this research examines alternative starchy sources in the form of low-value or waste in the value chain, such as cassava peels, banana peels, yam peels, and tubers. These materials have the added benefit of reducing waste and providing a renewable resource for bioplastics.

The technique involves isolating starch from non-traditional sources and then converting it into bioplastic using procedures such as fermentation, polymerization, and plasticizing. Several features of the created bioplastics, including biodegradation, mechanical strength, and thermal stability, are assessed to determine their applicability in commercial goods. Starting with initial findings, it has been stated that bioplastics produced from these nonconventional starchy materials have similar or even better characteristics than those prepared from traditional starchy resources, lower costs, and less environmental impact.

This study also compares the life cycle analysis (LCA) of bioplastics made from non-starchy substrates, demonstrating the benefit of employing starchy feedstock instead of petrochemical feedstock. This study addresses the topic of agricultural residues and byproducts, which contributes to the circular economy perspective when examining the resource efficiency method. Issues such as the optimum methods of extraction, expanding production, and maintaining standard quality are reviewed, and potential solutions are provided in light of current technological breakthroughs. Finally, atypical starchy sources are viewed as having enormous promise for high yields in the more sustainable production of bioplastics.

Keywords: *Fermentation, polymerization, starchy sources, bioplastics, biodegradation.*

Harnessing Artificial Intelligence in Renal Cancer Detection

Dr. Narendra Kumar Sharma¹, Ratnamala Ghosal²

1. Assistant Professor, 2. Research Scholar

Banasthali Vidyapith, Niwai

Email ID 1: drnarendraks@gmail.com

Heterogenous group of malignant tumours in kidney leads to Renal cancer, which is highly responsible for deaths over 100,000 yearly worldwide. Combining artificial intelligence (AI) with renal cancer helps in improving management, evaluation and patient outcome predictions. Researchers are interested in applying their skills to the early detection of cancer, which is a critical aspect of cancer treatment and patient survival. This review analysis targets to collect appropriate data for the future aspects in the field of medicine, especially renal cancer. This article is an impeccable source of collection of available data from PubMed and google scholar, including current research state and digital potential in context of detection of renal cancer.

Key Words: *Artificial Intelligence, malignant tumours, Renal cancer.*

Enzyme Activity Estimation in Desi Cotton Genotypes against Root-knot Nematode, *Meloidogyne incognita*

Shweta¹, Prakash Banakar¹, and Shiwani Mandhanian²

Department of Nematology¹ Department of Plant Breeding²

CCS Haryana Agricultural University, Hisar

shwetakhatak@gmail.com

Cotton, an important commercial crop grown worldwide, is confronted by several pests and pathogens. Root-knot nematodes (*Meloidogyne incognita*), considered the most destructive among parasitic nematodes, cause severe damage to cotton crops. As a prevailing pest, it was causing different symptoms by inducing large galls or "knots" throughout the root system.

Investigating biochemical changes can help to determine the cause of resistance or susceptibility of plants to nematodes. phenylalanine ammonia-lyase (PAL) and Tyrosine ammonia-lyase (TAL) are essential enzymes in both plant development and induced defense mechanisms by

synthesis of lignin which is specifically important in cell wall formation. This study analyzed two susceptible and two resistant genotypes of cotton cultivars for the enzyme activity PAL and TAL. Cotton plants were inoculated with root-knot juveniles, and after inoculation observations were recorded at 0,3,25, and 45 days. Both leaves and roots of the plants were analyzed in cotton cultivars to estimate PAL and TAL enzyme activity. Results revealed increased PAL and TAL enzyme activity in resistant genotypes as compared to the susceptible genotypes. The present results showed that the most effective method of managing root-knot nematodes is employing resistant and tolerant cultivars.

Keywords: Meloidogyne incognita, Cotton, Root-knot nematode, Enzyme

GIS: IAES-2024/19

Environmental Health Hazards and Natural Farming as a Solution

¹Panchakarla Sedyaw, ²Shubham Janbandhu, ³Priya Singh

Department of Fish Processing Technology, College of Fisheries,
Ratnagiri, DBSSKKV-415629

Department of Fisheries Resource Management, College of Fisheries
Science, Kamdhenu University, Veraval-362265

Department of Aquaculture, College of Fisheries Science, Chaudhary Charan
Singh Haryana Agricultural University, Hisar-125004

Corresponding author: shubhamjanbandhu18@gmail.com

Though yet in its infancy, public health is a global response to environmental insults such as rising air and water pollution, soil erosion, and climate change, which directly endangers ecosystems and negatively impacts human well-being by decreasing agricultural productivity. What is causing these threats are mostly arising from industrial agriculture at high-external-input that poison our water supplies, take soil fertility by farming over monoculture technique and greenhouse gasses increasing land output. Human exposure to pollutants from these sectors has been linked to soil erosion, loss of wildlife, cases of neurological disorders among children and respiratory diseases as well other long-term conditions. One of the most promising eco-friendly, sustainable approaches to mitigating those risks is natural farming. It reduces the dependency on chemical fertilizers and also enacts natural farming methods which do not harm nature in any way like crop rotation, composting, etc. to improve soil health. These methods are

beneficial to the soil microbial diversity needed for and rightfully desired water use efficiency, pest suppression undertaken against unwanted insect pests as well as retaining nitrogen in a cycle of available plant nutrition. Furthermore, with an increase in soil carbon retention and a decrease mechanised interventions natural farming starts to bring down the carbon footprints as well. Natural farming also leads to the reduction of environmental issues, and helps to produce healthier food which makes it a good solution against climate change. Farmers could benefit it by experiencing lower costs and produce high nutrient dense crops. Induction of natural farming in laws and practices, can undoubtedly be the future route map that takes CARE of agriculture environment for public health.

Keywords: Environment, Health, issues.

GIS: IAES-2024/20

Design and Synthesis of Dipropylene glycol mono methyletherbis (acetoacetate)for Enhanced Selectivity in Alkali Metal Ion Extraction and Transport

Poonam Hariyani¹, and Loni Lokwani²

¹Department of Chemistry, JECRC University, Jaipur

²Department of Chemistry, Govt. College, Kota

poonam.hariyani@jecrcu.edu.in

The dynamic character of host-guest chemistry confers the resulting constructions with fascinating stimuli-responsiveness. In the present study, we introduced the synthesized podand in membrane phase to promote the transfer of Na⁺, K⁺ and Li⁺ as well as coexisting metal (Na⁺ and K⁺) salts. The experiments were performed to study the selectivity of one metal ion over another. To choose the optimal parameter for a specific cation during extraction and transport, a variety of factors were taken into consideration, including fluctuation in metal concentration, type of anion and membrane effect. The data demonstrates that the synthesized ionophore's pseudocyclic cavity effectively facilitates the extraction of metal ions, such as Na⁺ and K⁺, from picrate salts in DCE. This selectivity is critical in biological and chemical processes where precise ion regulation is vital. Investigating cation extraction and transport by ionophores is essential for advancing

sustainability across various sectors, including energy, agriculture, healthcare, environmental protection, and industrial operations. This study contributes to the development of diagnostic tools, enhances targeted drug delivery, and improves treatments for disorders linked to ion imbalances.



Keywords: Dynamic, Membrane, Extraction, Transport, Ionophore.

GIS: IAES-2024/21

Analysis of Degradation Trends in Diverse Forest Types of Yellapur Division, Uttara Kannada, Karnataka

Gowri B Gowda, AG Koppad, Yathin PY

¹M.Sc. Scholar, Department of Forest Resource Management, College of Forestry, University of Agricultural Sciences, Dharwad, Karnataka, India

²Professor and Head, Department of Forest Resource Management, College of Forestry, University of Agricultural Sciences, Dharwad, Karnataka, India

³M.Sc. Scholar, Department of Forest Products and Utilization, College of Forestry, Kerala Agriculture University, Thrissur, Kerala, India

*E-mail: gowribgowda408@gmail.com

This study examines the annual degradation in tree height, basal area, form factor, number of stems, volume, biomass and carbon stock across three forest types - dry deciduous, moist deciduous and semievergreen - in the Yellapur forest division during 2023-24. The results reveal varying degrees of degradation across all parameters, with dry deciduous forests experiencing the most significant declines. Tree height decreased by 0.34 m in dry deciduous forests, 0.487 m in moist deciduous and 0.15 m in semi-evergreen forests, though these reductions were statistically non-significant. The basal area degraded by 2.38 m² ha⁻¹ in dry deciduous forests, 1.33 m² ha⁻¹ in moist deciduous and 1.11 m² ha⁻¹ in semi-evergreen forests, with dry deciduous

forests showing the most significant degradation. Similarly, stem numbers dropped by 33, 25 and 15 in dry deciduous, moist deciduous and semi-evergreen forests, respectively. Volume degradation followed the same trend, with a 12.95 m³ ha⁻¹ reduction in dry deciduous forests, compared to 8.84 m³ ha⁻¹ in moist deciduous and 1.49 m³ ha⁻¹ in semi- evergreen forests. Biomass declined by 13.03 t ha⁻¹ in dry deciduous forests, 7.13 t ha⁻¹ in moist deciduous and 4.91 t ha⁻¹ in semievergreen forests. Corresponding carbon stock losses were 6.14 t ha⁻¹, 3.30 t ha⁻¹ and 2.45 t ha⁻¹, respectively. The highest degradation across all metrics occurred in the dry deciduous forests, with statistically significant differences observed in basal area, volume, biomass and carbon stock compared to the semi-evergreen forests. The primary causes of tree mortality were disease, cutting and natural factors, with dry deciduous forests recording the highest number of dead trees. This study highlights the urgent need for forest management interventions to mitigate degradation and preserve the ecological integrity of these forests.

Keywords: *Degradation, moist deciduous forest, dry deciduous forest, semi-evergreen forest.*

GIS: IAES-2024/22

Activities of Acid Phosphatase and Alkaline Phosphatase in Various Silkworm Breeds and Their Correlation Studies

Mohd Younus Wani¹, N. A. Ganie¹, M. R. Mir¹, M. Yaqoob², I. Murtaza³, Zia H. Rufaie¹, M. F. Baqual¹ and K.A. Sahaf¹

¹College of Temperate Sericulture, Mirgund, SKUAST-Kashmir, Shalimar, J & K, India

²Division of Entomology, FOA, SKUAST-Kashmir

³Division of Basic Sciences and Humanities, FOH, SKUAST-Kashmir

Corresponding author: younus.wani6922@gmail.com

To effectively navigate the challenges posed by unfavourable climatic conditions and maintain optimal physiological function, the silkworm, *Bombyx mori L.*, secretes a range of enzymes. In our effort to unravel the complexities of enzyme secretion, we conducted an analysis of enzyme profiles across various silkworm breeds. The goal of the experiment was to estimate the levels of acid and alkaline phosphatases in various bivoltine silkworm breeds. Correlations were also calculated to investigate their

association with a variety of economic parameters. The SK1 silkworm breed had highest acid phosphatase activity of 5.26 μ moles of para nitro phenol released/ml / mg protein/min. Other breeds, such as SK6, SK22, SK28, and SK33 were also found to be excelled. alkaline phosphatase activity was found nil in all the silkworm breeds. Acid phosphatase had positive correlations with single shell weight ($r = 0.713$), single cocoon weight ($r = 0.668$), cocoon yield by number ($r = 0.623$), silk productivity ($r = 0.674$), cocoon yield by weight ($r = 0.658$), pupation rate ($r = 0.619$), and fecundity ($r = 0.621$). As a result, breeders may find these breeds to be prolific silkworm breeds and hence could be used in future breeding programs for evolution of new silkworm breeds.

Key words: *Climatic condition, Bivoltine silkworm, Economic parameters and Cocoon.*

GIS: IAES-2024/23

Sustainable Supply Chain Management: Innovations and Best Practices

Kiran Kotyal, Pooja S Beleri

Ph.D. Scholar, IABM, UAS, GKVK Campus, Bangalore-65
search Scholar, Indian Institute of Seed Science, RS, Bangalore-65

E-mail: kirankotyal000@gmail.com

Sustainable supply chain management (SSCM) has become a critical strategy for global industries as they seek to balance economic growth with environmental and social responsibility. 70% of a company's carbon footprint is rooted in supply chain activities, highlighting an urgent need for innovative solutions that minimize resource consumption, reduce emissions and uphold ethical labor standards. To address these needs, companies across various sectors are adopting SSCM practices, incorporating sustainable sourcing, green logistics and responsible waste management into a comprehensive approach aimed at reducing their environmental footprint. A major innovation in SSCM is the shift towards circular supply chains, where products are designed for longevity, reuse, repair and recycling, enabling companies to close the loop on resource utilization. Circular models not only

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curb waste but also lower costs associated with raw material procurement, creating both ecological and economic advantages. Blockchain technology is revolutionizing SSCM by enhancing transparency and traceability, especially in sectors such as food and apparel. Blockchain's real-time tracking of sourcing and manufacturing processes allows companies to validate sustainable practices and build consumer trust. Collaborative efforts among stakeholders also play a pivotal role in SSCM, as partnerships between suppliers, manufacturers and logistics providers foster coordinated initiatives to cut emissions, manage energy usage and optimize transport routes. Unilever, has championed a partnership-based model that includes supplier training on sustainable practices, achieving a 20% reduction in greenhouse gas emissions throughout its supply chain over the last five years. The adoption of renewable energy sources and electric vehicles in logistics has reduced reliance on fossil fuels, bolstering SSCM initiatives. SSCM has evolved into a strategic imperative and a competitive advantage in today's marketplace, where both consumers and regulators increasingly expect sustainability. By embracing innovations such as circular supply chains, blockchain and stakeholder collaboration, companies are reimagining supply chain efficiency, promoting long-term resilience and contributing to a sustainable global economy.

Keywords: *Sustainable Supply Chain Management (SSCM), Circular Economy, Carbon Footprint Reduction, Blockchain Transparency, Stakeholder Collaboration.*

Medicinal Plant-derived Bioactive Compounds for their Effect on Parkinson's Disease

Aishwarya Jaiswal^{1,2}, R.N. Kharwar¹, B.N Singh²

1 CAS in Botany, Institute of Science, Banaras Hindu University, Varanasi-221005, India

2 Pharmacology Division, CSIR-National Botanical Research Institute, Lucknow, 226001, India

jaiswal25march@gmail.com, rnkharwar@gmail.com, bn.singh@nbri.res.in

The phytochemical studies of medicinal plants have gained popularity for the development of new herbal drugs. Parkinson's disease is a neurodegenerative disease that affects about 2% of the world's population over 65 years of age, its distinctive features are loss of dopaminergic neurons in the substantia nigra (SN), pars compacta (SNpc) region, and accumulation of misfolded α -synuclein in Lewy bodies (LBs). Current medicines such as levodopa and carbidopa are not sufficient to cure such diseases, they only treat the symptoms of the disease, hence new approaches are required to find more effective medicines with low side effects. We studied the effects of medicinal plant-derived bioactive compounds on *in-vivo* model *Caenorhabditis elegans* strains. We fed the mice with plant extracts and collected their fecal materials, and the fecal material extracts were fed to *C. elegans* to study the enhanced bioactive compounds of extracts by the microbiota present in the gut. We evaluated the effect of extracts on α -synuclein aggregation, antioxidant gene, DA(Dopaminergic) neurodegeneration, and autophagy gene. *C. elegans* treated with extract (50mg/ml) showed 34.51 % inhibition of α -synuclein aggregation with no toxicity. The extract also showed activation of antioxidant genes *gst-4* and *sod-3* and significantly elevated the resistance of DA neurons to 6 OHDA-treated worms. The extract-treated *C.elegans* also showed a significant decline in lipid accumulation and *daf-16* nuclear localization. The study established a strong interaction between medicinal plant-derived bioactive compounds modulated by gut microbiota which could be used for drug development to cure neurodegenerative diseases by targeting lipid metabolism and the *daf-16* signaling pathway.

Keywords: Medicinal plant, *Caenorhabditis elegans*, Parkinson Disease.

Schwannoma Risk: The Impact of Environmental Influences

Avishi Jaiswal

Kasturba Medical College, Mangalore, MAHE, Karnataka
avishijaiswalkota@gmail.com

Genes set the stage, while the environment activates the process on several levels: initially through anatomical factors that contribute to nerve injuries, then via the cellular microenvironment that significantly influences schwannoma growth, and finally through environmental elements that may affect a tumor described by Dvorak as a “never healing wound.” This idea, known as the “tumor microenvironment,” complicates biological processes by encompassing not just the specific cell type but also its metabolically active surroundings and their interactions.

In the paper, a case study of a 60-year-old male patient with persistent swelling in his left leg for 10 years was diagnosed with Giant Schwannoma is presented. The swelling was insidious and progressed gradually, causing pain and aggravating with activity. An ultrasound revealed a well-defined, ellipsoid, encapsulated heteroechoic lesion in the anterolateral aspect of the leg. The patient underwent surgical excision, revealing a well-encapsulated growth from the Anterior Tibial Nerve. The growth was excised, and the patient's histopathological examination revealed proliferating cells, suggesting a nerve sheath tumor. The patient experienced relief from symptoms and gradually resumed activities within three weeks.

A schwannoma is a benign, isolated, noninvasive, and encapsulated tumor. It originates from Schwann cells that is responsible for maintaining the Myelin sheath around nerves. Schwannomas do not exhibit gender preference, and they commonly occur in patients between 2nd and 5th decade of life.

Keywords: *Giant Schwannoma, Heteroechoic lesion, Nerve sheath tumors, Well-capsulated masses.*

Review on Use of Geospatial Technology in Biodiversity Assessment, Conservation Management and Monitoring

Gajanan Charpe

Associate Professor Zoology
Government College Kota, Rajasthan
gajanancharpe527@gmail.com

A three and half years of continued evolution has resulted in enormous diversity of living organisms. We can observe biological diversity at different levels of biological organisation. In ecology biodiversity studies mainly deals with species level diversity in correlation with their habitat. With the increase in human population and urbanisation the immediate effect is seen in habitat loss and habitat destruction resulting in biodiversity loss. Assessment of biodiversity in its habitat is traditionally done by field study. Recently remote sensing and geographic information system are extensively used to get exact scenario of habitat loss, climate change, changes in land use and fluctuations in biodiversity. Various satellites provide spatial data which is backbone of such studies. Remote sensing (RS), Geographic information system (GIS), Global positioning system (GPS), provide data of various category which is extremely helpful in biodiversity assessment and monitoring, study the landscape dynamics, to observe degree of habitat loss and fragmentation during given time period. These data are helpful to develop biodiversity characterisation model and conservation strategies. Geospatial technology is also helpful to understand Normalized Difference Vegetation Index (NDVI) and Vegetation Indices (VIs) for conservation and agriculture.

Keywords: *Biodiversity, RS, GIS, GPS, NDVI, VI, biodiversity assessment, monitoring and conservation.*

Diversity of Grasses in Kota Region of Rajasthan, India

Chetan Kumar Meena, and Hemlata Gupta

Department of Botany, Government PG College, Kota

e-mail: chetan15121996@gmail.com

An experiment is being conducted in the Kota region of Rajasthan, India under the patronage of the University of Kota, Rajasthan. Kota is located in the south-eastern part of Rajasthan state within Hadoti belt in India. This region is characterised by a special climate, soil type and ecological conditions. This study aims to analyse the diversity of grass species in Kota district of Rajasthan to explain the ecological and economic importance of grasses. Field surveys were carried out across various ecological habitats at different locations viz., crop fields, wasteland, wetland, Abheda, Biological Park and Ladpura regions in Kota district to observe the different grass species present. In this study, over 25 distinct genera of grasses and some sedges have been identified so far highlighting the ecological and economic importance of grasses in supporting soil and environmental health, sequestering the soil carbon, maintaining local biodiversity and providing food, and fodder for the livestock. Following are the some important grass species observed under the present investigation *Chloris barbata* L., *Dactyloctenium aegyptium* (L.) Willd., *Chrysopogon aciculatus* L. (Retz.) Trin., *Agrostis ciliaris* (L.) R.Br. etc. in the Ladpura region, *Apluda mutica* L. (Phulkia), *Chloris virgata* Sw. (Billi) and *Melica ciliata* L. and some species of sedges like *Cyperus esculentus* L., *Bolboschoenus maritimus* (L.) Palla, *Cyperus iria* L. in biological park Abheda and cultivated grass species like *Oryza sativa* L. and *Zea mays* L. and a perennial grass species, *Saccharum spontaneum* L. under crop and wetland situations.

Key words: Grass, Diversity, Soil Conservation, Ecological and Economic Importance.

A study on Economic and Business strategies for sustainability

Dr. Manisha Dave

Associate Professor (ABST)

Government Girls College, Magra Punjala, Jodhpur

In present scenario, main objective of business firms is to create value of the firm. In order to create value of the firm business organizations should integrate economic, environmental and social objectives. The integration of economic, environmental and social aims into a firms goals is creation of a sustainable, just and equitable economy. Many business organizations are actively involved in issues of environmental degradation, climate change and social inequality. Organizations can help in developing sustainable environment. In this paper, an attempt has been made to discuss the economic and business strategies for sustainability. This paper also throws light on the strategies to develop a sustainable environment.

Keywords:- *Economic, Business, Environment, Strategies, Sustainability.*

An Evaluation on Phytochemical Composition of *Clitoria ternatea* in Mangli River Catchment Area

***Laxmi Sharma, Dr. Rajendra Prasad**

Research Scholar Department of Botany,

Government College Bundi, Rajasthan, India

Associate Professor in Botany Department of Botany,

Government College Bundi, Rajasthan, India

Email-laxmi920@gmail.com

Medicinal plants are crucial for the health of individuals and communities. Phytochemicals are bioactive compounds found in plants that contribute to their colour, flavour, and disease resistance. *Clitoria ternatea* (L.) also known as butterfly pea, is renowned for its diverse phytochemical profile and possible health advantages. This climber species is present in and around the

Mangli river catchment area. Using standardized extraction methods, we examined the leaves, stems, and flowers of the plant for the presence of major phytochemicals. Qualitative studies revealed that all plant sections contained flavonoids, alkaloids, saponins, tannins, and phenolic compounds, with the highest concentrations observed in the fruits and leaves. The diverse phytochemical constituents identified in this study underscore the therapeutic potential of *Clitoria ternatea* (L.) and assured further investigation into its pharmacological applications and health benefits.

Keywords: *Mangli river catchment area, Medicinal climber, Butterfly pea (Clitoria ternatea).*

GIS: IAES-2024/30

Radiation Induced Degradation of Textile Dye from aqueous Solution

Munesh Meena

Advanced oxidation processes (AOPs) have proved very effective in treatment of the various hazardous organic pollutants in water. The photocatalytic degradation of azo dye Direct Red 81 with UV/Visible/MBIR (Methylene Blue Immobilized Resin) Dowex 11 interface was investigated. Kinetic analysis indicates that the photodegradation rate of azo dye can usually be approximated as pseudo-first-order kinetics according to the Langmuir-Hinshelwood model. The degradation of dye depends on several parameters such as catalyst dose, concentration of dye, pH of the solution and light intensity. The mechanism of the photodegradation process under UV-Visible light illumination involves an electron excitation and generation of very active oxygenated species that attack the dye molecules leading to photodegradation. The dye solution could be completely decolorized and effectively mineralized, with average dye removal efficiency larger than 97% for a reaction time of 160 min.

Key words: - Photodegradation; Decolorization; Efficiency; Direct Red 81; Dowex-11.

Bridging Traditional Knowledge and Modern Science: Integrative Approaches for Environmental Sustainability

Dr. Eshita Pandey and Shikha Verma

Department of Zoology, Dayanand Girls PG College, Kanpur

pandeyeshi@gmail.com

Global environmental sustainability is an important challenge today in India. For which there is a need to combine many disciplines and many technologies in India. One such important technology is that if it is combined with India's traditional knowledge system and Ayurvedic knowledge, then it will be a promising step forward towards moving towards global environmental sustainability and it will provide promising paths. One such example is the discovery of the anti-inflammatory potential of hepatocyte cell line *Clitoria ternata* extracts, which is a study based on traditional Indian systems and scientific technology. In which *Clitoria ternata* plant will be used, it is not only used traditionally in Indian culture, but more than that, it is also used medicinally in Indian dishes.

The combination of its active properties, Indian cultural knowledge system, Indian Ayurvedic knowledge system, and current scientific technological system can give rise to new solutions for modern global environmental sustainability. This combination will also promote biodiversity, social needs, regenerative capacity, as well as environmental protection and sustainability, by integrating previous knowledge with the scientific and technical education system.

Keywords: *Environmental Sustainability, Global Innovations, Integrative Approaches, Indian Knowledge System (IKS), Clitoria ternata, Anti-inflammatory Potential, Hepatocyte Cell Lines, Traditional Knowledge, Bioactive Compounds, Ayurvedic Medicine.*

Impact of Illegal Mining Activities on Environment

Dr Hemu Chaudhary

Dept of Zoology,

Govt Girls College, Soorsagar

Mail id: hchemuchaudhary06@gmail.com

Illegal mining is mining activities carried out without Government consent. So it does not follow rules and regulations concern with environmental issues. In Rajasthan, illegal mining activities in hilly regions for massonary stones and rivers for sand are doing from a longer time. Both the items are used in construction work. The study was carried out through survey in Jodhpur and Barmer region in the year 2022. Data were also collected from Rajasthan Government official sites for analysis. The result shows that along with environmental issues like pollution, habitat loss for biodiversity, changes route of river flow and flood; health issues, cultural and economic issues are also associated with illegal mining activities. Policies through strict laws and monitoring technologies are followed to stop these activities. There should be discovery of an alternate, cheap and environmental friendly options for it.

Key words: *Illegal mining, environmental issues, health issues, cultural and economic issues.*

Economic and Business Strategies for Sustainability

Prof. (Dr.) Subhash Pahadiya, Dr. Hemant Kumar Singh

Prof. (Dr.) Subhash Pahadiya, Dr. Hemant Kumar Singh

Principal, Rajesh Pilot Govt. PG College Lalsot (Dausa)

Associate professor A.B.S.T, Rajesh Pilot Govt. PG College Lalsot (Dausa)

Environmental sustainability is a multifaceted concept that encompasses the responsible management of natural resources to ensure their availability for future generations. It involves a harmonious balance between ecological health, economic development, and social equity. The core objective of environmental sustainability is to create systems that can endure and thrive without depleting the Earth's finite resources. Economic and business strategies for environmental sustainability are essential for reducing ecological footprints while enhancing profitability. Companies can adopt sustainable supply chain management by selecting eco-friendly suppliers and embracing circular economy principles to minimize waste. Improving energy efficiency through regular audits and investing in renewable energy sources like solar and wind power are critical steps. Additionally, sustainable product development, incorporating eco-design and life cycle assessments, helps reduce environmental impacts. Businesses should aim for zero waste through recycling and composting initiatives, alongside fostering corporate social responsibility (CSR) by engaging with communities and maintaining transparency. Green marketing strategies that emphasize sustainable practices and eco-labels can attract environmentally conscious consumers. Employee engagement through sustainability training and incentive programs further supports these initiatives. Lastly, collaboration through industry coalitions and public-private partnerships, along with seeking sustainable investments, ensures alignment with business goals, positioning companies for long-term success in an increasingly eco-aware marketplace.

Keywords: *Economic Strategies, Business Strategy, Environmental Sustainability, Ecological Footprints, Sustainable Supply Chain Management, Eco-friendly Suppliers, Waste Minimization, Energy Efficiency, Sustainable Product Development, Eco-design, Life Cycle Assessments, Composting, Corporate Social Responsibility (CSR), Green Marketing Strategies, Eco-aware Marketplace.*

Assessment of Heavy Metals Contamination in Soil Sediments of Kota Industrial Area, Rajasthan, India

Dr. Bharti Sharma¹, Nikita Vijay²

¹Associate professor, ²Research scholar

Department of Chemistry, Maa Bharti College, Kota (Raj.), India

Email ID: Bharatisharma14@gmail.com

One of the main environmental problems caused by rapid industrialization in Kota city. Due to this reason increases heavy metals contamination of soils, air, and water. Soil is a major reservoir for pollutants because it has the ability to bind a large variety of compounds. Soil samples from the upper surface sediments and the first, second, and third one-foot-thick strata were analyzed in this study. The soil samples collected from industries of Kota district in Rajasthan. The results of present finding indicate that the soils are characterized by high concentrations of Cd, Cr, Cu, Ni, Pb, and Zn.

Keywords-Heavy Metals, Soil, Pollution, Environmental Problem.

Heavy Metal Ions impact on Seed Germination of the Carrot, Under Pot Culture Conditions

Raj Alwera*, M. L. Bhadoria

Department of Botany, Raj Rishi College, Alwar, Rajasthan

Email: r.alwera2020@gmail.com

Seed is a developmental stage that is highly protective against external stresses in the plant life cycle. In current study, we analysed toxicity of essential (Cu^{2+} and Zn^{2+}) and non-essential heavy metals (Hg^{2+} , Pb^{2+} and Cd^{2+}) on seed germination and seedling growth in the model species Carrot, under pot culture conditions. Our results show that seedling growth is more sensitive to heavy metals (Hg^{2+} , Pb^{2+} , Cu^{2+} and Zn^{2+}) in comparison to seed germination, while Cd^{2+} is the exception that inhibited both of these processes at similar concentrations. To examine if toxicity of heavy metals is

altered developmentally during germination, we seeds with Hg^{2+} or Cd^{2+} only for a period during germination. Hg^{2+} displayed relatively strong toxicity, while Cd^{2+} was more effective to inhibit germination. The observed differences are likely to be due in part to selective uptake of different ions by the intact seed, because isolated embryos (without seed coat and endosperm) are more sensitive to both Hg^{2+} and Cd^{2+} . We assessed interactive toxicity between heavy metals and non-toxic cations, and found that Ca^{2+} was able to partially restore the inhibition of seedling growth by Pb^{2+} and Zn^{2+} .

Keywords: Seed germination, heavy metal, pot culture, Carrot, toxicity.

GIS: IAES-2024/36

Transformative Economic and Business Strategies for Sustainability

Pooja Meena

Assistant professor, S.P.N.K.S. Govt. P.G. college, Dausa

Email id- pooja07meena05@gmail.com

In an era of escalating environmental challenges and resource depletion, the imperatives of sustainability have become central to the strategic frameworks of modern businesses. This paper explores innovative economic and business strategies that align corporate profitability with ecological stewardship. We begin by analyzing the integration of circular economy principles, which advocate for reducing waste and maximizing resource efficiency through design, recycling, and reusability. By adopting these principles, companies not only lessen their environmental footprint but also unlock new revenue streams and enhance brand loyalty.

Moreover, the strategic incorporation of sustainable supply chain management is discussed, highlighting practices that mitigate risks related to resource scarcity, regulatory compliance, and consumer preferences. Emphasis on renewable energy adoption and carbon neutrality initiatives serves to illustrate how businesses can transition towards more sustainable operations while achieving long-term cost efficiencies.

Investment in sustainable technologies, such as green innovation and digital transformation, positions businesses at the forefront of emerging markets and consumer demands. This paper also addresses the role of

stakeholder engagement, emphasizing the importance of community involvement and transparency in fostering trust and collaboration.

Ultimately, this study advocates for a holistic approach to business strategy that integrates sustainability into the core ethos of corporate governance. By doing so, organizations not only contribute to the global sustainability agenda but also secure their competitive advantage in an increasingly conscientious marketplace. The findings underscore that sustainability is not merely a regulatory obligation but a transformational driver for resilience and growth in the 21st century.

GIS: IAES-2024/37

Economic and Business Strategies for Sustainability

Nidhi Verma*

*Assistant Professor, SNKP Govt College, Neem ka Thana, Rajasthan

Nidhi4623@gmail.com

As the world prioritizes sustainability, economic and business strategies are evolving to address environmental concerns. This research highlights effective approaches to integrate sustainability into economic systems and business operations. Carbon pricing, Eco-tourism, green financing, Sustainable agriculture, Circular economy. Stakeholder engagement, Supply chain optimization, Sustainable product design, Renewable energy, Waste reduction, Transparency reporting. Product-as-a-service, sharing economy, Closed-loop production Impact investing, socially responsible investing, green bonds. Green financing, Impact investing, establish standards, incentivize sustainable practices, and enforce environmental regulations. Outcomes: Economic growth, Climate change mitigation, green job creation, Emission reduction.

Conclusion: Implementing these strategies ensures a prosperous future, stimulates innovation, and promotes sustainable development. Case studies demonstrate successful applications in various regions.

Keywords: *Renewable Energy, Circular Economy, Green Financing, Carbon pricing.*

Sustainable Use of Natural Resources of Kota District, Rajasthan

Kiran Choudhary¹ and Krishnendra Singh Nama²

1. Associate Professor, Lzebra College, Kota; choudharykiran01@gmail.com
2. Assistant Professor, Lzebra College, Kota; namasahib@gmail.com

The prudent use and management of natural resources in a way that maintains ecosystems, promotes the planet's health, and satisfies the requirements of present and future generations is referred to as environmental sustainability. To maintain the long-term health and well-being of the ecosystem, it entails striking a balance between social, economic, and environmental factors. Energy efficiency is the process of using energy more effectively (e.g., by reducing inefficient energy usage and implementing renewable energy sources like solar, wind, and hydropower). Water conservation refers to the prudent management of water resources to avoid excessive extraction and contamination of freshwater sources. Minimizing habitat damage and deforestation while preserving biodiversity and natural environments through sustainable land management techniques. Along with this Reduce, Reuse, Recycle of resources includes cutting waste by promoting the reuse of resources and products, encouraging recycling, and using more effective production techniques. Reducing waste and the need for raw materials by switching from a "take, make, dispose" model to one in which items are recycled, refurbished, and reused. This model can be used in present prospectus for the conservation of natural resources of Kota district, Rajasthan.

Key Words: *Wildlife, Water reservoirs, Forest, Ecosystem, Deforestation.*

Natural Farming for Sustainable Agriculture and Current Status

Dr. Shyam Kumar Meena, Sonal Meena

Assistant Professor, Department of Chemistry, Government College Dholpur
(Raj.)

Assistant Professor, Department of Geography, Government College
Dholpur (Raj.)

Mail Id - shyammeena8489@gmail.com

Chemical free farming methods like natural and organic farming attempt to minimize or eliminate external agricultural inputs, especially synthetic ones and rely on ecosystem management. The intensive uses and other inputs for maximizing agri-production were found essential to meet the food requirement of growing population. However, indiscriminate use of chemical inputs has caused serious hazard to human life. It is a daunting task to strike a balance between the production of safe, healthy, quality and environmentally sustainable food on the one hand and sufficient quantity of 400 million tones food on the other for the projected 1.66 billion population of India by 2050. Conservation agriculture, carbon positive farming, organic farming, natural farming and regenerative agriculture have been recognized as such alternative agriculture practices to conventional farming to produce quality food without negative effects on the environment. However, a concept of chemical free diversified agriculture-based farming practices with more concern on affordable native resources and management practices has emerged as a generic term "Natural Farming" in which use of externally purchased inputs is avoided or minimized and use of native resources with agro-ecological principles, people participation and common resource management is largely focused for benefit of farmers and community. Since last decade, concerted efforts are being undertaken in India to create the right perspective among different stakeholders to adopt science based natural farming practices. India can safely shift 2% of cultivated area each year from conventional farming to organic or natural farming (ONF) without any effect on food supply and has scope to replace around 20 per cent of area from conventional farming to ONF by 2030. Technologies based on agro-ecological principles especially on ONF are enabling fast changes in food production systems across the world with attractive opportunities to small farms in view of the premium price tag, and quality organic input supply.

Keywords- *Natural Farming, Inorganic Fertilizers, Pesticides, Research, Sustainable Agriculture.*

Interdisciplinary and Cross-Sectoral Collaborations for Promoting Sustainability

Yogendra Meel

Govt. PG College, Barmer

Email ID: - meelyogendra@gmail.com

Interdisciplinary and cross-sectoral collaborations are essential for advancing sustainability initiatives in an increasingly complex global landscape. This abstract explores the significance of integrating diverse fields—such as environmental science, economics, social sciences, and technology—to address multifaceted sustainability challenges. These collaborations foster innovative solutions by leveraging varied expertise, perspectives, and methodologies, which can lead to more comprehensive strategies for resource management, climate action, and social equity.

The paper highlights successful case studies where interdisciplinary teams have tackled issues like urban resilience, renewable energy deployment, and biodiversity conservation. By bridging gaps between academia, industry, government, and civil society, these partnerships can enhance stakeholder engagement, promote shared knowledge, and mobilize resources more effectively. Moreover, the role of policy frameworks and institutional support in facilitating such collaborations is examined, emphasizing the need for flexible governance structures that encourage cross-sectoral dialogue and action.

Key challenges, including communication barriers and differing objectives among sectors, are discussed alongside strategies to overcome them, such as establishing common goals and metrics for success. Ultimately, this exploration underscores that achieving sustainability requires not only technical solutions but also collaborative approaches that embrace diversity and foster innovation. The findings suggest that nurturing these interdisciplinary networks can significantly accelerate progress toward sustainable development goals, making a compelling case for their integration into policy and practice.

Keywords: - *Interdisciplinary, urban resilience, renewable energy deployment, biodiversity conservation, flexible governance, sustainable development goals.*

Global Challenges and Local Solutions: Integrative Approaches for Environmental Sustainability

Ashish Jinjwadiya¹, Hitesh Kumar¹, Shree Chand Chhimpa¹

¹Government Bangur College, Didwana, Rajasthan

Achieving environmental sustainability requires addressing complex global challenges such as climate change, biodiversity loss, pollution, and resource depletion. While these issues are interconnected and often require global policy and technological innovations, local solutions play an equally crucial role in creating sustainable, resilient communities. This paper explores integrative approaches that connect global frameworks with localized actions, examining case studies across sectors such as agriculture, water management, energy, and urban planning. Local solutions, including community-led conservation initiatives, sustainable agricultural practices, renewable microgrids, and green urban designs, exemplify how grassroots efforts can drive meaningful

environmental change. Integrating indigenous knowledge systems, circular economy principles, and community engagement into these solutions enhances their adaptability and sustainability. Moreover, policy support and educational programs are essential in scaling up these initiatives and fostering local capacity. By bridging global and local efforts, integrative approaches offer a dynamic pathway toward environmental sustainability, promoting environmental stewardship at all levels of society while empowering communities to address specific ecological and social needs. This study underscores the importance of collaborative frameworks that blend global sustainability goals with local action, creating a synergistic impact on environmental resilience and sustainability.

Critical Analysis of Legal Policy and Governance for Environmental Protection in India

Aasha Bhatnagar

Assistant Professor Law, Govt. Law College, Jhalawar (Raj.)
Dr. Bhim Rao Ambedkar Law University, Jaipur, Rajasthan.

India faces multifaceted environmental challenges, such as pollution, deforestation, and climate change, driven by rapid industrialization, urbanization, and a growing population. To address these issues, India has established a comprehensive framework of laws, policies, and governance mechanisms that prioritize environmental protection and sustainable development. Key legislation, including the Water (Prevention and Control of Pollution) Act of 1974, the Air (Prevention and Control of Pollution) Act of 1981, and the Environment (Protection) Act of 1986, has been foundational in regulating pollution and protecting natural resources. These laws are implemented and enforced by institutions like the Central and State Pollution Control Boards, which monitor compliance and develop regulations in areas such as air and water quality standards.

Recent policies, such as the National Action Plan on Climate Change (NAPCC), further India's commitment to climate action, while initiatives like the National Biodiversity Authority (NBA) address biodiversity conservation. Governance in this domain is increasingly decentralized, with state and local authorities collaborating on environmental projects, fostering community involvement, and promoting the adoption of sustainable practices. Despite these efforts, challenges remain, particularly concerning effective enforcement, resource limitations, and balancing economic development with environmental sustainability. Ongoing policy revisions and international cooperation, however, hold the potential to enhance India's environmental governance. This framework reflects India's dedication to building resilience and achieving sustainable development for a healthier, more sustainable future.

Keywords: *Environmental governance, sustainable development, pollution control, biodiversity conservation, climate action, India.*

Urban Green Spaces- Scope for nature in future

Manisha Sharma¹ & Arti Shah²

Janki Devi Bajaj Government Girls College, Kota

Biodiversity and ecosystem services are crucial natural capital. In present times, urban land expansion is occurring at a very fast pace and so urbanization poses both a challenge and opportunity to manage ecosystem services. In order to overcome this challenge, maintaining and developing urban green spaces in developing cities can help protect biodiversity and address the issue of ecosystem services in a proper manner. Also sacred trees are immensely valued even today and thus help protect the natural resources of the area. The present article attempts to review the effect of urban green spaces with sacred trees in the old city of Kota, well-known for its premier coaching institutes.

Analysis of Livelihood Systems in Villages of Anta Block, Baran District, Rajasthan Using the Sustainable Livelihood Framework

**Ajay Sharma^{1*}, Dr. Pravesh Singh Chauhan¹, Dr. Pushendra Sharma²,
Meena Rathore², Dr. Rajeev Kaushik², Dr. D.K. Singh¹**

¹Krishi Vigyan Kendra Anta-Baran,

²Division of Microbiology ICAR-IARI New Delhi

*Corresponding author mail id: ajaysharmaento@gmail.com

This study explores the livelihood systems in selected seven villages within Anta block of Baran district, Rajasthan, using the Sustainable Livelihood Framework (SLF) as an analytical tool. The research identifies key livelihood activities including agriculture, animal husbandry, wage labor, and migration, with financial institutions playing a crucial role in providing access to credit for essential agricultural inputs. By examining social, human, physical, natural, and financial capital, the study emphasizes how these assets shape the livelihood strategies of rural households. Findings suggest that the integration of these capitals is essential for improving income

generation, reducing vulnerability to economic shocks, and enhancing food security in the region. This paper also discusses the implications for policy interventions aimed at fostering more resilient and sustainable livelihoods in these communities.

Keywords: *Sustainable Livelihood Framework, Livelihood Systems, Agriculture, Financial institutions, Anta block, Food security.*

GIS: IAES-2024/45

An Ingrained Adverse Effect of Pesticides on the Environment Over an Extended Period and its Solution

Solanki M.

Assistant Professor Zoology

Samrat Prithviraj Chauhan Government College Ajmer, Rajasthan. INDIA
305007.

Email: 911626636mamta@gmail.com

Pesticide use aims to promote crop yield and protect the crops from diseases and damage. Pesticides must be handled carefully and disposed of appropriately because they are dangerous to people and other species by default. Environmental pollution occurs when pesticide contamination spreads away from the intended plants. These accumulate in various parts of the food chain and cause damage to the ecosystem. Biological techniques in the management of pest control such as importation, augmentation, and conservation, and the accompanying procedures are more efficient, less expensive, and ecologically sound than other ways.

The adverse effects of pesticides depend on several factors, including the pesticide's properties, soil factors, plant species, and climatic variation. Pesticides can cause some health issues, including cancer, birth deformities, neurological impairment, reproductive problems, and immune system disease. Pesticides can trigger social conflicts if they are used extensively and without safety measures. Integrated Pest Management (IPM) methods can be used to reduce the environmental impact of pesticides. IPM methods are intended to cause the least amount of environmental disruption by pesticides.

Ecological or organic farming is considered environmentally sustainable, economically viable, and socially adaptable through which sustainable agriculture development (SAD) is attained. Organic farming relies on local resources including plants that have pest-repellent properties to control the pests. Alternative techniques to pesticides are to be found viable in the long run and hence a concerted effort needs to be put in by all concerned to promote SAD in the broader framework of environment and health.

Keywords: *Environment, Pesticides, Sustainable, health hazards, Pollution.*

GIS: IAES-2024/46

Checklist of Birds at Jorbeer Conservation Reserve, Bikaner, Rajasthan, India

Manasi Khatri¹ and Fatima Sultana²

Research Scholar, Department of Zoology, J.D.B. Govt. Girls College, Kota, Rajasthan, India¹

Professor, Department of Zoology, Government College, Antah, Rajasthan, India²

mansikhatri8561@gmail.com

This survey was conducted at Jorbeer Conservation Reserve in Bikaner District, Rajasthan for two years. A total of 110 bird species was recorded during this survey. The present study was carried out to analyze the status of avifauna at this site. The Jorbeer Conservation Reserve is a protected area that is dominated by vultures, eagles, hawks, griffons and other raptor birds due to the presence of carcass dumping site. Besides, many other native and migratory birds also observed at this location during visit. Some birds are winter migrants; those occupy the entire area of reserve and become the center of attraction. Conservation of birds is crucial for balance of environment. It has been reported by many studies that urbanization, habitat fragmentation, overgrazing, and other anthropogenic activities causes severe threat on the birds and other animals as well. This exploration was done for investigation of Avi-fauna at Jorbeer Conservation Reserve of Bikaner District. The effort for conservation and governance of birds was also made for amplifying the population threatened species of birds in this region. Some vital observations of this visit are specified in this report in detail.

Keywords: *Jorbeer Conservation Reserve, anthropogenic, urbanization, threatened, fragmentation, carcass dumping site.*

Honey Bees, Honey and Pollution: A one Health Perspective

Dr. Rajendra Singh Rajawat¹, Dinesh Choudhary²

1 Assistant Professor, Department of Zoology, Government College, Kota

2 Research Scholar, Department of Zoology, Government College, Kota

E-mail- dineshchoudhary2806@gmail.com

While the effects of pollution and climate change on human health are well-documented, their impacts on animal health, particularly in honeybee species, remain significantly under-examined. This is increasingly important given the ecological and economic roles honeybees play. The natural environment is changing at an unprecedented rate, with projections indicating worsening conditions over time. Existing literature shows that exposure to pollutants can impair cognitive functions, reduce olfactory learning, and compromise immune responses in honeybees, ultimately leading to decreased colony resilience. Furthermore, the disruption of honeybee behavior and foraging efficiency not only threatens their survival but also jeopardizes the pollination services they provide, which are essential for food production and biodiversity. Therefore, adopting a One Health approach is critical for understanding how pollution from human activities affects vital species like honeybees, whose complex social structures and honey production are potentially compromised, thereby impacting human health in the long term.

Keywords- *Honeybee Health, Environmental Pollution, Pollination, One Health Approach.*

***In vitro* culture of the C₃–C₄ intermediate plant *Mollugo nudicaulis* Lam**

Dr Nitika Singh

Assistant Professor, Botany

Janki Devi Bajaj Government Girls College, Kota

rathore.nitika@gmail.com

Mollugo nudicaulis Lam. of Molluginaceae commonly known as John's folly or naked-stem carpetweed, is an ephemeral species of tropical regions widely distributed throughout India, Pakistan and tropical Africa. The plant is an important medicinal plant and is ideal to study the eco-physiological adaptations of C₃–C₄ intermediate plants. In the present report, *in vitro* rapid growth culture of the plant was produced. *In vitro* propagation of the plant was carried out on Murashige and Skoog (MS) basal medium augmented with additives and solidified with 0.8% (w/v) agar-agar. The concentration of plant growth regulators (PGRs) in the basal medium was optimized for callus induction and callus proliferation. Calli were induced from five types of explants (hypocotyl and cotyledons of mature zygotic embryos as well as leaflets, petioles and stems of seedlings). The optimum callus induction was obtained from *M. nudicaulis* seedling hypocotyls. The rapid callus was induced on MS (Murashige and Skoog, 1962) basal medium containing 9.05 μ M 2, 4-dichlorophenoxyacetic acid (2, 4-D) and 13.95 μ M kinetin (KT). Green or green purple compact nodules containing clusters of meristematic centers were induced in these calli after transfer to MS basal medium containing 1.14–22.75 μ M thidiazuron (TDZ) and 1.43–2.86 μ M indole-3-acetic acid (IAA). The pharmacognostical screening of *M. nudicaulis* is very beneficial for the comparison, authentication of the original drug and to maintain the quality and purity of the plant material used in various Ayurvedic formulations.

Green Approach for the Synthesis of MgO Nanoparticles and their Applications

Indra Kumawat, Poonam Dwivedi*

Department of Chemistry, School of Basic Sciences, Jaipur National University, Jaipur, India
E-Mail:poonamd23@gmail.com

Green synthesis approaches are gaining the attention of researchers because they follow a less hazardous process to obtain nanoparticles. Magnesium Oxide nanoparticles (MgO NPs) represent an interesting inorganic material widely utilized across various fields. Generally various synthesis techniques are available to prepare MgO nanoparticles. The Present study focus on synthesis of magnesium oxide nanoparticles by *Adhatoda vasica* leaf extract via green approach at 80⁰ C. Here, the leaf extract serves as a reducing as well as capping agent. As we know, this is the first article on the synthesis of MgO nanoparticles using *Adhatoda vasica* leaf extract. This method is non-toxic and eco-friendly. The synthesized material was characterized by XRD, UV-Visible, FTIR, FESEM, EDS, XPS and TGA. Fourier transform infrared spectroscopy (FT-IR) revealed characteristic Mg-O bonds through peaks at 537.78 cm⁻¹ and confirmed MgO nanoparticles synthesised using *Adhatoda vasica* leaf extract. FESEM and TEM analysis of synthesized MgO NPs described spherical morphology and size ranging between 40- 80 nm respectively. XRD data revealed crystalline nature of synthesized MgO nanoparticles. XPS data confirmed presence of Mg²⁺ ions. Further Applications of bio- synthesized MgO NPs will be studied in heavy metal Removal to prevent water contamination.

Key words – Green synthesis, *Adhatoda vasica* , MgO Nanoparticles (MgO NPs), Heavy Metal Removal.

Determination of Stability Constants and Antibacterial Investigations on Co (II)-Thiosemicarbazone Systems

Uma Rathore and S.K. Verma

GCRC, P.G. Department of Chemistry,
Govt Dungar College (NAAC 'A' Grade)
MGS University, Bikaner, 334 003 (Raj.) India
uma.rathore111@gmail.com

The solution study of micellar systems have been used in several fields such as chemistry, biochemistry, pharmaceuticals, medicine and industry. Micellar study depends on nature of surfactants and their concentrations. Thus micelles have great importance in chemistry. Present work explains the synthesis of ligand (4-(Dimethylamino) benzaldehyde thiosemicarbazone) by conventional as well as green method, volumetric analysis and antimicrobial investigations on Co (II)- thiosemicarbazone complexes. Solution studies on the complexes have also been carried out in different micellar (SDS, HTAB, TX- 100) systems at 25 °C. Stability constants have been determined in 60% ethanol using Irving Rosotti method. Proton ligand stability constant and metal-ligand stability have been determined potentiometrically. Antibacterial investigations have been carried out against, S. Aureus, B.substilis bacterial strain by using disc diffusion method.

Keywords - *Micellar, Thiosemicarbazone, Antibacterial, ligand, TX-100.*

Towards a Sustainable Environment: Protected Butterfly Species in Rajasthan under the Wildlife (Protection) Amendment Act, 2022

Jitendra Kumar*^{1,2}, Prahlad Kumar Meena³ and Smriti Johari⁴

¹Ph.D. Scholar, Department of Zoology, Janki Devi Bajaj Government Girls College Kota, University of Kota, Kota- 324001 (Rajasthan)

²Assistant Zoologist, Zoological Survey of India, Desert Regional Centre, Jodhpur-342016 (Rajasthan)

³Associate Professor, Department of Zoology, Government College Rawatbhata-323307, Chittorgarh (Rajasthan); E-mail: prahladmeena2008@gmail.com

⁴Professor, Department of Zoology, Janki Devi Bajaj Government Girls College Kota, University of Kota, Kota- 324001 (Rajasthan)
E-mail: smritiparesh@gmail.com

*Corresponding author E-mail: jayverma1584@gmail.com

Butterflies are vital indicators of biodiversity and ecosystem health, playing essential roles in pollination and food chains by supporting various predators. In India, the Lepidoptera order, encompassing butterflies and moths, includes 1,379 butterfly species. Rajasthan, known for its diverse landscapes, records 124 butterfly species, but ecosystem pressures such as habitat fragmentation and climate change threaten their survival. India's Wildlife (Protection) Act, amended in 2022 (WPA-2022), lists 391 butterfly species under two schedules, marking a legislative step toward conserving these ecologically significant species. This study presents an updated checklist of 21 butterfly species from Rajasthan protected under WPA-2022, representing 16.93% of the state's recorded butterfly species and 5.37% of India's protected species. Based on an extensive literature review, the list highlights taxonomic verification and conservation status, with detailed references. Family-wise distribution reveals that Nymphalidae is the most prevalent, followed by Lycaenidae, Pieridae, and Papilionidae. These findings underscore the importance of continued research on species distribution and habitat needs to support conservation in Rajasthan's unique ecosystems. The study's contributions offer a baseline for monitoring butterfly populations and inform habitat protection strategies. By consolidating knowledge on protected butterfly species, this research aids in implementing targeted conservation initiatives to mitigate biodiversity loss and support sustainable ecosystem management in Rajasthan and beyond.

Keywords: *Butterflies, Conservation, Lepidoptera, Rajasthan, Wild Life Protection Act.*

Assessing Fish Diversity and Production in Gosunda Dam, Rajasthan: A Comprehensive Study

Ramkesh Bairwa¹ and Fatima Sultana²

¹Research Scholar, Department of Zoology, Janki Devi Bajaj Govt. Girls
College Kota, Rajasthan

²Professor, Department of Zoology, Government College, Antah (Baran),
Rajasthan

bairwa.ramkesh1985@gmail.com

Biodiversity is essential for maintaining ecosystem balance and resilience in various environmental challenges. In ichthyology, many researchers have significantly contributed to understanding fish, representing nearly half of the global vertebrate population. The Gosunda Dam in Rajasthan, India, is home to a diverse fish fauna. A preliminary survey identified nine fish species across four families in the study area, with the Cyprinidae family being the most prevalent, representing 70% of all families recorded. The site showed notable fish diversity, particularly in major carp like *Catla catla*, *Labeo rohita*, and *Cirrhinus mrigala*, along with catfish species such as *Mystus seenghala*. Among the major Indian carp, *Catla catla* was especially prominent. In 2021-22, the dam's fish production reached 40 metric tons.

Keywords: *Biodiversity, Fish Production, Fisheries, Gosunda Dam, Ichthyology.*

Assessment of Water Quality Parameters of Surwal Dam Reservoir, Sawai Madhopur, For Irrigation Suitability During Post-Monsoon Season

Dr. Rajendra Singh Rajawat¹, Bhamini Gupta²

1 Assistant Professor, Department of Zoology, Government College, Kota

2 Research Scholar, Department of Zoology, Government College, Kota

E-mail- bhaminig04@gmail.com

Water is one of the most important elements for sustainability and maintenance of life. Its quality affects living beings both directly and indirectly. Surwal dam reservoir is an earthen type of reservoir situated nearby city of Sawai Madhopur. Main purpose of reservoir is for irrigation. Study on water quality parameters would help in assessment of water quality which is being used for irrigation in agricultural lands. Assessment of water quality will be helpful in sustainable agriculture practices, ensuring healthy crops and surrounding environment. Study of water quality was conducted during post monsoon season. Statistical interpretation like Sodium Absorption Ratio, Kelly's ratio, Percentage sodium, Chloro-alkaline indices, Langlier saturation index were used to analyze the water quality. Water quality parameters during the post-monsoon season were within the permissible range, suggesting its suitability for irrigation purposes.

***Keywords** - Water quality, Irrigation, Physico-chemical parameters, Post monsoon season.*

Environmental health hazards and natural farming as a solution

Rohitash Jat*

Assistant professor (English lit.), Govt. College, Sumerpur

Email _rohit541985@gmail.com

Environmental health hazards, driven by industrial agriculture, chemical pollution, and climate change, pose significant risks to human health and ecosystems. The reliance on synthetic pesticides, fertilizers, and monoculture practices has led to soil degradation, water contamination, and loss of biodiversity, contributing to a rise in health issues such as respiratory problems, cancer, and endocrine disruption. In contrast, natural farming presents a viable solution by promoting sustainable agricultural practices that enhance soil health, preserve biodiversity, and minimize chemical inputs. By harnessing natural processes and local resources, natural farming not only mitigates environmental health risks but also improves food security and resilience to climate change.

Natural farming techniques, such as crop rotation, cover cropping, and agroecological practices, contribute to the restoration of soil fertility and water quality while fostering a diverse ecosystem that supports beneficial organisms. By utilizing local resources and traditional knowledge, natural farming empowers communities to create sustainable food systems that improve food security and public health outcomes.

This abstract examines the intricate relationship between environmental health hazards and agricultural practices, highlighting the transformative potential of natural farming. Through a review of case studies and empirical evidence, we illustrate how the adoption of natural farming methods can lead to healthier ecosystems, reduced chemical exposure, and improved overall public health. The findings underscore the necessity of rethinking agricultural paradigms to prioritize sustainability and ecological integrity as we move toward a more resilient agricultural future.

Keywords - *Natural farming, agro-ecological practices, ecological integrity, Environmental justice.*

Effect of Neem Leaf Extract on Juveniles Mortality of *Meloidogyne Incognita*

Naresh Kumar Nayak

Assistant Professor, Department of Botany,
Government College, Kota, 324001 (Rajasthan)

Email: nayak.nema2009@gmail.com

Root-knot nematode *Meloidogyne incognita* is one of the widely distributed in India and most economically damaging genera in vegetable crops. Plant products are the safer alternative approaches to control root knot nematodes. An experiment was carried out in vitro to test the Neemleaf extract of aqueous, acetone and methanol extract. Different concentrations of shade-dried leaves of Neem were tested on mortality of *Meloidogyne incognita juveniles*. Increase in concentration and exposure period resulted in increased mortality rate of Juveniles of *M. incognita*. Methanol Neem leaf extract (5 ml concentration) proved to be the most effective among used aqueous, acetone and methanol neem leaf extract. After 48 hours exposure aqueous and methanol leaves extract showed 100% mortality while acetone neem leaves extract showed 100% mortality after 72 hours exposure of 5 ml concentration. Neem leaves 0.25 ml con.was the least effective among all con.

Key words: - Aqueous, Acetone, methanol, Mortality, *Meloidogyne incognita*, Plant extract.

A Decadal Study of Land Utilisation and Environmental Sustainability in Jodhpur District

Gagan Tanwar* and Dr. H.N. Koli**

*Research Scholar, Department of Geography, Government Arts College,
University of Kota

**Professor, Department of Geography, Government Arts College,
University of Kota

geetanjali1911@gmail.com

The study examines a semi-arid region in western Rajasthan, Jodhpur district faces many significant challenges related to land use, deforestation, desertification, water scarcity, and ecological balance. The research analyses temporal changes in agricultural, non-agricultural lands, wastelands, and barren lands using geospatial data and secondary data from 2010 to 2020. It investigates the socio-economic drivers behind land-use changes, such as population growth, urbanization, and agricultural practices. The findings highlight a noticeable shift in land from agricultural to urban and industrial use, with a decline in arable land and an increase in built-up areas. These changes have significant implications for environmental sustainability, particularly concerning groundwater depletion, desertification, and loss of biodiversity. The study emphasizes the need for sustainable land management practices and policy interventions to mitigate the adverse environmental effects. Recommendations include adopting water-efficient farming techniques, proper use of fertilizers, enforcing land-use regulations, and promoting afforestation and conservation initiatives. This decadal study provides valuable insights for policymakers and stakeholders to strike a balance between development and environmental sustainability in Jodhpur, ensuring long-term ecological health and resource security in the region.

Key words: *agricultural, land use, environmental sustainability, ecological.*

Role of AI in Optimizing Resource Management in Smart Cities

Dr. Komal Soni

Department of Chemistry, Government College, Kekri-305404

The role of artificial intelligence in optimizing resource management in smart cities is crucial. It could be really helpful in efficient management of energy resources, water resources as well as land resources thereby helps in formulating better policies. AI could be helpful in mapping out the lanes and pedestrian pathways in smart cities by precisely calculating their traffic in different areas/regions. AI, by using the data of underground water recharge and depletion rate, can also be used in dividing the residential pressure in various regions of city accordingly. It could, by using the data of AQI and other related indexes, can draft better policies about the forestation need of the city. Similarly, can prove itself highly effective in drainage management, land allotments for special economic zones, waste management etc. This new stream of intelligence will not only eliminate the chances of manual errors in policy drafting, rather will also boost the efficiency of their implementation by factoring in all possible shortcomings from the past records. This will ultimately enhance the quality of living of people in smart cities by optimising the usage of both natural and non-natural resources.

Keywords: AI, Resource management, Smart cities.

Indigenous Cultures and Environmental Conservation

Dr. Seema Kashyap

Professor (English), Government Deaf and Dumb, Jaipur (Raj.)

E-mail: drseemakashyap@gmail.com

The ten headed demon king Ravana, of Lanka, cries out repentantly in *The Ramayana*, “I have not cut down any fig tree ... Why then does calamity befall me ?” which goes to say that even the mightiest among the mighty were ethically aware and fearful of the consequences of harming the environment. India has had rich socio-cultural and religious practices which teach the ethics of protecting the environment. These practices project nature as divine and all powerful. Thus it is only imperative that awareness of one’s natural environment and its conservation should be a fundamental activity in the day to day lives of people at large.

It is an alarming fact that many sub cultures are getting subsumed in meta- cultures due to globalisation resulting in major elite cultures and extinction of many local cultures. Leading to the loss of many languages, and environment friendly practices thus many folk cultures are gradually being lost.

A look into our ancient texts or folk traditions shows the close kinship man has had with nature. Whether in Sanskrit texts of the intellectual elite like the *Rig veda* which claims that the, “Heaven is my father, my mother is this vast earth, my close kin,” or Surpala’s famous book *Vrikshayurveda* that elaborates in detail about trees, the method of planting and the multiple topics connected with the science of plants along with taking care of sick trees.

Folk culture, that includes folk tales, sayings, songs, puppetry, handicrafts, dance, music and oral traditions, is also highly illuminative of the man-nature relationship.

For example the people of the Bishnoi sect of Rajasthan are ready to martyr themselves rather than allow the cutting of the *Khejri* trees or killing the black bucks. Such a spirit of holding nature as supreme and vital in our day to day lives is a common feature across cultures and all religions in India.

A renowned historian Armesto has correctly stated that “Civilizations commonly overexploit their environment often to the point of self destruction.” This is exactly the scenario of the world today. Man’s unending greed for physical comfort has resulted in environmental pollution and depletion of natural resources. We can find solutions to the current environmental problems by readapting our cultural and religious practices. Here again the depletion of our intangible cultural heritage consequent to the

fast pace of globalization is alarming. For humanity to survive it is important to strike a balance between local peculiarities and global unity.

An attempt will be made in the paper to study how folk cultures and practices help to conserve our environment. The paper will also attempt to reiterate the causes of depletion of cultures and the importance of preserving cultural diversity and indigenous cultures. Simply speaking for optimum sustainability of the environment we have to “think global – act local”.

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Preparation of Bimetallic Nanoparticles using a facile Green Synthesis Method

Anjali Singh, Vijay Devra*

*Janki Devi Bajaj Government Girls college, Kota, Affiliated to University of Kota, Rajasthan

v_devra1@rediffmail.com

Over the past few decades, nanotechnology has been a contentious issue, but recent developments have made it much more fascinating. Nanoparticles are "tiny heroes" that perform tasks that would otherwise be impossible due to their use in a wide range of technological applications. The development of efficient green chemistry methods for the synthesis of bimetallic nanoparticles has become a main focus of researchers. In this research, for the synthesis of Fe-Ni bimetallic nanoparticles using extract from *Azadirachta indica* leaves as green reducing agent. The synthesized nanoparticles have been characterized by spectra of UV-vis spectrophotometer during the synthesis process and the maximum absorption wavelength at 268 nm was observed, confirming the formation of bimetallic nanoparticles and Fourier transform infrared spectroscopy (FTIR) studies demonstrated that the plant extract's C=O and C-O groups were essential for capping the nanoparticles. Crucially, since no further synthetic reagents are needed as stabilizers or reductants, the procedure can be referred to as pure “green chemistry”. Bimetallic nanoparticles, which are made up of two metal nanoparticles that mix in an unusual way and have a synergistic impact, are more interesting than metal nanoparticles. Therefore, the synthesized nanoparticles will be used in agriculture, medicine and environmental remediation fields.

Key words: *Nanotechnology; Green synthesis; Azadirachta indica; Bimetallic nanoparticles.*

Navigating Global Challenges: The Role of Social Sciences and Humanities in Developing Local Solutions

Vijay Laxmi* and Dr. H.N. Koli**

*Research Scholar, Department of Geography, Government Arts College,
University of Kota

**Professor, Department of Geography, Government Arts College,
University of Kota

vijaylaxmi095@gmail.com

As the world faces pressing global challenges such as climate change, social inequality, migration and habitat loss the need for context-sensitive solutions has never been more urgent. This paper explores how Social sciences and humanities contribute to understanding human behavior, cultural values, and societal structures, which are essential for developing effective sustainable strategies. By examining case studies that illustrate successful community- driven initiatives, the role of local knowledge, and interdisciplinary collaboration, it highlights how social sciences and humanities foster resilience and adaptability in environmental practices. Ultimately, this paper calls for a shift that prioritizes the insights of social sciences and humanities as essential tools in addressing global challenges.

The findings suggest that meaningful change arises when we bridge global perspectives with local realities, creating a more empathetic and effective path forward.

Keywords: *global challenges, social sciences, humanities, interdisciplinary collaboration.*

Impact of Industrial Effluents on Groundwater Quality in Semi-Arid Regions: A Case Study from RIICO Industrial Areas in Eastern Rajasthan, India

Deshmukh Singh Dr. Manoj Kumar Singh* Dr. Magan Prasad**

** Assistant Professor, Department of Chemistry, M.S.J. Govt. College
Bharatpur (Raj.)

*Professor, Principal, Govt. College Bari, Dholpur (Raj.)

Professor, Department of Chemistry, M.S.J. Govt. College Bharatpur (Raj.)

**ds50992@gmail.com

With an increased understanding of the importance of drinking water to public health and raw water quality to aquatic life, assessment of water quality has become very important. This study focused on the investigation of the impact of industrial effluents on the groundwater quality of the RIICO industrial areas of Bharatpur and Dholpur districts, Eastern Rajasthan, India. Physicochemical parameters and heavy metal concentrations (Fe, Cu, Zn, Mn, Pb, Cd, Cr, Hg) were analyzed as parameters and the groundwater samples collected from selected different locations of RIICO area during pre-monsoon, monsoon and post-monsoon seasons were analyzed. Results showed contamination levels varied widely across study areas. The Dholpur RIICO area had the highest levels of contamination among all areas, through different parameters which is obtained higher than the permissible limit; the Bharatpur region had moderate level of contamination comparatively low level of heavy metals. Water Quality Index (WQI) values at sites ranged from 65–136, and were moderate to poor, especially in Dholpur. Seasonal variations were observed with higher concentrations of contaminants observed in the post monsoon period. Statistical analysis indicates that groundwater deterioration was strongly correlated with industrial activity, and in areas of high industrial density. The study found that 40 percent of the samples exceeded permissible limits for different parameters, including heavy metals and total dissolved solids. In addition, the results suggest that there is an urgent need for better effluent treatment systems and more stringent monitoring regimes in these industrial zones in order to protect groundwater resources and public health.

Keywords: *Groundwater contamination, Industrial effluents, Heavy metals, Water Quality Index, RIICO industrial area, Rajasthan.*

Integrated Planning for Solid Waste Management in Jaipur

Gayatri Tanwar and Purushottam Jharotia*

Assistant Professor, Department of Mathematics,
Samrat Prathviraj Chouhan Govt. College, Ajmer-India

E-mail: gtrtnwar15@gmail.com

Rajasthan's economic growth has stimulated urbanization, but lack of commensurate investment in urban infrastructure and services has resulted in an overall deterioration of urban quality of life. Jaipur is the capital of the largest state of country, having an inefficient, outdated and unscientific waste management system. Jaipur socio-economic development potential relies on sound environmental management so that tourism may grow and become sustainable. This paper attempts to assess the existing state of municipal solid waste management (MSWM) in Jaipur city with the aim of identifying the main obstacles to its efficient and prospects for improvisation of solid waste management system in the city.

Key words: - RDF- refuse derive fuel, MSWM- municipal solid waste management, JMC, MT- metric tons.

Mitigating Environmental Health Risks through Natural Farming Practices: Towards a Sustainable Agricultural Future

Hitesh Kumar¹, Ashish Jinjwadiya¹, Shree Chand Chhimpa¹

¹Government Bangur College, Didwana, Rajasthan

Environmental health hazards, including exposure to pesticides, soil degradation, water contamination, and air pollution, pose significant risks to human health and ecosystems. Conventional farming practices often rely on synthetic chemicals and intensive resource use, which contribute to these hazards by degrading natural resources and disrupting ecological balance. As an alternative, natural farming—rooted in organic, regenerative, and permaculture principles—offers promising solutions to mitigate these impacts. This paper examines the environmental health risks associated with traditional farming methods and presents natural farming as a viable, sustainable model. Natural farming practices, such as crop rotation, use of cover crops, composting, and biological pest control, minimize dependence on synthetic inputs while enhancing soil fertility, water retention, and biodiversity. Additionally, natural farming promotes carbon sequestration, reduces greenhouse gas emissions, and protects pollinator populations, which are crucial for ecosystem resilience. By fostering healthier soils and reducing environmental pollutants, natural farming not only addresses immediate health risks but also contributes to long-term ecological sustainability. The adoption of natural farming practices, supported by policy frameworks and community-driven initiatives, is essential for achieving a healthier, more sustainable future, where agricultural practices are harmonized with environmental and public health goals.

Cyanobacteria as a Valuable Alternative for Artificial Fertilizers Promoting Sustainable Farming Practices

Dr. Leenta Arora

Department of Botany, Government College, Baran, Rajasthan

E-Mail ID: dr.leentaarora.gcb@gmail.com

Fertilizers play an important role in improving production in agriculture and this is especially vital in developing countries like India with a massive population and fast paced economy. But with the rising global warming paired with air, water and soil pollution it has been particularly taxing to maintain the same food production levels from the limited amount of land available. Cyanobacteria can be used as a natural alternative for industrial grade fertilizers promoting sustainable farming practices in the long run. Several unique features of cyanobacteria such as nitrogen fixation, oxygenic photosynthesis, high biomass yield, growth on non-arable lands and a wide variety of water sources (contaminated and polluted waters), generation of useful by-products and bio-fuels, enhancing the soil fertility and reducing green house gas emissions, have collectively offered these bio-agents as the precious bio-resource for sustainable development. Cyanobacterial biomass is also the effective bio-fertilizer source to improve soil physio-chemical characteristics such as water-holding capacity and mineral nutrient status of the degraded lands.

This review is an effort to enlist the valuable information about the qualities of cyanobacteria and their potential role in solving the agricultural and environmental problems for the future welfare of the planet.

Keywords: *Cyanobacteria, Sustainable Agriculture, Bio-fertilizer, nitrogen fixation.*

Pyridinium Dichromate (PDC): An Efficient Oxidizing Reagent in Organic Synthesis

Bhawana Meena, Manju Bala Yadav, Dhanraj

1 Government College Baran, Rajasthan, India

2,3 Government College Kota, Rajasthan, India

Email: bhawanameena.anta@ gmail.com

Chromium (VI) reagents are highly versatile, capable of oxidizing a wide range of organic compounds. Ongoing research into the development of the reagents remains significant. Among the recent advancements is pyridinium dichromate (P D C), a stable, bright-orange solid that can be easily synthesized by adding pyridine to chromium trioxide dissolved in a small amount of water, resulting in a precipitate. P D C serves as an efficient and mild oxidizing agent. It is highly soluble in water, dimethylformamide, dimethyl sulfoxide, and dimethyl acetamide, with stable solutions, while being only sparingly soluble in methylene chloride, ethanol, chloroform, and acetone, and virtually insoluble in hexane, toluene, ether, and ethyl acetate. Kinetic studies have explored the oxidation of amino acids in acidic conditions using PDC. Additionally, this reagent is utilized in various applications, including the rearrangement of allylic hydroxyl groups, the synthesis of hetero cycles, the generation of metal-free dienones, the oxidation of carbon– boron bonds, and in the preparation of enones and multicomponent reactions.

Keywords: *C chromium (VI), Ox iodizing agents, P D C.*

Environment Sustainability Approaches in Urdu Literature

Dr. Mohammed Shakir

Assistant Professor, Department of Urdu

SCRS Govt. College, Sawai Madhopur

Email: mskhan 318@gmail.com

Urdu literature plays a significant role in promoting environmental awareness by addressing ecological issues and exploring the human-nature relationship. While specific examples of Urdu literature's influence on environmental awareness are limited, the broader field of ecocriticism provides insights into the potential impact of literature on environmental consciousness. Urdu literature can address ecological issues, explore the human-nature relationship, inspire environmental ethics, and motivate individuals towards environmental activism. By engaging readers emotionally and intellectually, Urdu literary works have the potential to contribute to a greater understanding of environmental challenges and the importance of sustainable practices.

Urdu literature, a tapestry woven with vibrant emotions and profound reflections, is not merely a repository of language, but a powerful tool for shaping environmental consciousness. From the ghazals whispering love for verdant landscapes to the scathing nasrs critiquing ecological exploitation, it offers a nuanced lens through which to examine the human-nature relationship and ignite a passion for sustainability.

Within the delicate framework of ghazals, nature transforms into a muse, its elements echoing inner turmoil and mirroring human emotions. Faiz Ahmed Faiz's verses paint the bulbul's song as a poignant echo of his own yearning for freedom, subtly linking environmental degradation with the stifling of human spirit. Similarly, Mir Taqi Mir's ghazals, where rustling leaves whisper secrets and blooming flowers symbolize hope, celebrate the interconnectedness of human well-being and the flourishing of nature.

Urdu prose delves deeper, dissecting the consequences of environmental neglect with unflinching realism. Intizar Hussain's dystopian novel, "Basti", depicts a desolate landscape ravaged by ecological mismanagement, serving as a stark warning against unchecked human intrusion. In Munir Ahmed Badayuni's scathing nasrs, nature becomes a

witness to human greed and apathy, his words lashing out against those who exploit its bounties without understanding its delicate balance.

Beyond mere reflection, Urdu literature actively advocates for environmental consciousness. Sufi poetry, imbued with the philosophy of "wahdat al-wujud" (unity of existence), emphasizes the sacredness of all life forms, urging harmony with nature. Progressive writings, like Kishwar Naheed's poems, raise awareness about deforestation and pollution, weaving cautionary tales that inspire action. These works translate environmental concerns into accessible narratives, resonating with audiences across generations and social strata.

Therefore, Urdu literature's role in promoting environmental awareness is multifaceted. It acts as a mirror, reflecting our impact on the natural world; a critic, dissecting the consequences of ecological negligence; and an advocate, inspiring sustainable practices through powerful narratives. In its verses and prose, nature ceases to be a mere backdrop, and blossoms into a vital character, demanding our respect and protection. This literary tapestry, imbued with passion and wisdom, holds the potential to weave a future where humanity and nature thrive in harmonious coexistence.

Urdu literature, a reservoir of cultural expression, carries a profound capacity to elevate environmental consciousness. Through its poetic nuances and prose, it weaves narratives that resonate deeply with ecological concerns and the intricate dance between humans and nature.

Poets like Allama Iqbal and Faiz Ahmed Faiz intricately threaded nature's beauty and its fragility into their verses, presenting a canvas that painted the harmony between mankind and the environment. Their works evoke emotions, fostering a connection that transcends mere observation, urging readers to reflect upon their role in preserving nature.

Furthermore, Urdu literary works often serve as a catalyst for societal introspection. Stories and essays draw attention to environmental degradation caused by human exploitation, emphasizing the urgent need for conservation and sustainable living. They depict the consequences of neglecting this delicate balance, evoking a sense of responsibility and advocating for a more empathetic approach towards nature.

Ultimately, Urdu literature acts as a compelling medium, echoing the urgency of environmental conservation. It doesn't merely narrate tales or present imagery; it cultivates a consciousness that transcends words, inviting individuals to embrace their role as custodians of the environment and fostering a deeper appreciation for the interconnectedness between humanity and nature.

Keywords: *ecological, environment, sustainable, conservation, degradation*

Effect of PdCl₂ Catalyst on the Hydrogenation Properties and sorption Kinetics of Mg

Kanhaiya Chawla^{1,2*}, Abhinav Bajpai³, Sushant kumar³, I.P. Jain⁴,
Chhagan Lal^{1, 4*}

¹Department of Physics, University of Rajasthan Jaipur, JLN Marg, Jaipur-302004 Rajasthan India

²Department of Physics, Government PG College, Tonk-304001 Rajasthan India

³Department of Chemical and Biochemical Engineering, Indian Institute of Technology Patna, Bihta, 801103 Patna, India

⁴Centre for Non-Conventional Energy Resources, University of Rajasthan Jaipur, JLN Marg Jaipur 302004 Rajasthan India

*Corresponding author: kanhaiyachawla27@gmail.com

Slow hydrogenation kinetics and high de/absorption temperature of Mg/MgH₂ still a challenge in solid state hydrogen storage systems for industrial and automobile applications. The effect of PdCl₂ on the hydrogenation properties including kinetics of Mg/MgH₂ has been investigated in the present study. The nanocomposites of Mg and PdCl₂ were prepared using Ball Mill method with various concentrations of PdCl₂. The synthesized nanocomposites were characterized by X-ray diffraction, scanning electron microscope, pressure-composition- isotherm and differential scanning calorimetry. The result indicates that the maximum hydrogen storage capacity was achieved 6.15 wt% for Mg-5 wt% PdCl₂ nanocomposites, while milled Mg only absorb 3.417 wt% H₂ at 300 °C. The desorption kinetics were increased with PdCl₂ concentration. It is concluded that the onset temperature of Mg-PdCl₂ nanocomposites shifted towards lower side than milled Mg using DSC analysis. The SEM and XRD patterns confirm the phase identity maintain during ball milling. The new phases of PdH_{0.778}, MgCl₂, Mg₆Pd and different phases of MgH₂ in MgH₂-PdCl₂ nanocomposites were confirmed on the basis of XRD analysis.

Keywords: *Hydrogen storage, Magnesium, PdCl₂, PCT, DSC.*

Global Challenges and Local Solutions

Satyanarayan Meena

Asst. Professor (Hindi), Govt. College Deoli (Tonk)

e.mail-sattukhanwas@gmail.com

At present, the whole world is facing environmental problems. If we solve these problems at the local level and with local traditions, then we can manage them better. Rajasthan has a tradition of saving every drop of water. This effort is visible in the structures like artificial lakes, step-wells, wells, ponds, khakis, Toba, tanka, jihat, jhala, etc. built for water storage here. These structures are environment-friendly.

The 'Oran' forests of western Rajasthan, which we can call religious forests, where tree cutting is prohibited, have been very useful in saving the environment. The people here have even sacrificed their lives to protect them. In villages, trees like Tulsi, Neem, Mango, Peepal, and Khejri have been planted in the courtyard of the house. Cutting off these trees was prohibited; hence, tree worship has been linked to religious faith and preserved.

At present, farmers are using chemical fertilisers in the fields, due to which other diseases including cancer are spreading. Here, traditionally, organic fertiliser made from cow dung and weeds was used, which is beneficial for the soil and the environment.

The common people of Rajasthan have a love for animals and birds. There has been a tradition of feeding the birds every morning. The Vishnoi community here is known for saving animals and birds. It has been a tradition here to tie bird feeders for the birds in the summer season.

Taxonomic Study of Freshwater Green Algae of Chauth Mata Temple Pond, Tehsil Chauth Ka Barwara, District Sawai Madhopur (Raj), India

Shakeel Ahamad¹ and Dilip Kumar Rathore²

¹Research Scholar, Department of Botany, Government College Bundi, Rajasthan (India)

²Associate Professor, Department of Botany, Government College Bundi, Rajasthan (India)

shakeelahamad300@gmail.com

Chauth Ka Barwara is a tehsil head quarter in Sawai Madhopur district of Rajasthan. It is center of religious faith where the grand temple of Chauth Mata is situated in the lap of the hills of Aravalli mountain range. The Chauth Mata Temple pond is situated at the foot of the Chauth Mata temple hill which is an important water source for local residents for bathing, washing clothes, watering animals and religious activities. Algal diversity is closely related to water quality. Green algae are major and basic primary producers of aquatic ecosystems which are also important from ecological and commercial point of view. Algal diversity keeps changing due to seasonal variations. Total forty two species of Chlorophyceae belonging to different genera viz., *Spirogyra*, *Cosmarium*, *Pediastrum*, *Tetraedron*, *Chlorella*, *Characium*, *Scenedesmus*, *Chara*, *Oedogonium*, *Closterium*, *Kirchneriella*, *Coelastrum*, *Chlorococcum*, *Selenastrum*, *Crucigenia*, *Tetrastrum*, *Golenkinia*, *Ankistrodesmus*, *Chlamydomonas*, *Ulothrix*, *Schroederia* were identified.

Key Words: *Algal Diversity, Chlorophyceae, Seasonal Variations, Species.*

**Assessing Fish Biodiversity and Water Quality Changes in the
Downstream of Kota Barrage of Chambal River, Kota,
Rajasthan**

Dr. Rajendra Singh ajawat¹, Dr. Vikas Jangid²

1. Assistant Professor, Department of Zoology, Government College Kota,
Rajasthan
2. Assistant Professor, Department of Zoology, JDB Government Girls
College, Kota, Rajasthan

Corresponding Author: Email: rajendra1rajawat@gmail.com

This study investigates the fish biodiversity in the downstream of the Kota Barrage on the Chambal River in Rajasthan, India. The research focused on species composition, abundance, and the impact of the barrage on aquatic biodiversity. Sampling was conducted over multiple sites downstream, covering a variety of microhabitats. The study revealed moderate species richness with a prevalence of native species; however, the biodiversity index was lower than expected. Key findings highlighted that reduced water flow, habitat fragmentation, and pollution are affecting fish diversity, with migratory species showing declining trends. These results underscore the need for sustainable water and habitat management practices.

**Study on Fresh Water Algal Species (*Scenedesmus*) in
Gudha Dam of Hindoli Tehsil Bundi (Rajasthan)**

Afsheen^{1*} and Dilip Kumar Rathore²

¹Research Scholar, Department of Botany,
Government College, Bundi-323001(Rajasthan)

²Assistant Professor, Department of Botany,
Government College, Bundi-323001 (Rajasthan)

*Email- afsheenadil07@gmail.com

Gudha dam is located in Gudha village which is situated 16 km towards west from district head quarter Bundi. Gudha dam is the main source of water supply for Hindoli Tehsil and largest in Hadauti region. The filling capacity of the dam is 34.50 feet and constructed on Mez river. It plays an important role in irrigation as well as for water supply for human consumption. It is famous place for ecotourism in monsoon season. Various algal species grow vastly in and around the dam but in the present study, only green algal genus (*Scenedesmus*) were studied. Green algae are ecologically important as major producers of biomass in freshwater systems. Algal diversity is greatly affected by climatic factors as well as physico-chemical properties of water. Algal samples were collected from Gudha dam and identified by standard monographs with the help of high resolution microscope in laboratory. A total 16 *Scenedesmus* species were identified and recorded. *Scenedesmus tropicus*, *S. opoliensis*, *S. armatus*, *S. dimorphus*, *S. carinatus* etc. are observed as dominant species. The distribution and diversity of these species was shown to be strongly dependent on studied season, local environmental factors, anthropological activities as well as water quality parameters.

Key words: *Scenedesmus*, *Algal Diversity*, *Gudha Dam*, *Freshwater*.

Upshot of Stressors on Environmental Sustainability

Eshita Pandey & Zeba Afroz

Department of Zoology, Dayanand Girl's P.G. College

Email: pandeyeishi@gmail.com

Every organism undergoes in observable alterations as a result of the environmental stressors natural or manmade' inflict on them. Therefore; it's easy to comprehend that the environmental stressors play a major role in the sustainability of ecosystems. The study determines the pattern of destructiveness of particular stressors in the context of environmental sustainability, considering global warming, photoperiod changes, pollution, excessive use of resource and species extinctions and their causes as stressors that hamper the functions and services of ecosystems. In marine ecosystems, for instance, increased levels of stressors such as ocean acidification and excessive fishing result to bleaching of corals and dwindling populations of fish. In terrestrial ecosystems, the stressors at work include cause deforestation and soil erosion, which in turn unhealthy habitats and poor quality of soils that are suitable for cultivating crops. Water quality and biodiversity are also negatively affected by pollution as well as removal of water from freshwater ecosystems. In this research, the study includes how different stressors do not occur in isolation, their interactions and their absolute effect on biodiversity in the ecosystem, ecosystems that are human affected and even human welfare. In reviewing some of the case studies based on present day realities, and emerging works, it is argued that heightened anthropogenic factors, takes a toll on ecosystem productivity, inflicts biodiversity loss and incapacitates ecosystems from rendering nearly all essential services including clean water, air and soil for crop production. It also provides an overview of possible adaptive management actions and policy measures designed to reduce the negative consequences of ecological stress and restore ecosystems, as well as improve sustainability. The results highlight the critical importance of management of environmental stressors in an integrated manner for the sustainability of ecosystems on our planet even in future.

Key words: *Environmental Sustainability, Stressors, Pollution, Productivity.*

Scientific Innovations for Environmental Sustainability: Pathways to a Greener Future

Shree Chand Chhimpa,¹Hitesh Kumar¹, Ashish Jinjwadiya¹

¹Government Bangur College, Didwana, Rajasthan

Environmental sustainability is a critical global priority, aiming to balance ecological health with economic growth and human well-being. Scientific innovation plays an essential role in achieving this balance, offering tools and strategies to reduce environmental impact while fostering sustainable development. This paper explores recent advancements in key scientific areas, including renewable energy technologies, sustainable agriculture, green chemistry, waste management, and conservation biology. Notable innovations include advancements in solar photovoltaic efficiency, battery storage solutions, and green hydrogen production, which promise cleaner energy alternatives. In agriculture, precision farming and genetic engineering contribute to enhanced crop yield with reduced resource use, minimizing land degradation and water waste. Green chemistry approaches, such as biodegradable polymers and eco-friendly solvents, enable industry shifts toward reduced pollution and resource conservation. Breakthroughs in waste management, including plastic recycling technologies and bio-based composting solutions, tackle waste accumulation and promote circular economy models. Finally, conservation technology, encompassing drone monitoring and genetic tools, supports biodiversity by protecting endangered species and habitats. This synthesis highlights the transformative potential of scientific innovations in fostering a sustainable relationship between humanity and the environment, underscoring the importance of continued research and collaborative policy frameworks for a resilient, sustainable future.

Eco-Tourism: A Sustainable Approach to Protect Natural Environment

Shubhangi Singh

Research Scholar, Dept. of Geography, Govt Arts College, Kota (Rajasthan)

Tourism is one of the fastest growing sectors in present times contributing to 3% of the global GDP. Environment provides the very base and landscape for the tourism industry to develop and flourish properly. The quality of the environment has a direct relationship with the touristic landscape.

The massive flow of tourists to various destinations has both its pros and cons. Developing the area holistically through tourism without disturbing the natural ecosystem of the area is possible to eco-tourism. Eco tourism also known as 'Green tourism' involves responsible travel to natural sites with the aim of conserving its environment with conscious awareness as well as supporting the local community there in.

Baran district of Rajasthan known as 'the land of picturesque hills and valleys' holds tremendous potential of being developed as an eco-tourist destination. Shergarh sanctuary, Shahabad conservation reserve, Sorsan conservation reserve and Ramgarh conservation reserve are the major eco tourist sites in Baran.

Shahabad conservation reserve is the most densely covered forest region of Hadauti Region with forest land of about 49000 hectares. It holds a huge diversity of flora and fauna with more than 800 types of flora which includes many medicinal herbs also. This area lies between Madhav National Park and Kuno National Park, MP serving as a corridor between the two. The region is also enriched with rarest biodiversity of the state.

Thus, developing eco-tourism here will not only help in preserving the natural and cultural heritage of the region but will also financially assist the local communities there in. The present study tries to analyse the role of eco-tourism in protecting natural environment of Shahabad reserve of Baran district. The study is primarily based on primary data and supported with appropriate statistical and cartographic techniques. The study reveals that eco-tourism may play crucial role in protecting the natural environment in the study area.

Key words: *Eco-tourism, Shergarh Wildlife Sanctuary, Sustainability, Environment conservation.*

A comparative Study of Phytosociological Status of Nanta Forest Region, Kota District, Rajasthan

Anita Malav^{1*}, and Poonam Jaiswal²

^{1*} Assistant Professor, Department of Botany, Janki Devi Bajaj Govt. Girls College, University of Kota, Kota

² Professor, Department of Botany, Janki Devi Bajaj Govt. Girls College, University of Kota, Kota
animalav10@gmail.com

The purpose of this study was to compare the community structure and phytosociological status of shrubs and herbs in two different vegetation stands. The study was carried out in the Nanta forest region which is situated between 25.21525° N and 75.8311° E and comes under the Sakatpura forest range, Ladpura tehsil, Kota District, Rajasthan. In the shrub layer, *Mitragyna parviflora*. (Roxb.) Korth. has the highest IVI (21.05) followed by, *Anogeissus pendula* Edgew. (20.39) and *Hyptis suaveolens* (L.) Poit. (19.48). All these plants were reported absent from non-protected sites where *Ziziphus nummularia* (Burm.f.) Wight & Arn. has the highest IVI (66.28) followed by *Prosopis juliflora* (Swartz) DC. (60.99) and *Acacia leucophloea* (Roxb.) Willd. (40.26). In the herbaceous ground cover grass *Apluda mutica* L. has the highest value of IVI (18.70), followed by *Themeda quadrivalvis* (L.) Kuntze with IVI (9.19). In non-protected vegetation site *Cynodon dactylon* (L.) Pers. has the highest IVI (22.60) followed by *Eragrostis pilosa* (L.) P. Beauv. (22.18). In the present study area, it has been observed that the stem density and basal area are lower in non-protected vegetation stand than in protected vegetation site. Nanta forest area is unexplored and various anthropogenic factors are present here. Various wild species are present here must be conserved as a genetic reservoir.

Keywords: Nanta, phytosociological, IVI, community structure.

Synthesis of Novel 1, 5-Benzothiazepines as Potential Adrenergic Receptor Antagonist

Ashok Kumar Suman^{1,2*} and Bhawani Singh²

¹Department of Chemistry, Govt. College, Antah (Baran)

²Department of Pure and Applied Chemistry, University of Kota, Kota (Raj.)

*E-mail ID: ashok1001suman@gmail.com

This work investigates the novel 1,5-benzothiazepines as potential adrenergic receptor antagonists and provides a unique and green method for their synthesis. 1,5-benzothiazepines were synthesised by Sulfa Michael addition reactions. Spectroscopic methods such as ¹H-NMR and ¹³C-NMR, FT-IR, and mass spectrometry were used to confirm the structural characterisation of all synthetic compounds. Adrenergic receptor antagonist activity was evaluated using *in silico* and *in vitro* methods, specifically targeting α - and β -adrenergic receptors. The findings revealed that several compounds had favourable selectivity profiles and a strong affinity for adrenergic receptors. These results imply that 1,5-benzothiazepines would be good compounds for the construction of new adrenergic receptor antagonists, which could be used in the treatment of cardiovascular diseases and other related conditions. Further investigations on structure-activity relationships are needed to enhance efficacy and selectivity.

Keywords: 1,5-benzothiazepine, adrenergic receptor antagonist, cardiovascular disease.

Fungal Contamination on Chia (*Salvia hispanica* L.) seeds during Storage in Agra region

Avinash Jain

Dept. of botany, Agra college, Agra

E.mail: avinash.jain1028@gmail.com

Chia seeds, known for their nutritional benefits, are prone to fungal colonization under improper storage conditions, leading to potential health risks and economic losses. The increasing global demand for chia (*Salvia hispanica* L.) seeds has raised concerns about their safety and quality during storage, particularly regarding fungal contamination. This study investigates the prevalence and diversity of fungal contamination associated with chia seeds stored in the Agra region of India, aiming to assess their potential impact on seed quality and consumer health. Samples were collected from various storage facilities and subjected to microbiological analysis to identify the presence of moulds. Environmental factors such as temperature, humidity, and storage duration were also monitored to understand their influence on fungal growth. The study identified 50 fungal species, including *Aspergillus*, *Penicillium*, and *Fusarium*, which are known to produce harmful mycotoxins. These findings highlight the importance of controlling storage conditions to minimize fungal contamination and ensure the safety of chia seeds in the Agra region.

Keywords: *Chia seeds, fungal contamination, Mycotoxin.*

Eco-Friendly Synthesis and Antifungal Properties of Copper Nanoparticles from Leaf Biomass

Yathin P Y^{1*}, Vishnu R²

¹ MSc. Scholar, Department of Forest Products and Utilization, College of Forestry, Kerala Agricultural University, Thrissur, Kerala, India-680656

³ Assistant Professor, Department of Forest Products and Utilization, College of Forestry, Kerala Agricultural University, Thrissur, Kerala, India-680656

e-mail: yathin-2022-17-014@student.kau.in

The synthesis of metal nanoparticles has garnered significant attention due to their unique physical, chemical, and antimicrobial properties, as well as their broad applications across various fields. Among synthesis methods, green synthesis, which utilizes biomaterials, is preferred over conventional approaches that often involve toxic chemicals and produce hazardous byproducts. In this study, leaf extracts rich in flavonoids, tannins, glycosides, and alkaloids from four plant species—neem, teak, senna, and lantana—were employed to synthesize copper nanoparticles (CuNPs) from a 0.1 M CuSO₄ solution. These plant extracts serve multiple roles as reducing, stabilizing, and capping agents in the synthesis process. The green-synthesized CuNPs were characterized through a variety of techniques, including UV-Vis spectroscopy, FE-SEM, EDXS, FT-IR, TGA, and XRD, alongside yield analysis. Teak leaf extract yielded the highest quantity of CuNPs, followed by senna, lantana, and neem. FE-SEM imaging confirmed the nanoparticle shape and size, while the UV-Vis spectra exhibited a peak between 300 and 350 nm, indicative of CuNP presence. Additional analysis via EDXS, FTIR, XRD, and TGA revealed characteristic peaks corresponding to CuNPs, further validating their formation. The antifungal efficacy of these CuNPs was tested against *Corynespora cassiicola* using the poison food technique. This study highlights the potential of selecting optimal plant extracts for the efficient, eco-friendly, and cost-effective production of CuNPs.

Key words: CuNPs, Plant extract, Antifungal, Green synthesis, SEM.

Bio-Villages as Models for Sustainable Development and Climate Mitigation: Spatial Study of Rural *Hamlets* of Tripura State

Dr. Savitri Patidar

Assistant Professor, Department of Geography Government Meera Girls College, Udaipur (Rajasthan)
savipatidar@gmail.com

Bio-villages, rooted in principles of sustainability and community-based development, offer a transformative model for addressing climate change and fostering rural resilience. In India, the state of Tripura has adopted the concept of bio-villages to integrate environmental conservation with socioeconomic development. One of the core components of the bio-village model is the use of renewable energy sources, particularly solar energy, for household electricity and agricultural purposes. Furthermore, the integration of organic farming practices reduces the use of chemical fertilizers and pesticides, thereby preserving soil health and enhancing biodiversity. Another significant aspect of the bio-village model is its emphasis on social inclusivity and community empowerment.

Tripura, located in North-Eastern India, is predominantly rural and home to a diverse range of indigenous communities. The state faces challenges such as deforestation, soil degradation, and vulnerability to climate-induced disasters. In response, the state Government, along with the Department of Science Technology and Environment of India has implemented bio-village initiatives aimed at improving renewable energy sources, promoting organic farming and fostering community-based natural resource management. This paper explores how bio-villages in Tripura are contributing to sustainable development and climate mitigation, using a holistic approach that encompasses ecological, economic, and social dimensions. Using existing Government reports and policy documents of some *Hamlets* as a case study of Tripura state's rural communities, the study tries to investigate and review the effectiveness of these bio-villages in enhancing rural livelihoods, promoting renewable energy use, conserving natural resources, and reducing carbon emissions. However, the study also highlights the challenges such as the need for greater technical capacity, financial resources, and policy support. It also recommends to scale up these initiatives and wider its impact across geographies.

Key Words: - *Bio-Villages, Renewable Energy Source, Sustainable Development, Livelihood, Carbon Emission, Climate Change.*

Renewable Energy for Sustainable Development in India

Krisn Pratap Meena

Associate Professor, Department of Mathematics
S.R.R.M. Govt. College, Nawalgarh, Rajasthan-333042, India
Email: kpsgdm@gmail.com

The sources of electricity production such as coal, oil, and natural gas have contributed to one-third of global greenhouse gas emissions. It is essential to raise the standard of living by providing cleaner and more reliable electricity. India has an increasing energy demand to fulfill the economic development plans that are being implemented. The provision of increasing quanta of energy is a vital pre-requisite for the economic growth of a country. The National Electricity Plan [NEP] framed by the Ministry of Power has developed a 10-year detailed action plan with the objective to provide electricity across the country, and has prepared a further plan to ensure that power is supplied to the citizens efficiently and at a reasonable cost. According to the World Resource Institute Report 2017 India is responsible for nearly 6.65% of total global carbon emissions, ranked fourth next to China (26.83%), the USA (14.36%), and the EU (9.66%). Climate change might also change the ecological balance in the world. Intended Nationally Determined Contributions (INDCs) have been submitted to the United Nations Framework Convention on Climate Change (UNFCCC) and the Paris Agreement. The latter has hoped to achieve the goal of limiting the rise in global temperature to well below 2 °C. According to a World Energy Council prediction, global electricity demand will peak in 2030. India is one of the largest coal consumers in the world and imports costly fossil fuel. Therefore, there is an urgent need to find alternate sources for generating electricity like that Hydropower, Bioenergy, Solar energy, Geothermal energy, Wind energy and Ocean energy.

Keywords: *Renewable Energy, Sustainable Development, Hydropower, Bioenergy, Solar energy, Geothermal energy, Wind energy and Ocean energy.*

Economic and Business Strategies for Sustainability

Dr. Arun Kumar Jain

Associate Professor (ABST), Government College, Osian

Sustainability has become a fundamental priority for both economic development and business practices, given the growing concerns over climate change, resource depletion, and social inequality. This essay explores key economic and business strategies that promote sustainability, emphasizing how these approaches not only address environmental and social concerns but also foster long-term growth and profitability.

At the economic level, strategies such as green growth, the circular economy, and carbon pricing are critical. Green growth emphasizes the need for economic development without degrading natural resources, while the circular economy seeks to minimize waste and maximize resource efficiency. Carbon pricing and environmental taxes encourage businesses to reduce emissions and adopt cleaner technologies, aligning economic growth with environmental preservation.

On the business side, corporate social responsibility (CSR), sustainable supply chain management, and innovation in green technologies are essential strategies. CSR ensures that businesses take responsibility for their societal and environmental impacts. Sustainable supply chain management focuses on ethical sourcing, reduced emissions, and minimal waste throughout the supply chain. Additionally, innovation in green technologies, such as renewable energy and energy-efficient products, provides companies with a competitive advantage while contributing to sustainability.

The role of governments in facilitating sustainable business practices is equally important. Policies, regulations, and incentives help create a supportive environment for businesses to adopt sustainable strategies. Public-private partnerships (PPPs) also enable the development of sustainable infrastructure and technologies.

Despite challenges such as high transition costs and varying consumer behaviour, the benefits of sustainability—including enhanced brand reputation, increased investment, and long-term profitability—make it a critical business imperative. This essay concludes that integrating sustainability into core economic and business strategies is essential for creating a resilient and thriving future economy, where growth does not come at the expense of environmental and social well-being.

Urbanization and Birds

Sanjay Kumar Mehta, Dr. Kusum Dang

Assistant Professor (Zoology), Govt. Girls College Baran, Raj. India

Professor (Zoology), Govt. College Kota, Rajasthan India

Sanjaymehta402@gmail.com

Increasing urbanization all over the world is the main sign of development in the twenty-first century. Cities occupy 2% of the Earth's surface, but their inhabitants use 75% of the natural resources. As a result of the expansion of growing cities, local vegetation is decreasing. And the landscape there gets fragmented into mosaics. Due to which the amount of impervious surface increases and the structure of the remaining vegetation keeps changing progressively.

Due to increasing population, increasing urbanization cannot be stopped, hence greening urban ecology can prove to be a good step to increase biodiversity in cities and to prevent bird biodiversity from decreasing. In which natural and artificial green spaces like parks, sanctuaries, private gardens, wetlands, lakes etc. contribute to the creation of diverse ecosystems.

The diversity and abundance of bird species varies according to the structure of the city and the number of green spaces and trees within the city. Native species can be considered the main representation of the bird community. But rare species should also be protected from endemic extinction.

Due to increasing urbanization around the world, conservation in urban areas is one of the latest ways to conserve biodiversity. through which all levels of biodiversity can be achieved.

Keywords: *biodiversity, conservation, Increasing urbanization.*

Global Challenges and Local Solutions for Environmental Sustainability: Indian Villages Leading the Role

Dr. Anil Kumar Parihar

Associate Professor (EAFM), Government College, Osian

Environmental sustainability is a critical global issue, with challenges such as climate change, biodiversity loss, water scarcity, pollution, and deforestation threatening the planet's ecosystems and human livelihoods. While these challenges are global in scope, local solutions rooted in community involvement and traditional knowledge have emerged as effective means of addressing them. This essay explores how Indian villages are playing a pioneering role in providing solutions to these global environmental problems, showcasing the potential of grassroots initiatives in achieving sustainability.

Indian villages, which house a significant portion of the country's population, have historically followed sustainable practices, living in harmony with nature. In recent years, they have revived and adapted these practices to meet contemporary challenges. Water conservation methods such as check dams and Pani Panchayats, along with organic farming initiatives in Sikkim, and agroforestry in Karnataka, demonstrate how local communities are addressing issues like water scarcity, soil degradation, and biodiversity loss. Moreover, innovative waste management practices in villages like Hiware Bazar and Mawlynnong, and renewable energy solutions from places like Barefoot College and Dharnai, highlight the potential of localized efforts in reducing pollution and carbon footprints.

Despite the success of these initiatives, Indian villages face challenges like inadequate funding and infrastructure. However, with greater collaboration between local communities, governments, NGOs, and private sectors, these grassroots efforts can be scaled up to create more widespread environmental impact. This essay concludes that Indian villages provide a valuable model for the world, proving that environmental sustainability can be effectively pursued through local action and community-driven approaches.

Education And Capacity Building for Sustainable Development

Dr. Braj Sundar Gautam, Seema Bairwa

Associate Professor, JNTT PG T.T. College, Lakhawa, Bandadharampura
Road, Kota (Raj.)

Research Scholar, UOK, JNTT PG T.T. College, Lakhawa,
Bandadharampura Road, Kota (Raj.)

Gmail ID: seemabairwa7243@gmail.com

Sustainable economic development means: “development should take place without damaging the environment and development in the present should not compromise with the needs of the future generations.”

Resources are vital for human survival as well as for maintaining the quality of life. It was believed that resources are free gifts of nature. As a result human beings used them indiscriminately and this has led to the following major problems- Depletion of resources for satisfying the greed of a few individuals, Accumulation of resources in few hands, which in turn, divided the society into two segments i.e. haves and have not or rich and poor. Indiscriminate exploitation of resources has led to global ecological crises such as, global warming, ozone layer depletion, environmental pollution and land degradation.

An equitable distribution of resources has become essential for a sustained quality of life and global peace. If the present trend of resource depletion by a few individuals and countries continues, the future of our planet is in danger.

Therefore, resources planning is essential for sustainable existence of all forms of life. Sustainable existence is a component of sustainable development. Education and capacity building are essential components of sustainable development, empowering individuals, communities and institutions to address environmental, social and economic challenges. Education for sustainable development (ESD) integrates sustainability into formal and informal learning encourage critical thinking, systems thinking, and collaborative problem –solving skills. capacity building strengthens to implement sustainable practices with a focus on technical training, policy support and community engagement. Together, they promote a holistic understanding of sustainability enhance institutional and community resilience and contribute to the achievement of global goals like the UN Sustainable Development Goals (SDGs). These efforts help create more equitable, inclusive, and sustainable societies by addressing issues like climate change, biodiversity loss and resource management while fostering social equity and economic opportunities.

Key Words: *Sustainable development, capacity building, Biodiversity, Climate change, Global goals.*

Human–Environment Relationships: The Need to Understand for Sustainability

Dr. Mohammed Shahid

Associate Professor (Economics), Government College, Osian

The relationship between humans and the environment has been a fundamental factor in shaping civilizations throughout history. As human activities have increasingly transformed natural ecosystems, the need to understand this interaction has become more urgent, particularly in the context of sustainability. The concept of sustainability is rooted in the idea that human well-being is deeply interconnected with the health of the environment, requiring a balance that meets the needs of current generations without compromising the ability of future generations to meet their own needs.

Historically, human societies have relied on natural resources for survival and economic development. Agriculture, mining, deforestation, and urbanization have enabled progress, but often at the cost of environmental degradation. The depletion of forests, air and water pollution, loss of biodiversity, and climate change are some of the most pressing consequences of this imbalance. These impacts not only threaten the environment but also pose significant risks to human health, food security, and livelihoods. Understanding the long-term effects of human activities on the environment is essential to addressing these challenges.

Sustainability, therefore, calls for a shift in how we perceive and interact with the environment. It requires a multidisciplinary approach that incorporates ecological, economic, and social perspectives. For example, the practice of sustainable agriculture aims to maintain soil fertility and biodiversity while meeting the food demands of a growing population. Similarly, renewable energy sources like solar and wind power offer alternatives to fossil fuels, reducing greenhouse gas emissions and helping to mitigate climate change. Environmental policies and practices based on scientific understanding can ensure that ecosystems remain resilient, even in the face of human development.

Moreover, sustainable development emphasizes the equitable distribution of resources. This involves ensuring that marginalized communities have access to clean water, food, and energy, while also protecting the environment. Addressing these inequalities is crucial for creating a more just and sustainable world.

To build a sustainable future, it is imperative for governments, businesses, and individuals to work together in understanding and improving human–environment relationships. Education and awareness play key roles in fostering responsible environmental behaviour. By valuing the natural world and recognizing its finite resources, humanity can adopt more sustainable lifestyles and policies. Only through this deep understanding can

we hope to achieve the balance necessary for the long-term health of both people and the planet.

Thus, the need to understand the intricate relationships between humans and the environment is more critical than ever. It is the foundation for sustainability, guiding us toward a future where economic development and environmental preservation can coexist harmoniously.

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Amitav Ghosh's Ecocritical Stand in the Novel *Sea of Poppies*

Harish Meena

Assistant Professor

Swargiya Pandit Nawal Kishore Sharma P.G. College, Dausa

Email ID – hariomjorwal1993@gmail.com

Amitav Ghosh's *Sea of Poppies*, the first book of the *Ibis Trilogy*, exemplifies his profound ecocritical concerns through its exploration of the historical opium trade and the consequences of colonial exploitation on both human and environmental fronts. Ghosh vividly portrays how the British colonial enterprise not only oppressed and displaced the people of Bengal but also devastated the local ecosystem. The novel examines the exploitation of land and nature for the cultivation of poppy, which led to ecological degradation, the destruction of traditional agricultural practices, and the erosion of local biodiversity. By intertwining the plight of the dispossessed and the disrupted environment, Ghosh establishes a deep connection between colonial domination and environmental degradation. His narrative also reflects a critique of anthropocentric ideologies that prioritize economic gain over ecological and human well-being. *Sea of Poppies* thereby presents a holistic view of the intersection between human suffering and ecological loss, challenging readers to rethink the implications of historical injustices on our contemporary understanding of environmental sustainability and cultural heritage.

Keywords: *Biodiversity, Cultivation, Ecosystem, Opium.*

Law, Policy and Governance for environmental protection

Bhagwan Dev Inani

Assistant Professor (Sociology), S.M.C.C. Government College, Abu Road
Email ID:- bdinani303@gmail.com

Law, policy, and governance play a crucial role in environmental protection. Environmental laws set specific rules and regulations to protect the environment. They cover areas like pollution control, waste management, wildlife conservation, and more. Laws may set standards for emissions, waste disposal, and other environmental practices, promoting consistency and accountability. Environmental policies are broader frameworks that guide environmental decision-making. They outline a country's or organization's goals and strategies for environmental protection. Government agencies are responsible for implementing and enforcing environmental laws and policies.

Key Words: Conservation, Emissions.

Survey of medicinal plants belonged to family Liliaceae in Jhalawar district, Rajasthan

Bahadur Singh Meena^{1*} and Dr Shuchita Jain²

¹Assistant professor, Department of Botany, Govt. Girls College, Karauli, Rajasthan

²Professor (Retired), Department of Botany, J.D.B. Govt. Girls College Kota, Rajasthan

Email: meenabsms@gmail.com

Plants have long been revered for their vital role as primary producers and as sources of medicinal compounds. In this ethnobotanical study, we investigated the traditional medicinal use of plants from the Liliaceae family in the Jhalawar district of Rajasthan, India. A comprehensive survey was conducted from 2020-2021 to 2021-2022, gathering information from 40 informants, including traditional healers, herbalists, and villagers. Structured questionnaires were employed to record local names, plant uses, parts used, preparation methods, and demographic data. Results revealed 21 plant species belonging to the Liliaceae family, utilized for treating various ailments traditionally. Notably, different plant parts such as roots, leaves,

bulbs, and stems were employed to address conditions ranging from respiratory disorders to sexual dysfunction. Despite modernization and the encroachment of allopathic medicine, traditional knowledge persists, underscoring the ongoing relevance of plant-based remedies in local healthcare practices.

However, this knowledge is increasingly threatened by habitat destruction and cultural shifts. The conservation of medicinal plants necessitates community involvement and informed management strategies. Our findings contribute to the preservation of traditional knowledge and underscore the potential for integrating traditional medicine into modern healthcare systems. Furthermore, they highlight the urgent need for conservation efforts to safeguard both medicinal plant species and the cultural heritage they represent.

Keywords: Liliaceae family, Jhalawar district, ethnomedicinal knowledge etc

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Ecotourism and its Environmental Implications: A Case Study of Ramsagar Wildlife Sanctuary, Dholpur, Rajasthan

Mr. Anupam Parashar¹ and Dr. Seema Chauhan²

¹Research Scholar, Govt. Arts College, Kota

²Principal, Government Arts Girls College, Kota

Ecotourism is a new concept in tourism industry of India, which essentially developed since past 15 years. Ramsagar Wildlife Sanctuary, Dholpur of Rajasthan state has emerged as a new ecotourism destination with the unique natural landscape and rich floral and faunal diversity. It sprawled over an area of 34.40 square kilometres. was notified as a wildlife sanctuary in the year 1955. The sanctuary with its rich biodiversity is the preferred destination of domestic and international tourists. This study is conducted to examine the positive and negative environmental impacts of ecotourism in the sanctuary. In this paper, an attempt has been made to quest the path to minimize the negative impact on natural habitat of the sanctuary.

The survey was carried out in the core and buffer areas during December 2020 to July 2024. Peak season of tourism is middle October to March. The respondents were randomly *selected* from the local villagers and the tourist, both domestic and international. By using the questionnaire method as data collection, the study analysed both quantitative and

GIC: IAES 2024 - INTERNATIONAL CONFERENCE

qualitative data. The total sample size were 560 among them 448 were tourists and rest 112 were local villagers. Therefore a bottom up strategy is the need of the hour for the protection of the rich biodiversity of the sanctuary in particular and the ecological balance of the sanctuary in general. The result of study provides a summary of key findings and improving recommendations relating to ecotourism and environmental impacts management in the sanctuary.

Keywords: *Ecotourism, Environmental impacts, Ram Sagar Wildlife Sanctuary, Flora, Fauna.*

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Business Strategies for Sustainable Development

Sh. Hanuman Prasad Meena

Associate Professor in Hindi

Rajesh Pilot Govt. P G College Lalsot (Dausa)

The Sustainable Development Goals (SDGs) are a collection of 17 interlinked global goals to transform our world. They were designed to be a “blueprint to achieve a better and more sustainable future for all” and part of the United Nations 2030 Agenda for Sustainable Development. They were agreed by 193 countries in September 2015. Each of the 17 goals strive for the universal reduction of climate change and poverty, and the improvement of education, health, and economic growth. United Nations describes the SDGs as seeking to “protect the planet, and improve the lives and prospects of everyone, everywhere.” The SDG’s provide worldwide guidance for addressing each of these goals. Crises within the SDG’s are faced by most countries and can only be addressed if we work as one global community. The SDGs are: no poverty; zero hunger; good health and well-being; quality education; gender equality; clean water and sanitation; affordable and clean energy; decent work and economic growth; industry, innovation and infrastructure; reduced inequalities; sustainable cities and communities; responsible consumption and production; climate action; life below water; life on land; peace, justice, and strong institutions; and partnerships for the goals. Achieving the SDGs requires a collaborative effort from governments, businesses, and individuals. As of 2018, progress has been made towards achieving these goals, but significant challenges remain. Urgent action is needed to address these challenges and ensure a sustainable future for generations to come.

Keywords: *Sustainable Development Goals, SDGs, environmental conservation, greenhouse gas emissions, sustainable land use, climate action, marine pollution, biodiversity, deforestation, renewable energy, urbanization*

Environmental Health Hazards and Natural Farming

Dr. Rukmani Devi

Assistant Professor (Hindi), Government College, Bibirani

Email: rukimaniips01041967@gmail.com

Environmental health hazards, including pollution, pesticide exposure, and soil degradation, pose significant threats to both human health and ecosystems worldwide. Conventional agricultural practices, characterized by heavy reliance on synthetic fertilizers and pesticides, have led to severe environmental consequences, such as water contamination, loss of biodiversity, and the deterioration of soil quality. These challenges compromise food safety, contribute to climate change, and impact public health through increased exposure to toxic substances.

Natural farming emerges as a viable solution to these pressing issues, advocating for agricultural practices that emphasize ecological balance and sustainability. This approach focuses on techniques such as organic fertilization, crop rotation, intercropping, and agroecological principles to enhance soil health and biodiversity while minimizing chemical inputs. By fostering a resilient agro-ecosystem, natural farming mitigates the risks associated with environmental health hazards and promotes sustainable food production.

Additionally, natural farming supports local communities by improving food security and enhancing nutritional quality while reducing dependency on imported agricultural inputs. It encourages the conservation of local resources and traditional knowledge, which are essential for maintaining ecological diversity.

In conclusion, addressing environmental health hazards through the implementation of natural farming practices not only leads to sustainable agricultural outcomes but also contributes to the overall well-being of communities and ecosystems. This paradigm shift is crucial for developing resilient food systems that align with ecological sustainability and public health objectives.

Keywords: *Environmental health, natural farming, sustainability, biodiversity, soil health.*

**Distribution of Herbivore and Carnivore Mammals in
Ramgarh Vishdhari Tiger Reserve, Bundi, Rajasthan**

Ms. Rukhsar Bano, Dr. Fatima Sultana

Research Scholar, Department of Zoology, Janki Devi Bajaj Govt. Girls
College, Kota, Rajasthan, India

Professor, Department of Zoology, Government College, Antah, Rajasthan,
India

In the present study, we observed the distribution of herbivore and carnivore mammals in Ramgarh Vishdhari Tiger Reserve. For this purpose, sign survey of Ramgarh Vishdhari Tiger Reserve was done in march 2024 along with forest staff. Direct observations were made of animals using eyes and binoculars. Indirect observations were made by footprints or pugmarks and scats or pellets of animals observed along natural trails. Pugmarks and scats of tiger, pugmark and scats of striped hyena, droppings of nilgai, pellets of chital, porcupine spines, pellets of sambar, scratches on tree barks made by sloth bear, pugmarks and scats of leopard, jackal pellets were observed. During Sign survey, direct sighting of striped hyena, sloth bear, chital were also observed.

Law, Policy, and Governance for Environmental Protection

Deepak Korotania^{1*}, Lakshdeep Singh²

1. Department of Forestry and Natural Resources, Punjab Agricultural University, Ludhiana, Punjab, India
2. Department of Plant Breeding and Genetics, Punjab Agricultural University, Ludhiana, Punjab, India
Email: dkorotania4@gmail.com

The transition to renewable energy is critical for mitigating climate change, as fossil fuels remain a primary source of greenhouse gas emissions. This paper reviews the role of policy and governance in advancing renewable energy transitions, with a focus on global trends from 2023-2024. In 2023, renewable energy accounted for 29% of global electricity generation, with solar and wind power leading the growth at rates of 18% and 12%, respectively. Countries like China, the U.S., and the EU have set ambitious renewable energy targets, with China aiming to generate 50% of its energy from non-fossil fuel sources by 2030. Policy initiatives, such as tax incentives, subsidies for green technologies, and carbon pricing, have been instrumental in accelerating this shift. However, governance challenges, including regulatory barriers, market access issues, and a lack of infrastructure, still hinder progress in many regions. In 2024, the global investment in renewable energy is projected to surpass \$1.3 trillion, yet significant disparities in investment between developed and developing nations remain. In conclusion, while policy and governance frameworks have been effective in fostering renewable energy growth, stronger international cooperation and equitable investment strategies are needed to meet global climate goals and ensure an inclusive energy transition.

Keywords: *Renewable energy, Climate mitigation, Global investment, Energy transition.*

**Comparative Study of Ethnomedicinal Values and
Phytochemical Screening of *Pithecellobium dulce* and
*Helicteres isora***

Divya soni^{*}, Leena sharma¹, and Sitaram Khandelwal²

1*Research scholar, University of Kota, Rajasthan

1 Associate professor, Department of Botany, Government PG College,
Karauli, Rajasthan

2 Professor, Department of Botany, Government PG College, Karauli,
Rajasthan

The present study is conducted to compare qualitative phytochemical screening and ethnomedicinal values of *Pithecellobium dulce* and *Helicteres isora*. The study is carried out in order to know the distribution of various metabolites in plants and various diseases being treated with these plants by local people of Mukundara hills national park of Kota. Phytochemical screening is evaluated using ethanolic extract of different parts of plants. Ethnomedicinal study is conducted through field surveys and interviews of local people and documentation of traditional knowledge of these plants. The study revealed the presence of different secondary metabolites and a wide range of human ailments being treated with these plants. This study therefore, justifies the ethnomedicinal values of these plants by the presence of secondary metabolites.

Keywords - *Medicinal plants, Secondary metabolites, Ethnomedicine, Phytochemicals.*

Conservational Aspects of the Flora of Padajhar Mahadev Sacred Grove Region in the Aravali Hills of Rajasthan: A Multilevel Analysis

Priyal Vijayvargiya¹ and Prof. Pratima Shrivastava²

(Research Scholar¹ and Principal², Department of Botany Government College Kota)

The conservation of biodiversity is a global concern, with various species facing threats across regions. The current study assessed the conservation status of plant species within the study area by considering research across India (national and regional status) and the globe (IUCN Red Data List) to provide an account of the conservation values of the sacred grove. Results revealed that out of 78 species, 50% are not evaluated globally. On a national and regional scale, 29.48% of species are categorized in different categories. Notably, 11.5% of species are listed as Threatened in India, including *Butea monosperma* (Lam.) Kuntze, *Pterocarpus marsupium* Roxb., *Terminalia bellirica* (Gaertn.) Roxb., Three species are classified as Rare and Endemic to South Rajasthan, with several others listed as Rare or Endangered in different regions. The findings underscore the necessity for localized conservation efforts, particularly for species like *Pterocarpus marsupium* Roxb., which exhibits varying conservation statuses across global, national, and regional scales. The author highlights the urgent need for regional assessments of the conservation status of native species to facilitate habitat protection for scheduled species as part of in – situ conservation.

Key words: *sacred grove, conservation status, scheduled plants, in situ conservation.*

Environmental Protection Laws and Policies for Sustainable Green Development

Sitaram Bairwa

Assistant Professor-Zoology, Govt.College Baran

Email: Sitarambairwa1977@gmail.com

Sustainable development in the modern day must inevitably include green development as it provides the best means of addressing the dual issues of protecting the environment and boosting the economy. This article aims to introduce the episodes of green finance to discuss the role of the green economy in attaining sustainable development objectives and address particular problems of sustainable finance and environmental, social, and governance concerns of green financing. A significant challenge is evaluating the success of the 2030 Agenda and the role played by public policy. Several projects have arisen to link budgetary expenditures and Sustainable

The Stockholm Declaration of 1972 was the first major effort to conserve and protect the human environment at the international level. As a result of this Declaration, the States were required to approve legislative mandate to protect and improve the environment in concerned State this paper suggests an *Environmental Regulations-based Sustainable Green Development (ER-SGD)* strategy for protecting the environment and boosting the economy.

Conclusion: This article covers bolstering performance evaluation, optimizing energy savings and lowering emissions, and promoting business technology.

Keywords: *sustainable development, environmental law, green economy, rules and regulations.*

Aquatic Flora of Abhera Wetland, Kota District Rajasthan

Priyanka Suman¹, Poonam Jaiswal²

^{1,2}Department of Botany, Janki Devi Bajaj Government Girls College,
Kota

A wetland is a unique ecosystem that is the bridge between the terrestrial ecosystem and the aquatic ecosystem. They are vital ecosystems that provide various ecological as well as economic benefits. Wetlands support biodiversity by hosting diverse types of aquatic plants, animals and migratory birds. In recent years wetlands are facing threats from anthropogenic activities, pollution and encroachment. Macrophytic vegetation is essential for maintaining healthy aquatic ecosystems, supporting biodiversity and ensuring ecological balance.

The present study has been done to study macrophytic vegetation in the Abhera wetland Kota Rajasthan. The aquatic ecosystem survey conducted in different seasons to assess the aquatic vegetation wealth of Abhera wetland. During the investigation many plant families like Araceae, Pontederiaceae, Nymphaeaceae, Lentibulariaceae, Lythraceae, Marsileaceae, Asteraceae, Verbenaceae, Menyanthaceae, Nelumbonaceae were recorded and the their floristic database was prepared. The most dominant family with respect to the number of species is Poaceae with 11 species.

Keywords:- Abhera wetland, aquatic flora, floristic, macrophytes.

Waste Management: Challenges and Innovations

Dr. Swati Soni

Department of Chemistry, Govt. Girls College, Magra Punjala, Jodhpur
(Raj.), India

Correspondance:- soniswati2012@gmail.com

Waste management is a term that refers to all of the various actions taken and plans created to manage waste, from composting or recycling existing waste to minimizing the production of waste in the first place. Because we currently produce so much waste – plastic waste alone comes to 400 million tons annually-managing it all is a complex process, and different countries and regions have created different answers to the challenge. Even some states and counties have come up with their own systems on this front. Plastic reusing is a basic part of economical waste administration, pointed toward decreasing the natural effect of plastic waste. This paper gives an inside and out investigation of the present status of plastic reusing, looking at the sorts of plastics, reusing cycles, difficulties, and advancements. It likewise investigates the monetary, natural, and social ramifications of plastic reusing and offers bits of knowledge into future possibilities and expected systems to improve reusing effectiveness this paper provides an in-depth analysis of the current state of plastic recycling, examining the types of plastics, recycling processes, challenges, and innovations in the field. Additionally, it explores the economic, environmental, and social implications of plastic recycling, offering insights into future prospects and potential strategies for improving recycling efficiency.

Keywords: *Waste management, plastic recycling, social ramifications and Biological activities.*

Demographic Changes and its Impact on Environment- A Case Study of Deoli Tehsil

Dr. Nikita Mangal

Assistant Professor, Government College, Deoli

nikitamangal1983@gmail.com

Demographic changes, driven by factors such as population growth, urbanization, aging, and migration, exert significant impacts on the environment, reshaping ecosystems and resource use worldwide. As populations increase and urban areas expand, the demand for essential resources like land, water, and energy intensifies, often resulting in environmental degradation, deforestation, and loss of biodiversity. Rapid urbanization, especially in densely populated cities, contributes to increased greenhouse gas emissions, air and water pollution, and waste generation, which in turn accelerate climate change and stress local ecosystems. The aging populations in certain regions further influence resource consumption patterns, potentially reducing labour force size and changing energy and food demands. Migration trends, especially from rural to urban areas, drive urban sprawl and unsustainable land-use changes, putting additional pressure on local resources and exacerbating infrastructure challenges. These demographic shifts underscore the need for adaptive and forward-looking sustainable development policies that can accommodate changing population dynamics while prioritizing environmental protection. This research emphasizes the complex and interconnected relationship between demographic factors and environmental impacts, highlighting the urgent need for policymakers, planners, and communities to collaborate on adaptive strategies that promote ecological resilience, reduce carbon footprints, and create sustainable living environments in response to ongoing demographic and environmental transformations.

Keywords: *Demographic changes, Population growth, Urbanization, Environmental degradation, Resource demand, Migration, Urban sprawl, Sustainable development, Adaptive strategies.*

Green Chemistry: A Sustainable Approach to Modern Chemical Practices

Dr. Suman Khinchi

Assistant Professor, Department of Chemistry, Govt. P.G.College, Jhalawar

Email:- sumankhinchi84@gmail.com

Since its emergence, green chemistry, a paradigm with the goal of reducing environmental impact while promoting innovation in the design, production, and use of chemical products, has completely transformed modern chemical processes. This environmentally friendly strategy is based on 12 key concepts that include reducing toxic levels, increasing energy efficiency, and enhancing the biodegradability of the product. Green chemistry offers a holistic approach to chemical processes, from raw material procurement to waste management, in contrast to conventional chemistry techniques that often prioritize yield over environmental concerns. This article explores the basic ideas and modern uses of green chemistry in several fields such as materials science, agriculture, and pharmaceuticals. Significant advances such as the invention of environmentally friendly catalytic processes, sustainable solvents, and bio-derived feedstocks demonstrate how green chemistry offers practical answers to major global problems such as pollution, resource depletion, and climate change. By adopting a holistic, sustainable strategy, green chemistry not only revolutionizes conventional chemical technologies but also offers a gateway to a future that is both economically and environmentally sustainable. This essay attempts to provide a comprehensive overview of the field, its underlying ideas, and the diverse ways in which its applications contribute to building a sustainable society.

Key words: *green chemistry, environmentally, pharmaceuticals, sustainable, 12 key concepts.*

Impact of Vegetable Oil Mill Effluent on Growth and Development of Certain Agricultural Crops in Bundi, Rajasthan

Durga Lal Regar¹, Poonam Jaiswal²

¹Assistant professor, Department of Botany, Govt. Girls College Bundi (Raj)

²Professor, Department of Botany, JDB Govt. Girls College Kota (Raj)

regardurgalal1982@gmail.com

The vegetable oil industry covers almost 80% part of the industrial scenario of the Bundi district in Rajasthan. A study was conducted to investigate the effects of different concentrations of vegetable oil mill effluent on the growth and production of rice, mustard, and soybean for three years. The treated and untreated effluent samples from the vegetable oil-mill were collected and 0, 10, 20, 30, 40, 50, 60, 70, 80, 90, and 100% effluent concentrations were prepared by using tap water. The undiluted effluent of the vegetable oil mill was considered 100% concentration. The seeding pots were irrigated with the effluent of the above concentration. Three replications were maintained for each treatment.

The study reveals that the vegetable oil mill effluent has a deleterious effect on crop growth at higher concentrations. However, at lower concentrations (viz. 10 to 40% in rice, 10 to 30% in mustard, and 10 to 40% in soybean) of effluent, a beneficial impact on seed germination and seedling growth was noticed. Growth and development were increased with increasing concentration of the effluent up to 30% in rice, 40% in mustard, and 40% in soybean. Investigation showed that the growth and production of rice, mustard, and soybean were found to maximum at a concentration of 30, 40, and 40% effluent respectively.

Key Words: vegetable oil mill effluent, seed germination, seedling, productivity.

Ecocritical analysis of The Ministry of Utmost Happiness of Arundhati Roy

Dr. Madhukanta Meena

Assistant Professor

Swarigya Pandit Nawal Kishore Sharma Govt. P.G. College Dausa

Email – meenamadhukanta68@gmail.com

Arundhati Roy's *The Ministry of Utmost Happiness* presents a nuanced ecocritical exploration of the intersections between environmental degradation, social injustice, and political turmoil in contemporary India. Through a narrative that traverses the urban decay of Delhi to the conflicted landscapes of Kashmir, Roy highlights how environmental exploitation mirrors the oppression of marginalized communities. The novel critiques anthropocentric ideologies and the politics of development that prioritize economic gains over ecological integrity and human well-being. Roy's portrayal of urban and rural landscapes reveals the ecological impact of unchecked industrialization, rampant construction, and state-sanctioned violence, which displaces not only people but also disrupts the natural ecosystem. By connecting the stories of the oppressed with the wounded landscapes they inhabit, Roy emphasizes the interconnectedness of human suffering and environmental exploitation. The symbolic representation of graveyards and the resilient life growing in neglected spaces evokes the potential for renewal amidst destruction, hinting at a form of ecological resistance. *The Ministry of Utmost Happiness* thus offers a critique of contemporary socio-political and environmental crises, urging readers to reconsider dominant narratives of progress and the cost they exact on both human and non-human worlds.

Keywords: *Degradation, Industrialisation, Landscape, Social Injustice.*

Education: Turning Mirrors into Windows for Sustainable Development

Dr Deepti Joshi

Associate Professor, Department of English, Government Arts Girls College, Kota (Rajasthan)

Education for Sustainable Development, empowers people with the knowledge, skills, values, attitudes and behaviours to live in a way that is good for the environment, economy, and society. It fosters peer learning and innovation through information, networks and partnerships. Education helps to reduce inequalities and to reach gender equality. It also teaches people everywhere to live more healthy and sustainable lives. Education is also crucial to fostering tolerance between people and contributes to more peaceful societies. Education is the key that allows many other Sustainable Development Goals (SDGs) to be achieved. When people are able to get quality education they can break from the cycle of poverty. The problems of environmental degradation and climate change have assumed an unprecedented urgency. By imparting knowledge, instilling values, fostering beliefs and shifting attitudes, education has the power to strengthen the foundation of Sustainable Development. As it is quite evident that human behaviour is majorly responsible for the environmental changes, we inevitably need to tap the potential of education. Education enables people to comprehend the science behind environmental changes and face complex environmental issues. It can accelerate the progress towards achieving the proposed goals of Sustainable Development. Education is not only the basic human right but it is also indispensable for development. Sustainable development as a subject area and learning objective increasingly finds its way into the curriculum from pre-school to university level. Education and learning are emphasized as key drivers for Sustainable Development.

Keywords: *Sustainable Development, environment, goals, climate, education, change.*

Effect of Environmental Hazards on Trophic Levels of Urban Birds

Renu Meena

Assistant Professor Department of Zoology,
Government P.G. College, Jhalawar
mrenu0300@gmail.com

The human population is rapidly urbanizing, and the negative impacts of urban cover on biodiversity and ecosystem function are expected to increase. Trophic dynamics have been hypothesized to change with urbanization, with consequences for biodiversity and function. Here, I review recent progress in this area by focusing on how urbanization affects dietary sources, trophic interactions and the functional ecology of avian species. Urbanization affects primary production in terrestrial and aquatic ecosystems by replacing and fragmenting natural areas with impervious cover, increasing nutrient supply, changing hydrological regimes, and altering the composition and seasonality of primary producers.

Urbanization can dramatically change trophic dynamics in the urban ecosystem with implications for biodiversity patterns, management and conservation. However, it is clear that a broader and more mechanistic understanding of the urban food webs is needed. This can be accomplished through inclusion of functional trophic metrics in monitoring efforts, the use of stable isotope food web metrics, the use of multi-trophic-level experiments and a more detailed study of the functional ecology of synanthropes. This paper aims to study the various hazards of urban environment on bird trophic level by various models and explain the solution to maintain avian trophic levels.

Keywords: *Urbanization, trophic level, biodiversity, hazards, conservation.*

Environment Practice in Ancient India

Mahendra Kumar Verma

Assistant Professor History

Email- mahendarsain@gmail.com

This research paper delves into the environmental practices of ancient India, exploring the deep-rooted cultural and philosophical principles that fostered sustainable living and ecological balance. Drawing from ancient texts such as the *Vedas*, *Upanishads*, *Arthashastra*, and *Ayurveda*, the paper examines how environmental conservation was integrated into daily life, governance, and spiritual practices. Key aspects such as water conservation, sustainable agriculture, protection of wildlife, sacred groves, and the significance of eco-friendly architecture are analyzed to understand the holistic approach towards the environment in ancient India. The concept of *ahimsa* (non-violence) extended beyond human beings, promoting the protection of animals and natural resources. Reverence for rivers, forests, and medicinal plants played a pivotal role in maintaining ecological balance. This research highlights the relevance of these ancient practices in addressing contemporary environmental challenges, suggesting that the sustainable models of ancient India offer valuable insights for modern environmental conservation and governance. Through this examination, the paper aims to foster a deeper appreciation of ancient wisdom and its potential application in today's world.

Keywords: *Ancient India, environmental practices, sustainability, water conservation, wildlife protection, sacred groves, ahimsa, ecological balance.*

Ethnobotanical Studies of Some Medicinal Plants of Hadoti Region With Special Reference to Kota District

***Dr. Kalpana Chaurasia¹, Laxmi Sharma²**

1,2 Assistant Professor, Department of Botany

Modi Institute of Management & Technology College, Kota, Rajasthan

Email id- m.chourasiya@gmail.com

This study highlights the importance of ethno botanical plants from Hadoti region of Rajasthan. This region conducts mainly four districts (Kota, Bundi, Baran and Jhalawar) of Rajasthan. Ethno botany is a distinct branch of natural science dealing with various aspects such as anthropology, archaeology, botany, ecology, economics and medicine religious culture and several others disciplines. Several medicinal plants were collected for the treatment of various ailments, parts such as root, leaves, bark, seeds and stem. Traditional medicine remains an integral part of the health system in this area.

Key words: *Ethnobotany, traditional medicine, Kota district.*

A Preliminary Study on Impact of Chambal River Front on Ecotourism

Jhanvi Nagpal¹, Kiran Rathore², Manisha Sharma³

1, 2, 3 Department of Zoology, JDB Govt. Girls College, Kota, Rajasthan

Corresponding authors Email: jhanvinagpal01@gmail.com

Eco-tourism is a sustainable travel strategy that emphasizes on protecting the environment and promoting the welfare of resident population of the area. It reduces the ecological impact by raising environmental consciousness among the local people. A study was undertaken to study the impact of Chambal river front on ecotourism in Kota, Rajasthan, well known as a coaching hub for various competitive exams. Results depicted an evolving tourism sector which showed considerable growth based upon the growing interest in the resident and non- resident population of Kota city. The study confirms that social media, word-of-mouth recommendations by friends and family, and exchanging stories effectively fuel travel incentives and can help in nurturing the socio-economic benefits of ecotourism in Kota.

Keywords: *Ecotourism; Sustainable; Biodiversity preservation; Questionnaires.*

India's Cyber security Challenge: Threats and Strategies

Avinash Vyas and Sunil Choudhary

SBRM Government College, Nagaur, 341001

As the world is advancing in the realm of digitalization, the threat of cyber-attacks has also grown and India is no exception to it. Since India has a rapidly expanding digital economy with sectors such as healthcare, education, finance, retail and agriculture relying on online platforms and services but India's outdated or inadequate cyber security infrastructure, policies and awareness making it easy for hackers to exploit the gaps and weaknesses in the system that's why India faces sophisticated and persistent cyber threats from state-sponsored and non-state actors who target India's strategic, economic, and national interests. The major challenges regarding cyber security are critical infrastructure vulnerability, financial sector threats, data breaches and privacy concerns, cyber espionage etc. Indian government makes several initiatives to overcome the cyber security threat such as National cyber security policy which aims to build a secure and resilient cyberspace for citizens, businesses, and the government, Cyber surakshit bharat initiative, Indian cyber-crime coordination centre (I4C) which was established to provide a framework and eco-system for law enforcement agencies to deal with cyber-crimes in a comprehensive and coordinated manner, Computer emergency response team - India (CERT-In) is an organization of the MeitY which collects, analyses and disseminates information on cyber incidents, and also issues alerts on cyber security incidents. Although government makes several initiatives but we should do further to save itself from cyber-attacks such as strengthening existing legal framework, enhancing cyber security capabilities, establish a cyber-security board, expanding international cooperation.

Keywords:- *cyber security, critical infrastructure, cyber-attacks, cyber security policy.*

Global Challenges of Environmental Sustainability and the Local Solutions

Meera Gupta¹, Dr. Sunita Sharma², Sneha Srivastava³

¹Associate Professor, Government Arts Girls College, Kota (Raj.)

²Professor, Government Arts Girls College, Kota (Raj.)

³Student, Government Arts Girls College, Kota (Raj.)

E-mail: srivastavasnehakota@gmail.com

Environmental Sustainability refers to the responsible management of natural resources to fulfill the current needs without compromising the needs of future generations. Environmental sustainability is critical for long term survival and global well being for resource preservation for future generations, climate change mitigation, biodiversity and economic health, human health, economic stability, social equity and justice and global security. But the fast pace development and modernisation is causing a threat to environmental sustainability which has become a global challenge which includes climate change, overuse of natural resources, pollution, biodiversity loss and many more.

Present paper is an attempt to analyse various challenges of environmental sustainability. Paper analyses the impact of these challenges on GDP in detail. It completely focused on local solutions to minimise the losses to GDP. Initiatives taken by the government are also taken into account. Individual suggestions regarding environmental sustainability will work as a path finder at policy level.

Keywords: *Sustainability, GDP, Economic Health, Social Equity, Pollution.*

Heterostructures in Environmental Science

Ramesh Chand Meena

Assistant Professor (Physics)

Govt. P.G. College Deoli, Tonk (Rajasthan)

Mail- meena1991ramesh@gmail.com

Heterostructures are artificial materials made of two or more different substances, and are used in environmental science for a variety of applications. Heterostructures can be used in batteries. Heterostructures can be used to increase the catalytic performance of electrocatalysts. Heterostructures can be used to enhance the photocatalytic activities of materials, such as in the generation of hydrogen. Heterostructures can be used in solar cells. Heterostructures can be used to degrade pollutants. Heterostructures can be used in chemical conversion. Heterostructures can be used to reduce CO. Heterostructures can be used in the hydrogen evolution reaction. Heterostructures can be used in the oxygen evolution reaction. Heterostructures can be used in N fixation. Heterostructures can be used in chemicals synthesis. Heterostructures can be made in a variety of ways, including 2D heterostructures Epitaxial heterostructures Multi-heterostructure arrays.

Heritage Plants of Sacred Areas: An Urgent Need to Identify in Jhalawar District of Rajasthan

Dilip Kumar Sharma¹ and Dr. O.P. Sharma²

1. Ph.D. Scholar and Assistant Professor, Department of Botany, S.M.M. Government Girls College Bhilwara, Pin: - 311001 Rajasthan, India
2. Professor and Head Department of Botany, Government College Bundi, Pin: -323001, Rajasthan, India
Email: - dilipsharma85@gmail.com

An ancient anthropological practice with traditional intelligence in which natural habitats varying in size from a few square meters to a few kilometres are protected as sacred residences of local deities and sites for religious-cultural rituals by local communities is known as sacred area. Sacred areas are composed of sacred orans, sacred corridors, temple forest, sacred garden, smiriti van, creating grooves and even a single tree. The concept of a heritage plant is applying with any native species, at least 50 years old and is of historical, cultural, ecological and biological importance. Globally sacred areas are recognised as original gene pool for wild plants species and natural habitats recovery pools. Total 65 sacred places visited and 50 plant species have been identified as heritage plant sites in Jhalawar district. Currently these sites are facing various challenging issues like clear felling, mining, new construction activities, encroachment and other depletive factors like increasing pressure of livestock, anthropogenic activities and invasion of exotic species. The ideology behind this article is documentation, identification, and management of sacred areas with special reference to heritage plants. There is an urgent need of rethinking and reworking to maintain the integrity, stability and beauty of these plants. The paper not only highlight iconic biodiversity of these sites which can attracts more nature lovers and younger generations but also what challenges and threats are facing by these areas and factors responsible for it.

Keywords: - *Jhalawar, Biodiversity, Sustainable, Gene pool, heritage plants.*

Histopathological Changes in the Eye of *Channa Punctatus* Exposed to Aqueous Extract of *Euphorbia tirucalli* Plant Latex

Sonal Singh, Anand Pratap Singh and Satyadev Sharma, Achint Verma

Department of zoology, Agra college, Agra

E-mail: drsonal.aca@gmail.com

This study was to investigate the histopathological changes in the eye of snake headed Murrail, *Channa punctatus* exposed to aqueous extract of *Euphorbia tirucalli* plant latex. Fishes were exposed to two different sub lethal concentrations (20% and 40% of 30h-LC₅₀) of freshly prepared aqueous extract of *Euphorbia tirucalli* plant latex for 5 days and 10 days' exposure time as well as in control group. In 20% of 30h-LC₅₀ sub-lethal concentration experimental groups eye showed changes within the cornea, sclera and in the spherical lens. hemocytes were observed within the cornea, sclera damaged at various places and reticular cell layer filled with cellular debris and in 40% of 30h-LC₅₀ sub-lethal concentrations experimental groups eye showed severe damage occur in cornea and sclera. lens was fragmented, annular and suspensory ligaments as well as retractor muscle were ruptured. Vacuolization also occurred within eye tissues. These observations were increased with increase the sub-lethal concentrations as well as the exposure time of aqueous extract of *Euphorbia tirucalli* plant latex. The histopathological changes in the eye were both dose and time dependent. For recovery, experimental fishes were transferred to normal water and kept for 7 days. After 7 days of withdrawal period, eye of fish recovered significantly. This study reflects that the changes observed in the eye of *Channa punctatus* was due to aqueous extract of *Euphorbia tirucalli* plant latex.

Keywords: *Histopathology, Eye, Aqueous extract, Euphorbia tirucalli, Channa punctatus.*

Studies on Angiospermic Diversity of JDB Govt. Girls College Campus Kota, Rajasthan

Mamta Choudhary

Assistant Professor, JDB Govt. Girls College, Kota

mamtachoudharyishu@gmail.com

Educational and Government Institutions are important premises for protection and conservation of the local and endangered plants. During 2022-23 an exploratory survey of JDB Govt Girls College Campus done. A Total of 123 plant species under various families have been recorded. Fabaceae is found to be dominant family having highest number of plant Species. The present study deals with plant diversity of Angiosperms found in the campus of JDB Govt Girls College Campus, Kota Rajasthan.

Key words: Plant diversity, Dominant, conservation.

Environmental Conservation vs. Economic Growth

Dr. Sarita Singh

Associate Professor (Economics), M.S.J. Govt PG College Bharatpur,
Rajasthan

saritasinghmsj@gmail.com

The conflict between environmental conservation and economic growth is an important issue for modern societies. The core of this conflict is that while economic growth is essential for the prosperity of nations and improving the living standards of people, uncontrolled growth can have a profound impact on the environment. Increasing population, industrialization, urbanization, and development of technology have led to excessive use of natural resources and negative impact on the environment. The main objective of environmental conservation is to maintain life on earth and ensure proper use of natural resources. The impact of environmental degradation is widespread and intense, including climate change, loss of biodiversity, air and water pollution, and soil erosion. These problems directly impact human life, causing health problems, food insecurity, and reduced quality of life. In this article, we will try to understand how a balance can be maintained between environmental conservation and economic growth and what steps should be taken for this.

Key words - environmental conservation, economic growth, industrialization, urbanization, climate change.

Natural Farming in India: A Pathway to Mitigating Environmental Health Hazards and Enhancing Agricultural Sustainability

Deekshaa Meena

Assistant Professor, SPCGC Ajmer

deekshaa93@gmail.com

In India, conventional farming practices have led to serious environmental health hazards, including soil degradation, water pollution, and excessive chemical residue in food. These issues contribute to declining public health and environmental resilience, calling for urgent sustainable solutions in agriculture. This paper explores the potential of natural farming practices in India, such as zero-budget natural farming (ZBNF) and agroecology, as effective strategies to mitigate these risks while promoting ecological and economic sustainability. Through case studies across Indian states like Andhra Pradesh, Himachal Pradesh, and Maharashtra, this research evaluates the effectiveness of natural farming in reducing chemical dependencies, improving soil fertility, and fostering biodiversity.

Our findings indicate that natural farming methods not only reduce pollutants and restore soil health but also offer considerable socioeconomic benefits to smallholder farmers by lowering input costs and enhancing market value. Moreover, these practices contribute to climate resilience by increasing carbon sequestration and enabling farmers to better cope with erratic weather patterns and droughts. Additionally, the study addresses systemic challenges in scaling natural farming, including limited policy support, inadequate training resources, and the need for awareness-building among rural communities. Recognizing the barriers, this paper highlights the critical role of government incentives, educational programs, and farmer cooperatives in facilitating the transition to sustainable farming practices. This research concludes that, with the right support, natural farming can serve as a transformative pathway toward agricultural sustainability in India, effectively reducing health risks and supporting national and global environmental goals.

Assessing Pteridophytes as Bioindicators for Ecosystem Health and Sustainability in the Hadoti Plateau, Rajasthan, India

Noopur Soni¹ and Prof. Pratima Shrivastava²

1 Research Scholar, Department of Botany, Government College, Kota

2 Principal, Department of Botany, Government College, Kota

Email id: noopur9943@gmail.com

Pteridophytes, an ancient group of vascular plants, play a pivotal role in maintaining ecological balance and supporting environmental sustainability. This study investigates the role of Pteridophytes as bio indicators in the Hadoti region of Rajasthan, India, focusing on their potential to reflect environmental health and sustainability. The Hadoti plateau, characterized by a diverse ecosystem and varying climatic conditions, is suitable for Pteridophytic flora, making it an ideal location to explore these plants' responses to environmental stressors. In the Hadoti region, field studies were carried out in a variety of habitats, including both naturally occurring and human-impacted sites. We discovered particular species that are especially sensitive to elements like soil quality, moisture content, and air purity by documenting the diversity, distribution of Pteridophyte species and examining how they react to environmental variables. Species such as *Marsilea* demonstrated considerable sensitivity to changes in water availability and habitat quality, indicating their utility as reliable bio indicators. Our research highlights how Pteridophytes might be used as markers to evaluate the health of ecosystems, especially in areas where pollution and habitat destruction are problems. The integration of Pteridophyte into regional environmental monitoring initiatives is also recommended by this study, as it may help guide conservation plans for long-term ecosystem management.

Key words: *Pteridophytes, Bioindicators, Environmental sustainability, Ecosystem health, Conservation.*

Orthoptera Population Dynamics: Differences Between Outbreak and Non-Outbreak Species

Monika Bharti¹, Dr. Smriti Johari²

Research scholar¹ and Professor², Department of Zoology, Janki Devi Bajaj
Government Girls College Kota, Rajasthan, India

Corresponding Author: - smritiparesh@gmail.com

Understanding the dynamics of orthoptera population is critical for predicting and managing the impacts of both outbreak and non-outbreak species. We look at how environmental conditions, such as habitat quality and climate, along with the presence of predators and human activities, affect population changes. By investigating the reproductive habits, movement patterns, and ability to withstand environmental challenges, we aim to identify what sets outbreak species apart from non-outbreak species. The finding provides insights into the complex interactions that shape orthoptera population, offering valuable information for managing these insects in both agricultural and natural settings. Additionally, we analyze the distinct ecological and behavioral traits that differentiate outbreak species from their non-outbreak counterparts, focusing on reproduction strategies, dispersal mechanisms and environmental stressors. By integrating ecological theory with data, this research aims to elucidate the underlying mechanism driving orthoptera population dynamics, providing a framework for effective management strategies.

Keywords: *Orthoptera, Habitat quality, Climate condition, Outbreak, Dynamics, Predators.*

CP-MLR/PLS Directed Quantitative Structure-Activity Relationship Study on The Histamine H₃ Receptor Binding Affinity: The Cyclohexylamine Based Series

Shahista Chuhann* and Brij Kishore Sharma

Department of Chemistry, Government College, Bundi-323 001, India

The histamine H₃ receptor binding affinities of cyclohexylamine derivatives has been analysed with the topological and molecular features from Dragon software. Analysis of the structural features in conjunction with the biological endpoints in combinatorial protocol in multiple linear regression (CP-MLR) led to the identification of 26 descriptors for modelling the activity. The study clearly suggested the role of atomic properties such as mass, electronegativity or charge content, polarizability, atomic van der Waals volume, average valence connectivity index chi-5 and absence of number of acceptor atoms for H-bonds (N, O, F) type functionality to optimise the histamine H₃ receptor binding affinity of titled compounds. The models developed and the participating descriptors advocate that the substituent groups of the cylohexylamine moiety hold scope for further modification in the optimization of the H₃ receptor binding affinity.

Analysis of these descriptors in partial least squares (PLS) highlighted their relative significance in modulating the biological response. The selected descriptors are enriched with information corresponding to the activity when compared to the remaining ones. Applicability domain analysis revealed that the suggested model matches the high quality parameters with good fitting power and the capability of assessing external data and all of the compounds was within the applicability domain of the proposed model and were evaluated correctly.

Keywords: QSAR, Histamine H₃ receptor, Binding affinity, Combinatorial protocol in multiple linear regression (CP-MLR) analysis, PLS, Dragon descriptors, Cyclohexylamine derivatives.

Economic and Business Strategies for Sustainability

Kanta Kumari Meena

Assistant Professor, Govt. College, Merta City

Email ID -kantameena08@gmail.com

In the face of escalating environmental challenges, the integration of sustainability into economic and business strategies has become paramount. This paper investigates effective approaches that organizations can adopt to balance economic growth with ecological responsibility. We explore the concept of the circular economy, emphasizing how businesses can redesign their operations to minimize waste and maximize resource efficiency. Additionally, we analyze green supply chain management as a means to reduce carbon footprints while enhancing supply chain resilience.

The study highlights sustainable product design as a crucial strategy, showcasing how innovation in materials and processes can lead to environmentally friendly products that meet consumer demand. By leveraging advanced technologies such as artificial intelligence and blockchain, companies can enhance transparency and accountability in their sustainability efforts.

Case studies of leading organizations illustrate the successful implementation of these strategies, revealing significant improvements in brand loyalty, operational efficiency, and profitability. Furthermore, we discuss the importance of stakeholder engagement and collaborative efforts across industries to foster a culture of sustainability.

Ultimately, this research posits that sustainability is not just a regulatory obligation but a strategic imperative that can drive long-term business success. As consumers increasingly prioritize environmental stewardship, businesses that proactively embrace sustainable practices will not only contribute to global efforts against climate change but also position themselves as leaders in their respective markets. The findings underscore that a commitment to sustainability can yield substantial economic benefits while ensuring the well-being of future generations.

Keywords- *Sustainability, Circular Economy, Green Supply Chain Management, Sustainable Product Design Environmental Impact, Economic Growth.*

Assessing the Influence of Fluoride Toxicity on Fish Health and Aquaculture Productivity

Kiran Bala, Dr. Rajesh Verma

1 Research Scholar, Department of Zoology, Veer Kunwar Singh University, Ara

2 Assistant Professor Department of Zoology, Veer Kunwar Singh University, Ara

Email id: kbala170@gmail.com

Fluoride contamination in aquatic ecosystems has emerged as a growing concern, with significant implications for fish health and overall aquaculture productivity. This seminar aims to explore the intricate relationship between fluoride toxicity and its detrimental effects on aquatic species, particularly in freshwater ecosystems. The rising levels of fluoride in water, primarily due to industrial effluents, agricultural runoff, and natural geological processes, can cause various physiological and biochemical disruptions in fish. Such disruptions can manifest in reduced growth rates, impaired reproductive health, altered metabolic functions, and increased susceptibility to diseases. Fish, being sensitive bioindicators of water quality, are significantly impacted by prolonged exposure to elevated fluoride concentrations. Fluoride accumulation in tissues can lead to skeletal deformities, altered gill function, and enzyme inhibition, all of which hinder the fish's ability to thrive in aquaculture environments. These health challenges directly impact aquaculture productivity, leading to economic losses, decreased fish yields, and compromised food security. This mechanisms of fluoride toxicity in fish species, the threshold levels for fluoride in aquaculture, and the potential solutions for mitigating these effects. Attention will be given to species-specific responses to fluoride, as well as the factors that influence the bioaccumulation and toxicity of fluoride, such as water temperature, pH levels, and fish size. The role of water management practices and regulatory standards in controlling fluoride pollution will be explored.

Keywords: Fluoride Toxicity, Fish Health, Bioaccumulation, Water Quality.

Renewable Energy

Vandana Ranga

Professor, Department of Physics

Samrat Prithviraj Chauhan Government College Ajmer

e-mail: a.vandana20@gmail.com

Technological and engineering solutions are pivotal in addressing environmental challenges, promoting sustainability, and mitigating the effects of climate change. Key innovations have emerged in renewable energy, pollution control, waste management, and resource efficiency. Renewable energy technologies like solar, wind, and hydropower are leading the transition away from fossil fuels, reducing greenhouse gas emissions. Advances in solar panels, such as increased efficiency and lower production costs, are making clean energy more accessible. In the realm of pollution control, technologies like carbon capture and storage are designed to trap carbon dioxide emissions from industrial processes and store them underground. This helps in reducing the carbon footprint of industries while maintaining productivity. Additionally, air and water filtration systems are becoming more sophisticated, removing contaminants more effectively and reducing harm to ecosystems.

Engineering innovations also extend to waste management, with the development of biodegradable materials and efficient recycling technologies. Circular economy principles, where waste is repurposed or reused, are gaining traction. For instance, plastic waste can now be converted into fuel or building materials through advanced chemical processes.

Lastly, precision agriculture leverages drones, sensors, and data analytics to optimize water usage and reduce pesticide application, promoting sustainable farming practices. Overall, the integration of technological and engineering solutions is crucial in creating a balance between development and environmental conservation, ensuring a more sustainable future.

Keywords: *Ecosystems, biodegradable, efficiency Greenhouse, fuel.*

Balancing Carbon Budget in Indian Cities

Kiran Choudhary¹ & Poonam Jaiswal²

^{1,2}Department of Botany, Janki Devi Bajaj Govt. Girls College, Kota

In India, 31% of India's population lived in cities that occupy only 3% of the nation's land area. Growing population in urban areas in India resulting in increased transportation demand, high energy consumption, industrial activities and vehicular emissions, which significant contribute to greenhouse gas emissions thus national carbon footprint. The rapid growth of urban areas is creating increasing difficulties in managing and reducing carbon emissions. Under such conditions, urgent strategies for balancing the carbon budget are necessary which can be achieved by approaches that involve transition to renewable energy, promotion of sustainable public transport and enhancing energy efficiency in building. Implementing green infrastructure like urban forests, development of parks, rooftop gardens and green belts, which improve air quality and help in carbon sequestration are urgent requirement. Furthermore, proper management of waste, emissions through recycling biogas generation and composting are also very significant role. The present investigation reviews the need of multi-sectorial efforts and strategic policies that addresses environmental and socio-economic challenges for achieving carbon naturally in Indian cities.

Key words: Carbon, greenhouse gases, urban green spaces, forest.

Plant Tissue Culture Use as Tool for Conservation of Plant Genetic Resources in Indian Arid Ecosystem

Dr. Deepika

Assistant Professor, Department of Botany
Government College, Luni, Jodhpur (Rajasthan) -342802
Email- deeplodha113@gmail.com

The Thar Desert (also known as the Great Indian Desert) is the world's ninth largest subtropical desert having a total area more than 259,000 km². It is a large arid region located in the north-western part of the Indian subcontinent and makes a natural boundary along the border between India and Pakistan. This desert region is characterized by its low relative humidity, extreme temperature, low rainfall (342 mm mean annual), and high evapo-transpiration, and high wind velocity (average 10.7 km/h). These variability's in the climatic, topographic and edaphic conditions offers natural circumstances for growth and evolution of diversity in plants, animals or microbes. These microbes, animals and plants lives variety's of abiotic and biotic stresses and have developed strategies to survive and hence bear important traits / genes that are important for biologists, geneticists or plant breeders (Shekhawat et al. 2012; Shekhawat et al. 2014). We all need nature for every breath, every bite of food and every drop of water. The natural forests are home to most of Earth's biodiversity and are of major importance in maintaining the ecological balance. Plant biodiversity has so far served as the feed stock for sustainable food and health security and can play a similar role in the development of climate resilient farming and livelihood system. Over exploitation, climate change and habitat fragmentation have posed a serious threat to biodiversity. Plant tissue culture belongs to the lower end of the agricultural biotechnology ladder. The in vitro systems provide ample opportunity to induce the cells to synthesize novel compounds by manipulating the growth conditions (Murthy et al. 2014). Plant tissue culture can be served as tool for biodiversity conservation in Indian arid ecosystem.

A Study of Causes of Environmental Health Hazards

Dr. Ajay Kumar Meena

Assistant Professor, Department of Chemistry

Government College Tonk

Email- meena.ajay00777@gmail.com

Environmental health hazards are factors in our surroundings that pose risks to human health and well-being. These hazards stem from various sources, including air, water, soil, and chemical pollutants, which are often intensified by human activities such as industrialization, urbanization, and deforestation. Air pollution from vehicle emissions, industrial discharge, and burning of fossil fuels is a leading cause, contributing to respiratory diseases and cardiovascular issues. Water contamination from agricultural runoff, sewage, and chemical spills can lead to waterborne diseases, including cholera and dysentery. Soil contamination, often due to improper waste disposal, industrial chemicals, and pesticide use, affects food safety and can cause chronic health problems. Furthermore, climate change exacerbates these hazards, increasing the frequency of extreme weather events, which contribute to the spread of infectious diseases and malnutrition. The accumulation of hazardous waste, deforestation, and habitat destruction further disrupt ecosystems, leading to long-term health effects. Addressing these environmental health hazards requires robust policies, technological innovations, and public awareness to mitigate their impact on human health.

Keywords: *Air pollution, Water contamination, Climate change, Industrialization, Environmental health hazards.*

**Light Trapping for Nocturnal Agricultural Insect Pest of
Brassica campestris Standing Crop Related to Abiotic Factors**

Achint Verma*

*Asstt. Professor, Deptt. of Zoology, Agra College, Agra (U.P.)

Email Id: achintverma20@gmail.com

Light trapping is often used to monitor nocturnal insect pests of field crops to issue forewarning to the farmers. The limitations in the light trapping are adequately corrected and data are properly analysed. Light trapping of insect pests may represent good prospect in predicting pest outbreak under IPM.

Light traps were operated between Oct. 2023 to March 2024 in the cultivated *Brassica campestris* field. The most common noctuid species were *Bagrada cruciferarum* of Hemiptera and *Athalia lugens proxima* of Hymenoptera from *Brassica campestris* field. *Bagrada cruciferatum* and *Athalia lugens proxima* were attracted more to light trap during month of October – November with the highest collection of 19774 on 44th standard week (2023) of *Bagrada cruciferarum*. *Athalis lugens proxima* 30982 on 44th standard week (2023). *Bagrada cruciferarum* attracted more in yellow light, it indicate that these pests can trapped better in light of wave length between 580 μ – 700 μ . *Athalia lugens proxima* attracted more in green colour light with a wave length between 510 μ - 570 μ . This experiment of monochromatic light supported by Yogi (1947), it shows that in monochromatic light source, the compound eye of nocturnal insect took different timing to become light adapted with references to various colours. *B. cruciferarum* (females) and *Athalia lugens proxima* (females) were caught more in traps. This indicate that most of the insect pest were attracted to the traps only after egg laying.

Key words: *Trapping, Nocturnal, Monochromatic.*

Nature-Inspired Solutions: Biomimetics and Natural Farming as Pathways to Environmental Sustainability

Maahi Singh

¹Department of Forestry, Wildlife & Environmental Sciences,
Guru Ghasidas Vishwavidyalaya Bilaspur, Chhattisgarh

* Corresponding Author's E-mail-maahisingh1306@gmail.com

Natural farming and biomimetics-inspired solutions are effective approaches to achieving environmental sustainability. The technique of mimicking nature's structures and functions has produced cutting-edge technology with minimal ecological impact and maximum resource efficiency. For instance, breakthroughs like self-cleaning surfaces and energy-efficient building designs are inspired by natural systems, advancing sustainability in sectors such as engineering, architecture, and energy. Biomimetics provides resource-efficient solutions to human challenges while reducing environmental damage by examining nature's tactics. Likewise, natural farming prioritizes practices that support soil health, promote biodiversity, and enhance the resilience of agricultural ecosystems. Practices like crop diversification, permaculture, and the use of natural insect predators reduce reliance on hazardous chemical inputs and fortify ecosystems against degradation and climate change. Natural farming offers a sustainable method of agriculture that boosts output without harming the environment by working with natural systems. The combination of biomimetics and natural farming provides a comprehensive and regenerative strategy for environmental sustainability. These nature-inspired solutions not only help restore damaged ecosystems but also address food security demands of a growing population. By appreciating and applying the principles found in natural systems, these methods offer innovative solutions that prioritize long-term ecological health. Promoting the integration of biomimetics and natural farming can lead to a more sustainable future where human and ecological needs are met harmoniously.

Keywords: *Biomimetics, Natural farming, Environmental sustainability, Resource efficiency, Biodiversity.*

Navigating Governance in the Climate Crisis: The Role of Global Partnerships in Environmental Innovation and Sustainability

Manju

Assistant Professor, Department of Political Science

SSSS Government College, Bidasar, Churu

Email id- mimansharathi1@gmail.com

As the climate crisis escalates, traditional governance structures face increasing challenges in balancing economic development, environmental protection, and social equity. This paper examines how global partnerships can serve as integrative frameworks for advancing environmental sustainability through innovative governance approaches. Drawing on case studies from multilateral institutions, public-private partnerships, and cross-national agreements, the research highlights how collaborative initiatives enable resource pooling, knowledge exchange, and coordinated action on a global scale. The findings emphasize the critical need for adaptable and inclusive governance models that bridge national policies and international frameworks, especially in addressing cross-border environmental issues such as carbon emissions, biodiversity loss, and resource depletion. Key insights reveal how regulatory innovations, such as market-based incentives, cooperative R&D initiatives, and green finance, drive practical outcomes and encourage stakeholder alignment across sectors. This study ultimately advocates for a hybrid approach to environmental governance, one that leverages the strengths of multilateral diplomacy and grassroots advocacy to foster scalable and sustainable environmental solutions worldwide.

Keywords: *climate, sustainable, environmental, public-private partnerships, governance.*

Effects of Microclimate on Pearl millet genotypes grown under different dates of sowing under semi-arid regions of Haryana

Harshana¹, Anil Kumar² and Chander Shekhar²

¹RA, Agro Advisory Services Unit, Meteorological Centre, Bhopal, IMD

²Department of Agricultural Meteorology, CCS HAU Hisar

Corresponding author email id: marwalharshana7@gmail.com

The field experiment was conducted during kharif season of 2020 and 2021 to study the microclimate over pearl millet genotype viz., V₁-GHB 558, V₂-HHB-67 Improved and V₃-HHB-272 at different phenological stages, sown under different growing environments, viz. D₁- 2nd fortnight of June, D₂- 1st fortnight of July, and D₃- 2nd Fortnight of July. The results revealed that among different treatments, D₁ sowing date and V₃ variety of pearl millet absorbed more PAR at booting phase during both crop seasons. Reflection of radiation decreased from tillering to anthesis and then it increased upto physiological maturity in all growing environments. The fraction of absorbed radiation increased till the crop attained maximum LAI and then it declined towards physiological maturity. The transmitted radiation decreased till anthesis and then it increased towards physiological maturity. The highest PAR observations were recorded in D₁ sown crop. Among genotypes, highest PAR observations were recorded in V₁ (GHB 558) at different crop growth intervals during both crop seasons. Inclination of temperature profiles were more at crop maturity than those for other crop growth stages. The profiles of relative humidity were lapse inside the canopy of crop throughout the day but near iso-humic profiles were seen at 9:00 hours in all treatments. The profiles of relative humidity were lapse inside the canopy of crop throughout the day but near iso-humic profiles were seen at 9:00 hours in all treatments during both the crop seasons.

Keywords: *Kharif, Pearl millet, Phenological stages, Microclimate, Growing environment.*

Millets for Environment and Human Health

Dr. Sunita Swami

Assistant Professor, Department of Botany

Government Dungar College, Bikaner

Email address- swamisunita29@gmail.com

Millets are small seeded food crops belonging to the family Poaceae. These crops consists several species of pearl millet (*Pennisetum glaucum*), foxtail millet (*Setaria italica*), finger millets (*Eleusine coracana*), kodo millet (*Paspalum setaceum*), little millet (*Panicum sumatrense*), and barnyard millet (*Echinochloa utilis*). They are widely distributed in marginal lands in dry areas around the world. Millets are generally more tolerant of poor soils and drought. They can survive without fertilizer and pesticides. Their roots can control soil erosion and desertification. Millets have many dietary elements like phenolics, tannins, carotenoids and flavonoids. They have a low glycemic index and gluten free and strong antioxidant. They are lower in carbohydrate and higher levels of protein, fibre and minerals like calcium, magnesium, phosphorus and iron and vitamins. Dietary fibres, plant protease inhibitors, bioactive peptides present in millets have the capacity to induce apoptosis, inhibit cell proliferation, and interact with microbiota leading to potential anticancer effects.

Key Words- Millet, cancer, dietary, protease, proliferation.

Natural farming for better environment

Prof. Parmeshwari Bagra

Government Girls of College Dausa

parmeshwari.bagra@gmail.com

Environmental health hazards, ranging from chemical pollution to soil degradation and climate change, pose significant risks to human health and ecosystems. The increased use of synthetic pesticides, fertilizers, and intensive farming methods contributes to the contamination of soil, water, and air, impacting biodiversity and leading to long-term health effects in human populations. Natural farming, a sustainable agricultural practice that emphasizes minimal human intervention and reliance on ecological cycles, offers a promising solution to these hazards. By avoiding synthetic chemicals and focusing on enhancing soil health through organic matter, natural farming reduces environmental toxins and fosters resilience against climate challenges. This approach supports healthier ecosystems, promotes biodiversity, and helps in restoring natural balance, which in turn mitigates health risks associated with traditional farming practices. Adopting natural farming as a mainstream practice could reduce environmental health hazards significantly and contribute to a healthier, more sustainable future.

Science, Technology and Innovation for Sustainable Development

Neeraj Meena

Assistant Professor (Physics)

Government Girls PG College, Dausa

Email.id: nmphysicsdu@gmail.com

Science, technology and innovation are essential drivers of sustainable and inclusive development. It is therefore crucial that science, technology and innovation initiatives address all aspects of sustainable development — economic, social and environmental — and their interrelationships, since technological choices can have negative impacts on the social and environmental dimensions of sustainable development. It is equally important that knowledge systems be constructed broadly to include the cultural, social and institutional dimensions in which they operate. The role of government in building science, technology and innovation capabilities is fundamental, including in stimulating the development of systems that will foster the acquisition, development and dissemination of knowledge at the national level. This includes the promotion of education, research, development and technological dissemination, as well as the design and implementation of nationally appropriate industrial policies. Moreover, the international community should review the extent to which the international trade and investment regimes can guarantee adequate policy space for national Governments in this area.

Key words: *Science & Technology, innovation, environmental, Sustainable, Research development.*

Chronic Fluorosis: Understanding Its Impact on Bone Health and Skeletal Disorders

Nehal Kumar, Dr. Rajesh Verma

Research Scholar, Department of Zoology, Veer Kunwar Singh University,
Ara

Assistant Professor, Department of Zoology, Veer Kunwar Singh University,
Ara

Email id: nehalkumar95@gmail.com

Chronic fluorosis, caused by prolonged exposure to excessive fluoride levels, has emerged as a significant public health concern, particularly in regions with high fluoride concentrations in drinking water and food sources. This condition primarily affects bone health, leading to a range of skeletal disorders such as osteosclerosis, osteomalacia, and osteoporosis. Fluoride accumulates in bones over time, altering their structural integrity and density, which can result in pain, stiffness, and increased fracture risks. The impact of chronic fluorosis on skeletal development is particularly pronounced in children, who are more vulnerable due to their developing skeletal systems. Additionally, the toxic effects of fluoride extend to joint mobility and muscle strength, exacerbating disability in affected populations. While fluoride is essential in small quantities for dental health, excessive exposure disrupts bone remodeling processes, posing long-term health risks. This review explores the biochemical mechanisms of fluoride toxicity in bone tissue, the clinical manifestations of skeletal fluorosis, and potential preventive measures to mitigate its impact on bone health. Understanding these effects is crucial for developing strategies to manage and prevent chronic fluorosis in endemic regions.

Keywords: *Chronic fluorosis, skeletal disorders, bone health, fluoride toxicity.*

Carbon Credits: A Sustainable Commodity

Nisha Meena

Asst. Professor-ABST, Govt. College Deoli (Tonk-Raj.)

Email: nishasattu@gmail.com

Climate change, global warming, and weather variations are more than simply platitudes; they are now the most talked-about topics worldwide. Environmental issues are getting worse as a result of increased human activity. The average global temperature has risen by 2.45 degrees Fahrenheit from the pre-industrial era (1850-1900). Last ten years has been recorded as the warmest years (NASA Climate Science). To handle the situation concerned countries organised a meet in Tokyo (Japan) and Kyoto Protocol got formed with three effective mechanisms viz., Joint Implementation (JI), Clean Development Mechanism (CDM) and Emission Trading (ET). Kyoto Protocol was implemented with main objective of environment protection by setting limits over carbon emission by manufacturing entities of the signatory countries.

Companies which emit less than their allowed limit of emission, earns 'Carbon Credits' for the saved emission limit which are treated as 'tradeable commodity' and generates revenue in international market on selling. One carbon credit is equal to one tonne of carbon di oxide. Companies emitting less than their limits can earn 'Carbon Credits' which are tradeable in international market just like any other commodity. This serves dual purpose of saving environment along with monetary benefit from it. India is second largest country after China in registering CDM Projects with UNFCC. These certificates are tradeable in international market. Such markets where carbon credits are bought and sold are known as 'Carbon Market'.

Keywords: *Global Warming, Carbon Emission, Sustainable Development, Carbon Credit, Carbon Market.*

A Preliminary Study on Potential of NTFP'S in Rural Livelihoods

Kiran Rathore¹, Jhanvi Nagpal², Manisha Sharma³

Department of Zoology
JDB Govt. Girls college, Kota

The present study was conducted to explore and document the non-timber forest products (NTFPs) in Talwas and Jetpur villages located in the vicinity of Bundi city, Rajasthan. Field data was collected by observations and interviewing the inhabitants of the region. The results revealed that only a few species of non-timber forest products (NTFPs) were harvested and traded by people in the study area which served as food, fire wood, as fodder, construction material while some were used as medicines. The study showed that the average share of NTFPs in total household income in the region was about one fourth, while three fourth of house hold income was derived from other sources. In areas, where the period of NTFP collection coincided with the period of farming activities and fodder harvesting, it was found that employment in other activities substantially reduced the importance of NTFPs income in total household income. The study suggests that owing to growing demand across the world for foods which are in some sense 'authentic' meaning they are 'natural', 'healthy' and 'pure', NTFPs can offer a sustainable and viable pathway for enhancing rural livelihoods, contribute in poverty alleviation, environmental conservation, and social empowerment. For NTFPs to reach their full potential, there is a need for supportive policies, improved market linkages, sustainable harvesting practices, and investments in local capacity building.

Assessment of Aquatic Toxicity Based on Dichlorvos Intoxication in *Channa punctatus* (Bloch.) and Remedial Effect of Vitamin E

Rajani and Suman Kapoor

Department of Zoology, Agra College, Agra

Environmental pollution refers to the contamination of the natural environment by harmful substances, affecting air, water, and land quality. One major concern is aquatic toxicity, which occurs when pollutants such as heavy metals, chemicals, and plastics enter water bodies, harming marine life. Industrial waste, agricultural runoff, and improper waste disposal are significant contributors to this toxicity. Dichlorvos, an organophosphate insecticide, is highly toxic to fish. It disrupts the nervous system by inhibiting acetylcholinesterase, an enzyme crucial for nerve function. Even at low concentrations, dichlorvos can cause behavioral changes, respiratory distress, and mortality in fish, making it a significant threat to aquatic ecosystems. Dichlorvos exposure in fish can lead to liver toxicity, impairing vital functions like detoxification and metabolism. It causes oxidative stress, cellular damage, and enzyme disruption in the liver, leading to hepatocellular degeneration. Prolonged exposure may result in liver failure, affecting overall fish health and survival in polluted aquatic environments. In present study effect of pesticide dichlorvos has been observed on liver marker enzymes viz- alkaline phosphatase, aspartate transaminase and alanine transaminase for 7, 14, 21 and 28 days and found significantly elevated levels of these enzymes due to free radical production by toxic effect of dichlorvos. Further supplementation of antioxidant vitamin E reduces this toxicity by protective action and levels comes to almost normal in treatment duration. In support of present work, Kumar *et al.* (2012) studied alterations in liver parameters in freshwater fish *Clarias batrachus*, exposed to a commercial-grade lambda-cyhalothrin.

Key words: *Environmental contamination, Aquatic toxicity, Channa punctatus (Bloch.).*

**Study on Impact of Some Biochemical Parameters of Kidney
After Intoxication of Dichlorvos in *Channa punctatus*
(BLOCH.) with Vitamin E**

Rajani*, Professor Suman Kapoor

Department of Zoology, Agra College

Dr. Bhimrao Ambedkar University, Agra 282002 (U.P.) India

E-mail: rajaniyadavup@gmail.com

For the control of pests, the pesticides are used since about 1850. Now-a-days due to advancement of technologies and requirement of huge amount of grains, the use of pesticides increased on large scale. These chemicals when enters in food chain then they create most dangerous effects to human beings as well as other animals like fishes, reptiles and aves etc. The fish "*Channa punctatus (Bloch)*" are the most sensitive of all aquatic animals towards such pollutant while passing through the river receiving wastes from adjoining human settlement and industries. The fish easily gets its tissues, damage due to water pollutants. The number of workers has been studied on several aspects of toxicity of pollutants on the kidney and kidney of fishes but studies on the effect of dichlorvos toxicity of kidney of *Channa punctatus (Bloch)* is so meagre. So therefore this study is needed. Present investigation carried on *Channa punctatus (Bloch)* under the stress of an organophosphorus intoxicant, dichlorvos, on kidney biochemical parameters viz. Glycogen, total lipid, protein, acid phosphatase and alkaline phosphatase. *Channa punctatus (Bloch.)* exposed to sub lethal concentration of various periods upto 96 hours at 100 ppm, 200 ppm and 300 ppm. The decrease in the kidney total glycogen may be due to the increased rate of glycogenolysis or due to the decreased rate of glycogenesis.

Keywords: *Glycogen, total lipid, Dichlorvos, alkaline Phosphatase, acid phosphatase).*

Global Challenges and Local Solutions

Mr. Rajesh Kumar Meena

Assistant Professor, Govt. College Sumerpur

Email - rajeshmeena1610@gmail.com

Global challenges, such as climate change, inequality, and health crises, require innovative and localized solutions. These complex issues often manifest differently across regions, necessitating tailored approaches that leverage local knowledge and resources. Climate change, for example, disproportionately affects vulnerable communities. Local solutions, like community-led reforestation projects and sustainable agricultural practices, not only address environmental degradation but also empower residents, fostering resilience. Similarly, in urban settings, initiatives like urban farming and green infrastructure can mitigate the urban heat island effect and improve food security. Economic inequality, another pressing global challenge, can be tackled through local entrepreneurship and cooperative models. By supporting small businesses and fostering local economies, communities can create jobs and reduce dependency on external markets. Educational programs that focus on skill development further enhance local capacities, enabling residents to adapt to changing economic landscapes. Health crises, such as pandemics, highlight the importance of local health systems. Strengthening community health initiatives, promoting telemedicine, and facilitating access to healthcare resources can improve resilience against global health threats. Local responses, informed by cultural contexts and community needs, often prove more effective than one-size-fits-all solutions. Moreover, technology plays a crucial role in connecting local solutions to global networks. Digital platforms can facilitate knowledge sharing, enabling communities to learn from each other and replicate successful initiatives.

In conclusion, while global challenges require coordinated international efforts, the most effective responses often emerge from local actions. By empowering communities to address their specific issues, we can create a more sustainable and equitable world, demonstrating that local solutions are vital in the face of global adversity.

Environmental and Health Impacts of Air Pollution and Prevention

Dr. Ravindra Choudhary

Assistant professor, Government PG College, Jamvaramgharh, Jaipur

One of our era's greatest scourges is air pollution, on account not only of its impact on climate change but also its impact on public and individual health due to increasing morbidity and mortality. There are many pollutants that are major factors in disease in humans. Among them, Particulate Matter (PM), particles of variable but very small diameter, penetrate the respiratory system via inhalation, causing respiratory and cardiovascular diseases, reproductive and central nervous system dysfunctions, and cancer. Despite the fact that ozone in the stratosphere plays a protective role against ultraviolet irradiation, it is harmful when in high concentration at ground level, also affecting the respiratory and cardiovascular system. Human activities have an adverse effect on the environment by polluting the water we drink, the air we breathe, and the soil in which plants grow. Although the industrial revolution was a great success in terms of technology, society, and the provision of multiple services, it also introduced the production of huge quantities of pollutants emitted into the air that are harmful to human health.

Renewable fuel and clean energy production, Energy conservation and efficiency, Eco- friendly transportation, Green building are preventing activities regarding air pollution.

Keywords- *Morbidity, Cardiovascular, Pollutants, Conservation, Prevention.*

Reducing Environmental Health Risks through Natural Farming Practices

Aarti Gurjar

Assistant Professor, Department of Botany, Govt. Girls College, Baran
Email: aartiadhana.001@gmail.com

Conventional farming practices, including the extensive use of chemical pesticides, synthetic fertilizers, monoculture planting, and intensive land management, have created substantial environmental health hazards. These practices are responsible for soil degradation, water contamination, loss of biodiversity, and increased human exposure to toxic chemicals, which collectively pose severe risks to both ecosystems and human populations. Chemical runoff from fertilizers and pesticides leads to the eutrophication of water bodies, causing harmful algal blooms and the depletion of aquatic life. Moreover, the degradation of soil structure reduces its capacity to support plant growth, exacerbating food insecurity and environmental instability. This paper examines natural farming as a sustainable alternative to mitigate the detrimental impacts of conventional agriculture. Natural farming avoids synthetic chemicals in favor of organic inputs and regenerative techniques, such as composting, crop rotation, and agroforestry, which enhance soil health, reduce pollution, and promote biodiversity. By focusing on improving soil fertility, conserving water through rainwater harvesting, and minimizing external inputs, natural farming offers a holistic approach to agricultural production that is resilient to climate change and supports healthier ecosystems. Through an analysis of case studies and scientific literature, this research evaluates the potential of natural farming techniques in addressing global environmental health threats while improving public health outcomes. The findings suggest that a transition to natural farming practices could play a critical role in alleviating environmental degradation, improving food security, and enhancing the sustainability and resilience of global agricultural systems.

Keywords: *Conventional farming, Environmental health hazards, Natural farming, Ecosystem sustainability, Sustainable agriculture.*

Renewable Energy Adoption in Rajasthan: Challenges and Economic Benefits

Ravi Kumar Kumawat

Assistant Professor, Department of Business Administration, M.L.V. Govt.
College, Bhilwara, Rajasthan

Kkr19295@gmail.com

As Rajasthan emerges as a leader in renewable energy generation in India, the potential economic and environmental benefits of adopting renewable energy sources, particularly solar and wind, are substantial. This study explores the challenges and economic advantages associated with the adoption of renewable energy in Rajasthan, focusing on factors such as infrastructure development, investment opportunities, government policies, and regional climate conditions. Using data from policy reports, industry case studies, and stakeholder interviews, this research examines barriers to large-scale renewable energy implementation, including high initial costs, grid integration issues, and resource management constraints. The findings highlight the positive economic impacts of renewable energy on local employment, energy security, and sustainable economic growth, alongside potential solutions for overcoming identified challenges. Recommendations for policymakers and industry stakeholders are provided, emphasizing the need for supportive policies, financial incentives, and technological advancements to accelerate renewable energy adoption in the region. This study contributes to the understanding of renewable energy's role in sustainable economic development in Rajasthan and offers strategic insights for overcoming adoption barriers.

Keywords: *Renewable Energy, Economic Benefits, Challenges, Sustainability, Energy Security, Infrastructure Development.*

Role of Art in Sustainable Development of the Environment

Dr. Priyanka Verma

Assistant Professor-Drawing & Painting

Government Arts Girls College, Kota

Email – priyanka.kalapi@gmail.com

Art has the power to capture attention and connect with viewers on an emotional level. By portraying the beauty of nature, highlighting environmental issues, and demonstrating the consequences of human actions, art can effectively raise awareness of the urgent need for environmental protection. Artists can use their art to amplify the voices of environmental activists, indigenous communities, and other groups that are at the forefront of environmental conflicts. By highlighting these issues through their art, artists can help draw attention to and support sustainable development of the environment. By integrating artistic approaches into environmental problem-solving, artists can contribute to innovative thinking, encouraging new perspectives. Art can create empathy and foster a sense of connection between individuals and the natural world. When people are emotionally affected by art that depicts the impact of environmental degradation, they will be more likely to feel a personal interest in taking action to protect the environment and minimize further damage. Art can also challenge existing attitudes and encourage critical thinking about environmental issues. Artistic mediums such as paintings, sculptures and photos can depict the beauty of nature, the impact of human activities on the environment and the potential consequences of our actions. By telling stories visually through art, artists can create a powerful emotional connection with viewers and inspire them to consider their relationship with the natural world.

Keywords- Art, Environment, Sustainable development, Nature, Awareness.

Air Pollution and it's Control under Law

Dr. Sandeep Kumar Hudiwal

Assistant professor (Law),

Maa Ambe K.P. Sanghvi govt. Law college Sirohi, Rajasthan, India

Email id – sk.hudiwal1985@gmail.com

Air pollution has become a serious problem for the human community today. Any unnecessary change in the physical, chemical or biological properties of air which causes destruction or harm to human life or other living beings or our natural wealth is air pollution. Air pollution is caused by natural and human sources. Due to this, human health, trees, plants, animals and climate and weather are affected. Air pollution is a part of environmental pollution. Today's increasing industrial and technological development has given rise to air pollution. To prevent air pollution, the Government of India has enacted the Air Pollution (Prevention and Control) Act, 1981. The main objective of this Act is to protect human life from the effects of air pollution. This Act is in force from May 16, 1981. In this Act, provision has also been made regarding Central and State Boards for prevention and control of air pollution.

Key words - Air, Pollution, Human, Industries, Environmental.

Fluoride Contamination in Aquatic Ecosystems: Ecological Threats and Sustainability Issues

Sachin Kumar Akela, Dr. Rajesh Verma

Research Scholar Department of Zoology
Veer Kunwar Singh University, Ara
Assistant Professor Department of Zoology
Veer Kunwar Singh University, Ara
Email id: sachinkrakela86@gmail.com

Fluoride contamination in aquatic ecosystems has emerged as a pressing ecological threat, with far-reaching implications for environmental sustainability. As a naturally occurring element, fluoride is present in various water bodies, but its elevated levels, primarily due to anthropogenic activities, pose significant risks to aquatic life and human health. Industrial discharges, agricultural runoff, and improper waste management practices contribute to the excessive fluoride levels in rivers, lakes, and groundwater systems. These elevated fluoride concentrations disrupt the natural ecological balance, adversely affecting the physiology, reproduction, and survival of aquatic species. Fluoride accumulation in fish, invertebrates, and aquatic plants leads to biomagnification, impacting entire food webs and causing long-term ecological damage. Fluoride contamination compromises water quality, rendering it unsafe for human consumption and agricultural use, thus threatening local communities that depend on these water sources for their livelihood. The multifaceted ecological impacts of fluoride contamination on aquatic ecosystems and examines the sustainability challenges it presents. It will address the pathways through which fluoride enters aquatic environments, its bioaccumulation in different species, and the cascading effects on biodiversity and ecosystem functioning. Current mitigation strategies and policy frameworks aimed at reducing fluoride pollution and promoting sustainable water management practices. The role of innovative technologies, community engagement, and policy interventions in curbing fluoride contamination and ensuring the long-term health of aquatic ecosystems. By understanding the ecological and sustainability challenges posed by fluoride contamination, this seminar aims to foster awareness and inspire action toward preserving aquatic environments and protecting the biodiversity within.

Keywords: *Biodiversity, Aquatic Ecosystems, Ecological Threats, Sustainability.*

Toxic Impact of Fluoride Contamination in Water: Health Concerns and Applied Approaches

Saumya Rani, Dr. Rajesh Verma

Research Scholar, Department of Zoology, Veer Kunwar Singh University,
Ara

Assistant Professor, Department of Zoology
Veer Kunwar Singh University, Ara

Email id: soni.saumyarani.14@gmail.com

Fluoride contamination in water is fast becoming a public health issue globally, particularly in regions where the natural fluoride levels in the groundwater are beyond the acceptable limits. Although trace amounts of fluoride are good for oral health, excessive concentrations over time will lead to grave health effects. This seminar will take into account the potential toxicological effects of excess fluoride exposure and human health-related concerns such as dental and skeletal fluorosis, neurologic disorders, and disturbances in the reproductive system. The seminar will further focus on the mechanism as it underlies the toxic effects of fluoride exposure through interference with the disturbance in bone metabolism, enzyme activity, and endocrine functions leading to both short- and long-term health consequences. This issue requires a multifaceted approach that focuses on scientific, technological, and policy-based strategies. The discuss current applied approaches toward mitigation of fluoride contamination in drinking water, including techniques that can employ adsorption, ion exchange, membrane filtration, and other coagulation methods for fluoride removal. Policy intervention, public health awareness programs, and community-based initiatives are found to be an important dimension for reducing fluoride exposure. This would include experiences from regions in India and the world as a whole that have been affected by fluoride-to present case studies on what has been successful, and which haven't-and their challenges.

Keywords: Fluoride, Dental Fluorosis, Skeletal Fluorosis, Public Health.

Scientific Innovations for Environmental Sustainability

¹Shubham Janbandhu, ²Panchakarla Sedyaw, ³Priya Singh, ⁴Smruthi Hareendran

Department of Fisheries Resource Management, College of Fisheries Science, Kamdhenu University, Veraval-362265

Department of Fish Processing Technology, College of Fisheries, Ratnagiri, DBSSKKV-415629

Department of Aquaculture, College of Fisheries Science, Chaudhary Charan Singh Haryana Agricultural University, Hisar-125004

Faculty of Fisheries Science, Kerala University of Fisheries and Ocean Studies, Kochi-682506

Corresponding author: shubhamjanbandhu18@gmail.com

Because of world-wide environmental issues, e. g., pollution and species extinction due to the destruction of habitats in general as well as global phenomena like shortages with important resources or climate change resulting from a number anthropogenic interferences are highlighted various aspects related in unprecedented scientific challenges ranging towards sustainable environments. Cutting the release of greenhouse gases and dependence on unrenueable resources will need novel work in renewable solar, wind and biodiesel. Increased interest in the mitigation of atmospheric CO₂ concentrations makes carbon capture and sequestration an environmentally attractive way to lower the cost burden on any low- or zero-carbon transition. The circular economy model, biodegradable materials and sophisticated recycling systems are all intended to reduce the environmental burden of garbage (and waste water), landfill use and ocean pollution. To promote soil health, prevent environmental degradation and ensure efficient water use in the context of precision farming under sustainable agriculture-oriented practices; reduces tillage for "logistified" planning. Green chemistry and nanotechnology contribute by creating safer, eco-friendly materials and reducing the toxicity and waste associated with industrial processes. These interconnected advancements highlight the importance of scientific progress in developing scalable, integrated approaches to sustainability. Achieving long-term environmental goals will require not only technological innovations but also strong interdisciplinary collaboration, supportive legislative frameworks, and active public engagement. Together, these factors will foster the effective implementation and widespread acceptance of sustainable solutions, ultimately enhancing and balancing the global ecosystem.

Keywords: *Environmental issues, Innovation, Scientific.*

Fluoride Toxicity in Fish: Reproductive Effects and Biological Consequences

Shravani Verma, Dr. Rajesh Verma

Research Scholar Department of Zoology

Veer Kunwar Singh University, Ara

Assistant Professor Department of Zoology

Veer Kunwar Singh University, Ara

Email id: shravaniv30@gmail.com

Fluoride, a naturally occurring element, is widely present in aquatic ecosystems due to both natural processes and anthropogenic activities such as industrial discharge and agricultural runoff. While fluoride is an essential trace element in small amounts, its excessive concentrations in water bodies pose significant environmental threats, particularly to aquatic life. Among the affected organisms, fish populations are especially vulnerable to fluoride toxicity. This seminar explores the reproductive effects and biological consequences of fluoride exposure in fish, emphasizing its detrimental impact on both individual organisms and broader aquatic ecosystems. The reproductive system of fish is highly sensitive to chemical imbalances in their environment, and fluoride toxicity has been shown to disrupt hormonal regulation, impair gametogenesis, and reduce fertility. Studies reveal that elevated fluoride levels in water can lead to decreased sperm motility in male fish, altered oogenesis in females, and overall reproductive failure. These disruptions not only affect the population dynamics of fish species but also have cascading effects on the food chain, ultimately threatening biodiversity and ecosystem stability. To reproductive effects, fluoride exposure in fish leads to various physiological and biochemical changes. These include oxidative stress, enzyme inhibition, and impaired ion regulation, which weaken the immune system and increase vulnerability to diseases. To examine fluoride's impact on fish growth, development, and survival rates, further complicating the ecological balance. Fluoride-induced skeletal deformities, such as spinal curvatures and jaw malformations, are commonly observed, hindering fish mobility and their ability to escape predators or compete for resources.

Keywords: Fluoride, Reproduction, Toxicity, Ecosystem, Pollution.

**Diversity of Macrophytes in Puskhar Talab Complex-
Ramgarh Impact Crater (Geo-Heritage Site), Kishanganj
Baran Rajasthan, India**

Teena Kumari Meena, Savita Gupta & Mridula Khandelwal

Department of Botany, Government PG College Kota, Kota

E-mail: teenakumarimeena1996@gmail.com

The Ramgarh impact crater is now declared as Geo-heritage site of India (Govt of Rajasthan). After many evidence now it is clear that Ramgarh crater is an extra-terrestrial material (Asteroid) impact crater. Age of Ramgarh Impact crater is 165 million years old. Because meteors are indirect source of known earth interior, so crater study will be useful to know interior of earth. The vegetation of Ramgarh emphasize that the area is rich in biodiversity such as Bryophytes, Pteridophytes, Angiosperms. In crater there are two artificially dammed lakes, known as Puskhar Talab complex. Macrophytes in Puskhar Talab complex has namely *Isoetes*, *Ceratophyllum*, *Potamogeton*, *Lemna*, *Spirodella*, *Azolla*, *Nitella*.

Key words- *Impact crater, Macrophytes, Extra-terrestrial, Artificially dammed lakes.*

Green Synthesis of Al metal-based Nanoparticles

Sumit Yadav*¹, Dr. Seema Agrawal², Dr. Nitin Gupta³

¹Research Scholar, Department of Chemistry, Govt. College Kota, Rajasthan

²Professor, Department of Chemistry, Govt. College Kota, Rajasthan India

³Assistant Professor, Department of Chemistry, Govt. College Kota,
Rajasthan India

*Corresponding Author Email ID: sumityadav966@gmail.com

AlCl₃ was employed as the precursor, while the reducing and stabilizing agents were derived from *Azadirachta indica* leaf extract, a source rich in bioactive phytochemicals. The synthesis was carried out at room temperature, avoiding the need for toxic chemicals or high-energy inputs, aligning with sustainable practices in nanomaterials synthesis. The synthesized nanoparticles were characterized by SEM, which revealed a spherical morphology with particle sizes ranging from 20-50 nm. TEM further confirmed the size distribution, with most particles measuring approximately 30 nm in diameter and displaying a uniform, smooth surface. EDS analysis confirmed the purity of the synthesized nanoparticles, showing prominent aluminum peaks with minimal impurities. The crystalline nature of the particles was corroborated by XRD analysis, with peaks corresponding to pure aluminum. FT-IR spectrum indicated the presence of biomolecules from the plant extract, suggesting they contributed to the reduction and stabilization processes.

Keywords: *Phytochemicals, Extract, Nanoparticles, Green synthesis, Azadirachta indica, Aluminum metal.*

Surface Gasses Effects on Environment

Dr. Dhanraj Meena

Assistant Professor (Physics), SCRS Govt. P.G. College,

Sawai Madhopur (Rajasthan)

Mail- dhanrajmeenasawai@gmail.com

Greenhouse gases in the Earth's atmosphere trap heat from the sun, causing the planet to warm and leading to climate change. The average temperature of the Earth has increased by 1.66 degrees Fahrenheit since 1880. Changing precipitation patterns Shifts in snow and rainfall patterns are occurring. More extreme weather Heatwaves and floods are becoming more common. Sea level rise Sea levels are rising. Some greenhouse gases are naturally occurring, but many are produced by human activities, such as Fluorinated greenhouse gases (F-gases). These gases have a high global warming potential, often thousands of times stronger than carbon dioxide (CO₂). They were originally introduced to replace ozone-depleting substances (ODS). These small particles are produced when fossil fuels are burned, and can also be produced naturally by forest fires and volcanoes. Climate change affects many aspects of the environment, including human health, agriculture, water resources, forests, wildlife, and coastal areas. The emissions we release today will impact us long into the future.

Sustainability of Environment and its Prospects

Anu Kumar Sharma¹ & Suman Lata Tripathi²

1. Professor- Zoology, Government Dungar College, Bikaner

2. Professor- Botany, Government Dungar College, Bikaner

dr.anusharma67@gmail.com

Environment sustainability is based on local economic, social, and environmental conditions. It is the responsibility to conserve natural resources and protect global ecosystems to support health and wellbeing. Environmental sustainability manages natural resources to fulfill current needs without compromising the ability of future generation. It aims to balance ecological, economic, and social goals. There are many causes of environmental problem such as population growth, wasteful and unsustainable resource use, poverty etc. As humans and ecosystems across the planet are suffering from the damaging impacts of climatic change, many individuals, communities, and organization worldwide are embracing environmental sustainability. These efforts will allow use to decarbonize our planet and conserve natural resources. The 3 Rs are the foundation of most waste minimization strategies. Reducing and reusing can help sustain the environment for future generation, reduce greenhouse gas emission, and reduce the amount of waste that needs to be recycled. Sustainable environment protection can be done by decrease air and water pollution from waste disposal, conserve materials for continuous reuse in making new products. Sustainability has three main aspects i.e. social, economic, and environmental. Environmental problem mainly includes climatic change and biodiversity loss. Sustainability preserves natural resources, protect wildlife and habitat, prevent environmental degradation, improve food security and sustainable agriculture.

Keywords: Sustainability, natural resources, climate, biodiversity.

Limnological Studies on the Chandrasarovar Pond of Jhalawar, Rajasthan

Dr. Rajendra Singh Rajawat¹, Dr. Chetan Kumar Joshi², Veena Saini³

1. Assistant Professor, Department of Zoology,
Government College, Kota (Raj.)
2. Associate Professor, Department of Zoology,
Government Science College, Sikar (Raj.)
3. Research Scholar, Department of Zoology,
Government College, Kota (Raj.)
Email- mvkumkum1984@gmail.com

Aquatic ecosystems not only serve direct purposes but also offer many essential benefits to human populations, making them one of the most productive ecosystems. However, industrialization and intensive farming to support the growing human population have resulted in the excessive exploitation of nearly all water bodies. To protect these vital resources from further degradation, it is crucial to conduct regular monitoring of aquatic systems. The present study is concentrated on Chandra Sarovar Pond which is an important water body situated in Jhalawar city (headquarters district Jhalawar, Rajasthan). The geographic location of Jhalawar is 24.62°N 76.15°E, at an average altitude of 312 meters (1023 feet). The climate of the area is hot and humid, typical of the Indo-Gangetic plain. Chandra Sarovar Pond, located in Jhalawar, Rajasthan, is a historical and scenic water body with significant cultural and religious importance. It serves as a hub for religious rituals, especially during festivals. Surrounding the pond are temples and historical structures, adding to its cultural value. The present investigation involved physical factors like water temperature, pH of water and visibility of water and chemical factors like dissolved oxygen, free carbon dioxide, chlorine content, hardness, phosphates, nitrates, COD, BOD and primary productivity. In biological investigation plankton estimation was conducted. Human activities around the pond, such as religious events and agriculture, contribute to nutrient inflow (e.g., nitrates and phosphates), potentially causing eutrophication, which degrades water quality.

Key words: - *Limnological study, physico-chemical, biological parameters, eutrophication.*

Vegetation Analysis in Mukundara Hills Tiger Reserve Using Remote Sensing & GIS

Ms. Aayushi Jain¹, Dr. Ajay Vikram Singh Chandela²

¹Research Scholar, Department of Geography, Government Arts College, Kota

²Professor, JDB Girls College, Kota

aayushi1402jain@gmail.com

This research paper is related to 15th sustainable development goal, that is “*Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss*”. To achieve its target 15.2, ‘promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally’, I suggest a technique here to analyse the vegetation. Vegetation is very important for the balance of life on the earth but monitoring of it is much more difficult than planting trees. It is difficult to manually detect felling of trees in vast forest areas, health of vegetation and to monitor the impact of natural disasters like forest fires, earthquake etc. quickly and in a short time. But remote sensing and GIS techniques have made this easier. Now we are able to obtain images of the entire earth from time to time through satellite imagery. Therefore, analysis is possible through their comparative study. Mukundara Hills Tiger Reserve is the study area of this research paper. It is located in South Eastern Rajasthan. Having area of approx. 1135 square kilometres, tiger reserve is spread over four districts of Rajasthan; Kota, Bundi, Chittorgarh and Jhalawar. It is located between 24°18’ to 25°44’ north latitude and 75°17’ to 76°16’ east longitude. The entire area could not be analyzed manually in the short time required for research work. Therefore, remote sensing & GIS technology has been used to analysis health and density of vegetation in this research work. Here the comparative study of vegetation has been done by using Sentinel 2 satellite data.

Keywords: SDG 15, Mukundara Hills Tiger Reserve, Vegetation analysis, NDVI, Remote Sensing & GIS.

**Natural regeneration status of *Diospyros melanoxylon* Roxb.
in the Jhalawar forest division of Rajasthan**

Vivechna Rajpoot¹ and Sulekha Joshi²

¹Ph. D. Scholar, Department of Botany, Government College, Kota-324001

²Professor, Department of Botany, Government College, Kota-324001

Email ID: vivisonyru2017@gmail.com

Diospyros melanoxylon Roxb commonly known as tendu Its leaves are used to wrappers of Bidi due to its texture, flexibility, agreeable flavour, resistance to decay and capacity to retain fire. It is the financial lifeline to forest department providing seasonal income and employment of the country. Due to recurrent harvesting of its leaves the species is threatened with extinction in the forest of India. Tendu tree is very slow growing due recurrent harvest of its leaves, with poor natural regeneration primarily due to low seed production and germination. Hence, the present study was undertaken to assess the natural regeneration status of this species. Four dominated microsites (Aklera, Asnawar, Jhalawar and Khanpur) of tendu forest were selected in the Jhalawar forest division of Rajasthan for the study. It was found that recruitment, unestablished and established of tendu species was found higher at Asnawar forest range followed by Khanpur forest range, but there is no sustainable regeneration in any of the four dominated microsite of Jhalawar forest division. Over-harvesting and other anthropogenic pressures were comparatively higher at all microsites, leading to poor regeneration. Associated species showed better recruitment and regeneration compared to tendu, which is attributed to the natural regeneration of tendu being hampered due to over-exploitation. The study suggests that there is an immediate need to protect tendu forests from harvesting of leaves, grazing and other destructive activities. Using efficient biotechnological tools, artificial regeneration of this species could be promoted in nurseries to produce healthy planting material on a large scale. Besides in-situ conservation and management, large-scale afforestation with the participation of local communities in protected forest areas, particularly in religious forests, is necessary.

Water Crisis and the Role of Water Harvesting in Managing Water Scarcity: A Case Study of Jaipur District

Abhilasha Saxena

Research Scholar, Department of Geography, Government Arts College,
Kota, University of Kota
abhilashasaxena1412@gmail.com

Jaipur is one of the most urbanized and populated districts in Rajasthan. The increasing population is putting a tremendous stress on the fast-depleting surface water resources in the region as a result the dependence on ground water has increased manifold. All the 15 blocks in Jaipur have come under the over exploited status. Agriculture sector is the biggest consumer of the ground water resources followed by the domestic and industrial sectors. The traditional water sources are now polluted or in poor conditions due to the negligence of the people and government. There is no perennial river in the region and small lakes like Mansagar lake, Maota lake, Sagar Lake, Galta lake are heavily polluted. In this light there is immense pressure on the ground water reserves. In the past few years there has been ample rainfall in Jaipur and this year we received copious rainfall. This necessitates the need for harnessing the surface run off so that the water stored can be used sustainably and efficiently for future usages. The study involves primary data from the various field visits undertaken in different blocks of Jaipur district to understand the major water problems and what mechanisms are undertaken to resolve the water crisis. There has been an active participation by the Government as the watershed department has undertaken the construction of several water harnessing structures in the region based on the local geology and geomorphology. The study will try to look into the role of different water harvesting techniques to mitigate the water crisis in the study region.

Keywords: Over exploited, perennial, water harvesting, mitigate.

Climate Change: A Global Challenge

Dr. Deave Lal Rojh

Assistant Professor Department of Hindi, S B D Govt. College, Sardar Sahar

Email devjirojho@gmail.com

In our ancient religion texts, nature has described the mother like a mother. The environment of human is dependent on nature and this is the reserves of its resources. India has been a country of diversity since ancient times. Our land is such that everything gives the land along with Anjal, so it is called a motherland. Our unity culture and its direct behavior. Our ancestors fought and sacrificed for the protection of this culture. Our life is becoming more dependent on physical resources in the modern era. Human adheres to the lap of this nature and your family's lal, But due to self-ignorance, scientific and technical information is stuck in the egoblh Goddess is harming the same nature and trying to survive for your selfishness, but the nature and the environment that we are getting a key role in living life is not trying to keep it alive. Green House Gases is affecting the climate, carbon dioxide gas generated by natural and human causes is mainly a factor of climate change change in addition to the climate changes in the climate of Nitrus Oxide Chloroflorocarbon etc. Modern In the era, the way human activities are increasing, the emissions of greenhouse gases are increasing and the global temperature is increasing, the prospect of climate change has started falling on animal husbandry and related enterprises.

We can not deny that the climate change is the biggest challenge in the global form and it has become the biggest requirement of the current time to deal with the figures show that¹⁹By the end of the century, the average temperature of the surface of the earth is almost^{1.62}Besides the degree of foreign country has increased, the sea water level is also increasing steadily, the effect of the society culture market forest and wildlife is also being clearly reflected clearly, in which the environment is being contaminated by climate change by climate change. Therefore, it is time to think seriously in the direction of climate change.

Antioxidative Effects of Plant Extracts in *In vitro* Model System

Prahalad K. Meena

Associate Professor, Department of Zoology, Government college,

Rawatbhata-323305

prahladmeena2008@gmail.com

Antioxidants are substances that prevent or repair the oxidative damage to cells and its constituents. They are effective in preventing damage to lipids, proteins and DNA in neurons not only in but in other cells. Neurons are constantly exposed to external and internal toxins in the brain. One of the common mechanisms of action of these neurotoxins is mediated by oxidative stress due to an excessive production of reactive oxygen species (ROS) and reactive nitrogen species (RNS). In this experiment the antioxidative properties of *Asparagus racemosus*, *Centella asiatica* and *Withania somnifera* extracts were assessed in cultured neuronal cells. Neuronal viability was determined by three morphological criteria, phase brightness, possession of at least one or more neuritis longer than the diameter of the cell body and granulation free neuritis. Viability assay was assessed by trypan blue staining and acridine orange plus ethidium bromide staining. These findings suggest that these plant extracts compensate oxidative damage by reducing the free radical concentration by themselves as well they also stimulate the natural free radical scavenging system of body. Flavonoids and other phytoestrogens in *A. racemosus*, withanolides in *W. somnifera* and asiaticoside in *C. asiatica* present in plant extracts bind and activate respective receptors on neurons.

Keywords:-Antioxidants, ROS, RNS, *Asparagus racemosus*, *Centella asiatica* and *Withania somnifera*.

Redox Behaviour and Voltammetric Determination of Melphalan, An Anti-Cancer Drug, at Glassy Carbon Electrode

Sachin Doi*

***Department of Chemistry, Government College Kota, Kota 324001, India**

E-mail: sachindoi2015@gmail.com

A simple, fast, sensitive and validated voltammetric method was developed to study redox behavior, electrode kinetics, redox mechanism and for determination of melphalan, an anticancer medication. Cyclic voltammetry (CV) and differential pulse voltammetry (DPV) techniques were performed for voltammetric studies of melphalan using glassy carbon electrode. A sharp oxidation peak was obtained in anodic direction at a potential of 0.78 V versus Ag/AgCl in Britton-Robinson (BR) buffer of pH 7.2. Absence of peak in reverse scan suggested the irreversible nature of oxidation process. Furthermore, under optimized conditions peak current linearly increased from 3.9×10^{-5} M to 1.39×10^{-4} M concentration of melphalan with the limit of detection (LOD) and limit of quantification (LOQ) 5.02×10^{-7} and 1.67×10^{-6} respectively. The developed method was successfully applied for the determination of drug in bulk, pharmaceutical formulation and in serum sample.

Education and Capacity Building for Sustainability

Dr. Devaki Meena

Assistant Professor, Department of Sociology S.P.C. Govt. College Ajmer
Rajasthan

Mail Id:- Devki230783.dm@gmail.com

Developing technical skills and knowledge, particularly in the area of environmental management, renewable energy technologies, and climate resilience, is crucial for both mitigating climate change and adapting to its inevitable impacts. This involves training individuals and communities, as well as strengthening institutional capabilities to develop and implement effective climate strategies. Moreover, capacity building is instrumental in achieving other SDGs, such as SDG 1 (No Poverty), SDG 3 (Good Health and Well-being), and SDG 5 (Gender Equality). By empowering communities with the skills and resources they need, capacity building fosters self-reliance and enables people to address the root causes of poverty, improve health outcomes, and promote gender equality and women's empowerment. Capacity building is not just an isolated objective within the SDGs but a fundamental strategy that underpins the entire framework. Its holistic approach ensures that efforts in one area support and reinforce progress in others, creating a more integrated and effective path towards sustainable development. It requires a concerted effort from various stakeholders, including governments, international organizations, the private sector, civil society, and local communities, to share knowledge, expertise, and resources. This collaborative approach is essential for building capacities that are sustainable, context-specific, and aligned with the diverse needs and challenges faced by different countries and communities.

Keywords:- Education, Capacity Building, SDGs, Sustainability, Abilities, Methodologies, Economic Growth, Opportunity.

Challenges and Opportunities of Environmental Education in India

Dr. Aruna Kumari, Dr. Sumit

Assistant Professor, Government Science College, Sikar, Rajasthan

Email: apayal88@gmail.com

Due to increasing human activities on environment, it is significant that they have serious consequences for future generations. Environment education has a noteworthy role in making the youth conscious about their environment, adopting green social behaviour and thus responding to the environment crises. Recognizing the importance and need of environment education, India has initiated several efforts including making the environment education compulsory at all level of education. Today when various environmental problems like as environmental pollution and climate changes are adversely affecting living beings, there is a need to reorient the curriculum of environment education for making it more attractive and responsive to the local environmental issues. Furthermore, related policies are also needed to be updated for sensitizing the people, especially school and college level students about the issues related to environment management.

***Keywords:** Environment education, Pollution, Climate change, Environment management.*

Environmental crisis, Government Policies and sustainable development in India

Asha Nagar

Associate Professor, Department of Political science, Govt.College Deoli
(Tonk) Rajasthan

At present we have entered an era which is full of high technology and modernization. We have been ahead in every step of development and profit, but another hand we are facing many problems and issues reacted to social economical political value crisis and environmental crisis. Recent decades the environmental crisis has become another factor which has made everyone in word to think it's gravity. Increasing population literacy urbanization shrinking of agriculture land certification and technology development and vanishing the forest, schedule changing the weather schedule melting Iceland are the some dangerous problems increasing by development. Due to all these environmental problems arising as a result of today's development, today the human species has reached the brink of destruction from where it seems impossible to return and save the universe. The effect of environmental crisis is raised by many national, international, local organizations, government, social groups and NGOs, but no such solution has yet come to the fore which is universally accepted. The Indian government has made many policies for environmental protection, but even in their presence, the expected improvement in environmental protection has not been seen yet. Sustainable development can become the best option to solve this problem if all the countries implement it properly. In international forums related to environmental issues, at present, sustainable development is being accepted as the only option that can save the creation that is being destroyed as a result of development. This sustainable development is based on the same ideas given by Gandhiji regarding the environment, which he himself declared years ago. Gandhi ji had told man to love nature, respect nature and not to do too much, and he also indicated about its ill effects. Not accepting sustainable development as an option to solve environmental problems by all the countries of the world on international forums and trying for this proves the relevance of Gandhiji's thoughts. In the blind race of development, man has dug a pit for his own destruction. If we do not wake up from sleep in time, then it is certain to fall in that pit

Keywords: -Environment, Nature, human species, Government Policies, Sustainable Development.

NEP 2020: A Current Scenario of the Education System in India

Dr. Shiv Kumar Meena

Professor in Public Administration, Govt. College Jamvaramgharh, Jaipur

Mail:- drshivkumarmeena@gmail.com

It is clear from the above description and points that the National Education Policy (NEP) 2020 is a big revolution in place of old policy ideas and education system which has been going on for 34 years. This policy presently shows the complete picture of the country's education system. The government has to strengthen the educational infrastructure to achieve each and every objective of the new education policy. The capital pool of the country will have to be increased by increasing foreign direct investment (FDI). Under this policy, a fine balance has been maintained between traditional and an interdisciplinary approach, which is a great need in the 21st century. The new National Education Policy NEP 2020 has taken care of the potential of our country's youth to improve their skills and all kinds of arrangements necessary to be globally competitive and employable have been taken care of. NEP, 2020 aim to increase the GER to 100% in preschool to secondary level by 2030 whereas GER in Higher Education including vocational education from 26.3% (2018) to 50% by 2035. The new National Education Policy (NEP) 2020, is a good policy as it aims at making the education system holistic, flexible, multidisciplinary, and aligned to the needs of the 21st century and the 2030 Sustainable Development Goals. The intent of policy seems to be ideal in many ways but it is the implementation that lies the key to success.

**Mobile Telephony, Rising Risk of Cancer and Human Semen
Profile: An Original Piece of Work**

Dr. Mukesh Kumar and * Dr. M.S. Srinivas+

+ Reproductive Biotechnology Laboratory, Deptt. of Zoology, M.S.J. (Govt. P.G.) College,, Bharatpur (Rajasthan) – 328001

* Caree Fertility Test Tube Centre, 324, RD Complex, 1st Cross, 8th Main Basaveshwara Nagar, III- State, Bangalore – 560079

+ Presenting Author

Email: prof.mukeshkumar@rediffmail.com

Present study was designed to assess the possible effects of mobile phone (Electro-magnetic-radiation) on human seminal profile. 80-human male volunteers attending our infertility Clinic were assessed for semen profile according to the WHO Method Manual (Parameters included: abstinence period, liquefaction time, colour, volume, viscosity, density, motility, debris and sperm abnormalities). Personal details of these human volunteers like – profession, cell phone placing (shirt pocket and belt pocket), talk time/day (approximately) and number of total years of mobile phone use were also recorded. Results of our study reveal that 55-human volunteers (out of 80) were in the state of oligospermia with increased sperm abnormalities. These volunteers used mobile phone 3- 11 hours/day for a period ranged 3-10 years. While 25 volunteers showed normospermic state and these volunteers used the mobile phone for 15 -45 min /day approximately and number of total years ranged 1 -3 year. Our study reflects the possible impact of mobile phone (electro-magnetic- radiation) on sperm characteristics which may be associated with use of mobile phone for longer duration alongwith other environmental factors, future studies are needed to confirm the effect of mobile phone on male reproductive system in order to ascertain its safety and formulate guidelines for mobile users.

Key Words: Mobile Phone, Human Semen Profile.

Role of Political System for Solutions of Water Pollution

Dr. Gayatri

SPC Government College, Ajmer

The political system can play a significant role in solving environmental pollution through a number of policies, laws, and initiatives etc. Global warming is increasing, and it is an issue we cannot turn a blind eye to. With climate change and global warming, our precious planet is starting to edge towards a water crisis. Our global population is increasing, putting demand on water availability, and because of this, we are seeing an increase in waterborne diseases due to our waters becoming polluted. Water pollution truly harms biodiversity and aquatic ecosystems. The toxic chemicals can change the color of water and increase the amount of minerals - also known as eutrophication - which has a bad impact on life in water. Thermal pollution, defined by a rise in the temperature of water bodies, contributes to global warming and causes serious hazards to water organisms. Water pollution has very negative effects on public health. A lot of diseases result from drinking or being in contact with contaminated water, such as diarrhea, cholera, typhoid, dysentery or skin infections. In zones where there is no available drinking water, the main risk is dehydration obviously.

Keywords: *Biodiversity, Global warming, Thermal pollution, Typhoid.*

Eco Tourism: Appreciation of Mother Nature

Dr. Rohini Maheshwari

Associate Professor, Government College Bundi

Ecotourism is a form of tourism responsible for exploration of natural areas, with holistic approach towards awareness of natural resources including local people ethical values. Bundi is a district surrounded by Aravalli hills, having step wells and unexplored forest.

Key Words: Holistic, Ethics.

Diversity of Fishes and It's Correlation with Environment

Ghanshyam Bairwa and Dr. Faiza Rifat

Department of Zoology, Apex University Jaipur

Mail I'd:- gbairwa9@gmail.com

One of the key concerns for enabling the sustainable use of natural resources is Biodiversity and its conservation. A most varied group of vertebrates occupied by Fishes and they are reliable indicator of water pollution. Human's activities are responsible for a continuous increasing loss of Biodiversity in aquatic ecosystems, which plays a vital role to produce detrimental impact on ecosystem functioning, services and resistance to future environmental change. Which may alter the development and behavior of fish population, alter the life cycles and productivity of fishes and reduce availability of fish stocks? With the change in ecosystems, the existence and number of species will fluctuate with or without human intervention and in that situation it's become necessary for safeguarding biodiversity. In some of the most biodiversity areas patterns and causes of aquatic biodiversity loss are poorly understood. This is concerning because a growing number of development projects, like hydropower dams, could have significant effects on the fish fauna of the associated river systems. Many of these areas are also among the most threatened aquatic system on Earth.

Keywords: Conservation; Environment; Fish Biodiversity; Management; Overfishing.

Arts and Communication for Environmental Advocacy

Pooja Meena

Assistant Professor, Government College Gangapur city

Arts and communication for environmental advocacy" refers to using artistic expression across various mediums like painting, photography, film, music, and performance art to raise awareness about environmental issues, inspire action, and promote positive behavior changes towards sustainability, often by conveying complex ecological concepts in a powerful and engaging way to a wider audience.

Raising awareness: Artistic creations can visually depict the impacts of environmental degradation, like polluted landscapes or endangered species, grabbing attention and sparking conversations about pressing issues. Emotional connection: Art has the ability to evoke strong emotions, allowing people to connect with the environmental crisis on a personal level, which can be more impactful than just presenting data. Storytelling: By incorporating narrative elements, artists can tell compelling stories about environmental challenges, highlighting individual experiences and the human connection to nature. Community engagement: Interactive art installations or participatory projects can encourage community involvement and foster a sense of collective responsibility towards environmental protection. Examples of art forms used in environmental advocacy: Visual arts: Paintings, sculptures, photography, and installations that depict environmental concerns. Performance art: Theatrical performances or body art that raise awareness about specific environmental issues. Film and video: Documentaries, short films, and animation that tell environmental stories with emotional impact. Music: Songs, compositions, and music videos that convey environmental messages. Street art: Murals and graffiti used in public spaces to communicate environmental messages to a wide audience. Benefits of using arts in environmental advocacy: Accessibility: Art can reach diverse audiences who might not engage with traditional environmental information. Cross-cultural communication: Visual art can transcend language barriers and connect with people from different backgrounds. Inspiring action: By triggering emotional responses, art can motivate people to take action and advocate for environmental change.

Effect of Micronutrient on Plants

Raghvendra Singh Nama* and Manjul Mishra

Deptt. of Chemistry, Apex University Jaipur (Rajasthan)

raghv_tonk@rediffmail.com

Micronutrients are essential plant nutrients that are present in small quantities which not only play a vital role in the growth and development of plants but also have a significant impact on the quality, yield and market value of crops. Their deficiency could potentially result in a decline in plant productivity. There are many reasons like soil erosion, long-term cropping of high-yielding varieties, use of mineral fertilizers instead of animal manure, Organic matter, soil texture, soil pH, management, climatic and spatial variability are the main reasons of micronutrient deficiency. Some important micro-nutrients Boron (B), Chloride (Cl), Copper (Cu), Iron (Fe), Manganese (Mn), Molybdenum (Mo), Nickel (Ni), Zinc (Zn), Phosphorus (P), Potassium (K), Selenium (Se), Sodium (Na). General symptoms their deficiency are: Mottled leaves, interveinal chlorosis, Interveinal chlorosis of young leaves, Discolouring of stem and leaves, Bronzing of leaves Stunted growth, Marginal scorching and cupping or rolling of leaves. Death of entire limbs or plants. Behavior and symptom identification is helpful in to take remedial or preventative action.

Key words: *Micronutrients, Deficiency, Productivity.*

Integrating Biophysics and Green Chemistry for Environmental Remediation: Cr-Substituted Co-Zn Ferrite

Ram Naresh Meena

Department of Physics, Govt. College Gangapur City

email: ramnareshmsc@gmail.com

It is very important to remediate the material coming out of our homes and industries which is increasing environmental pollution. Many methods are used for this. Bio physics and green chemistry is a very good approach. In this paper, nanoparticles like chromium substituted cobalt zinc ferrite can be used. We examine the synthesis, properties, and mechanisms that allow Cr-substituted Co-Zn ferrite to act as an efficient adsorbent and catalyst for the removal of pollutants from soil and water. By integrating biophysical methods with green chemistry principles, we propose a pathway for sustainable environmental cleanup using engineered ferrite materials.

Keywords: *Chromium, Green Chemistry, Environment, Sol-gel, Co-Zn Ferrite.*

Agroforestry System for Enhancing Environmental Sustainability

Rohit¹, Ram Surat Sharma² and Azaj Ansari³

¹Banda University of Agriculture and Technology Banda, (210001) Uttar Pradesh, India

²Acharya Narendra Deva University of Agriculture and Technology, Kumarganj, Ayodhya, (224229) Uttar Pradesh, India

³Rani Lakshmi Bai Central Agriculture University, Jhansi, (284003), Uttar Pradesh, India

*Corresponding author Email: rohitkumar7408182382@gmail.com

Agroforestry, combining agricultural crops with trees, is a promising approach to enhancing environmental sustainability. These systems can sequester between 0.2 to 3.1 tons of carbon per hectare per year, making it a valuable tool for climate change mitigation. By incorporating trees, agroforestry increases biodiversity and soil health; studies indicate a 20-30% improvement in soil organic matter compared to conventional agriculture, reducing reliance on chemical fertilizers and promoting natural nutrient cycling. This practice also plays a crucial role in water conservation; it reduces soil erosion by up to 50%, improves groundwater recharge, and minimizes surface runoff. In tropical regions, agroforestry has been shown to decrease crop failure rates by 15% due to enhanced microclimate regulation, such as temperature moderation and shade provision. Economically, agroforestry supports smallholder farmers by diversifying income sources from products like timber, fruit, and medicinal plants, reducing financial risk and contributing to poverty alleviation. Biodiversity gains are notable; agroforestry systems can host over 50% more native species than monoculture systems, supporting ecosystem resilience and food security through pollinator and natural predator conservation. As a holistic land management strategy, agroforestry aligns with sustainable development goals by promoting food security, biodiversity conservation, and climate resilience. Scaling up agroforestry through supportive policies and training can strengthen its role in achieving global environmental sustainability goals and enhancing community resilience in the face of climate change.

Keywords: Sustainability, Environment, Role, Agroforestry, Natural resources.

Ancient Strategies for Environmental Sustainability: Lessons for the Modern World

Dr. Sumitra Devi Sahu

Assistant Professor in Economics, Govt. College Bundi

Gmail-sahusumitra56@gmail.com

The modern world is experiencing unprecedented environmental crises. Climate change, resource depletion, deforestation, pollution and water scarcity are putting immense pressure on ecosystems and human societies. While technological advancements offer potential solutions, many ancient civilizations had developed environmental strategies that ensured long term sustainability. This paper explores various ancient strategies for environmental sustainability, examining how societies in regions like Mesopotamia, Egypt, India, and the Americas adopted methods to protect the environment. It highlights how traditional knowledge and resource management techniques can inspire sustainable practices today.

Keywords: *ancient civilizations, environmental sustainability, traditional knowledge, agriculture, resource management.*

Sustainability Encompasses

Sh. Rahul Bhargave

Assistant Professor-Business Administration, Govt College Gangapur city

Sustainability encompasses three elements; economic, social and environmental. Sustainable development aims to reduce impacts of all three elements. Currently, there are a number of tools for assessing products' sustainable impact and improving their performances. Life cycle assessment (LCA) is one of the more commonly used tools for such purpose. LCA is used for assessing environmental impacts associated with all the phases of a product's life from cradle-to-grave (raw material extraction, manufacturing, distribution, use, and end-of-life). Similar tools were developed to assess economic and social impacts, such as life cycle costing (LCC) and Social-LCA (S-LCA).

However, these tools compare products on the basis of shared functionality (A functional Unit), for example when comparing a pen and a pencil a functional unit that prescribes 'the drawing of a line 20km in length', will have to ignore other non-shared functions such as permanence, fragility, etc. As the corresponding shared functionality decreases, so the validity of any comparison becomes weaker, such as the comparison between a horse and a car as a mode of transport. Furthermore, while sustainability improvements can be achieved using these tools; they are generally limited to reducing the negative impacts and optimising efficiencies at each stage of the life cycle and ignore the potential benefits of increased functionality and positive benefits. This paper proposes that a fairer and more accurate assessment of a product would include its positive impacts 'value' at an individual and societal level. Furthermore, consider the 'value' of a product as well as its environmental, social and economic impacts would provide a much fairer basis on which to allocate resources in a resource constrained future where difficult decisions will inevitably have to be made.

This research has particular relevance in supporting strategic planning decisions aimed at increasing future resilience in manufacturing companies. At present, sustainable assessing tools offer little or none in value assessment, particularly during the use phase of products.

Global Challenges and Local Solutions

Premlata Meena

Assistant Professor, Department of English, Govt PG College Gangapur city

Relationships between local and global scales deserve more attention than they have received in the global change research enterprise to date. This paper examines how and why scale matters, drawing on six basic arguments; examines the current state of the top-down global change research paradigm to evaluate the fit across relevant scale domains between global structure and local agency; and reviews current research efforts to better link the local and global scales of attention and action.

Key points: global scales, global structure.

Natural Farming use in Environment

Mr. Dheeraj Kumar Gupta

Assistant Professor, Hindi, Govt. College, Gangapur city

Email ID:- gdheeraj9387@gmail.com

In natural farming, Jeevamrit (Jeevamrit), Ghan Jeevamrit and Beej Amrit are used to provide nutrients to the plants. These are used by spraying the solution on the crops or with irrigation water. In natural farming, Neemastra, Brahmastra, Agniastra, Sothastra, Dasha Padni, Neem paste, cow urine are used as pesticides.

Environmental thinking in Vedic literature

Mrs. Manisha Gupta

Assistant Professor, Sanskrit, Govt. College, Nagar

Email ID:- guptamanisha90939@gmail.com

It is known from the study of Vedas that in the Vedic society there was immense awareness about the importance of the environment and its protection. The then society was very conscious about the dangers of environmental pollution. In that period the land was considered to be revered as God.

Environmental Contemplation in the Poetry of Mahakavi Kalidas

Mrs. Rinky Gupta

Assistant Professor, Sanskrit, Govt. Girls College, Karauli

Email ID:- rinkysmbj@gmail.com

Kalidasa is a poet of nature and environment. In his Meghduttam, we can see various forms of nature. The description of flowers found in different seasons at one place is a unique example of nature depiction. Lotus flowers bloom in summer and autumn, Kunda in winter, Lodhra in winter, Kurbak in spring, Shirish in summer and Kadamba flowers in rainy season. Kalidasa has given concrete form to his environmental thinking by showing the use of floral ornaments for the adornment of the women of the city, who have reached the pinnacle of prosperity due to the charming environment and extreme love. This verse is worth seeing -“haste lila kamalamalake balakundanuviddh nitalodhra pranatarajasa pandutamanne shri.

Biomimetic: An application on Aerospace Engineering

**Smt. Sarita Bagariya, Dr. Sunita Singh, Dr. Subhash Gora & Dr
Mukesh Kumar Khichar**

Assistant Professor, Department of Chemistry, Govt. Science College, Sikar
(Raj.) 332001

Assistant Professor, Department of Zoology, Govt. Science College, Sikar
(Raj.) 332001

Email: monu290889@gmail.com, vsingh.sunita@gmail.com,
subhashgora@gmail.com & mkhichar32@gmail.com

Over millions of years, nature has evolved gradually, constantly adapting and coming up with unique solutions to common issues. As a result, a variety of effective solutions are available that might be applicable to technical systems. For many years, biomimetic, also known as bio-inspiration, has been employed as a design methodology, transforming goods and procedures across a range of sectors. Since many traits of biological organisms, such as response-stimuli adaptability, robustness and lightweight construction, autonomy and intelligence, energy efficiency, and the capacity for self-repair or healing-are also necessary for space systems, there are numerous examples in the space industry. This article discusses biomimetic in aerospace engineering and lists bio-inspired ideas that have already been developed, partially tested, and used in the space industry, such as gasping features (gecko feet adhesion capabilities), telescopes (lobster eye optics), and drilling tools (wood wasp ovipositor drilling). Numerous biological models are presented together with their potential applications in the space environment. This study specifically identifies promising bio-inspired ideas for addressing the harsh conditions of space and the difficulties that arise during rocket launches, space system operations, and space exploration activities.

Keywords: *Biomimetic, Environment, Engineering, Biological, Space.*

Global Pathways to Environmental Sustainability: Innovative Solutions and Integrated Approaches

Jyoti

Assistant professor (English), Govt. Kamla Modi Girls collage, Neem ka thana

As environmental sustainability emerges as a critical global priority, the integration of innovative solutions and collaborative strategies becomes essential to addressing complex ecological challenges. This research paper, titled "Global Innovations and Challenges: Integrative Approaches to Environmental Sustainability," investigates how interdisciplinary approaches can drive sustainable development. By analysing case studies across renewable energy, waste management, biodiversity conservation and sustainable urban planning, the paper explores how innovations in technology, policy and community engagement can create resilient and adaptable systems. It also highlights obstacles such as climate instability, resource depletion and socioeconomic disparities, arguing that a unified approach involving diverse stakeholders such as governments, industries, communities and scientific bodies is crucial. The study provides insights into actionable frameworks for

aligning global efforts towards long-term sustainability, contributing valuable perspectives for policymakers, researchers and environmental advocates.

Keywords: *Environmental sustainability, Interdisciplinary approaches, Sustainable development, Renewable energy, Biodiversity conservation, Climate instability, socioeconomic disparities.*

Integrative Approaches for Environmental Sustainability: Innovations and Challenges in PMAY-G

Suman Meena

Assistant Professor – Economics, Government College, Deoli (Tonk)

e-mail id – byadwalsimi123@gmail.com

The Pradhan Mantri Awas Yojana – Gramin (PMAY-G) aims to uplift the standard of living for rural populations by providing secure, permanent housing, or ‘pucca’ houses. This program extends beyond housing provision by integrating essential amenities and employment opportunities, which collectively contribute to a comprehensive lifestyle upgrade for beneficiaries. Through convergence with various rural development schemes, PMAY-G aligns with initiatives such as the Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) for wage employment, Swachh Bharat Mission (SBM) for sanitation, Pradhan Mantri Ujjwala Yojana (PMUY) for clean cooking fuel, Deen Dayal Upadhyaya Gram Jyoti Yojana (DDUGJY)/Saubhagya for electricity, and the National Rural Drinking Water Programme (NRDWP) for piped water. This collaborative approach provides households with a healthier, more sustainable living environment.

The study explores the extent of PMAY-G’s convergence with these schemes and examines the tangible and intangible benefits derived by beneficiaries post-construction. The findings indicate that this integrative approach enhances not only housing security but also impacts areas such as health, sanitation, education, child development, and social inclusion. By combining housing with critical amenities and employment, PMAY-G represents a holistic model for environmental sustainability and socio-economic improvement. This framework could serve as a global benchmark for sustainable rural development, addressing both current challenges and fostering innovation in rural welfare initiatives.

Keywords – MGNREGA, PMUY, SBM, DDUGJY, Convergence, sustainable, initiatives.

Evolving Roles of Nutraceuticals in Health and Wellness

Jyoti Pathak¹ Mrs. Anubha Gupta²

^{1,2} Associate Professor, Chemistry, Govt. College Kotputli

jjp100176@gmail.com

Nutraceuticals, positioned at the convergence of nutrition and pharmacology, represent a rapidly expanding category of health-promoting products that deliver benefits beyond essential nutrition. These products are increasingly recognized for their roles in disease prevention, health enhancement, and as supportive adjuncts to conventional medical treatments. Built upon principles of bioactive compounds and functional nutrition, nutraceuticals encompass a diverse array of products, including functional foods, dietary supplements, herbal extracts, and fortified ingredients specifically designed to improve health outcomes through targeted biological mechanisms. Their rising popularity reflects a growing demand for natural, preventative, and integrative health solutions among consumers and healthcare practitioners alike. Major categories within nutraceuticals—such as functional foods and beverages, dietary supplements, and herbal products—offer distinct health benefits derived from their unique biochemical actions. Functional foods often aim to enhance physiological functions, while dietary supplements and herbal products are used to address nutrient deficiencies, modulate immune responses, and provide anti-inflammatory or antioxidant effects. Omega-3 fatty acids, for instance, have demonstrated anti-inflammatory properties that support cardiovascular health, while polyphenols in green tea are known to reduce oxidative stress and support metabolic regulation. Probiotics, another key component of nutraceuticals, contribute to gut health and improve overall well-being by promoting a balanced microbiome. The therapeutic efficacy and safety of nutraceuticals depend on factors such as quality, dosage, and individual health considerations, highlighting the importance of ongoing research, appropriate regulation, and professional guidance in their use. When integrated thoughtfully into comprehensive health strategies, nutraceuticals offer a promising approach to enhancing health outcomes. This paper includes a detailed review of nutraceutical categories, mechanisms of action, evidence of effectiveness, as well as insights into market trends, current challenges, and future directions in this dynamic field.

Keywords: *Nutraceuticals, Functional Foods, Dietary Supplements, Fatty Acids, Probiotics.*

Major Environment Policies and Legislations in India

Dr. Akila Azad

Professor, Political Science, Govt. Arts College, Kota, Raj.

akilaazad92@gmail.com

The protection, conservation and improvement of environment are main and major issues or problems in India and as well as all over the world. The term environment includes of both physical environment and biological or ecological environment. In this paper, an effort has been made to momentarily outline the various Indian Legislations relating to the environment, which are mainly the more relevant to protect and improve the environment in India. Environment Protection Act 1986 states that environment includes water, air, land and the interrelationship which exists among water, air, land, human beings, and other living creatures, plants, microorganism and properties. Initially, the constitution of India had no direct provisions for environmental protection. Global consciousness for the protection of environment in the seventies, Stockholm conference, and increasing awareness of environment crisis prompted the Indian government to enact 42nd amendment to the constitution in 1976. The constitution was amended to introduce direct provisions for protection of environment. This act added Article 48a to the Directive principles of State Policy. The constitutional provisions for protection of environment are Article 48a, Article 21, Article 253, Article 51a, Article 19 (1) (g), Article 51, and Article 14.

The purpose of this study is to throw light on policies and enactments made by the Indian government for the protection of flora and fauna. Environmental degradation in India has been caused by a variety of social economic institutional and technological factors. The provisions for protection of environment was implicit in the Preamble and Directive Principles of State Policy in Indian Constitution. With the passage of time, the state has realised its responsibilities to protect the environment. The environmental rights and obligations have been added to the constitution. We have more than 200 central and state Legislations and laws which deals with environment issues and problems but enforcement of these Legislations has been far from satisfactory. There is urgent need for the effective, successful and well-organised enforcement of the constitutional mandate and other environmental Legislations or laws in India.

Key words - *Environment protection, Legislation, Public Interest Litigation, Pollution, National Green Tribunal.*

The Role of Society in Environmental Development

Dr. Akshay Narayan Pareek

Assistant Professor

Email: akshaynarayanpareek@gmail.com

Environmental sustainability is increasingly recognized as a collective responsibility that transcends individual efforts, emphasizing the crucial role of society in fostering a sustainable future. This abstract explores how societal dynamics—encompassing culture, education, governance, and community engagement—contribute to environmental stewardship.

Firstly, societal values and norms shape perceptions of environmental issues, influencing behaviours and practices that either harm or protect ecosystems. Educational initiatives play a pivotal role in raising awareness about sustainability, equipping individuals with the knowledge and skills needed to make informed decisions. Furthermore, community engagement fosters collaboration, enabling collective action towards sustainable practices, such as local recycling programs and conservation efforts. Governance structures, including policies and regulations, are essential for promoting sustainable development. Effective legislation can incentivize environmentally friendly practices while discouraging harmful behaviours. Additionally, societal pressure and advocacy can drive governments and corporations to prioritize sustainability in their operations and policies.

Finally, the interconnectedness of global communities highlights the need for a unified approach to sustainability. Societies must work together to address shared challenges, such as climate change and resource depletion, through international cooperation and knowledge sharing. In conclusion, the role of society in environmental sustainability is multifaceted, requiring a holistic approach that integrates cultural, educational, and governance strategies. By fostering a culture of sustainability, societies can create resilient ecosystems that benefit both current and future generations.

Key Words:- Environment, Social value, Awareness, Development.

Relevance of Research on Aerosols

Bheru Lal Koli

Assistant Professor, Physics

Maharana Pratap Government Post Graduate College Chittorgarh, Rajasthan

Email Id-amblkoli555@gmail.com

The size of aerosol particles is comparable to the wavelength of visible light, and they scatter visible light, making the atmosphere much less visible and contributing to air pollution. A vicious cycle and negative feedback are created when it simultaneously raises air pollution and the fuel used to light electricity. Conversely, variations in composition, structure, concentration, and aerosol sources can result in the formation of aerosol particles of a broad variety of sizes, which may cause various light effects like absorption, scattering, and refraction. Sea level rise, precipitation, temperature variations, and atmospheric composition are all impacted by these factors, either directly or indirectly, which ultimately impacts the stability of the whole ecosystem. Since the world economy has grown so quickly in recent years, a lot of industrial waste gas has been released into the atmosphere and the environment. It not only has an impact on atmospheric climate change but also poses a major threat to human health as well as the survival of other plants and animals.

Keywords:- Aerosol, atmosphere, climate change, absorption, scattering.

Reducing Chemical Exposure: How Natural Farming Enhances Environmental Health

Mukesh Kumar Prajapat

Assistant Professor, S. B. D. Government College, Sardarshahar

Email ID- mkpzology@gmail.com

In recent years, rising concerns about chemical pollution have driven interest in sustainable agricultural practices, particularly natural farming, as a means to reduce chemical exposure and enhance environmental health. Conventional farming heavily relies on synthetic fertilizers, pesticides, and herbicides, which contribute to soil degradation, water contamination, and biodiversity loss. This study examines how natural farming practices, which eschew synthetic inputs in favor of ecological processes, impact environmental health. By emphasizing soil regeneration, biodiversity, and organic nutrient cycles, natural farming methods can significantly reduce the presence of chemical residues in the environment, thereby improving soil fertility and fostering healthier ecosystems.

Through a review of existing literature and case studies, this research explores the specific ways in which natural farming minimizes chemical exposure. Key findings highlight that natural farming promotes soil microbiome health, reduces water pollution through minimal chemical runoff, and supports wildlife habitats by eliminating harmful pesticides. These practices not only protect environmental health but also enhance the resilience of agroecosystems, making them more adaptable to climate change. The study concludes that natural farming offers a viable pathway to sustainable food production, suggesting that policies encouraging such practices could have far-reaching benefits for environmental health. By transitioning to natural farming systems, agriculture could play a critical role in reducing chemical exposure and safeguarding the ecosystem, creating a more sustainable future for both farming and environmental health.

Keywords: *Natural Farming, Environmental Health, Chemical Exposure Reduction.*

Green Chemistry for Sustainable Environment

Rakesh Kumar Yadav

Deptt. Of Chemistry, LBS Govt College, Kotputli, Rajasthan

rkyadav2307@gmail.com

“Green chemistry” is defined as “the design of chemical products and processes that reduce or eliminate the use and generation of hazardous substances”. With the introduction of the Twelve Principles of Green Chemistry, guidelines were provided for chemists to develop clean, environmentally benign methodologies that are sustainable for the long term. Green chemistry is widely used in the chemical, pharmaceutical, paper, polymer, clothes and colour industry. It plays a key role in different energy science, and the manufacture of innovative technique to make solar cells, fuel cells, and batteries for storing energy. In nanoscience and technology, green chemistry also highly used. Since main goal of green chemistry is to minimize or eliminate waste in the chemical industry, it has inspired the creation of many green “next generation” catalysts.

Study of Shielding Parameters of Al, Fe, Pb using PHITS (Monte Carlo simulation code)

Ram Kumar Meena

Département of Physics, Government college, Baran

email: ramkumarmeena967@gmail.com

The gamma and neutron radiations emerged during, energy production for power plants, medical diagnosis, cancer therapy etc. In this process workers and users absorb the dose that is the cause of the disease, to reduce the dose consumption shielding is required. The materials which contain high-atomic number (Z) elements (Ba, Pb and Bi etc..) do not allow to pass gamma radiation through itself and for prevention of neutron radiation, those materials are preferred that contain low-atomic number elements (C, H, Paraffin Wax and N). The materials which contain a lower atomic number

(Z) are used in medical applications, water is hydrogen rich so it is used for neutron attenuation, but in present days polymers and plastics are good alternatives rather than water because it is more hydrogen-rich. Polymers also play a crucial role in human protection from radiation. The human body also contains polymers such as

proteins and enzymes. Every day in life polymers use in various fields such as electronics, medical applications, drug delivery systems, cosmetics, tissue engineering, etc. The nuclear physics community uses the various simulation codes, MNCP, GEANT, and PHITS, to optimise the shielding properties of materials. In the present work the Linear attenuation coefficient of Al, Fe, and Pb estimated by PHITS simulation code. The experimental results comparable with theoretical code.

Key points- Cs-137 (1mCi), Dose rate, PHITS.

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E-Banking and Bank Profit: Does Increased Customer Adoption Lead to Financial Gains

Dr. Renu Nainawat¹ and Ms. Shahida Bano²

¹ Associate Professor, Department of EAFM, Govt. Commerce Girls College, University of Kota, Kota, India

² PhD Scholar, Department of EAFM, Govt. Commerce Girls College, University of Kota, Kota, India

Email Id - drrenumanoj@gmail.com

The financial services sector has undergone a revolution due to the explosive rise of electronic banking, or e-banking, which has changed how banks conduct business and how their clients engage with them. This study investigates the effect on bank profit of growing consumer use of e-banking services. This study examines whether increased e-banking usage results in quantifiable financial gains by examining data from a public sector (PNB) and a private sector (ICICI) bank that have adopted digital channels. It focusses on assessing the correlation between active number of customers of mobile banking and internet banking with the chosen bank's profit for two years.

The results indicate that the implementation of e-banking has a favorable impact on profit through mobile banking and internet banking channels. The study points out the reasons for the shift in banking services from traditional methods to online banking methods and the effect of digitalized services on banking. The findings show that although e-banking adoption may increase profitability, the resulting financial benefits depend on efficient cost control, client engagement tactics, and ongoing innovation.

This study advances knowledge of the digital transformation of banking and offers insightful information to financial organizations looking to use e-banking to boost their bottom line. In order to maximize profitability in the digital age, the report emphasizes the necessity for banks to take a balanced approach, fusing customer-focused initiatives with technology improvements.

Keywords: E-banking and profit, digital transformation, PNB, ICICI.

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Role of Generic Engineered Microbes in Bio Remediation

Virendra Sharma

Assistant Professor Zoology, Govt. Kamla Modi Girls College Neem Ka
Thana

email jd-virendra220780@gmail.com

Bioremediation means employing indigenous or genetic engineered Microbes to clean up contaminated Environment At present genetic Engineered Microbes are developed by Gene Transfer Methods, GEMs include bacteria, Fungi, Algae which Degrade chemical pollution like toluene, camphor, organic hydrocarbons GEMs used enzymes to degrade and remove contaminants from the sites. In vitro created bacterial strains have efficient catabolic pathways for excellent bioremediation super bug Pseudomonas putida is best example.

Social Sciences and Humanities Perspectives

Dr. Sucheta Verma

Assistant Professor, Deptt. Of Political Science, S.P.C. Govt. College, Ajmer
sucheta180@gmail.com

Addressing global environmental challenges requires integrative approaches that combine social sciences and humanities to promote sustainable innovation. Unlike purely technical solutions, this perspective takes into account the cultural, social, economic, and ethical dimensions of sustainability. It focuses on how human values, behaviours, and institutions influence environmental outcomes. This approach highlights the importance of inclusive policymaking, ethical governance, and community engagement in achieving environmental goals. By examining human attitudes, social norms, and cultural values, researchers gain a deeper understanding of the barriers to adopting sustainable practices and can design policies that are both effective and socially accepted. Furthermore, insights from history, ethics, and philosophy help us address questions of environmental justice and intergenerational equity. Challenges such as climate change, resource depletion, and biodiversity loss are not solely scientific issues; they also involve moral and societal considerations deeply connected to questions of responsibility, fairness, and human well-being.

Social sciences and humanities provide frameworks that foster resilience through adaptive governance, participatory decision-making, and the role of narratives in shaping sustainable futures. Integrating these perspectives within environmental science promotes a holistic approach, encouraging innovations that are technologically sound, culturally relevant, and ethically grounded. In summary, sustainable solutions are not only about what is feasible but also about what is socially desirable, making the humanities and social sciences essential for meaningful and lasting environmental progress.

Keywords: *Environmental Sustainability, Social Sciences, Humanities Perspectives, Adaptive Governance, Environmental Justice.*

***Alucophora Foveicollis*: As a Pest on Mustard Crop at Bohra Village, Tehsil Khanpur, Near Kota, Rajasthan, India**

Richa Bharti¹, Dr. Neha²

1. Research Scholar in Zoology, Govt. College Kota.
2. Associate Professor, Department of Zoology, Govt. College Kota.

Corresponding Author- richabhartigautam@gmail.com

Aulacophora foveicollis is found particularly in temperate and subtropical areas. *A. foveicollis* is a significant pest that threatens mustard crop (*Brassica* species), production in India. This study was carried out at Bohra village, Tehsil Khanpur near Kota. It belongs to Chrysomelidae family. It is also known as red pumpkin beetle. These beetles feed on the leaves, stems, and flowers of the mustard plant. adult beetles and their larvae cause defoliation, decreased photosynthesis, and general plant deterioration. The adult beetles are extremely active and proliferate quickly, These beetles cause uneven holes on the leaf surfaces and deformed growth. Furthermore, the damage is made worse by the larvae, which consume the undersides of the leaves. The quantity and quality of mustard seeds are reduced as a result of this damage. For developing an effective control strategies, the pest's life cycle and behaviour, including its reproductive patterns and preference for specific mustard cultivars should be studied. Integrated pest management (IPM) approaches, such as biocontrol agents, resistant mustard varieties can be used in mustard cultivation.

Keywords: *Aulacophora foveicollis*, *Mustard crop*, *Chrysomelidae* family, *adult beetles*.

Kinetic Equations Involving the General Classes of Functions Associated to Multivariable Mittag-Leffler Function and their Applications in the Chemical Kinetics

Suman Sharma* and Sunita Bhargava

Department of Chemistry, Government College, Kota 324001,
Rajasthan, India

Email: sumansharma23531@gmail.com

The current paper deals with solution of certain generalized fractional differential and kinetic equations incorporating a new class of special function in several variables and its generalized form. By applying the Sumudu transform, we derive solutions for the fractional differential equations and fractional kinetic equations expressed in terms simpler Mittag-Leffler functions. Our findings are highly general and unifying numerous existing results and provide various applications in the field of Chemical kinetics.

Keywords: Fractional kinetic equations, Class of Special functions, Mittag-Leffler function, Sumudu transform, Chemical Kinetics.

Impact Of Environmental Laws on Environmental Protection in India

Ameesh Dev Singh

Assistant Professor, Government Meera Girls College, Udaipur

Email id- ameesh777@gmail.com

World is facing threatening issue of emergence of Global Warming due to climate change for very existence of life on earth. Undoubtedly the whole world is facing irreparable damage to the mankind and the Environment due to the adverse Impacts of various Wastes including Hazardous wastes produced by several chemical & Explosive industries. Global climate change is the utmost severe environmental anxiety caused due to accumulation

Global Warming which was due to rise in levels of Green House Gases into the atmosphere. The impact of climate change is severe in developing nation like India. In our nation climate change adversely affect the forestry, agriculture, natural resources, as well as change in the temperature. The important legislations relating to environmental protection were enacted by parliament. This paper discusses the concept of climate change, its impact of environment, the present legal position of climate change in India with an overall prospective future and the judicial activism played by the Indian judiciary in protecting the environment against climate change and global warming. More effective steps need to be taken in dealing with major polluting industries at all levels so as to keep our Environment free from all types of pollution and stop climate change.

Key words: Global Warming, climate change, environmental protection, atmosphere.

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Green Chemistry: Foundations in Cosmetic Sciences

Dr Anupama, Poonam Saini

Assistant Professor of Chemistry, Govt Science College, Sikar

Email- anupama.sik.1256@gmail.com

Email- psaini300391@gmail.com

Green chemistry, often termed sustainable chemistry, is a vital framework for transforming the cosmetic industry by prioritizing environmentally-friendly and health-conscious practices in product development. This approach aims to minimize the environmental footprint of cosmetic formulations, from sourcing raw materials to product disposal. At its core, green chemistry emphasizes the use of renewable resources, biodegradable ingredients, and environmentally-safe synthesis methods, aligning with the principles of reducing waste and avoiding hazardous substances. In cosmetics, this translates to innovative approaches for sourcing botanical extracts, creating natural preservatives, and utilizing eco-friendly solvents and surfactants. The concept also encourages life-cycle thinking, which examines the full environmental impact of a product, including energy consumption, emissions, and water use across all stages. Advances in green

chemistry have led to the development of alternative, non-toxic compounds that enhance product safety and efficacy while reducing the reliance on synthetic chemicals. Additionally, green chemistry supports clean label initiatives, where consumers are increasingly demanding transparency about ingredients and ethical sourcing practices. By integrating green chemistry principles, cosmetic scientists and manufacturers can create safer, high-performance products that appeal to eco-conscious consumers while addressing regulatory pressures and sustainability goals.

This shift towards greener alternatives not only protects ecosystems and human health but also promotes innovation in cosmetic science, fostering a future where personal care and environmental stewardship go hand-in-hand. Green chemistry thus serves as a foundational pillar for a sustainable transformation in the cosmetic sciences.

Keywords: Green chemistry, eco-friendly ingredients, biodegradable, renewable resources, life-cycle analysis, non-toxic compounds, environmental impact, clean label, natural preservatives, ethical sourcing, sustainable transformation, environmental stewardship, cosmetic science innovation.

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Ecological Role of the Black-winged Stilt in Wetland Ecosystems: Impacts of Habitat Fragmentation and Anthropogenic Disturbances in Kota District

Mamta Nagar¹, Harsh Gulati² and Smriti Johari^{3*}

¹Research Scholar, Career Point University, Kota, Rajasthan, India¹,

²Assistant Professor, Lovely Professional University, Punjab²

³Professor, Department of Zoology, University of Kota, Kota, Rajasthan^{3*}

Email – smritiparesh@gmail.com

The Black-winged Stilt (*Himantopus himantopus*) plays a critical ecological role in wetland ecosystems, serving as an indicator species for wetland health and biodiversity. This study examines the population dynamics, habitat utilization, and behavioral adaptations of Black-winged Stilts in response to habitat fragmentation and anthropogenic disturbances across 5 wetland sites in the Kota district, India. Between January 2022 and December 2023, bi-

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monthly field surveys recorded population counts, nesting patterns, and foraging behavior across varying wetland conditions. Results indicate that the Black-winged Stilt population density was significantly higher in less disturbed sites, with an average of 35 ± 8.4 individuals per hectare in protected wetlands compared to 15 ± 5.6 individuals in fragmented or heavily disturbed sites ($p < 0.01$). Our analysis revealed that habitat fragmentation, primarily due to land conversion for agriculture and urban expansion, reduced the availability of foraging areas and nesting sites by 40% across surveyed wetlands. Anthropogenic disturbances, including pollution and human activity, further impacted nesting success rates. In disturbed wetlands, nest abandonment was observed in 22% of nesting attempts, compared to only 8% in protected areas, highlighting the sensitivity of Black-winged Stilts to human interference ($p < 0.05$). Foraging efficiency, measured by the average number of prey items captured per minute, also decreased by 30% in fragmented habitats. The study underscores the importance of integrated conservation strategies to protect critical wetland habitats in Kota district, emphasizing habitat connectivity and reduced human disturbances. Our findings suggest that preserving larger, undisturbed wetland patches is essential for sustaining Black-winged Stilt populations and maintaining the ecological integrity of these ecosystems. This research provides quantitative insights into the ecological role of Black-winged Stilts and serves as a foundation for formulating evidence-based wetland management policies to support biodiversity conservation in the face of expanding anthropogenic pressures.

Keywords: *Black-winged stilt, Kota, Behavioural ecology, Conservation, Rajasthan, Wetland, Habitat.*

UN - SDGs and Sustainability

Dr. Parul Singh

Assistant Professor – Sociology, Government Arts Girls College, Kota

spparulsingh@gmail.com

The United Nations' Sustainable Development Goals (SDGs), launched in 2015 as part of the 2030 Agenda for Sustainable Development, has given a roadmap for achieving global sustainability. They include 17 interconnected goals aimed at addressing critical issues such as poverty, inequality, climate change, environmental degradation and peace and justice. The SDGs emphasize the interconnection of the social, economic and environmental components of development which espouses a comprehensive approach to long-term growth. Sustainability, as defined by the SDGs, envisages developing long-term solutions that meet current demands without jeopardizing future generations' ability to meet their own. Goals such as SDG 13 (Climate Action), SDG 7 (Affordable and Clean Energy), and SDG 12 (Responsible Consumption and Production) directly address ecological sustainability by reducing human effect on the environment. Meanwhile, goals such as SDG 1 (No Poverty), SDG 3 (Good Health and Well-Being), and SDG 10 (Reduced Inequalities) prioritize social equity by encouraging inclusive growth that benefits marginalized populations.

This paper endeavours to examines how the SDGs encourage cross-sector collaboration, focusing on the responsibilities of governments, corporations and civil society in implementing sustainable practices particularly in India. Despite remarkable advances, significant challenges remain, including funding shortfalls, sociopolitical barriers, and inconsistencies in policy implementation. By reviewing successful projects and ongoing problems, the article emphasizes the importance of a shared commitment to sustainable development. It advocates for innovative, cross-sectoral collaboration to remove hinderances and capitalize on global momentum, guaranteeing a sustainable, equitable future consistent with the 2030 agenda.

Keywords: *United Nations Sustainable Development Goals (SDGs), Sustainability, Environmental and Social Equity, Cross-sectoral Collaboration, 2030 Agenda.*

Uses of Aquatic Plants in Sustainable Development of Agricultural Crops

Dr. Rajendra Kumar

Professor in Botany, Dr. Bhim Rao Ambedkar Govt. College,
Sri Ganganagar 335001, Rajasthan, India
raj.2009karwasra@gmail.com

Increased use of chemical fertilizers and intensification of management have increased agricultural production, but it also increased the cost of production and often accompanied by deleterious environmental effects. This has put the emphasis on organic farming where instead of various chemical fertilizers naturally available materials / substances / organic manures /crop residues are used as a primary source for nutrients for the crops. This management system not only reduced input cost but also eco- friendly and as a result the profitability is higher. The study of allelopathic interaction between different plants can help in organic farming. So a experiment was conducted to study the allelopathic effect of 3% aqueous extracts of fresh above ground and below ground part of *Eichhornia crassipes* (Mart.) Solms (Water hyacinth) on seed germination and seedling growth of wheat (*Triticum aestivum* var. Raj 1482). Seeds were allowed to grow in petri-dishes containing 3% aqueous extracts of fresh above ground and below ground part of *Eichhornia crassipes*. The result indicated that seed germination and seedling growth was increased by both above ground and below ground part of *Eichhornia crassipes* .The promotive effect of below ground part is maximum than above ground part.

Key Words: *Organic farming, Eco-friendly, Allelopathy, germination, Seedling growth.*

Synthesis and *In-silico* Activity Prediction of some 6-substituted-3-chlorobenzo[b]thiophene containing Pyrazole derivatives

Dr. Ashok Kumar Patidar

Assistant Professor, Department of Chemistry, Govt. P.G. College Jhalawar,
Rajasthan, India

In the present synthesis we synthesized 6-substituted (3-chloro-1-benzothiophen-2-yl)(3,5-dimethyl-1*H*-pyrazol-1-yl)methanone and 6-substituted 2-(3-chloro-1-benzothiophene-2-carbonyl)-5-methyl-2,4-dihydro-3*H*-pyrazol-3-one derivatives from cyclisation of 6-substituted 3-chloro-1-benzothiophene-2-carbohydrazide with 1,3-diketon and ethylacetoacetate. The structures of compound were established on the basis of spectral and elemental analysis. Estimation of biological activity of the synthesized compounds has been carried out on the basis of PASS (Prediction of Activity Spectra for Substances) as Pa and Pi value.

The relationship between Scientific innovation and sustainability

Dr. Tulsi Panwar

Department of Physics, Samrat Prithviraj Chauhan Government College,
Ajmer (Rajasthan), Affiliated to Maharshi Dayanand Saraswati University,
Ajmer, Rajasthan, India

Author email:- panwartulsi77@gmail.com

Scientific innovation and environmental sustainability are increasingly interlinked as humanity faces urgent environmental challenges. Advances in technology and scientific research offer innovative solutions to pressing issues like climate change, resource depletion, and pollution. Advancements in solar and wind energy technology, such as improved efficiency and battery storage, have made renewable energy more accessible and affordable. Innovations like floating solar panels and small-scale hydro projects help reduce dependency on fossil fuels and make clean energy feasible across

diverse regions. Advances in biotechnology, including CRISPR and genetic modification, enable scientists to develop crop varieties that are more resistant to extreme weather, pests, and diseases, which helps safeguard food security in a changing climate. Innovation in materials science has led to the development of biodegradable plastics and other sustainable materials, helping to reduce single-use plastic waste. Precision agriculture uses IoT devices, drones, and sensors to monitor soil, water, and crop health in real-time. Advances in e-waste recycling technology allow for valuable metals and components to be recovered from old electronics, which reduces the need for mining and lowers environmental impact. Technologies for carbon capture, utilization, and storage are designed to remove CO₂ from industrial emissions or directly from the air, reducing greenhouse gas levels. New materials, such as carbon-negative concrete and cross-laminated timber, reduce the carbon footprint of buildings. AI and machine learning models can analyse complex climate data, enhancing predictive capabilities for climate patterns and helping governments and industries adapt their strategies to mitigate risks. Scientific innovation, therefore, plays a transformative role in promoting environmental sustainability. However, challenges such as resource requirements, scalability, regulatory issues, and equitable access must be carefully managed to maximize the positive impact of these technologies on a global scale.

***Keywords:** hydro projects, CRISPR, IoT, carbon-negative concrete, carbon footprint.*

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**Study of Climatic Parameters and Thermal Comfort
Enhancement in Six Major cities of Rajasthan with Suggestive
Passive Techniques**

Deepmala Meena¹, Namrata Sengar²

¹Department of Physics, Government College Kota Rajasthan

²Department of Pure and Applied Physics, University of Kota Rajasthan

Corresponding author e-mail: Deepmala.gcb@gmail.com

Residential buildings which are considered to be 24-hour spaces aim to protect the occupants from the climatic vagaries and provide a comfortable thermal environment to carry out the daily chores. With rising energy consumption in buildings and concerns for climate change, it becomes

important to identify appropriate passive techniques for cooling and heating requirements in the buildings. The use of passive measures can help in better designing of the buildings, thus making buildings more responsible by reducing the energy consumption and carbon foot print. To identify the appropriate passive measures, it is important to understand the climatic parameters of the location. The present work aligns in the direction of studying the climatic parameters of six major cities of Rajasthan, and to estimate the thermal comfort needs by the residents in different climatic conditions such as summer and winter. The information is presented for 24-hour residential spaces for whole year and extensively based on the use of CARBSE Tool. Based on the climatic conditions of the six significant urban areas of Rajasthan - Jaipur, Jodhpur, Bikaner, Jaisalmer, Kota, and Barmer the passive heating and cooling techniques are suggested for these urban communities.

Key Words: *climatic data, thermal comfort, passive cooling, passive heating, passive techniques, buildings.*

GIS: IAES-2024/199

The Role of Capacity Building in Promoting Sustainable Development in Developing Countries

Dr. Dhanwanti Bishnoi

Associate Professor, Department of GPEM
Govt. M.S. College For Women's, Bikaner (Raj.)
Mail- dhanwanti045@gmail.com

Capacity building is a cornerstone for sustainable development in developing countries, where communities often face significant economic, environmental, and social challenges. This paper explores how targeted capacity-building initiatives empower individuals and institutions to drive sustainable growth from within, transforming local potential into actionable, long-lasting change. Through skill development, institutional support, and knowledge transfer, capacity building equips communities with the tools to tackle pressing issues like climate adaptation, resource management, and economic resilience. Drawing on successful case studies from sectors such as agriculture, healthcare, and renewable energy, this research demonstrates the

transformative power of capacity building when aligned with local needs and cultural contexts.

The study also underscores the importance of collaborative partnerships—between governments, non-profits, and international organizations—in scaling up these efforts. Ultimately, this paper argues that capacity building is not just a mechanism for immediate improvement but a fundamental strategy for achieving the Sustainable Development Goals (SDGs) and fostering self-reliant, resilient societies capable of thriving amidst global challenges. The findings underscore that sustainable development in these regions is best achieved through a holistic approach that builds on local strengths, unlocking pathways to a more equitable and sustainable future.

Keywords: *Capacity Building, Sustainable Development, Developing Countries, Community Empowerment, Resilience.*

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Green Growth: Emerging Business Strategies for Environmental Impact

Dr. Archana Tiwari

Associate Professor, Business Administration, SPC Govt. College Ajmer

akshyash2014@gmail.com

Green growth is becoming an increasingly important part of corporate strategies as organizations strive to reduce environmental damage while attaining economic success. This paper investigates developing solutions for environmental effect, focusing on circular economy models, sustainable supply chains, clean energy uptake, and green product creation. This study, based on data from recent case studies and market analysis, shows how businesses are incorporating sustainability into their operations to meet global environmental concerns.

The concept of green growth has gained traction as firms, consumers, and politicians recognize the need of sustainable practices. The Organisation for Economic Cooperation and Development (OECD) defines green growth as promoting economic progress while ensuring that natural assets continue to offer resources and environmental services. According to the Global

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Green Growth Institute, the green economy could create up to 24 million jobs globally by 2030 while significantly reducing carbon emissions. This paper examines emerging business strategies for green growth, highlighting how companies are integrating sustainability into their business models.

Key Words: *Green Growth, Environmental Sustainability, Circular Economy, Eco-Friendly Innovation, Corporate Social Responsibility (CSR).*

GIS: IAES-2024/201

Economic and Business Strategies for Sustainability in India

Dr Gajendar Kumar Jangir

Assistant Professor (A.B.S.T.), SRDRL Government College Nawa
(Deedwana - Kuchaman)

India, is one of the world's fastest-growing economies, faces unique challenges in balancing economic growth with environmental sustainability and social equity. Rapid industrialization, urbanization, and population growth have led to increasing environmental pressures. This paper examines economic and business strategies that Indian companies and policymakers are adopting to promote sustainable development. Key strategies include the adoption of circular economy models, renewable energy investments, sustainable supply chain management, and Corporate Social Responsibility (CSR) initiatives. By exploring these strategies, the paper highlights how sustainable business practices can foster long-term growth, resilience, and competitive advantage within the Indian context.

Keywords:- *Corporate Social Responsibility, Renewable Energy Investments, Unique Challenges, Urbanization.*

An Enhancement in Performance of Photogalvanic Cell for Solar Energy Conversion and Storage-A review

Prabha Sharma¹, Chirag Gandhi², and Dr. Jagrati Meena³

Department of Chemistry, Janki Devi Bajaj Govt. Girls College, Kota-324001, Raj., India

sharmaprabha7822@gmail.com, jagrati2626@gmail.com

Photogalvanic effects were studied in Photogalvanic cells containing surfactant, reductant, and dye/photosensitizer. Surfactants are active agents that have a unique character due to the presence of both hydrophilic and hydrophobic groups, so they have the ability to solubilize a variety of molecules and formed micelles structure. The photosensitizer is photoexcited by the absorption of solar radiation. This photo sensitized molecule is reduced by reductant. Then the reduced sensitized molecule acts as a source of electrons flowing in external circuit, leading to solar power generation and storage. Various natural and synthetic dyes have been exploited for solar power conversion and storage. Photo potential, photocurrent, conversion efficiency, power of the cell, and cell performance of the cell were determined. The effect of different parameters (light intensity, pH, concentration of reductant, concentration of surfactant, concentration of dye, and temperature) on the electrical output of the cell was observed. For generation of electricity in the cell, a photochemical reaction mechanism has been proposed. A photogalvanic cell is a device which converts light energy into electrical energy. The photogeneration of electricity has attracted the attention of scientists as viable media for solar energy conversion and storage in photogalvanic cells with bright future prospects. The object of research work is to enhance the solar energy conversion into electricity and store it through a photogalvanic cell.

Keywords: *Photopotential, photocurrent, conversion efficiency, cell performance.*

Plant-Mediated Synthesis and Catalytic Effects of Bimetallic Nanoparticles

Preeti Bairwa, Vijay Devra

Janki Devi Bajaj Government Girls College, Kota (Raj.), India 324001

*Author for correspondence v-devra1@gmail.com

dhawanpreeti92@gmail.com

Nanotechnology is a cutting-edge field of study that works with tiny materials. It is a multidisciplinary field with several subject areas including engineering, biology, physics, and chemistry. A green chemical strategy that blends nanotechnology and plant biotechnology is the manufacture of nanoparticles from plants. The plant extract is utilized to create nanoparticles that bio-reduce metal ions. It has been demonstrated that plant metabolites such as proteins, sugars, terpenoids, polyphenols, alkaloids, phenolic acids, and polyphenols play a crucial role in reducing metal ions to nanoparticles and promoting their ensuing stability. The presence of hazardous biological agents and chemicals in the water at concentrations above those found in normal water is referred water pollution because it might hurt the environment and human health. In the realm of antibacterial, therapeutic, analytical, environmental, and nano chemistry, silver and copper among other metal nanoparticles have a wide range of uses. We used leaf broth from *Azadirachta indica* as a reducing and capping agent in the current work to create copper-silver bimetallic nanoparticles (BMNPs) in a unique, reliable, and practical way. Utilizing an improved oxidation technique with Peroxomonosulphate as an oxidant, the produced Cu-Ag NPs were evaluated for degradation and degradation kinetics with dye and pesticides.

KeyWords: *Bio-Synthesis, Bimetallic Nanoparticles, Oxidative Degradation.*

The Devastating Effects of Pesticides on Human Health and the Environment: Natural Farming as a Sustainable Solution

Ratan Kumar Meena

Assistant Professor (Botany), Government College Jamwaramgarh, Jaipur

Email: ratanbhavrayat@gmail.com

The widespread use of pesticides in conventional agriculture has severe consequences on human health and the environment. Exposure to pesticides has been linked to increased risk of cancer, neurological disorders, reproductive issues, and respiratory problems. Additionally, pesticides contaminate soil, water, and air, threatening biodiversity and ecosystem services.

Natural farming, an holistic approach to agriculture, offers a viable solution to mitigate these harmful effects. By adopting natural farming practices, such as crop rotation, biological pest control, and organic amendments, farmers can reduce pesticide use, promote soil health, and conserve water. This paper explores: The adverse effects of pesticides on human health and the environment. The principles and benefits of natural farming. Successful case studies of natural farming implementations.

Keywords: *Pesticides, Natural Farming, Sustainable Agriculture, Human Health, Environmental Impact.*

Designing Solar-Powered Cities: Integrating Photovoltaic Technologies for Sustainable Urban Development

Dr. Shweta Nehra

Associate Professor in Geography, Govt Dungar College, Bikaner

The integration of solar energy into urban design presents a transformative opportunity for creating sustainable, energy-efficient cities of the future. As urban areas experience rapid growth, the demand for clean energy and effective space utilization is paramount. This paper explores the future of solar energy within urban planning, focusing on how photovoltaic (PV) technologies, solar thermal systems, and innovative energy storage solutions can be embedded into the architecture, infrastructure, and landscapes of cities. By assessing the potential for rooftop solar installations, building-integrated photovoltaics (BIPV), and smart solar street lighting, this study highlights the dual benefits of energy generation and reduced carbon emissions. Additionally, we discuss the challenges and opportunities in implementing solar energy within high-density urban areas, considering factors such as shading, grid integration, and regulatory frameworks. Case studies of successful solar cities are examined to draw insights into policy, design, and technological advancements. The findings indicate that with supportive policies and evolving technologies, cities can move towards energy self-sufficiency, reduce dependency on fossil fuels, and address climate resilience. This paper concludes with strategic recommendations for urban planners, architects, and policymakers on fostering solar-centric urban landscapes to meet the energy needs of tomorrow's sustainable cities.

Keywords: *-Solar Energy, Integration Urban Design, Sustainable Cities, Photovoltaic (PV) Technologies, Building-Integrated Photovoltaics (BIPV).*

Integrated planning for solid waste management in Jaipur

Gayatri Tanwar and Purushottam Jharotia *

Assistant Professor, Department of Mathematics,
Samrat Prathviraj Chouhan Govt. College, Ajmer-India

E-mail: gtrtnwar15@gmail.com, purushottamjharotia@gmail.com

Rajasthan's economic growth has stimulated urbanization, but lack of commensurate investment in urban infrastructure and services has resulted in an overall deterioration of urban quality of life. Jaipur is the capital of the largest state of country, having an inefficient, outdated and unscientific waste management system. Jaipur socio-economic development potential relies on sound environmental management so that tourism may grow and become sustainable. This paper attempts to assess the existing state of municipal solid waste management (MSWM) in Jaipur city with the aim of identifying the main obstacles to its efficient and prospects for improvisation of solid waste management system in the city.

Key words: - RDF- refuse derive fuel, MSWM- municipal solid waste management, JMC, MT- metric tons.

Fluoride Contamination: A Global Challenge and Local Solutions for Sustainable Health Outcomes

Dr. Lalita Panchal

Guest Faculty, Govt. PG. College, Mavli

lalitapanchal@yahoo.com

Fluoride contamination of water is a global issue that affects millions of people, particularly in regions with natural fluoride concentrations exceeding safe levels. While fluoride is commonly added to drinking water for dental health benefits, excessive exposure can lead to a range of health problems, including dental and skeletal fluorosis. This dual nature of fluoride—beneficial at low levels but harmful at high concentrations—presents a complex challenge for public health systems worldwide. The problem is most pronounced in areas where groundwater serves as the primary source of drinking water, such as parts of India, China, and East Africa. The global nature of fluoride contamination necessitates coordinated efforts to address the issue through both large-scale interventions and localized solutions tailored to the specific needs of affected communities. Local solutions often include the use of defluoridation technologies, community education programs, and policy reforms that balance fluoride's benefits with its risks. Effective strategies require a multi-disciplinary approach that integrates environmental science, public health, and socio-economic considerations, while ensuring that interventions are sustainable and culturally appropriate. This paper explores the global problem of fluoride contamination and highlights local solutions that have proven successful in mitigating its adverse effects, emphasizing the importance of context-sensitive approaches in solving global health challenges.

Keywords: *Fluoride contamination, global health, defluoridation, water quality, dental fluorosis.*

Green Synthesis, Spectral Characterization and Antibacterial Evolution of Metal Complexes of Amide Containing Bioactive Ligands With 3d Series Metals

S. K. Verma

GCRC, P. G. Department of Chemistry, Govt. Dungar College (NAAC 'A' Grade), MGS University, Bikaner, India-334001

Email: vermask008@gmail.com

A microbial infection affects tremendously to the human health and antimicrobials are one of the mainly successful forms of chemotherapy which saves the human population from the risk of infectious diseases. In this regard, the present study involves synthesis of transition metal complexes have often shown the immense antibacterial activity. Nicotinamide (Pyridine-3-carboxamide) has crucial role in various metabolic processes such as glycolysis, fatty acid synthesis, and respiration and also has effects on protein and RNA synthesis. Four new complexes of 2-Hydroxynicotinamide (2HNICAM), a pyridine-based ligand, with Mn (II), Co (II), Ni (II) and Cu (II) were synthesized using microwave irradiation and their structural aspects were investigated by elemental analysis, magnetic, FT-IR and UV-visible spectroscopic methods. The antibacterial efficacy of the ligand and its complexes were also determined by *in-vitro* method against some pathogenic bacterial stains.

Keywords: *2-Hydroxynicotinamide, Microwave irradiation, FT-IR, Antibacterial studies.*

Current and Emerging Trends of Eco-friendly Corrosion Inhibitors

Dr. Gajendra Singh

Associate Professor, S. P. C. Govt. College, Ajmer (Raj.)

Email- gajendray78@gmail.com

Corrosion occurs as a result of the interaction of a metal with its environment. Corrosion causes significant damage to our properties, lives and the environment. Thus, it is essential to focus on preventing corrosion. While synthetic inhibitors are commonly used to combat corrosion, they are harmful to the environment. As a result, there is a need for eco-friendly inhibitors. Green corrosion inhibitors present a viable solution to this issue. Their popularity is rising due to both environmental and economic reasons. This review article provides a concise overview of various corrosion prevention strategies, highlights different green inhibitors along with their sources, and discusses effective application methods for them. The operational mechanism of green inhibitors in different media and various environments is also outlined. Methods for assessing corrosion inhibition are summarized. Naturally, the financial importance of these inhibitors has been a topic of discussion. Finally, considering the current research gaps, future research directions are put forward.

Keywords: *Corrosion, green inhibitors, Inhibition strategies, operational mechanism.*

Echoes of Sustainability: Exploring Environmental Consciousness in Indian English Literature

Gajendra Verma

Assistant Professor, Govt Girls College Hanumangarh

Gaj.vv8@gmail.com

This research paper undertakes a comprehensive examination of the representation of sustainable development in Indian English literature, with a specific focus on the intersection of environmentalism, social justice, and cultural identity. Through a critical analysis of select texts by prominent authors such as Arundhati Roy (*The God of Small Things*), Amitav Ghosh (*The Hungry Tide*), and Indra Sinha (*Animal's People*), this study reveals the growing concern for ecological sustainability and environmental justice in contemporary Indian literature. Employing an ecocritical framework, this research investigates how Indian English literature reflects the complexities of sustainable development in the Indian context, including: Colonialism and its legacy on environmental degradation, Globalization and its impact on local ecosystem, Climate change and its disproportionate effects on marginalized communities, Cultural identity and traditional ecological knowledge. This paper argues that Indian English literature serves as a powerful tool for: Raising environmental awareness and promoting sustainable practices, Reimagining India's ecological future and challenging dominant narratives, Exploring intersections between environmentalism, social justice, and human rights. By analyzing the representation of sustainable development in Indian English literature, this research contributes to a deeper understanding of the cultural, social, and environmental dimensions of sustainability in the Indian context.

Keywords: *Sustainable Development, Indian English Literature, Ecocriticism, Environmental Justice, Cultural Identity, Colonialism, Globalization, Climate Change.*

Environmental Health Hazards: Natural Farming as a Key to Sustainable Agriculture and Human Well-being

Govind Singh Meena

Assist. Professor, Govt. Arts College Kota

Email- govindmeena98@gmail.com

The environmental health hazards from conventional farming methods are the biggest threats to human beings and the future of Earth's survival. Widespread use of chemical fertilizers and pesticides has resulted in the degradation of soil, pollution of water, and loss of biodiversity. Natural farming is one potential solution. The holistic concept makes use of natural resources with minimum external inputs and traditional farming practices to sustain soil health, save water, and protect biodiversity. The natural farming methodologies include composting, mulching, and cover cropping-all activities that improve the fertility and structure of the soil. This approach rules out the application of chemical fertilizers and pesticides to prevent pollution of water bodies that could affect aquatic life. Besides all this, natural farming reaches the goals of crop diversification supporting local wildlife while improving the yields and nutritional quality for better food security.

The pan-India initiative by way of Zero Budget Natural Farming has successfully been put into action in Andhra Pradesh State. The program was initiated in 2016 and aimed at creating a radical change in the state's agricultural system by encouraging crop diversification, reducing consumption of chemical fertilizers and pesticides, improving soil health and water conservation, and empowering small-scale farmers and local communities. Organic farming approaches exempt us from all the possible environmental health dangers of the chemicals applied to produce a crop; it helps in sustainable agriculture and develops a much healthier future for the coming generations. The study acknowledges the benefits and potentials of natural farming, underlining that it is an area of activity with a potential role to play within the environmental and health challenges linked with conventional farming practices. This underlines the urgent need for a paradigm shift toward sustainable, eco-friendly agricultural approaches-a call to action among policymakers, farmers, and consumers in their adoption and practice of natural farming as one of the key steps toward sustainability.

Keywords: *Natural Farming, Environmental Health Hazards, Sustainable Agriculture, Organic Farming.*

Mitigating Environmental Health Risks through Sustainable Farming Practices

Manisha Kumari Sharma

Assistant professor-Chemistry, SCRS govt college Sawai Madhopur

Mail Id- msmanisha20@gmail.com

Environmental health hazards, including pollution, pesticide residues, soil degradation, and loss of biodiversity, have significant impacts on human health and the ecosystem. As industrialized agriculture relies heavily on synthetic chemicals and monoculture practices, it contributes to air and water pollution, poses health risks, and depletes natural resources. This abstract explores natural farming as a viable solution to these environmental health challenges. Natural farming, which minimizes chemical use and emphasizes ecological balance, can improve soil health, reduce pollution, and increase biodiversity. By promoting the use of organic compost, crop rotation, cover cropping, and minimal tillage, natural farming offers a sustainable agricultural alternative that supports environmental and human health. This approach not only mitigates the adverse effects of chemical farming but also contributes to healthier food systems and resilient ecosystems, highlighting the role of natural farming in addressing modern environmental health issues.

Keywords: Environmental health, natural farming, pollution.

Evaluating Root Water Uptake and Soil Water Flow for Wheat Crops Using HYDRUS: A Transient Flow Study in the Jaipur Region

Dinesh Kumar Varma

Research Scholar, Department of Mathematics, Government College, Kota,
Kota, Rajasthan

Email: dkmaths89@gmail.com

This study evaluates the soil water flow and root water uptake dynamics of wheat crops under transient flow conditions in the semi-arid Jaipur region of Rajasthan, using the HYDRUS software model. With a focus on improving irrigation practices in water-scarce environments, this research analyzes how transient soil moisture levels, influenced by varied irrigation schedules and rainfall, affect the efficiency of root water uptake in wheat. Field data from ten distinct sites within the region characterized by diverse soil properties were utilized to parameterize the model, ensuring a realistic simulation of local conditions. The study confirms that root water uptake is highly responsive to soil moisture changes, with significant adaptations in root activity across different soil layers during dry spells. Optimizing irrigation intervals proved crucial, with weekly schedules enhancing water-use efficiency by up to 20% compared to traditional practices. These findings underscore the potential of targeted irrigation strategies to conserve water and improve crop yields in semi-arid areas, offering valuable insights for sustainable agricultural practices in regions facing similar climatic challenges. Future research could extend these methodologies to other crops prevalent in the region and integrate real-time soil moisture monitoring to refine irrigation recommendations further.

Keywords: *HYDRUS model, transient flow conditions, root water uptake, soil-water dynamics, semi-arid agriculture, irrigation management.*

Green Chemistry: A Sustainable Horizon

Dr. Sonlata Bargoutya

Department of Chemistry, Govt. P. G. College, Tonk, Rajasthan

Email: b.sonlata@gmail.com

Chemistry of present era aims to build a pollution free environment. For the same, it targets to create some alternatives which are eco-friendly and nature loving. Present research work is a step towards achieving such alternatives. Chemistry here plays a pivotal role in determining the quality of modern life. The chemical industry and other related industries supply us with huge variety of essentials. However, these industries have the potential to seriously damage our environment. So, it creates a demand of greener chemistry. It serves to promote the design and efficient use of environment benign chemicals and chemical processes. This branch of modern era promotes the concept of atom economy leading to zero waste. Hence, we try to achieve environmentally friendly synthesis. The main of green chemistry is to reduce chemical related impact on human health and virtually eliminate contamination of the environment through dedicate and sustainable prevention programs. Green chemistry searches for alternative that target for sustainable development. So, it is to promote the idea of “greener” solvents (non-toxic, benign to environment), replacement in cases that can be substituted with safer alternatives, or changes in the methodologies of organic synthesis, when solvents are not needed. Therefore, researches finally indulge in creating and innovating ways to reduce waste, conserve energy, and discover replacements for hazardous substances. Advances in green chemistry concepts will be enhanced by obtaining a better understanding of mechanistic pathways involved in various reactions. This thematic issue will further focus on theoretical and experimental research by co-operating the best chemical processes for safer chemistry. Present research work is a step towards achieving such alternatives. For this, complexes copper (II) surfactants with N/S donor ligands synthesized under microwave irradiation. These compounds were also obtained with conventional heating procedures to compare them with those obtained with microwave and characterized by elemental analysis, IR, NMR, ESR spectral studies. Their purity was checked by thin layer chromatography. They were sequentially screened for multiple biocidal studies.

Key Words: *Benzothiazole, Copper, Green Chemistry, Eco-Friendly.*

Analyses of Various Factors Affect Performance of a Photovoltaic System

Urjasvita Priyadarshini Gaur¹, Dr. Emarti Kumari²

^{1,2}Mechanical Engineering, MBM University, Jodhpur, Rajasthan
urjasvitagaur124@gmail.com , emarti.me@mbm.ac.in

Solar power is one of the keys to a clean energy future and plays a crucial role in the decarbonization of our societies and provides a sustainable alternative to the conventional sources of energy that are on the verge of depletion. Globally the solar energy scenario has shown an increasing trend revealing that it is the fuel of the future. Every day, the sun gives off far more energy than we need to power everything on Earth which hence needs an optimized and systematic approach to harvest this energy achieving high efficiencies and better performance along with methods to reduce the losses. An exhaustive study of the factors affecting the efficacy of the solar panel is the need of the hour to make it available at lower operating cost to meet the exponentially raising demands. This study is much needed since solar energy is leadingly used in various applications particularly in agriculture where standalone systems are able to provide energy requirement in remote farm locations at low costs. This paper intends to review thoroughly the information regarding the parameters affecting the PV systems and their performance. These parameters can be broadly classified into 3 main categories: Climatic; Design; Operational. The climatic factor involves the study of impact of factors like solar irradiance, ambient temperature, wind speed, dust etc; the design conditions include the sun tracking system, anti-reflection coating etc and the effect of heat loss coefficient and thermal resistance are studied under operational factors. These are discussed in detail to evaluate their effect on the thermal, electrical and overall efficiency of PV systems.

Keywords: *efficiency; performance; agriculture; PV systems.*

Sustainability in Works of Literature where Nature Intersects with Climate Instability

Dr. Manju Shivran

Assistant Professor (English), Govt. Arts College, Sikar (Raj.)

E-mail: manjushivran88@gmail.com

History of literature concerning nature is vast and old. By the 20th century, due to life threatening environmental pollution Eco criticism emerged as a major discourse in the centre of global debates and in the literature as well. Nature is highly honoured and revered in literary traditions. The works Aesop's fables, Ovid's Metamorphoses, the fifteen-volume story collection One Thousand and One Nights, and theatrical allegory Volpone by Ben Jonson intersect with literature. Greek, Asian, and Western literary traditions also focus on narratives that inform on the interactions between humans and nonhumans. Animal fables are understood to rethink worldviews and a more sustainable ideology. The animal fable and the allegory reveal ways western audiences negotiate their own sense of morality and ethics which in turn exposes an ideology that vies an animal kingdom as less moral and inferior; hence easily exploitable. These belief systems challenge twenty-first century readers to consider alternative narratives that are more ecological and environmentally sound. Literary works address aspects of humanity and its superstructure on sexuality, gender, political hierarchy, in various forms of literature such as lyrical poetry, allegory and so on.

Key Words: Sustainability, Literature, Nature, Climate instability.

Emerging Challenges of Agrochemical Resistance in Pests and Insects: Strategies for Sustainable Management

Sampat Ram Meena¹

1Assistant Professor, Dept of Zoology
Shri Govind Guru Govt College, Banswra
Email: Meenaanju907@Gmail.Com

Agrochemical resistance in pests and insects is a growing global concern that threatens food security, agricultural productivity, and the effectiveness of pest management strategies. The widespread and often excessive use of synthetic pesticides in modern agriculture has led to the evolution of resistant pest populations, undermining the effectiveness of chemical control measures. This resistance is driven by various factors, including genetic mutations, the overuse or misuse of agrochemicals, and insufficient integration of integrated pest management (IPM) practices. Resistance mechanisms vary among pest species and can include metabolic detoxification, target-site insensitivity, and behavioral changes that reduce exposure to the chemicals. The ecological impact of resistance extends beyond the targeted pests, often affecting non-target organisms and disrupting ecosystems. To address this challenge, innovative approaches such as the development of new agrochemicals, biological control methods, and sustainable pest management strategies are essential. Furthermore, global cooperation and more stringent regulatory frameworks are needed to monitor and control resistance, promoting the responsible use of agrochemicals and the preservation of their efficacy for future generations.

Keywords: *Agrochemicals, IPM, Pesticides, Ecosystems, Resistance & Pest Management.*

Economic Strategies for Environmental Sustainability

Mangal Ram Meena

Assistant Professor

Email: mangaljharwal@gmail.com

Global challenges such as climate change, resource depletion, and biodiversity loss intensify, integrating sustainable practices into economic frameworks becomes crucial. Key strategies include the implementation of circular economy principles, which prioritize resource efficiency and waste reduction through recycling, reuse, and sustainable product design. Additionally, investing in green technologies and renewable energy sources not only mitigates environmental impact but also stimulates economic growth and job creation. Carbon pricing mechanisms, such as cap-and-trade systems and carbon taxes, serve as effective tools to internalize the environmental costs of greenhouse gas emissions, encouraging businesses to adopt cleaner practices. Furthermore, fostering public-private partnerships can drive innovation and facilitate the transition to sustainable infrastructure. Incentives for sustainable agriculture, conservation, and ecosystem services can enhance food security while preserving natural resources.

The role of education and awareness in promoting sustainable consumer behavior is also emphasized, as informed citizens can drive demand for environmentally friendly products and services. Finally, international cooperation and commitment to global sustainability goals, such as the United Nations Sustainable Development Goals, are essential for addressing transboundary environmental issues. By aligning economic incentives with ecological integrity, these strategies not only safeguard the planet but also ensure long-term economic resilience and prosperity. Ultimately, a holistic approach that integrates environmental considerations into economic decision-making is vital for fostering a sustainable future.

Key words:- Economy, Consumer; Climate change, Growth.

Creative Catalysts: How Arts and Communication Fuel Environmental Activism

Manoj Kumar Singhal

Assist. Prof. Geography, S.H.M. Govt. College Sangod (Dist-Kota Raj.)

Email – manojasussinghal@gmail.com

The emerging environmental crisis fundamentally requires an innovative approach to advocacy that goes beyond conventional scientific and policy-driven ways. This paper attempts to address the potential role of the arts and communication in stimulating environmental action and the adoption of sustainable behaviors. This study combines theoretical approaches—environmental communication, art therapy, and social movement theory—showing how artistic expressions and strategic communication can mobilize environmental awareness, engagement, and policy change. The projects performed by arts-based initiatives such as visual arts, music, theatre, and literature on environmental advocacy are explored in this study. In fact, this would elucidate the fact that arts and communication methods have the propensity to make a huge impact in environmental advocacy by emotionally deepening connections to environmental issues, nurturing community involvement and participation, amplifying marginalized voices, influencing policy makers and other stakeholders, and encouraging lifestyle choices for sustainability. It reveals how active arts and communication function in environmental advocacy, particularly on issues related to climate change, conservation, biodiversity, mobilization of youth and marginalized communities, consumption patterns, and harnessing and utilizing creative storytelling in the course of informing policy decisions. It is a work within an emerging area of environmental communication and arts-based research, with practical recommendations for policy-makers, activists, and artists who want to capitalize on the transformative power of creative expression in the name of environmental advocacy.

Keywords: *environmental advocacy, arts and communication, sustainability, social movement, environmental education.*

International Conference on Global Innovations and Challenges: Integrative Approaches for Environmental Sustainability

Monika Choudhary

Assistant Professor, Govt. Bangur College, Didwana, Rajasthan

monikamaths96@gmail.com

The goal of sustainable development is to secure a good living opportunity for present and future generations, that is, we should use natural resources sustainably. A sustainable economy is based on economic decisions made by consumers, businesses and society. Economic sustainability means the use of various strategies for employing existing resources optimally so that a responsible and beneficial balance can be achieved over the longer term. In the long term, it is important for the whole world and all generations to consider the carrying capacity of the environment. Thus we have to look at sustainable development from the perspective of each economic decision-maker.

Key words: *sustainable development, economic sustainability, environment, economy*

Efficient Solar Energy Conversion and Storage through Sustainable Photogalvanic Cells

Ms Kanchan Kumari

Department of Chemistry, University of Rajasthan, Jaipur

With the increasing commercialization of wind and solar energy, the demand for efficient power storage technologies has become critical. Photogalvanic cells (PGCs) offer a promising approach by enabling simultaneous solar energy conversion and storage. This study investigates the potential of Photogalvanic cells for sustainable solar energy utilization, focusing on their power output and conversion efficiency. The objective is to enhance the direct conversion of solar energy to electricity using PGCs, which operate by absorbing light into an electrolyte solution composed of a dye, a reductant, and a surfactant in an alkaline medium. Through photochemical reactions, energy is generated via charge transfer to an electrode by photo-reduction or photo-oxidation of the active molecule diffusing in the electrolyte. In this study, we varied critical parameters, including the concentration of power couples, transport and kinetic properties, and cell dimensions, to assess their impact on power output and conversion efficiency. Experimental results indicate that while theoretical power conversion efficiencies could reach up to 18%, practical limitations suggest a more achievable efficiency range of 5-9%. These findings highlight the importance of optimizing material and cell design parameters to advance Photogalvanic cell technology. Conclusively, Photogalvanic cells, though currently limited by material constraints, represent a promising direction for sustainable solar energy storage solutions, meriting further exploration into their scalability and potential for commercial application.

Keywords: *Solar Energy, Photogalvanic cells, Photochemical reactions, Applications.*

Promoting Sustainable Agriculture in Bundi: Mitigating Environmental Health Hazards through Natural Farming Practices

Mukesh Meena

Department of Chemistry, Government College Bundi,

mukeshmeena25@gmail.com

Bundi district in Rajasthan faces numerous environmental health hazards, including water scarcity, soil degradation, water and air pollution, and health risks from chemical pesticide use. These challenges are exacerbated by climate change, further threatening agricultural productivity and public health. Natural farming, which emphasizes sustainable practices, offers a promising solution to these issues. By focusing on water conservation, soil fertility restoration, reduction of chemical use, and biodiversity enhancement, natural farming can mitigate the adverse impacts of conventional agriculture. It also improves farmers' resilience to climate change and ensures healthier, chemical-free produce. This paper explores the environmental health hazards in Bundi and outlines how natural farming techniques, such as rainwater harvesting, organic fertilization, crop rotation, and biological pest control, can help restore ecological balance, promote sustainable livelihoods, and reduce health risks. Implementing these practices through government support, community-driven initiatives, and awareness campaigns can pave the way for a more sustainable agricultural model in Bundi, ensuring both environmental and public health benefits for the region.

Environmental Conservation and Sustainability: Challenges and Approaches

Dr. Anil Kumar Sarowa

Assistant Professor in Political Science, Govt. Arts College, Sikar

Email: sarowaanil@gmail.com

Environmental pollution and our survival are among the biggest challenges of future as pollution and contamination of natural resources are adversely affecting global livelihood. Global warming, greenhouse gas emission due to industrialization and urbanization, and residual chemicals being applied in industries and agricultural sector are taking 100 million lives per annum. Critical increase in health risks due to carcinogenic compounds by 20% is another effect of living in polluted habitats. Statistics suggest that till 2050, if no sustainable measures are taken, the world rain forests will diminish resulting into loss of biodiversity. Global warming is resulting into decline in world glacier reserves causing a noticeable rise of 3.3 mm in sea levels annually. Demographic growth and urbanization and industrialization, and agricultural developments are major environmental sustainability challenges and future strategies to mitigate their effects have been discussed in detail. We have discussed the conservation and restoration strategies and have put much of the emphasis to sustainable approaches toward environmental restoration. This chapter also explains the future perspectives of environmental sustainability and the scope of novel industrial and agricultural developments leading toward environmental sustainability. Using recent literature and a case study, we have elaborated the role of ecological pest management and industrial development that need to be focused toward sustainable environmental protection.

Key words: *urbanization, biodiversity, environmental restoration.*

Environmental Laws in India: Problems and Prospects

Dr. Mukesh Kumar Sharma

Assistant Professor in Political Science, Govt. Arts College, Sikar

Email: mukeshsharmask@gmail.com

In India, there are many laws pertaining to environmental protection, but their implementation has not been up to par. There is a need for the Constitutional mandate and other environmental laws to be enforced effectively and efficiently. The judiciary has played an important and praiseworthy creative role. Numerous Public Interest Litigations against numerous industries for failing to provide adequate pollution control, as well as against Pollution Control Boards to order them to take appropriate measures to ensure pollution control, have been filed in the Supreme Court of India in accordance with the constitutional provisions found in Articles 48A and 51A (h) of the Indian Constitution.. Caring for regulating and protecting the environment is essentially a desire to see that national development should proceed along the rational sustainable laws.

Keywords: *Water Pollution, Air Pollution, Environmental Protection, Sustainable Development, Public Interest Litigation, Judiciary.*

Education and Capacity Building in Sustainable Development

Dr. Jitendera Deo Dhaka

Associate Professor of English, Govt. Arts College, Sikar

Education and capacity building play a pivotal role in advancing sustainable development by empowering individuals, communities, and organizations with the knowledge, skills, and attitudes needed to address complex environmental, social, and economic challenges. Sustainable development, which aims to meet the needs of the present without compromising the ability of future generations to meet their own needs, requires a multidisciplinary approach that encompasses environmental conservation, social equity, and economic viability. Education, particularly through formal institutions and informal community-based learning, fosters critical thinking, problem-solving, and innovation, essential for sustainability. It enables individuals to understand the interconnectedness of natural systems and human activities, encouraging sustainable behaviors and informed decision-making. Capacity building, on the other hand, focuses on strengthening the capabilities of individuals and organizations to implement sustainable practices. Both education and capacity building are crucial for achieving global sustainability goals, such as those outlined in the United Nations' Sustainable Development Goals (SDGs). They create the foundation for long-term social change by promoting values such as resource efficiency, environmental stewardship, and social inclusivity. In order to effectively address challenges like climate change, resource depletion, and inequality, education systems must integrate sustainability into curricula at all levels and across disciplines.

Keywords: *sustainable development, Capacity building, social equity.*

Environmental and Health Impacts of Air Pollution

Rajeev Bagaria

Assistant Professor of Geography, Govt. Arts College, Sikar

Email: bagaria.rajeev@gmail.com

One of our era's greatest scourges is air pollution, on account not only of its impact on climate change but also its impact on public and individual health due to increasing morbidity and mortality. There are many pollutants that are major factors in disease in humans. Among them, Particulate Matter (PM), particles of variable but very small diameter, penetrate the respiratory system via inhalation, causing respiratory and cardiovascular diseases, reproductive and central nervous system dysfunctions, and cancer. Despite the fact that ozone in the stratosphere plays a protective role against ultraviolet irradiation, it is harmful when in high concentration at ground level, also affecting the respiratory and cardiovascular system. Furthermore, nitrogen oxide, sulfur dioxide, Volatile Organic Compounds (VOCs), dioxins, and polycyclic aromatic hydrocarbons (PAHs) are all considered air pollutants that are harmful to humans. Carbon monoxide can even provoke direct poisoning when breathed in at high levels. Heavy metals such as lead, when absorbed into the human body, can lead to direct poisoning or chronic intoxication, depending on exposure. Diseases occurring from the aforementioned substances include principally respiratory problems such as Chronic Obstructive Pulmonary Disease (COPD), asthma, bronchiolitis, and also lung cancer, cardiovascular events, central nervous system dysfunctions, and cutaneous diseases. Last but not least, climate change resulting from environmental pollution affects the geographical distribution of many infectious diseases, as do natural disasters.

***Keywords:** air pollution, environment, health, public health, gas emission, policy.*

Effect of Soil Amendments and Irrigation Schedules on Soil Carbon Pools, Water Use Efficiency and Yield of Soybean under Vertisol

R.K. Yadav^{1*}, R.S. Narolia¹, V.K. Yadav², S.L. Yadav¹, H.P. Meena¹,
J.P. Tatarwal¹, M.K. Sharma¹, C.K. Jadon¹

¹Agricultural Research Station, Kota

²College of Agriculture, Kota,

*Corresponding author: raj91yadav@gmail.com

A field experiment was carried out at Agricultural Research Station, Kota, Rajasthan (Agriculture University, Kota) during *Kharif* season of 2021 to investigate the “Effect of soil amendments and irrigation schedules on soil carbon pools, water use efficiency and yield of soybean under Vertisol”. The experiment consisting of three levels of irrigation schedules (0.6, 0.8 and 1.0 IW/CPE ratios) kept in main plots and four soil amendments (No amendments, Mustard straw, wheat straw and Compost @ 5 t ha⁻¹) was kept in sub plots were laid out in strip plot design with three replications. The normal dose of fertilizer uniformly was applied to soybean variety JS 20 -34. Result showed that increasing levels of irrigation schedule and soil amendment Compost @ 5 t ha⁻¹ significantly increased influenced the soil physico-chemical parameters *viz.*, rest of treatments pH (7.53), electrical conductivity (0.34 dSm⁻¹), organic carbon (0.46%), bulk density (1.37 Mg m⁻³), particle density (2.53 Mg m⁻³), KMnO₄ oxidizable carbon (0.99 mg kg⁻¹), total organic carbon (1.46 g kg⁻¹) and carbon management index (168.94%) were non-significant at harvest stage of crop. Maximum value of available nitrogen (232.50 kg ha⁻¹), phosphorus (26.73 kg ha⁻¹), potassium (466.6 kg ha⁻¹) and micronutrients content Zn, Fe, Mn and Cu (0.696 mg kg⁻¹, 5.61 mg kg⁻¹, 4.56 mg kg⁻¹ and 1.32 mg kg⁻¹, respectively) content, total nitrogen (2.04%), POM-C (8.91 g kg⁻¹), POM-N (0.57 g kg⁻¹), water holding capacity (43.97%), water use efficiency (1.70 kg ha⁻¹ mm⁻¹), mean weight diameter (1.832%), geometric mean diameter (1.0026%) and water stability aggregate (0.703%) of soil at harvest stage of crop were increased significantly irrigations schedules 1.0 IW/CPE in comparison to 0.6 and 0.8 IW/CPE respectively.

Key words: Soil amendment, Irrigation schedule, Carbon pools.

Evaluating The Efficacy of Plant-Based Mosquito Repellents on *Aedes albopictus*: A Comparative Study

Surabhi Chittora*¹ and Smriti Johari²

1. Research Scholar, Department of Zoology, Career Point University,
Kota, Rajasthan, India
2. Professor, Department of Zoology, Government JDB Girls College,
Kota, Rajasthan, India

Corresponding author email:- surabhichittora94@gmail.com

Aedes albopictus, a primary vector for dengue and other arboviral diseases, has expanded its geographic range due to global trade and climate change. Effective vector control is critical in preventing disease transmission, especially since widespread vaccination for vector-borne diseases like dengue remains limited. This study aimed to assess the susceptibility of *Aedes albopictus* populations from Barmer and Kota districts in Rajasthan to various plant based larvicide, including pine, eucalyptus and neem. The results revealed that the Barmer strain exhibited higher sensitivity to these larvicide compared to the Kota strain. Pine oil proved most effective in reducing larval populations, with a 1.19-fold greater susceptibility in the Barmer strain (LC50: 31.458 mg/l) than in the Kota strain (LC50: 37.723 mg/l). Eucalyptus oil showed an LC50 of 45.920 mg/l for the Kota strain, while the Barmer strain exhibited an LC50 of 36.763 mg/l. Similarly, the Neem extract was more effective in the Barmer strain (LC50: 3.673 mg/l) compared to the Kota strain (LC50: 4.665 mg/l). These findings underscore the need for region-specific vector control strategies and highlight the potential of plant-based larvicides in managing mosquito populations. The results suggest that the Kota region may require more intensive vector control efforts than the Barmer region.

Keywords: *Aedes albopictus*, dengue, insecticides, susceptibility, vector control.

Economic Opportunities and Challenges in Organic Farming in Rajasthan

Dr. Kanhaiya Lal

Assistant Professor, Department of E.A.F.M., Government College, Sirohi
E-mail- kmbhatia83@gmail.com

Organic farming has emerged as a sustainable agricultural practice with the potential to enhance environmental health, improve food safety, and provide economic benefits to farmers. This study examines the economic opportunities and challenges associated with organic farming in Rajasthan, a state characterized by arid and semi-arid conditions that pose unique agricultural challenges. Through a mixed-methods approach, including field surveys, interviews with farmers, and economic data analysis, this research highlights the profitability of organic farming versus conventional methods, especially in terms of soil conservation, lower input costs, and premium pricing for organic produce. The study finds that although organic farming can yield higher economic returns, it faces substantial barriers such as high initial conversion costs, limited access to certified markets, challenges in pest management, and a lack of awareness and technical knowledge among farmers. Additionally, policy gaps and inadequate government support hinder the growth and scalability of organic farming practices in the region. The findings underscore the need for targeted policies, improved certification processes, and farmer education programs to realize the full economic potential of organic farming in Rajasthan. This research contributes to the broader understanding of sustainable agriculture practices, emphasizing the economic viability and practical challenges of implementing organic farming on a larger scale.

Key Words: *Organic Farming, Sustainable Agriculture, Economic Viability, Rajasthan, Soil Conservation, Premium Pricing, Certification Barriers, Farmer Education, Policy Support.*

Sustainable Development: Status, Scope, Innovations and Outcomes in India

Subhash Chand Verma* and Jeetendra Kumar Verma[‡]

*Department of Botany, Seth RL Saharia Government PG College, Kaladera, Jaipur-303801

[‡]P.G. Department of Botany, Government College, Kota -324001

E-mail: botanistjkverma@gmail.com

E-mail: botanysubhash@gmail.com

World Conservation Strategy by the International Union for Conservation of Nature (IUCN) was the first report to briefly incorporate the concept of Sustainable Development. After few years the United Nations established a new organization known as the World Commission on Environment and Development, to focus on environmental and development problems and solutions. This commission popularized and defined the term “sustainable development” as the development that meets the needs of the present without compromising the ability of future generations to meet their own needs. Sustainable development requires an integrated approach that takes into consideration environmental concerns along with economic development. Some approaches and innovations that can help with environmental sustainability include green process innovation, smart cities, grassroots movements, clean innovation and sustainable & renewable energy. The desired outcomes of sustainable development are poverty reduction, access to basic needs, education and gender equality, social inclusivity, Cultural heritage, environmental conservation and economic prosperity.

Keywords: *Environmental change, Innovations, Sustainability.*

Conserving Medicinal Plants: Integrative Strategies for Sustainability and Biodiversity

Neha Verma¹ & Poonam Jaiswal²

^{1,2} Department of Botany, Janki Devi Bajaj Govt. Girls College, Kota

Medicinal plants sourced from their natural environments establish the structural basis for the traditional healthcare system. With the growing demand for medicinal plants for therapeutic purposes, comes a great risk of extinction and genetic erosion of numerous species caused due to extensive deforestation and overexploitation. Keeping in mind the dependency of the conventional healthcare system on these plants there is a need to control the decline in their wild populations which threatens both their sustainability and biodiversity of ecosystems. This study highlights the urgent need for conservation initiatives that incorporate both in-situ and ex-situ strategies to preserve medicinal plants and promote their sustainable utilization by adopting strategies such as the MEE model, organic farming, Good Agricultural Practices (GAP), etc that can enhance overall yield thereby reducing pressure on wild. Along with this some advanced biotechnological tools and techniques like DNA barcoding, microarray, and genetic engineering offer effective solutions for propagation and preservation of vulnerable species. In the meantime, efforts from local communities and non-governmental organizations (NGOs) have contributed greatly to preserving these wild resources by integrating traditional knowledge in formulating international and national policies to gain maximum benefits from medicinal plant resources. In the paper medicinal plants in the Dadh Devi forest range in Kota district are identified that need conservation. Some of these medicinal plants, *Terminalia arjuna*, *Mitragyna parvifolia* (Kadam), *Diospyros melanoxylon* and *Syzygium cuminii*, and *Pandanus odorifer* (Kevada) are found in Dadh Devi forest region of Kota District.

Keywords: Medicinal plants, conservation, traditional healthcare.

Synthesis and *In-silico* Activity Prediction of Imidazole and Thiophene Derivatives

Dr. Vijendra Kumar Meena

Assistant Professor, Department of Chemistry, Govt. P.G. College Gangapur City, Rajasthan, India

In the present investigation novel imidazole derivatives based on 6-substituted-3-chlorobenzo[b]thiophene were synthesized from the reaction of 3,6-dichloro-1-benzothiophene-2-carboxylic acid and o-phenylenediamine in 4N HCl under reflux. The structure of synthesized compound was established on the basis various physicochemical method such as IR, NMR (^1H & ^{13}C) and elemental analysis. All synthesized compounds were *in-silico* screened for their biological activity in PASS (Prediction of Activity Spectra for Substances).

Poly pyrrole-based Nanocomposites for Removal of Dyes from Contaminated Water

Ajay Kumar Surela*, Parmeshwar Lal Meena

¹Department of Chemistry, University of Rajasthan, Jaipur-302004 (India)

Email: surela.ajraj10@gmail.com

The presence of dye pollutants in water not only adversely affects aquatic life but human health also owing to their mutagenic and carcinogenic nature. Polypyrrole (PPy)-based nanocomposites are proved to be promising adsorbent materials for dye removal as they are identified with some distinctive features such as hydrophilic and tunable surface functionalities, high flexibility along with mechanical strength and chemical versatility. Such composites maintain the inherent characteristics of pyrrole matrix such as non-toxic nature, ion exchange potential, high adsorption capacity and redox properties along with modified or upgraded properties because of blending with other substrates. Moreover, some admirable aspects including facile fabrication process, easy processability, thermal stability, biodegradability, moisture and solvent resistance and biocompatible nature render these composites suitable for water remediation applications. The

present review describes PPy-based composites with emphasis on their synthetic strategies, functionalization and potential application as adsorbent for removal of various synthetic dyes from water. It comprehensively entails a variety of PPy-based composites including PPy coated biocomposites, PPy-carbon based material composites and PPy-metal oxides composites. Furthermore, literature significantly suggests enhanced photocatalytic behavior of PPy-based composites for removal of dye pollutants in aqueous media so, a detailed account in this regard have also been presented here. At last, future prospects of PPy-based composites in dye removal are discussed precisely.

Keywords: *PPy-based composites, Dyes, Adsorption, Photodegradation.*

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Encouraging Natural Farming for Environmental Restoration and Hazard Mitigation

Dr. Anita Prajapat

Associate Professor (Hindi), Dr. B.R.A. Govt. College Sriganganagar
Rajasthan

Anitaprajapat81@gmail.com

Sustainable development - development that does not destroy or undermine the ecological, economic, or social basis on which continued development depends - is the only viable pathway to a more secure and hopeful future for rich and poor alike. The environmental impacts of conventional farming, including soil degradation, water pollution, air pollution, deforestation, climate change, desertification, loss of groundwater and biodiversity, have raised serious concerns about the sustainability of current agricultural practices. Natural farming offers a promising alternative by eliminating the use of synthetic pesticides, chemical fertilizers, and intensive tillage. This sustainable approach enhances soil health, conserves water, and reduces greenhouse gas emissions, thereby mitigating a range of environmental hazards. By promoting biodiversity and restoring ecological balance, natural farming not only improves the quality of agricultural produce but also contributes significantly to the preservation of ecosystems. This paper examines the role of natural farming in reducing environmental risks and highlights its potential as a sustainable solution for long-term ecological resilience.

Key words: *Environment, Natural, Ecological, Biodiversity, Sustainability.*

Role of UN Agencies in Environmental Protection

Kunji Lal Meena

Email ID - kunjilaljnv311@gmail.com

The United Nations Environment Programme (UNEP) is a UN agency that works to protect the environment by:

Setting the global environmental agenda: UNEP provides leadership and encourages partnerships to care for the environment. *Supporting the Sustainable Development Goals:* UNEP helps countries transition to low-carbon economies, strengthen environmental law, and safeguard ecosystems. *Developing solutions:* UNEP develops solutions to environmental issues, including climate change, marine and terrestrial ecosystem management, and green economic development. *Promoting environmental science:* UNEP publishes and promotes environmental science. *Helping national governments:* UNEP helps national governments achieve environmental targets. *Protecting environmental defenders:* UNEP works to protect environmental defenders. *Strengthening legal frameworks:* UNEP strengthens legal frameworks. *Building capacities:* UNEP builds capacities of relevant stakeholders. *Advancing universal recognition:* UNEP advances universal recognition of the right to a healthy environment. UNEP's work focuses on the root causes of three planetary crises: Climate change, Nature and biodiversity loss, and Pollution and waste. UNEP was established in June 1972 after the United Nations Conference on the Human Environment in Stockholm. Its headquarters are in Nairobi, Kenya.

Life Movement and Sustainable Development

Dr. Sharda Devi

Assistant Professor, Govt Arts College, Sikar

The LiFE (Lifestyle for Environment) movement, launched by the Indian government, advocates for sustainable living by promoting environmentally conscious behaviors at the individual and community levels. This research explores the role of the LiFE movement in advancing sustainable development, particularly through its emphasis on mindful consumption, energy conservation, and waste reduction. By encouraging citizens to adopt eco-friendly practices such as reducing plastic use, conserving water, and minimizing carbon footprints, LiFE aligns with the United Nations Sustainable Development Goals (SDGs), particularly those related to responsible consumption and climate action. The movement seeks to drive a cultural shift, highlighting the importance of lifestyle changes as a critical pathway for achieving long-term environmental sustainability. This paper examines how LiFE's bottom-up approach can complement traditional top-down policies by fostering a collective commitment to sustainability. Additionally, it considers the social and cultural dimensions of the movement, recognizing that sustainable development is not only an economic or technological challenge but also a cultural transformation. Through a qualitative analysis of the LiFE framework, this study assesses its potential to reshape global environmental strategies and empower individuals to become active participants in the global effort toward sustainable development. The findings underscore the importance of integrating environmental consciousness into daily life as a fundamental aspect of global sustainability efforts.

Keywords: Sustainability, Global, SDG.

Adapting Global Solutions to Local Contexts: A Path Forward for Sustainable Development

Nidhi Meena

Government Arts Girls College, Kota

nidhimina@gmail.com

Global challenges, such as climate change, poverty, health crises, and political instability, require complex and multifaceted solutions. These challenges are interconnected and often exacerbate one another, making it crucial to address them holistically. However, while global strategies and international cooperation are vital, local solutions tailored to specific contexts can significantly impact mitigation and adaptation efforts. Climate change, for instance, is a pressing global issue with severe local consequences. Local solutions like promoting sustainable agriculture, implementing community-based reforestation projects, and encouraging the use of renewable energy sources can contribute to reducing greenhouse gas emissions and building resilience against extreme weather events. In rural India, initiatives like solar-powered irrigation systems not only address energy needs but also enhance agricultural productivity, thereby improving livelihoods.

Poverty alleviation efforts benefit from localized approaches that consider the unique socio-economic and cultural contexts of communities. Microfinance programs, vocational training, and local entrepreneurship can empower individuals and foster economic development. Organizations in Latin America have successfully implemented these strategies, resulting in increased employment and reduced poverty levels. Health challenges, such as pandemics, require both global coordination and local responses. Strengthening local healthcare systems, ensuring access to clean water and sanitation, and promoting public health education are crucial steps in managing health crises. For example, community health workers in Africa play a pivotal role in providing primary healthcare services and educating the public about disease prevention. Political instability can be addressed through local peace building initiatives, dialogue facilitation, and community engagement. Grassroots movements and local leadership can promote social cohesion and democratic governance, as seen in various post-conflict regions worldwide. In conclusion, while global challenges demand global responses, localized solutions tailored to specific community needs are essential for effective and sustainable outcomes. By leveraging local knowledge, resources, and innovation, we can create resilient and thriving communities capable of addressing global issues from the ground up.

Keywords: Health challenges, Political instability, Poverty alleviation, Global challenges.

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Agroforestry: A Sustainable Solution for Soil and Water Conservation

¹Smith Barina¹, L.K. Behera², A.A. Mehta³, S.A. Huse⁴, S.M. Patel⁵ and C.A. Dholariya⁶

¹M.Sc. Research Scholar, Department of Silviculture and Agroforestry, CoF, NAU, Navsari- 396450

²Assistant Professor, Department of Silviculture and Agroforestry, CoF, NAU, Navsari- 396450

³Assistant Professor, Department of Forest Products and Utilization, CoF, NAU, Navsari- 396450

⁴Assistant Professor, Department of Forest Biology and Tree Improvement, CoF, NAU, Navsari- 396450

⁵Assistant Professor, Department of Silviculture and Agroforestry, CoF, NAU, Navsari- 396450

⁶Sr. Research Fellow, Dept. of Silviculture and Agroforestry, CoF, NAU, Navsari- 396450

E-mail: p23ayesh@gmail.com

The adverse environmental and health impacts of intensive agricultural practices, including excessive chemical use, soil degradation, and water contamination, are increasingly urgent global concerns. These practices contribute to reduced soil and water quality, and harm both ecosystems and human health through pollution and erosion. Therefore, Natural farming practices incorporating Agroforestry provide a promising solution, combining ecological resilience with productivity. Agroforestry integrates trees, crops, and sometimes livestock on the same land, creates a multifunctional landscape addressing these environmental challenges. By stabilizing soil and enhancing nutrient recycling, agroforestry systems strengthen the health of soil and water resources. Studies revealed that the splash erosion potential was 3.12 times greater in rubber monoculture while 1.22-2.18 times in Agroforestry which is less than monoculture. Agroforestry

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practices also reduce chemical leaching, allowing the soil to retain vital nutrients and promoting water infiltration, which improves groundwater recharge and availability. Additionally, the incorporation of nitrogen-fixing leguminous trees within agroforestry systems naturally enhances soil fertility for example large amounts of nitrogen can be fixed by alley cropping system, *e.g.* 75 to 120 kg N/ha in six months by *Leucaena*. The added biodiversity further supports pest control and soil structure, making agroforestry a versatile and ecologically sound farming approach. This content explores the broad environmental and agricultural benefits of agroforestry and its capacity to mitigate the health hazards associated with intensive farming. Emphasizing the global applicability of agroforestry, it can be adopted as a sustainable, resilient farming strategy capable of safeguarding long-term environmental health and productivity.

Keywords: *Agroforestry, Ecological resilience, Natural farming practices, Soil conservation, Water management.*

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The Study of Environmental Science

Amar Chand Kumawat

Department of Chemistry, Shri Kalyan Rajkiya Kanya Mahavidyalaya, Sikar

Environmental chemistry studies the occurrence, movements, and transformations of chemicals in the living environments. It is an interdisciplinary field that studies the presence and impact of chemicals in soil, water, and living environment. It deals with the impact of chemicals and their effects on human health and organisms in the environment. It helps us trace and control contaminants. This paper provides the fundamentals of environmental chemistry and the effects of mankind's activities on the earth's chemical systems.

Key Words: *Environmental Science, Chemical Pollution.*

The Devastating Consequences of Climate Change: A Global Phenomenon

Anil Kumar Meena

Assistant Professor Govt. College Tonk

Climate change, driven by human-induced greenhouse gas emissions, poses a catastrophic threat to the planet. Rising global temperatures, exacerbated by deforestation, fossil fuel combustion, and industrial agriculture, have severe consequences. These include intensified extreme weather events, sea-level rise, melting glaciers, and altered ecosystems. The repercussions of climate change are far-reaching, impacting biodiversity, human health, economic stability, and social structures. Vulnerable populations, particularly in developing nations, bear the brunt of climate-related disasters, displacement, and food insecurity.

***Keywords:** Climate change, greenhouse gases, global warming, extreme weather events, sea-level rise, biodiversity loss, human health impacts.*

Redefining GDP for a Better Evaluation of Environmental Sustainability

Anisha Goyal

Assistant Professor, Govt Arts College, Sikar

Anisha29897@gmail.com

Gross Domestic Product (GDP) has long served as the primary indicator of economic performance, but it fails to account for environmental sustainability, often overlooking the depletion of natural resources and the negative impacts of economic activity on ecosystems. As global environmental challenges intensify, there is growing recognition that traditional GDP does not adequately reflect the long-term health of both economies and ecosystems. This paper proposes redefining GDP to incorporate environmental factors, such as the depletion of natural capital, pollution, and carbon emissions. We examine alternative metrics like Green

GDP, the Genuine Progress Indicator (GPI), and the Inclusive Wealth Index (IWI), which aim to address these gaps by integrating environmental costs with economic growth. The paper highlights the importance of including ecological footprint analysis, natural capital valuation, and carbon accounting to provide a more comprehensive measure of national prosperity. Furthermore, we discuss the practical challenges of incorporating these adjustments, including the need for reliable data, political will, and methodological consistency. By redefining GDP in a way that better reflects environmental sustainability, countries can achieve a more accurate assessment of economic progress and develop policies that promote long-term ecological resilience, aligning with global sustainability objectives.

Key Words: GDP, Environmental sustainability, economic.

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Effects of Hazardous Chemicals on Human Health and Environment

Dr. Anjana Intodia

Professor, Government Meera Girl's College Udaipur (Raj.)

Email: anjanaintodia27@gmail.com

Expose to chemicals causes health risks and also have environmental consequences. Particularly problematic substances, which enter the food chain, soil, air and drinking water, are accumulate in our bodies. Our environment can be contaminated by hazardous chemicals, including heavy metals and pesticides. This can cause irreversible harm to the flora, fauna, marine life, health of humans etc. Many toxic substances are found in food systems and the food we eat with latent harmful long-term effects. In current years, the mandate for protection of human rights, especially children and exposed populations from toxics is emerging. Children are more vulnerable than adults due to ratio among body weight and levels of exposure and are also more sensitive to developmental growth. There is a disability and disease associated with exposure to toxics and pollution during childhood. Toxic substances may affect with the normal expression of genes, brain development, the function of hormones and other processes necessary for children to grow into healthy adults.

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These days, the majority of children are born with numerous pollutants that impact on several of their rights. Number of noxious and hazardous substances in children before birth through their mother's exposure. Males and females have diverse susceptibility to chemical exposure and are differently affected with regard to physical conditions or reproductive health. Children, teenagers and women working in the informal sector, occasionally have trainings related to the use of chemicals. They are also additionally affected through the use of domestic particular items or household cleaning products. Worldwide supply chains and the trade of chemicals and products, are becoming increasing. This will increase chemical releases, exposures, concentrations that affects our health and environmental. Agenda for Sustainable Development incorporates chemicals and waste as important factors for attaining the Sustainable Development Goals. Our upcoming Future Policy must highlight classic laws and policies that protect the environment and people from hazardous chemicals.

Key Words: Hazardous, environment, pesticides, sustainable development, reproductive health.

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Biomedical Waste and Its Management

Virender Kumar

Assistant professor, Government Bangur College Didwana

virender04092012@gmail.com

Biomedical waste (BMW) is the term used to describe the waste produced in different hospitals and healthcare facilities, including industrial trash. This kind of garbage is composed of a variety of dangerous and infectious components. After that, this garbage is recognized, separated, and given scientific treatment. Healthcare workers must inevitably possess the necessary skills and have the right mindset toward BMW and its management. Trash produced by BMW can be solid or liquid and may contain contagious or possibly infectious compounds, such as trash from laboratories, research, or medical settings. India has created guidelines for managing and handling BMWs correctly. Every healthcare facility must take all necessary precautions to ensure that BMW is handled without having a

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negative impact on the health of people or the environment, according to the Biomedical Waste Management Rules, 2016 (BMWM Rules, 2016). The six schedules in this document include the BMW category, the type and colour coding of the containers, and labels for BMW bags or containers that must be visible and non-washable. The new regulations in India are intended to enhance BMW treatment, transportation, disposal, and segregation. Because BMW has the potential to pollute the air, water, and land if improperly managed, this appropriate management is meant to reduce environmental contamination. The successful disposal of BMW requires a lot of cooperation as well as dedicated government funding and infrastructure development.

Keywords: BMW, Healthcare, Biomedical Waste Management, Treatment.

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Environmental Sustainability Through the Three Rs- Reduce, Reuse and Recycle

Dr Neetu

Assistant Professor Public Administration
Govt Arts College, Sikar

The 3 Rs of sustainability, - Reduce, Reuse, Recycle are central tenets of many community waste management program promoting responsible uses of natural resources and ecosystem services. Over the past few decades, recycling has become widespread, but monetary and energy expenditure required to transport and transform waste materials have led to downsizing of recycling programs globally and in the U. S. This trend increases the need for effective reducing and reusing practices as alternative to recycling.

Keywords: reducing, reusing, recycling, community, ecosystem waste management.

Health benefits of Extra Virgin Olive oil

¹Madhu Choudhary, ²Smita Jain

¹Assistant Professor, Department of Botany, Govt. Dungar College, Bikaner

²Professor, Department of Botany, Govt. Dungar College, Bikaner

Extra virgin olive oil (EVOO) which is also known as a milestone in the Mediterranean diet, has been recognized as one of the healthiest and most sustainable dietary pattern and life style. The main source of healthy fats in the diet along with the other bioactive compounds as phenols, phytosterol, and flavonoids are associated with the longevity, well-being and a lower incidence of chronic disease, particularly cardiovascular disease in the population living in Mediterranean region. In this paper, a brief overview of the antioxidant, anti-inflammatory, anti-cancer and cardiovascular protective effects of EVOO are emphasized. Antioxidants can counteract the effects of the free radical and other oxidative species thus reducing the oxidative stress in the body. Therefore, the level and the diversity of antioxidant in the body are crucial for counteracting and neutralizing the oxidative stress. Antioxidant production in body is limited. Therefore, dietary anti-oxidants such as polyphenols, carotenoid, tocopherol, tocotrienols, and others are preferred as they are naturally bioavailable components which are easily absorbed by the human body and ready to counteract the oxidative stress. Taking into account the above benefits of EVOO, it is obvious that EVOO should be used in abundance in the daily diet.

Keywords: *Olive oil, Mediterranean diet, Antioxidants.*

The Paris Agreement on Climate Change: A Landmark Deal

Dr. Mahendra Kumar Meena

Associate Professor, Swargiya Rajesh Pilot Government College, Bandikui

The climate regime is all about to decide the rules, principles, norms, mechanism and compliance for a comprehensive action plan to avert climate change. Essentially, it a political issue as far as the decision-making process is concern in the climate regime. No country is willing to leave cheap and abundantly available traditional source of energy like coal and oil. Developing countries predominately argue the historical responsibility of developed countries in the degradation of environment and hence they have clear perspective that developed countries should take lead in dealing with climate change and they should provide financial and technological assistance to developing countries for their voluntary mitigation actions. Since 1992, from the Rio, world was waiting for a historical agreement to reach a comprehensive consensus to tackle the issue of climate change. The Paris Agreement was historical in its approach as it had diluted the difference of responsibilities by leaving founding principle of the UNFCCC, i.e. CBDR and inclined more towards respective capabilities.

The CoP-21/MoP-11 was held from 29 November to 11 December 2015 in Paris, France. It was a land mark CoP as it resulted in ‘Paris Agreement’ a reflection of global endeavor to avert the climate change and keep the future of human kind alive through sustainable development. The Paris Agreement can be said compromisation of different interest of countries and their respective groups but, cannot be said as a consensual documents as operational rules and procedures are still underway of debate.

Keywords: *Climate Change, Paris Agreement, UNFCCC, COP, CBDR.*

Corporate Sustainability: Strategies, Challenges, and Opportunities

Dr. Anita Maheshwari

Assistant Professor (Business Administration),
Govt. Commerce Girls College, Kota

Corporate sustainability has emerged as a critical framework for modern businesses, aiming to balance profit generation with positive environmental, social, and governance (ESG) impacts. This paper explores the multifaceted concept of corporate sustainability, particularly within the Indian context, where rapid economic growth intersects with pressing environmental and social challenges. The study delves into the definition, significance, and scope of corporate sustainability, highlighting its importance in mitigating environmental degradation, promoting economic resilience, and fostering social well-being. Through a review of existing literature, the research synthesizes key theoretical models, such as the Triple Bottom Line and Stakeholder Theory, offering a comprehensive understanding of the topic.

The paper further investigates the opportunities and challenges associated with corporate sustainability, identifying the benefits of market differentiation, cost savings, and innovation, as well as the obstacles of high initial costs, regulatory complexities, and skill gaps. A detailed case study of Tata Group demonstrates the practical application of corporate sustainability in India, showcasing the tangible benefits of integrating sustainability into business strategies. The findings emphasize that while challenges remain, the growing demand for sustainable practices presents significant opportunities for businesses to innovate, attract responsible investment, and enhance their competitive edge. In conclusion, corporate sustainability not only aligns with global sustainability goals but also offers a strategic pathway for companies in India and beyond to thrive in an increasingly conscientious global economy. This research underscores the need for continued innovation, policy support, and industry collaboration to advance sustainable practices in the corporate world.

Keywords: *Corporate Sustainability, Environmental Social and Governance (ESG), Triple Bottom Line, Stakeholder Theory, Business Strategies.*

Sustainable Development of Corporate Social Responsibility in India

Dr. Mangi Lal Meena

Assistant Professor, Department of ABST (Commerce)
Government PG College Jamwaramgarh, Jaipur (Raj.)
E-Mail: mangilalmeenajpr@gmail.com

Profit is the main objective of every business corporation as no business can survive without earning Profits. But business corporations bear a more significant responsibility to the society than only making Profits. Business corporations use resources of society so they owe a responsibility towards society. Any Corporation focused just on maximizing profits for shareholders, with little regard for societal and Environmental problems, is doomed to failure in the long term is what led to the birth of CSR and Sustainable development as significant concerns of business activity. Businesses can contribute to a Better society by allocating a percentage of their profits to Corporate Social Responsibility (CSR) Initiatives. Due to the fact that CSR initiatives address 15 of the 17 Sustainable Development Goals, they Are helpful in reaching the Sustainable Development Goals. The aim of this paper is to study the concept Of Corporate Social Responsibility, Sustainable Development and the contribution of Corporate Social responsibility towards achieving the goal of Sustainable Development in India. This study is based on the secondary data.

Keywords: *Corporate Social Responsibility, Sustainable Development, Sustainability*

Phytoplanktonic Diversity of Naval Sagar Lake, Bundi City (Rajasthan)

Diksha and Dilip Kumar Rathore

Department of Botany, Government College Bundi, Rajasthan (India)

Corresponding Author: Diksha, dikshakywal95@gmail.com

The city of Bundi, also called the City of Stepwells, is located in the Hadoti region of eastern Rajasthan. Phytoplanktons are primitive, typically aquatic, photosynthetic organisms that are fascinating in their variety and effectiveness. Surface water bodies have become contaminated by urbanisation, which has caused certain species to go extinct and others to grow significantly, rendering the water unsafe for human consumption and use. This study was completed using a standard approach, and samples were taken from the lake ecosystem at several locations over the period of two years (2020 to 2022). Total 106 algae species were identified which belong to three algal classes Chlorophyceae (62), Cyanophyceae (34), and Bacillariophyceae (10). The chlorophyceae, which include species from the chlorococcales group and 11 major genera like *Scenedesmus*, *Tetraedron*, *Actinastrum*, *Ankistrodesmus*, etc., constitute the dominant phytoplankton component of the entire lake. Cyanobacteria are primarily freshwater organisms that are unicellular, colonial, and filamentous. Among the 6 dominant genera are *Aphanocapsa*, *Arthrospira*, *Merismopedia*, *microcystis*, *Raphidiopsis*, *Planktothrix*. Bacillariophyceae or Diatom, including *Navicula* and *Nitzschia*. Thus, Chlorophyceae found as dominated algae in the studied lake. The diversity of phytoplankton indicates that the lake's water is contaminated.

Keywords: *Phytoplankton diversity, Bundi city, Naval Sagar Lake.*

Environmental Sustainability and Role of Folktales

Mrs. Reena Kumari

Assistant Professor, Department of English, Government College Kota

Email – reenakumarimeena.eng@gmail.com

In the era of modernity, we have seen many inventions crossing many amazing milestones. Along with the comforts provided by nature, today we are living a golden life in every respect. This modernity becomes the chief cause of environmental pollution. It is clear that the environment should be clean and pollution free, for this purpose the first and foremost step that should be taken is to implement the motto 'Save Trees Save Life'. Environmental sustainability and role of folk tales. Folklore and folk tales play a significant role in environmental sustainability by promoting traditional knowledge, installing ecological values, influencing social norms, showing how early cultures dealt with nature amplifying the dangers of unsustainable interactions. For example, some tribal communities believe that gods and deities live in trees in the forest and that if they are not respected, the clan will be destroyed. This belief leads to the conservation of sacred plants which helps maintain biodiversity. Many folklorists around the world have contributed a lot for the conservation of biodiversity and environmental sustainability. They wrote many folk tales to inculcate the feeling of protection for environment. In Rajasthan regional writer, Vijayan Detha also make an effort by his folk stories to protect the environment. The paper explores how Rajasthani folk narrative place important role in environmental sustainability. Vijaydan Detha is the regional writer from Rajasthan who reinvented the Rajasthani folk tales, his collection of folk tales, namely Anokha pad is a collection of illustrated children's story. These folk tales reflect to love for trees and for in environment, folks have progressively transcended the boundaries of oral transmission to enter the Arena of the written world and Vijayan Detha have made it successfully.

Keywords: *Environmental sustainability, Folktales, Tribal Community, Tradition, Vijaydan Detha, Global Awareness.*

Education and Capacity Building for Sustainable Development

Astha Jain

Assistant Professor English, Dr. Bheemrao ambedkar govt. PG. College,
Sri.Ganganagar

Mail id: jainastha04142410@gmail.com

Education and capacity building are integral to achieving sustainable development, as they empower individuals and communities to address the complex environmental, social, and economic challenges of the 21st century. Sustainable development is a multifaceted goal that requires not only the conservation of natural resources but also the promotion of equity, social justice, and resilience. This paper explores the role of education and capacity building in advancing sustainability goals, with a particular focus on enhancing the knowledge, skills, and attitudes necessary for individuals and communities to contribute to sustainable practices.

Education for sustainable development (ESD) plays a critical role in raising awareness about sustainability issues and fostering the development of competencies such as critical thinking, problem-solving, and collaboration. It equips learners with the tools to understand global challenges such as climate change, biodiversity loss, and inequality while encouraging the adoption of sustainable behaviour's in daily life. Effective capacity building, which involves strengthening the abilities of individuals, organizations, and governments, complements education by ensuring that these groups can implement and sustain sustainable development strategies.

This paper examines various models of ESD and capacity building across different contexts, highlighting successful case studies and the challenges faced in integrating sustainability into educational frameworks. Additionally, it discusses the importance of partnerships between governments, educational institutions, non-governmental organizations, and the private sector to create a collaborative approach to capacity building. In conclusion, education and capacity building are essential drivers for achieving sustainable development, enabling both present and future generations to create more resilient, equitable, and sustainable societies. The paper advocates for the integration of sustainability principles into all levels of education and emphasizes the need for continuous learning and adaptation to address the evolving nature of global challenges.

Keywords: *Education, capacity building, sustainable development, sustainability, global challenges, resilience.*

Bio-Mimetic Approaches for Sustainable Technologies

Dr Sunita Chawla

Assistant professor, SPC Government College Ajmer

Mail Id:-drsunitachawala@gmail.com

Biomimetics holds the promise to contribute to sustainability in several ways. However, it remains unclear how the two broad concepts and research fields are connected. This article presents a literature overview on biomimetic sustainable developments and research. It is shown that there is an increasing trend in publications dealing with various topics and that the research takes place worldwide. The biological models studied in biomimetic sustainable developments are mostly sub-elements of biological systems on a molecular level and lead to eco-friendly, resource and energy-efficient applications. biomimicry in sustainable architecture is a holistic approach that integrates psychology, religion, and ethics to create environments that not only meet human needs but also coexist happily with the natural world. This article indicates that biomimetics is further integrating sustainability to contribute to real problems in this context

Keywords :- *Biomimetic, Sustainability, Research Field, Biological Model, Eco-friendly, Psychology, Religion.*

Challenges of Sustainable Development in Emerging Economies

Dr. Pramila Shrivastava¹, Suman Meena²

¹Professor, Department of Economics, Government Arts College Kota

²Associate Professor, Department of Economics MLV Government College
Bhilwara

India's journey toward sustainable development is marked by a challenging dual mandate: advancing economic growth while safeguarding environmental health. As a rapidly industrializing nation, India faces unique pressures to balance urban expansion and industrialization with resource conservation and pollution reduction. These challenges include the need to curb carbon emissions, protect natural ecosystems, and manage urban sprawl, all under the strain of escalating energy demands. Despite substantial policy efforts, such as the promotion of renewable energy, green growth initiatives, and sustainable urbanization frameworks, India must navigate a complex landscape where economic, social, and environmental goals frequently intersect and compete. To address these complexities, India has pioneered several adaptive governance models, integrating multi-stakeholder collaborations, judicial oversight, and innovative socio-economic policies. Judicial interventions have proven pivotal, as they provide necessary checks on industrial projects and prioritize environmental protections. Meanwhile, policy reforms aim to foster sustainable resource management, reduce environmental risks, and ensure resilient growth models that align with India's commitment to global sustainability goals. This comprehensive approach underscores the need for a synergistic strategy that harmonizes industrial advancement with ecological preservation. By embracing a multidimensional framework that leverages policy innovation, legal instruments, and community engagement, India stands poised to achieve sustainable growth that balances development with ecological integrity.

Keywords: *economic growth, environmental protection, industrialization, urbanization, carbon emission, natural resource conservation, renewable energy, green growth policies.*

The Development of Dalit Literature

Ashok Kumar Tanan

Assistant Professor (English), Government Arts College, Sikar

The present paper, titled, “The Development of Dalit Literature” seeks to trace the development of Dalit literature. The paper also delves into the conditions which engendered the sprouting out of most Dalit literature, especially in the post-Independence India. The experiences of the Dalits have not found expression only in poetry. Dalits have also chosen literary criticism as their tool. When one talks about Dalit literature one cannot forget the name of one of their most popular and influential leaders, Dr B. R. Ambedkar, even though his works were more political than literary. The study is based on the articulations by renowned Dalit and non-Dalit critics, intellectuals and litterateurs. It also lists some very notable texts which narrate Dalit life and present a nuanced understanding of the Dalit situation. Further, the paper also examines the history of caste-based discrimination and untouchability.

Keywords: Dalit, Literature, untouchability and history.

Biowaste Management: A Global Challenge during Pandemic

Dr. Manju Choudhary

Department of Chemistry, Government Science College, Sikar-332 001,
Rajasthan, India

E-mail: divyanshimanju@gmail.com

Throughout the pandemic, biomedical waste (BMW) management emerged as a global issue. The World Health Organization has emphasized that COVID-19 led to the generation of tens of thousands of tons of biomedical waste. It includes garbage from hospitals, research laboratories, the pharmaceutical sector, and others, with pharmaceutical waste significantly impacting the ecosystem. It encompasses trash produced during diagnosis, research, immunization, and treatment, including vials, bottles, gloves,

masks, needles, expired, unused, spilt, or contaminated pharmaceuticals, radioactive materials, and pharmacological waste. The timely and exact management of biomedical waste (BMW) is a critical concern. This book seeks to deliver a complete overview of BMW, emphasizing pharmaceutical waste, its classifications, points of entry, and management techniques such as pyrolysis and nanotechnologies. We have systematically analysed the existing guidelines and issues related to management technologies and offered a practical framework outlining the roles of government agencies and the pharmaceutical business, along with anticipated outcomes from the recommended procedures. In addition to advancements in the pharmaceutical sector, it is necessary to devise and execute eco-friendly methods to dispose of biomedical waste to benefit society.

Keywords: Biomedical waste (BMW), COVID-19, pharmaceutical waste, pyrolysis etc.

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Question of environmental Sustainability in the Area of Artificial Intelligence

Dr Surendra Yadav

Assistant Professor, S.P.C. Government College Ajmer

Environmental issues have continued to spur discussions, debates, public outrages, and awareness campaigns, inciting interest in emerging technologies such as Artificial Intelligence. Its usage is spread across many environmental industries, including wildlife protection, natural resource conservation, clean energy, agriculture, energy management, pollution control, and waste management. In 2017, at the United Nations Artificial Intelligence Summit in Geneva, the UN acknowledged that AI could be an enabler in the sustainable development process towards peace, prosperity, and dignified life for humankind and proposed to refocus on the application of AI in assisting global efforts on sustainable development to eradicate poverty, hunger and to protect the environment as well as to conserve natural resources. It is vital to address environmental sustainability concerns; however, with the advent of AI, most common environmental issues are now solvable by prioritizing human interests. Sustainability encompasses the

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interrelated areas of the environment, society, and economy. According to the United Nations' "Our Common Future," also known as the "Brundtland Report," it is defined as "development that satisfies current needs without compromising the ability of future generations to meet their own needs." Unfortunately, the Earth is currently facing serious consequences from global warming and climate change, and immediate action is required to encourage the use of environmentally friendly and sustainable products to address these issues. Environmental degradation and climate change are numerous environmental concerns requiring novel and intelligent artificial intelligence solutions. The literature on AI and environmental sustainability encompasses various domains. Notably, AI is being used to address the bulk of regional and global environmental concerns, including energy, water, biodiversity, and transportation, even though many of these sectors have permeated and evolved. However, there is a need to combine current literature on the application of AI, particularly in relation to environmental sustainability in areas such as energy, water, biodiversity, and transportation. There is a significant lack of research on how AI can promote environmental sustainability. This research aims to explore how AI can be applied to address environmental issues in various sectors to achieve the Sustainable Development Goals (SDGs).

Keywords: artificial intelligence, sustainable development goals, environment, sustainability.

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Law, Policy and Governance for Environmental Protection

Dr. Beena Kaushik

Associate Professor, Department of History
Samrat Prithviraj Chouhan Govt. College Ajmer, Rajasthan
Mail Id:- 1beenakaushik@gmail.com

Environmental Law and Governance stand as pillars in the journey towards sustainable development. Recognizing the intricate connections between the environment, social dynamics and economic dimensions, UNEP is committed to supporting countries in developing and implementing

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integrated environmental policies. This commitment is anchored in the belief that robust legal and institutional frameworks are essential for achieving environmental goals within the broader context of sustainable development, both globally and at the regional and national levels. Within the environmental subprogramme, UNEP collaborates with governments, UN institutions and Multilateral Environmental Agreements (MEAs). This collaborative effort aims to foster cohesive decision-making, ensuring that actions on environmental issues are both effective and efficient.

Keywords:-Environmental Law Policies, Governance, Sustainable development, Social & Economic Dynamics, UNEP, MEAs.

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Environmental Awareness in Kalidasa's *Abhijnanasakuntalam*

Dr. Mahendra Kumar Meena

Assistant Professor Department of Sanskrit,
Govt P.G. College Gangapur City

Ecocriticism deals with study of relationship between literature and environment. In the milieu of literature, Ecocriticism has its impetus on contemporary environmental issues and deals with human and non-human social life. Ecocriticism, fast emerging over the past few years, has offered a new area for the scholars, academicians and critics to pursue research and study in this direction. Kalidasa's *Abhijnanasakuntalam* brings forth before its readers ecological concepts like as relationship between man, nature and its prevailing culture. At this backdrop, the present paper makes an attempt to discuss Ecocriticism in Kalidasa's *Abhijnanasakuntalam*.

Key words: Ecocriticism, Ecology, Nature, Beauty, Character, Forest.

Education and Capacity Building for Sustainability

Dr. Seema Meena

Assistant Professor, Department of History
Samrat Prithviraj Chouhan Govt. College Ajmer, Rajasthan
Mail. Id :- seemaratan66@gmail.com

The concept of capacity-building revolves around enhancing the skills, abilities, processes, and resources of individuals, communities, and institutions, enabling them to tackle a wide array of issues more effectively. One of the most direct mentions of capacity building in the SDGs is found in Goal 17, which focuses on strengthening global partnerships to support sustainable development. This is essential for these countries to not only participate in, but also contribute meaningfully to, the global sustainable development agenda. It plays a pivotal role in virtually all the other goals due to its cross-cutting nature. For instance, in SDG 4, which aims to ensure inclusive and equitable quality education, capacity building is crucial for empowering educators and learners. By enhancing teaching methodologies and learning environments, and providing access to necessary resources and training, capacity building directly contributes to improving the quality of education. In the context of SDG 8, which focuses on promoting sustained, inclusive, and sustainable economic growth, capacity building is key in equipping the workforce with the necessary skills. This includes vocational training, digital literacy, and entrepreneurship skills, which are vital in the rapidly changing labor market. Such capacity enhancement leads to better job opportunities, increased productivity, and economic growth, particularly in developing economies.

Keywords:- Education, Capacity Building, SDGs, Sustainability, Abilities, Methodologies, Economic Growth, Opportunity.

Economic Strategies for Environmental Sustainability

Dr. Priyanka Saini

Assistant Professor, Department of Economics
Shaheed Captain Ripudaman Singh Rajkiya Mahavidyalaya, Sawai
Madhopur

Email- psainijpr@gmail.com

In recent years, economic strategies for environmental sustainability have gained critical importance as governments, businesses, and organizations recognize the urgent need to address environmental challenges while fostering economic growth. These strategies focus on creating a balance between economic development and environmental stewardship, aiming to reduce resource consumption, minimize waste, and lower greenhouse gas emissions. Core approaches include promoting a circular economy, adopting renewable energy sources, implementing green technologies, and enhancing resource efficiency across industries. Sustainable business practices, such as corporate social responsibility (CSR) and the triple bottom line (people, planet, profit), are also integrated to ensure long-term value creation. Additionally, policymakers are leveraging tools like carbon taxes, incentives for green investments, and stricter environmental regulations to encourage sustainable practices. By aligning economic incentives with environmental goals, these strategies aim to drive sustainable development, support biodiversity, and mitigate climate change, ultimately fostering resilience and a sustainable future for both society and the planet.

Key Words: *sustainability, environmental, strategies, economic, development.*

Economic strategies for sustainability

Dr. Aruna Kumari Paliya

Assistant Professor, Department of Economics

Govt. College Kudi Bhagtasni, Jodhpur (Raj.)

Mail-arunagenwa@gmail.com

The integration of sustainability into economic strategies is essential for addressing the challenges posed by climate change, resource depletion, and socio-economic inequality. This paper examines the economic strategies that promote sustainable development, emphasizing the role of market-based mechanisms, policy interventions, and innovation in driving long-term ecological and social value. Key strategies discussed include the implementation of carbon pricing, the promotion of green investments, and the transition to a circular economy, where resource use is minimized and waste is maximized through reuse and recycling. The paper also explores the role of subsidies, taxes, and public-private partnerships in incentivizing businesses and industries to adopt sustainable practices. Additionally, it highlights the importance of fostering sustainable consumption and production patterns, aligning economic growth with environmental and social sustainability goals.

The analysis further considers the challenges of measuring and quantifying sustainability impacts, proposing methods for incorporating externalities such as environmental degradation and social costs into economic decision-making. Finally, the paper underscores the necessity for coordinated global efforts, with economic strategies that not only drive local and regional sustainability but also contribute to achieving international climate and development targets, such as the United Nations Sustainable Development Goals (SDGs).

Keywords: - *sustainable economics, green investments, circular economy, SDGs, economic policy.*

Economic Strategies for Sustainability

Dr. Prakash Seervi

Associate Professor, SPC Govt. College Ajmer (Raj.)

Now generally understood to be a combination of environmental, social and economic performance. Economic sustainability is the most elusive component of the triple bottom line approach. There is not even universal consensus that businesses should be economically sustainable. Though most concur that sustainability is desirable to prevent the devastating and inefficient impacts of corporate premature death .Economic sustainability means the use of various strategies for employing existing resources optimally so that a responsible and beneficial balance can be achieved over the longer term. Economic sustainability systems support sustainable social and environmental outcomes. The main goal of economic sustainability is to create a balance between economic growth and the development of positive change for the environment and humanity. Economic stability works towards the concept to provide all people with the resources necessary to live a satisfying life. The economic pillar of sustainability include investing in renewable energy sources, creating a circular economy, and reducing cost though increased efficiency. For further progress to be made , change to wider systems and mindsets are likely to be needed how ensuring that more challenging sustainability aims are integrated into innovation targets are worth and cost. The changes will expand the scope for successful sustainability strategies and enhance the ability to sustainable economic strategies to compete against non sustainable ones.

Keywords:- *Environment, Economic pillar, Community, Development, Innovation.*

Environmental Sustainability through CSR: An Indian Perspective

Dr. Chetna Kumawat

Assistant Professor, Department of EAFM
MLV Government College, Bhilwara, Rajasthan
E-mail: kumawatchetna07@gmail.com

Corporate social responsibility (CSR) has become a key instrument in India for advancing environmental sustainability. With an emphasis on environmental preservation, the Companies Act of 2013 requires big businesses to spend money on corporate social responsibility. This study looks at how CSR might help India deal with its urgent environmental issues, including waste management, water scarcity, and climate change. With an emphasis on eco-friendly activities, sustainable agriculture, and renewable energy, the study shows that CSR programs have made a substantial contribution to environmental protection. Indian businesses have made significant investments in environmental initiatives like trash reduction, water harvesting, and afforestation. CSR has increased the collective impact by fostering collaborations between governments, corporations, and non-governmental organisations. Employee engagement, operational efficiency, and brand reputation have all increased because of successful CSR initiatives. Study also highlights challenges and opportunities in the field and suggests measures to be taken. Study revealed that CSR assessment and reporting are not standardised. Startups and SMEs have little awareness and engagement. Integrated CSR strategies that consider social, economic, and environmental factors are required. In conclusion, CSR has emerged as a key force behind environmental sustainability in India, encouraging ethical company conduct and community involvement. To enhance impact, it is essential to address existing challenges, encourage collaborative efforts, and leverage technology for sustainable development.

Keywords: *Corporate Social Responsibility (CSR), Environmental Sustainability, India, Companies Act 2013, Renewable Energy, Sustainable Agriculture.*

Environment and Human Health

Laveena Tandel

Assistant professor (Department of ABST)
Government Commerce Girls College, Kota
Email ID - laveena2291@gmail.com

The living environment role is the health of individuals evolves. A good environment is an indication of healthy human beings and a developed nation. Environment and human health are intricately related. It is important to analyses the relevance of the environment to health at the light of different factors. Pollution growth and intensification of man's activities on various fronts like agricultural development, urbanization and industrialization all over the world have created a hazardous environment. Global warming being one such threat to life that can completed destroy the mankind. Such situation can only be prevented from worsening only when the natural resources are used in a sustainable manner and this can only be achieved through sustainable development. The association between environment as a whole and human health are very complex.

Keywords:- *Environment, Human health, Global warming, Living environment.*

Environment and India's Feast and Festivals

Dr. Renu Jangid

Professor, Govt. Girls College, Magra Punjala Jodhpur
jangidrenu28@gmail.com

Indian culture (feast and festivals) venerates and protects nature, including forests, rivers, mountains, trees, and animals. In Hinduism, the sun, wind, land, trees, plants, and water are worshipped as the basis of human survival. Every aspect of nature is considered sacred, and humans are not above nature or other life forms. This paper through descriptive research design tries to highlight how through the various feast and festivals the

environment is conserved and protected in India. The awareness of environment protection when associated with festivals, it becomes tradition which passes from one generation to another, it becomes an integral part of the life of people in the society, hence ecology is balanced.

Keywords - environment, festivals, worship, nature, society.

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Environmental Issues, Challenges and their Solutions for Sustainable Development: A Review

Dr. Meena Dochania

Associate Professor, Dept. Of Chemistry, S. P. C. Govt. College, Ajmer

Email- dochaniameena@gmail.com

Human activities have significantly altered the earth's ecology, leading to major environmental changes throughout history. In developing nations like India, extensive human interventions have exacerbated environmental challenges such as climate changes, soil degradation, greenhouse effect, global warming, and ecological imbalance. These issues have had a direct impact on environmental quality and sustainability. Research and data clearly show that if current patterns persist, conditions will deteriorate in the foreseeable future. Sustainable methods, including bioremediation for water pollution and microbial decomposition for agricultural waste, are becoming increasingly vital and require greater awareness to mitigate the adverse effects of human actions and ensure sustainable development. Microorganisms have an essential role in the cycling of carbon and other nutrients, making their impact on climate change particularly important to examine. The relationship between microorganisms and nutrient cycling serves as a powerful approach to tackling various environmental problems, including soil degradation, global warming, and ecological instability. Therefore, this study sought to address a gap in research and evaluation by investigating environmental challenges and their implications for sustainable development.

Key Word: environmental changes, ecological imbalance, microorganisms and nutrient cycling.

Environmental Policy

Shalu Kanwat

Assistant professor, Department of zoology, Govt. PG college Gangapur city
Email-shalukanwat87@gmail.com

Environmental policies encompass a wide range of measures aimed at protecting the environment and promoting sustainable practices. These policies can cover various sectors such as air and water pollution control, waste management, conservation of biodiversity, renewable energy promotion, climate change mitigation, and more. By implementing comprehensive environmental policies, governments strive to strike a balance between economic development and ecological sustainability. Environmental policy dictates actions to safeguard the environment. It outlines rules for industries and individuals. Government agencies enforce these policies. Monitoring pollution levels is a key aspect. Fines or penalties deter violators. Environmental impact assessments evaluate proposed projects. Conservation measures protect biodiversity. Regular updates adapt policies to emerging challenges. Public awareness promotes eco-friendly practices. Collaboration with international bodies enhances effectiveness. Evaluation ensures policy goals are met. Continuous improvement is essential for sustainable environmental management.

***Key words:** Environmental policies, public Government.*

Environmental Pollution and Its Impact on Public Health

Jyoti Nagar

Assistant Professor, Department of EAFM
Government Commerce Girls College, Kota
Email ID – jyotinagar28@gmail.com

Environmental pollution is the wide-reaching problem and it is likely to influence human health. This paper provides the insight views about the effects of environmental pollution in the perspective of air pollution, water and soil pollution on public health by disease and problems. Common causes for environmental pollution are industrialization, use of pesticides and nitrogen-based fertilizers, crop residues in agriculture, urbanization, forest fire, desert dust and inadequate waste management have intensified environmental health risk and pollution, especially in low- and middle-income countries. Pollution in the environment or climate related events can have a massive impact on our health. Air and noise pollution and heavy metals like mercury are directly related to health issues like asthma, hearing loss, dehydration and heart disease. It can cause a variety of respiratory problems, cardiovascular disease, skin irritations, neurological disorder and even cancer. Water, air and soil pollution can cause significant adverse health outcomes in human, wild and domestic animals and plants. Environmental contamination is an important factor in many non-infectious diseases, including cancer and respiratory illness.

Keywords:- *Environmental Pollution; Air Pollution; Water Pollution; Soil Pollution; Public Health; Asthma; Cancer.*

Future Scope of Transition Metal Complexes

Rakhi Methi

Assistant Professor, Department of Chemistry, J.D.B. Govt. Girls College,
Kota

gorimethi1984@gmail.com

In recent years, many compounds have been developed to achieve more environmentally friendly chemicals. One of the aspects to consider for further work is to synthesize more safer chemicals in view of green chemistry. Numerous other derivatives can also be synthesized with different metal ions. These synthesized complexes can again be analysed through various other spectroscopic techniques in order to obtain more accurate results. It would also be interesting to discover other new rapid mechanism for synthesizing these compounds. Another aspect to consider in future work is to check these synthesized compounds for biological activities such as: Antioxidants, Antimicrobial, Anti-cancer, Anticonvulsant, Anti-insecticidal, Ant-helminthic, Anti-diabetic, Analgesic. Metal complexes have a wide range of applications in several scientific disciplines, making them highly useful in numerous sectors. Coordination compounds possess a multitude of intriguing characteristics that have a wide range of practical uses in various facets of human life.

Key Word: *Biological activities, Green chemistry, Numerous factor, Coordination compound.*

Green Chemistry for Environmental Remediation

Ganesh Kumar

Department of Botany, MLS Govt. Girls' College, Jaisalmer (Raj.)

Email: gkbotany@gmail.com

Green chemistry, defined as a collection of ideas which is applied to reduce the production and design of toxic and hazardous substances for company workers and customers. The process of removing the environment free of pollutants is known as environmental remediation. As anthropogenic environmental pollution increases, it is disrupting the health and environmental systems. As awareness of environmental protection, pollution prevention, and safer industrial ecology grows, significant strides have been made in eliminating pollution problems and safeguarding the environment, public health, and industrial ecology. Environment friendly chemistry is the design of chemical processes and products for the purpose of reducing or eliminating the use and manufacture of hazardous substances. Green chemistry techniques are used for soil, groundwater, and environmental remediation, as well as purification. Future advances in green chemistry will use the principles as a systematic design framework.

***Keywords:** Environment, green chemistry, groundwater, pollution, remediation.*

Eco-friendly and Sustainable Agricultural Practices and Natural Farming Using a Multidisciplinary, Integrated, and Cross-Sectoral Approach: A Timely Demand for Environmental Remediation and Human Health

H. R. Dhanetia

Assistant professor, Department of Chemistry,
L.B.S Government College, Kotputli, District: Kotputli-Behror (Rajasthan)
Email: harichem09@gmail.com

As of 2024, India has become the most populous country, surpassing China. India's average agricultural productivity per hectare is 2.7 tonnes and quality of agricultural products is sub standard. To enhance agricultural production for profit and to meet the food needs of the growing population, organic pesticides, fungicides, herbicides, synthetic plant growth hormones and chemical fertilizers have been used rampantly since the inception of the 'Green Revolution' in India. These practices are degrading our ecosystem, environment and human health. Therefore, this article focuses on a multidisciplinary, integrated and cross sectoral approach to environmental remediation, sustainability and addressing human health challenges through eco-friendly practices and natural farming.

Key Words: Organic Pesticides, environmental degradation, ecological imbalances, sustainability, remediation, natural farming etc.

Global Challenges, Local Solutions: Examining Community-Led Environmental Sustainability Initiatives in Response to Global Environmental Crises

Aastha Dubey

Assistant Professor, Dept. of Business Administration

S.P.C Govt. College, Ajmer

aasthadubey2002@gmail.com

This study explores the impact of local recycling and upcycling initiatives as effective responses to the global plastic pollution crisis. With plastic waste contaminating oceans, harming wildlife, and affecting human health, the urgency for sustainable waste management has never been greater. While large-scale solutions face challenges of cost, infrastructure, and policy alignment, local efforts have demonstrated innovative approaches that not only reduce waste but also foster environmental stewardship within communities. This research examines diverse case studies of community-driven recycling and upcycling programs in urban and rural settings, highlighting how these initiatives address plastic waste by converting it into usable products, art, and sustainable materials. The study investigates the economic and social benefits of upcycling as a creative solution to waste, offering insights into how small businesses, artisans, and local entrepreneurs contribute to waste reduction. Additionally, the research evaluates the scalability and adaptability of these models to inform broader waste management practices and policies. By documenting the successes and challenges of localized efforts, this study reveals the potential for community-led recycling and upcycling as a sustainable pathway to mitigating plastic pollution globally. The findings emphasize the importance of grassroots action in environmental conservation and call for greater support and integration of local initiatives into global waste management strategies.

Keywords: *Plastic pollution, Recycling initiatives, Upcycling, Waste management, Community-driven solutions, etc.*

Global Changes and Social Solutions in India

Dr. Usha Lamror

Associate Professor, Govt. Dungar College, Bikaner

India is addressing global climate change through a combination of national policies and local initiatives: National policies. India's National Action Plan on Climate Change (NAPCC) includes eight missions, such as the National Solar Mission and the National Mission for Sustainable Habitat. India also aims to reach net zero emissions by 2070. Local initiatives- Communities are adapting to climate change through initiatives such as: Health workers: Educating communities on proper ventilation and vaccination to prevent disease outbreaks, Resilient agriculture: Promoting resilient agriculture to help save lives and livelihoods, Groundwater conservation: The Atal Bhujal Yojana (Abhy) program aims to improve groundwater management, Mangrove planting: The Emergency Tsunami Reconstruction Project aims to protect India's coasts by planting mangroves, Flood-prone area development: The Bihar Kosi Basin Development Project aims to make flood-prone areas safer. India is also working to reduce single-use plastic, produce clean cooking fuel, and protect regional glaciers.

Globalization and Its Impact on Cultural Identity: A Study of Transnational Migration

Dr. Jitendra Pakad

Assistant Professor, Govt College Karauli

Globalization has significantly reshaped the dynamics of cultural identity, particularly in the context of transnational migration. The rapid movement of people, ideas, and goods across borders has created new intersections between diverse cultural practices and identities, leading to both opportunities for cross-cultural exchange and challenges related to the preservation of distinct cultural heritage. This study explores the impact of globalization on cultural identity, focusing specifically on transnational migration. By examining the experiences of migrant communities, the research analyzes how migration has facilitated the blending, adaptation, and sometimes erosion of cultural identities. Through qualitative and quantitative methods, the study assesses how migrants negotiate their cultural identities in new, globalized environments, balancing the preservation of their native cultural practices with the pressures to assimilate or integrate into host societies. The research highlights the complex, multifaceted nature of cultural identity, which is no longer seen as static but as dynamic, fluid, and constantly evolving in response to transnational movements and interactions.

in their host countries. This process results in the creation of multiple, layered identities that Key findings suggest that globalization does not lead to the homogenization of cultures, as often feared, but rather to a through remittances, social media, and transnational networks, but also adopt new cultural practices challenge traditional notions of cultural belonging and national identity. hybridization of cultural forms. Migrants maintain strong connections with their home countries.

The study contributes to a deeper understanding of how globalization influences cultural identity through migration and offers policy recommendations for fostering cultural diversity and inclusion in increasingly multicultural societies. By framing cultural identity as a dynamic process, the research underscores the importance of supporting migrant communities in navigating the complexities of globalization without losing their cultural roots.

Green Finance as a Catalyst for Sustainability: Analysing Financial Institutions, Investment Instruments, and Regulatory Policies

Dr. Renu Nainawat¹ and Ms. Shahida Bano²

¹ Associate Professor, Department of EAFM, Govt. Commerce Girls College, University of Kota, Kota, India

² PhD Scholar, Department of EAFM, Govt. Commerce Girls College, University of Kota, Kota, India,

Email Id - drrenumanoj@gmail.com

Email Id - shahidaaa14@gmail.com

Green finance and sustainable investment have emerged as essential in addressing social challenges and global environmental problems. This paper examines the changing field of green finance, emphasizing how it supports the shift to a low-carbon economy, encourages environmentally friendly investing methods, and drives sustainable investment practices. The study examines the role of financial institutions, regulatory frameworks, and innovative financial instruments such as green bonds, sustainability-linked loans, and impact investing—in facilitating capital flow towards environmentally and socially responsible projects. Additionally, it examines the impact of green finance on business sustainability, evaluating its opportunities and challenges. Findings suggest that while green finance offers substantial potential for advancing sustainable development goals, effective implementation relies on improved transparency, standardized metrics, and robust regulatory policies. The paper concludes by recommending regulatory measures and investment strategies to enhance the effectiveness of green finance, ultimately aiming to foster a more resilient and sustainable global economy.

Keywords: *green finance, sustainable investments, regulatory framework, opportunities & challenges of green finance.*

Green Chemistry and Environmental Remediation

Prof. Neetu Bharatiya

SRKP Govt PG College Kishangarh

neetubharatiya@gmail.com

Green Chemistry is the branch of science which focuses on minimising the wastes generated during a chemical process. These wastes are hazardous for both consumers and workers. These days there is much awareness for environmental sustainability and protection. Environmental remediation is the process of removing toxins from the environment. Green Chemistry utilises such techniques and processes which help in environmental remediation. Hence there is urgent need to not only use such processes to design chemical synthesis but also to use such green practices at all levels. When applying the principles of green chemistry during the design phase, we can prevent pollution at the source by making safer chemicals. Green processes include utilization of microwave synthesis, ultrasound technologies, alternate fuels for energy such as biofuels instead of fossil fuels, renewable energy resources, solvent free processes, use of green catalysts, use of ionic liquids, etc. Green remediation is the practice of considering all environmental effects of remedy implementation and incorporating options to minimize the environmental footprints of cleanup actions.

Ecological and Agricultural Study of Beehives near Mustard Fields in Umeddganj, Kota

Alisha and Aditi Saxena

Department of Zoology, JDB Government Girls College, Kota

E-mail – Aditisaxena1978@gmail.com

This study investigates the ecological and agricultural significance of beehives located near mustard fields in Umeddganj, Kota, specifically during the flowering season in December. The presence of beehives enhances pollination, directly contributing to improved crop yields while simultaneously supporting honey production for local apiculture. By establishing beehives in proximity to these fields, beekeepers can leverage the abundant nectar and pollen available from flowering mustard plants, aligning perfectly with the foraging needs of honeybees. Our research involved observing bee activity, hive health, and honey production throughout the December flowering period. The findings indicate that beehives significantly boost mustard pollination, leading to higher yield and quality of the crops. Additionally, the ecological benefits include increased biodiversity and sustainability in agricultural practices. The study underscores the importance of beekeeping not only for agricultural productivity but also for environmental conservation, thereby fostering a mutually beneficial relationship between apiculturists and farmers in the region. This research highlights the vital role of local bee species, such as *Apis mellifera* and *Apis cerana*, in enhancing both agricultural outcomes and ecological health. Future studies are suggested to explore long-term impacts and further optimize beekeeping practices for sustainability.

Key words: Apiculture, Pollination, Mustard Fields, Ecological Significance, Agricultural Productivity.

Characterization of Water and Environment

Dr Shyam Soni¹, Mahaveer Singh²

^{1,2}Assistant Professor Govt College Tonk

The purity of water that comes from nature can never be guaranteed. Precipitation is the primary means through which the majority of the world's water supplies are replenished. The water picks up a broad range of dissolved or suspended contaminants as it travels over (in the case of runoff) and through the ground (in the case of infiltration) during precipitation, which drastically reduces the water's utility. Because of its distinctive physical, chemical, and biological qualities, water is an indispensable component of all living things, including plants and animals. These qualities also have a direct impact on the kinds of aquatic biota that can be found and where they are distributed. The properties of the water are taken into consideration while formulating all of the regulations and guidelines that govern the discharge of wastes into the body of water. In addition to this, the formulation of policy measures and the enhancement of water quality are both revolving around these qualities.

Keywords: Physical, chemical, water, environment.

Environmental Health Hazards and the Role of Natural Farming in India

Dr. Sanjay Parihar

Assistant Professor, Geography, Government College, Sumerpur

India is experiencing increasing environmental health hazards due to industrialization, urbanization, and intensive agricultural practices. The excessive use of synthetic pesticides and fertilizers in conventional farming has exacerbated soil degradation, water pollution, and air contamination, contributing significantly to public health risks. Natural farming, a holistic approach rooted in traditional agricultural practices, has gained attention as a sustainable alternative. This paper explores the environmental health hazards associated with conventional farming, the potential benefits of natural farming in mitigating these hazards, and the challenges and opportunities for its adoption in India.

Keywords: agriculture; fertilizer; industrialize.

Integrative Solutions for Environmental Sustainability: Global Innovations and Emerging Challenges

Dr. Sandesh Gautam

Assistant professor (Hindi)

Govt. Kamla Modi Girls collage, Neem ka thana

Achieving environmental sustainability on a global scale requires balancing economic growth, ecological preservation and social responsibility. This paper, themed "Global Innovations and Challenges: Integrative Approaches to Environmental Sustainability," examines critical innovations and cooperative strategies that support a sustainable future. Focusing on advancements in areas such as renewable energy, sustainable agriculture,

waste reduction and urban development, the study highlights both technological progress and the policy frameworks needed to drive change. It also addresses pressing challenges; including climate change, resource limitations and environmental degradation, by proposing integrated, cross-disciplinary solutions that promote community participation, circular economy concepts and international policy coherence. The research emphasizes the importance of global collaboration and comprehensive strategies for building resilient ecosystems, presenting a foundation for future studies, policy development and action toward a sustainable world.

Keywords: Environmental sustainability, Climate change, Circular economy, Cross-disciplinary solutions, Policy frameworks.

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Isolation of eDNA from Water Bodies of Hadoti Region

Narendra Kumar Sharma¹, Ravi Prakash Shringi², Ratnamala Ghosal³

1. Assistant Professor, 2. Assistant Professor, 3. Research Scholar

1 & 3 -Banasthali Vidyapith, Niwai

2 Modi Institute of Management and Technology, Kota

Email ID 1: drnarendraks@gmail.com

2: shringi.ravi@gmail.com

3: mouprit16@gmail.com

Environmental DNA (eDNA) provides a non-invasive approach for assessing aquatic biodiversity, aiding conservation efforts by detecting DNA shed by organisms in their habitats. This study isolates and analyzes eDNA from water bodies in Rajasthan's Hadoti region, which includes diverse aquatic environments such as rivers, lakes, and ponds. Water samples were collected across different sites, depths, and seasons to capture species distribution and seasonal variations influenced by breeding cycles and rainfall. Samples were filtered on-site, stored with preservation buffers, and eDNA was extracted using kits tailored to minimize environmental inhibitors. DNA was amplified using PCR with primers targeting conserved genetic regions, allowing for broad taxonomic identification from fish to amphibians. Sequencing on high-throughput platforms enabled accurate species identification via comparison

with reference databases. The findings reveal insights into species richness, the presence of invasive species, and seasonal biodiversity changes across the Hadoti region. This eDNA-based approach supports conservation by enabling regular biodiversity monitoring without disrupting habitats or resident species. The study underscores the potential of eDNA for environmental management, identifying critical habitats, and informing strategies to protect native biodiversity and manage invasive species. It highlights eDNA as a sustainable tool for fostering ecological balance and conservation in aquatic systems of arid and semi-arid regions eDNA.

Keywords: *Aquatic Biodiversity, Edna, PCR, Ecological Balance, Environmental Inhibitors.*

GIS: IAES-2024/282

The Environmental Impact of e-waste: Obstacles and Remedies

Dr. Jagdish Prasad

Assistant Professor, Department of Physics, Govt. Science College, Sikar
(Raj.) 332001

Email: jpdhaka22@gmail.com

A secondary source of precious and valuable metals is electronic trash. These metals' profitable prospects, expanded commercial opportunities, ability to provide a source of income, and potential to help achieve the Sustainable Development Goals (SDGs) 2030 agenda have made urban mining of these metals a hot topic in recent years. However, because of the presence of hazardous chemicals, the substantial amount of e-waste proves to be an overwhelming issue. The massive production of e-waste has led to a number of problems for current treatment solutions because of its detrimental effects on the environment and human health. The majority of wealthy nations possess technical know-how, established system boundaries, and promising e-waste management technologies. Due to a number of obstacles and a dearth of pertinent methods, the situation in emerging nations is different. The three main issues impacting India's entire e-waste value chain are illegal dumping, a lack of data inventorization, and the unavailability of treatment

alternatives. Since a sustainable e-waste value chain, resource security, social well-being, less environmental effect, and overall sustainable development depend on these strategic interventions adhering to current legislation, this paper addresses them. The 4R concept, extended producer responsibility, polluter pays, life cycle assessment, bioleaching, eco-product design, and circular resource management were also recognized and addressed as potential future directions for the Indian context. It is essential and strongly advised to formally integrate the unorganized sector into an open recycling system.

Keywords: *E-Waste, Sustainable, Environment, Hazardous.*

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Kinetics Of Isoamyl Alcohol and Ethylene Glycol Inhibited Uncatalyzed and Cobalt (II) Catalysed Autoxidation of S(IV) in Aqueous Heterogeneous Alkaline Medium

Manoj Kumar¹, Chandrashekhar Meena² and Manju Bala Yadav¹

1. Department of Chemistry, Government College Kota, Kota, Rajasthan, India

2. Department of Chemistry, Government P.G. College, Gangapur city, Rajasthan, India

Email: mjkrdhawan@gmail

The kinetics of Isoamyl alcohol and Ethylene glycol inhibited CoO catalysed S(IV) autoxidation in the pH range 7.50 to 8.50 medium have been investigated and a rate law & free radical mechanism have been proposed based on the observed results and inhibition parameters. In all situations, the reaction's order and rate constants were calculated, meanwhile, the reaction was determined to be first-order. The impact of various temperatures & pH levels were explored also. We reported that Isoamyl alcohol and Ethylene glycol as a significant inhibitor for SO₂ autoxidation in the pH range of 7.50 to 8.80. The Arrhenius equation was used to get the value of apparent activation energy (E_a) ($K = A.e^{-E_a/RT}$). Based on the observed results, following rate laws is given as below:

$$\frac{-d[S(IV)]}{dt} = \frac{(k_1 + k_2 [CoO]) [S(IV)]}{1 + B [Organics]}$$

Keywords: Kinetics; Autoxidation; SO₂; Co(II); Catalysis; Isoamyl alcohol and Ethylene glycol.

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Synthesis of Transition Metal Nanomaterials Mediated by Plant Extract

Nimish Kumar¹, Preeti Bairwa², Vijay Devra³

Assistant Professor, Assistant Professor, Professor,

Department of Chemistry

Janki Devi Bajaj Government Girls College Kota, Rajasthan, India

chemistnimish@gmail.com

Green Nano-technology is a rapidly developing scientific field that has attracted significant attention recently because of its many potential uses. It is a multidisciplinary field that is safe, non-hazardous, and environmentally benign, unlike chemical and physical procedures for creating nanoparticles. Because the biomolecules in the plant extract serve as both a capping and reducing agent, the resulting nanoparticles are extremely stable. Consequently, produced nanoparticles have a broad variety of possible uses in the medicinal and ecological fields. The current report contains information on numerous green synthesis methods that rely on different plant parts for green transition metal nanoparticle synthesis.

Keywords: Green synthesis, Nanotechnology, Transition Metal nanoparticles, Plants extract, Biomolecules.

Study of Metal-doped and Un-doped Titanium Oxide Nanoparticles for the Photocatalytic Degradation of Dyes Under UV and Solar Irradiation

Ajay Kumar Meena

Assistant professor, Department of Physics, Govt Girls College Baran

This study majorly explores synthesis, characterization, morphological behavior and photocatalytic properties of metal doped and un-doped titanium oxide nanoparticles for photocatalytic degradation of dyes. Titanium oxide has three natural phases anatase, rutile and brookite with properties like good optical properties and high chemical stability, non-toxicity and strong oxidative capabilities. Among all these phases The rutile phase is most stable phase and anatase, brookite phases are thermally metastable. Anatase and rutile phase TiO_2 has tetragonal crystalline structure and brookite phase TiO_2 has orthorhombic crystal structure. Anatase phase showed more photocatalytic activity than other phases and photocatalytic activity affected by crystalline form and parameters like surface to volume ration, particle size, morphology. Calcination temperature is also an most important factor in controlling the particles size and phase of prepared TiO_2 nanoparticles.

Nanoparticles were characterized using X-ray diffraction (XRD), scanning electron microscopy (SEM), energy-dispersive X-ray spectroscopy, X-ray photoelectron spectroscopy to analyse their structural, morphological and optical properties. Band gap of titanium oxide nanoparticles successfully narrowed by transition metal doping enabling activation under solar light. The photocatalytic performance of these nanoparticles was tested on the degradation of methylene blue and rhodamine B under visible light irradiation and results show a significant increase in degradation rates for metal-doped titanium compared to un-doped titanium.

Keywords: Photocatalytic, Nanoparticles, Band gap, Degradation etc.

Jeen Mata Sacred Grove of Sikar District, Rajasthan: Biodiversity Value, Status and Strategies for its Conservation

Suman Khichar

Research scholar

Department of Botany, University of Rajasthan, Jaipur

Sacred groves are communally-protected forest fragments with significant religious connotations. Sacred groves are part of landscape containing trees, animals, other forms of life and geographical features that are conserved by human societies. Indigenous cultural and rituals practices of the local people in sacred groves serve as a tool for conserving biodiversity. Sacred groves are distributed over a wide ecosystem and help in conservation of rare and endemic species. Well-preserved sacred groves are store houses of valuable medicinal and other plants having high economic value, and serve as a refuge to threatened and endangered species. Our present study area is Jeen Mata Oran of Sikar District, Rajasthan that inhabits many significant plants species which needs to be conserved. There are many factors which are adversely affecting plants, growing in this area including overgrazing, overexploitation, and various anthropogenic activities. So, this present study brings in light various measures to conserve the plants species of this particular area.

***Key words:** Biodiversity value, Conservation status, Sikar, Sacred grove, Socio-cultural aspects, Tree diversity.*

Environmental Biocatalysts Encompass Enzyme-based Cleaning and Innovative Green methods

Kajal Kumawat^{1*}

¹Janki Devi Bajaj Government Girls College Kota, 324005, India

* Author's email: Kajalkumawat05@gmail.com

Heavy metals are poisonous and can accumulate in living creatures, posing a substantial hazard to both ecosystems and human health. In complicated environmental conditions, traditional removal methods may not be cost-effective, energy-efficient, or reduce secondary pollution. Molecular simulation approaches provide detailed insights into the interactions between heavy metals and adsorbents, making them a possible solution. Bio-catalysis improves manufacturing processes by reducing energy, raw material usage, waste, and hazardous byproducts. Bio-catalysis is making significant improvements in environmental domains, including enzymatic bioremediation, renewable energy generation, and biochemical remediation of 'dirty' fossil fuels. Although bio-catalysis has numerous benefits, it is often hindered by high production costs and low yields, limiting its use. This article focuses on new advances in recombinant DNA techniques for biocatalyst development. It also encourages the biotechnology community to pursue environmental bio-catalysis, including enzyme remediation and green processes.

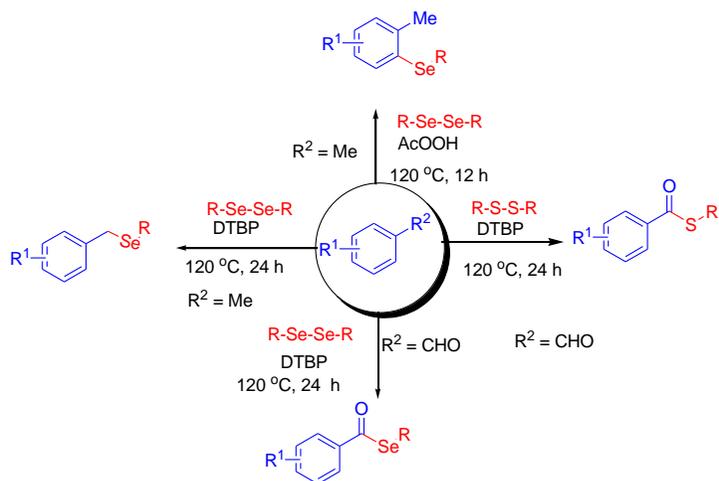
Sustainable Developments of Metal-free C-S Bond Formation via Coupling Reaction

Prof. Mangal Chand⁺¹, Dr. Kamlesh Kumar Dabaria*,

^{+1,*}Seth RL Saharia Govt. PG College, Kaladera, Jaipur, Rajasthan

Email: kamleshdabaria@gmail.com * ; mcsankhala@gmail.com ⁺¹

Recently, peroxide catalysis emerged as interesting substitute for various cross-coupling reactions under metal-free conditions. In recent years, variety of C-C, C-S, C-N, C-O, C-Se bond formations have been performed using peroxide as catalyst.¹ Mostly, such transformations proceed via radical mechanism. In this abstract, we describe an oxidant promoted thiolation/selenation of methyl arenes/aldehydes using disulfide/diselenides as source of sulphur/selenide under metal-free and solvent-free conditions.^{2,3}



Keywords: Sustainable Development, Metal-free, Coupling reaction, Selenation.

Global Environmental Problems: Challenges and Solutions for a Sustainable Future

Prof Sitaram Choudhary

Department of Political Science, Govt. College, Phagi, Jaipur-303005 (India)

Email: profsitaramchoudhary@gmail.com

The world is facing numerous environmental challenges that threaten the very foundation of human existence. Climate change, air and water pollution, deforestation, biodiversity loss, and waste management issues are just a few of the pressing concerns. This paper provides an overview of the current state of global environmental problems, their causes, consequences, and potential solutions. We examine the impact of human activities on the environment and discuss strategies for mitigating these effects, including renewable energy, sustainable agriculture, conservation efforts, and environmental education. Furthermore, we highlight the role of international agreements and organizations in addressing these challenges. Our analysis underscores the need for collective action, cooperation, and policy changes to ensure a sustainable future. Air pollution is an environmental problem that is familiar to residents of absolutely all corners of the earth. It is especially acutely felt by residents of cities where enterprises of ferrous and non-ferrous metallurgy, energy, chemical, petrochemical, construction, pulp and paper industries operate. In some cities, the atmosphere is also severely poisoned by vehicles and boiler houses. These are all examples of anthropogenic air pollution. The subject of the study is the emissions of carbon dioxide into the environment. The purpose of the study is to solve the problem of environmental pollution by harmful substances and preserve the ecology in the world.

***Keywords:** Global environmental problems, climate change, sustainability, conservation, environmental education.*

Natural Farming: A Sustainable Solution to Environmental Health Hazards

Agarwal N

Govt. M. S. College for Women, Bikaner

Environmental health threats, driven by industrial processes, pollution, and the use of harmful chemicals in agriculture, pose serious risks to ecosystems and human well-being. These risks can lead to various health concerns, including skin conditions, chronic diseases, and respiratory problems. As awareness of these dangers increases, the need for sustainable solutions becomes more urgent. Natural farming offers a compelling alternative to traditional practices that rely heavily on synthetic fertilizers and pesticides. This holistic approach emphasizes the use of organic materials, crop rotation, and biodiversity, thereby promoting ecosystem resilience and enhancing soil health. Techniques such as composting, intercropping, and cover cropping are essential for restoring and maintaining healthy soils, which in turn support moisture retention, microbial diversity, and nutrient-rich food production. By reducing chemical inputs, natural farming also minimizes pollution and runoff, leading to improved public health outcomes. As consumers become more aware of the risks associated with use of chemicals and the broader impacts of industrial agriculture, the demand for sustainably produced foods is on the rise. This shift not only fosters healthier food options but also encourages a market that values environmental integrity. Overall, the transition to natural farming represents a proactive step toward addressing health issues and promoting a sustainable future. With growing awareness and demand for sustainable food sources, natural farming has the potential to reshape agricultural practices, contributing to a healthier population and a more resilient planet.

Keywords: Hazards, natural farming, organic, sustainable future.

Global Changes and Local Solutions

Sangeeta Rachiyata

Associate professor, Department of Home science, Government Girls
College, Bikaner

Global changes can impact local communities and local can help address these issues here are some examples of local solutions to global changes - sustainable agriculture-In developing countries, sustainable agriculture and rural development can help increase food production and improve food security. Child health- Improving child health improves adult health for example china, costarica have higher life expectancies and lower child mortality rates then expected for their wealth. Biodiversity-Protected regions can be created where farmers are compensated for growing local crops instead of high yield biotech strains. Climate change, Local knowledge can help develop an effective strategy to mitigate the impacts of Climate change. other examples of global challenges and local solutions include, enhancing the role of women in food governance. Improving food quality nutritional content and self-life. some say that a top down approach to finding global solutions is not the best approach, instead, they suggest focusing on developing Local capacity to resolve local problems.

Applications of Physics in Climate Modelling

Jyoti

Assistant Professor (Physics), SNKP Govt. College Neemkathana, Rajasthan

Email Address- jyotijoshi.phy2008@gmail.com

Environmental science is a multidisciplinary field that establishes the connections between humans and the natural world. It combines insights from various scientific areas, such as biology, ecology, chemistry, physics, geology, and social sciences. Physics plays an important role in the field of environmental science. It is especially used in understanding and addressing various environmental phenomena and processes of the natural incidents. Among many of the applications of Physics in understanding the natural phenomena one of the important applications is to understand and evaluate climate changes. The principles of Physics are used to develop climate models that forecast changes in temperature, precipitation patterns, and other climate variables which are useful for scientists in comprehending the impacts of climate change as well as forecast extreme weather conditions.

Keywords- Climate change, Climate models, Greenhouse gases.

Strategic Frameworks for Balancing Profitability and Environmental Sustainability in Modern Businesses

Hari Narayan Meena

Assistant Professor, Govt. College Karauli

In the face of increasing environmental challenges, modern businesses are under growing pressure to adopt strategies that not only drive profitability but also align with global sustainability goals. The delicate balance between economic performance and environmental responsibility has become a focal point in corporate strategy, prompting the development of strategic frameworks that integrate both dimensions. This abstract outlines the key approaches, tools, and models that businesses can utilize to reconcile profitability with environmental sustainability.

GIC: IAES 2024 - INTERNATIONAL CONFERENCE

First, the integration of sustainability into corporate strategy requires a shift from traditional profit-maximizing models to more holistic, long-term approaches that consider environmental, social, and governance (ESG) factors. Frameworks such as the Triple Bottom Line (TBL), which emphasizes the balance between people, planet, and profit, provide a foundation for businesses to measure success beyond financial outcomes. The TBL encourages companies to assess their impact on environmental health and social equity while ensuring financial viability.

A second key strategy involves the adoption of circular economy principles, which aim to reduce waste, maximize resource efficiency, and promote sustainable consumption patterns. This approach advocates for the redesign of business models to close the loop on production and consumption cycles, focusing on resource recovery, reuse, and recycling. It also encourages businesses to innovate in product design, shifting from a linear "take-make-dispose" model to one that minimizes environmental harm while creating new avenues for value generation. Another key consideration is the role of innovation in achieving sustainability goals without compromising on profitability. Green technologies, renewable energy solutions, and sustainable product innovations are emerging as major drivers of both environmental sustainability and economic growth. Companies that prioritize research and development in green technologies not only mitigate environmental risks but also position themselves as leaders in an evolving marketplace where sustainability is becoming a competitive advantage.

In conclusion, strategic frameworks for balancing profitability and environmental sustainability are multifaceted and require a shift in corporate mindset. By leveraging tools such as the Triple Bottom Line, circular economy principles, ESG metrics, innovation, and stakeholder engagement, businesses can create value that benefits both their bottom line and the planet. The future of business success will likely depend on the ability to integrate sustainability into the core of business strategies, positioning companies not only as profitable entities but as responsible contributors to global sustainability efforts.

Global Warming: Causes, Effects and Solutions

Manju Kumari Meena

Assistant Professor BADM, Govt. College Tonk

Many researchers, engineers and environmentalists are expressing deep concerns about changes in the overall climate of the planet. Fossil fuels are being continuously used to produce electricity. The burning of these fuels produces gases like carbon dioxide, methane and nitrous oxides which lead to global warming. Deforestation is also leading to warmer temperatures. The hazard of global warming is continuously causing major damage to the Earth's environment. Most people are still unaware of global warming and do not consider it to be a big problem in years to come. What most people do not understand is that global warming is currently happening, and we are already experiencing some of its withering effects. It is and will severely affect ecosystems and disturb ecological balance. Because of the treacherous effects of global warming, some solutions must be devised. The paper introduces global warming, elaborates its causes and hazards and presents some solutions to solve this hot issue. Above all, alternative energy sources (solar, wind, hydro, geothermal, bio mass) need to be seriously pursued. Finding and using renewable sources of energy is one of the methods to combat the ever-increasing global warming effectively.

Mining Activities and Water Pollution

Sunil Kumar

Govt Bangur College, Didwana

geosunil22@gmail.com

Mining plays a vital role in national economic development and on the contrary mining undesirably impact our environment. Mining has increased rapidly due to the development of large-scale mines. This technique of mining disturbs large areas of land and water which need to be restored. The environmental problems arising due to mining activities are natural land degradation, air and water pollution with heavy metals, organic and

inorganic waste, negative impact on terrestrial and aquatic ecosystems, human health and socio-economic. Possibly, the weightiest after effect of a mining is its effects on water resources. The impact of mining on surface and groundwater is due to spill erosion, sedimentation, acid mine drainage, lowering of water table, subsidence, disturbance on hydrological cycle and rainfall. Acid mine drainage is regarded one of mining's most serious threats to water resources. A mine with acid drainage has the capacity for long term damaging impacts on rivers, streams and aquatic life.

Keywords- ecosystem, hydrological cycle, acid mine drainage, aquatic life.

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Environmental Sustain Development Curriculum Challenges in Higher Education

Mhoar Singh Meena

Assistant Professor History

Govt. Kamla Modi Girls College Neem Ka Thana

email id- mhoarsingh129@gmail.com

Sustainable development is an area of knowledge which has considerably evolved since the late 1990s, when it was defined and took its place in the international agenda. Over the last two decades, many higher education institutions have become increasingly aware of their impact on the environment, and have been trying to develop a better understanding of the environmental dimensions and implications of their operations.

There is an increasing trend towards integrating sustainability as a transversal theme, rather than limiting it to specific parts of the curriculum, hence improving the potential for impact on all university students. Universities are extremely important in the formal delivery of environmental education, yet they do not always provide effective environmental and sustainability learning. Sustainability and environmental themes require interdisciplinary solutions that sometimes are hard to achieve in a university setting. Thus, in order to better define priorities and face the challenges that HEIs are facing, these organisations should allow teaching staff the flexibility to develop formal and extra-curricular resources for sustainability and employability skills important to their discipline and work with

employers and entrepreneurs to identify the capacities and knowledge needed for business opportunities in the green economy. In turn, government and policy-makers should support the higher education sector in responding to the student demands for sustainable development to be promoted in their institutions and provide guidance to ensure that learning and teaching resources on employability include the issue of sustainability.

GIS: IAES-2024/297

Phytoremediation: Systematic Approach to Remove Arsenic from Aquatic Environment

Kratika Rao¹

¹Research Scholar, Department of Forensic Science, University School of Allied Health Sciences, Rayat Bahra University, Mohali, Punjab, India

Email: kratika.rao55@gmail.com

Arsenic is extremely harmful in its inorganic form. Contaminated water used for drinking, preparing food, and watering food crops poses the greatest threat to public health from arsenic. Due to several effects and carcinogenic nature, efforts have been made to reduce its toxicity. Traditionally ion exchange, coagulation, adsorption methods were used but due to several disadvantages like low removal efficiency, high operational cost, high energy cost; efforts have been made towards phytoremediation which is cost-effective, ease of operation, environment friendly and demands low energy. It is an emerging technology that helps to clean soil and water from harmful pollutants and offers an economical and sustainable way to improve the economies of developing countries. It is one of the most powerful and practical solutions for poor farmers. The process of phytoremediation uses the plant to remove the contamination from the environment. The common plants that are used in phytoremediation are *Eichhorria crassipes*, *Peteris vittate*, *Alyssum murale*, *Targets minuta* because they have a high growth rate in contaminated water, high tolerance power, high biomass production, adaptability, and ability to absorb to remove arsenic, large surface area, and high translocation potential. Phytoremediation of arsenic needs a clear idea/mechanism of the molecular phenomenon of uptake of arsenic, extrusion, sequestration, and overall coordination. These factors are most important for the phytoremediation of arsenic from the contaminated site.

But the process of phytoremediation is affected by other factors like soil pH, inorganic fertilizer, organic amendments, contaminant concentration, mobility, bioavailability, and chelating agents. This article presents the mechanism of arsenic removal by phytoremediation, plant species, and its respective degree of arsenic accumulation.

Key-Words: *Arsenic, Contamination, Phytoremediation, Toxicity, Accumulation.*

GIS: IAES-2024/298

Arts and communication for Environmental Advocacy

Poras Kumar Mahawar

Associate Professor, Department of History
Samrat Prithviraj Chouhan Govt. College Ajmer, Rajasthan
Mail Id:- seemaran66@gmail.com

Environmental communication refers to the ways in which information about the environment is created, shared, and understood. This includes the interactions between various stakeholders such as scientists, artists, policymakers and the public, fostering awareness and promoting action on environmental issues. The effectiveness of this communication plays a vital role in shaping public perceptions and encouraging collaborative efforts towards sustainability and environmental stewardship. Although art as a communication medium has a rich tradition and the environment is a critical concern, no scholarly endeavor has connected these two research areas. This exploratory study, therefore, seeks to understand how artists and environmentalists perceive the role of art in environmental communication. Art's uncertain contribution to environmentalism and environmental art's role and transformation. The first theme discussed the art's audience, its standard and use, its meaning, social and financial dilemmas in the way of art's contribution to environmentalism, and disagreements between environmentalists and artists over a few issues. The second theme focuses on the communicative and persuasive roles and potentials of arts in positive environmental changes and how the internet has recently transformed environmental art, making it digital, wide-reaching, more democratic, and more innovative.

Keywords:- Environmental Communication, Sustainability, Stakeholders, Scientist, Artist, Transformation.

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A Pilot Study on Credit Risk Management for Private and Public Sector Banks

Ramesh Kumar Jabdolia

Maharana Pratap govt. PG college Chittorgarh

rameshjabdolia1993@gmail.com

This pilot study explores credit risk management practices in private and public sector banks, aiming to identify effective strategies and areas needing enhancement. Credit risk, which arises when borrowers fail to meet repayment obligations, poses significant challenges for financial institutions. The research employs a mixed-methods approach, gathering data through surveys and interviews with risk managers and credit analysts across various banks. Results indicate that private sector banks typically leverage advanced technologies and proactive risk assessment techniques, leading to more agile credit risk management. In contrast, public sector banks often depend on traditional methods and regulatory guidelines, resulting in slower response times to emerging risks. Key findings highlight deficiencies in risk culture, data analytics capabilities, and the integration of risk management into broader business strategies, particularly within public institutions.

The study underscores the necessity for tailored credit risk management frameworks that cater to the distinct operational environments of both banking sectors. Recommendations include enhancing training programs, investing in modern technology, and fostering a risk-aware organizational culture. By addressing these gaps, banks can better manage credit risk and contribute to overall financial stability. This research lays the groundwork for future studies on credit risk management practices, ultimately aiming to strengthen resilience within the banking industry.

Keywords: financial stability, credit risk management, operational environments, public institutions, business strategy.

e-Governance Education for Sustainable Development

Dr. Ramesh Kumar

Associate Professor in Political Science, Govt. Arts College, Sikar

Email: rameshponia222@gmail.com

Education in e-government needs to be better aligned with Sustainable Development Agenda. To clearly understand the potential adjustments of an e-government education programme, an initial assessment of the programme's impact on Sustainable Development Goals (SDGs) should be made as well as appropriate capabilities for sustainable development selected. Following the Analytic Hierarchy Process (AHP) method, the research has identified the list of SDGs that an e-Governance study programme influences most. They include SDG 9 (Industry, innovation and infrastructure), SDG 17 (Partnerships for the goals), SDG 11 (Sustainable cities and communities), SDG 8 (Decent work and economic growth), SDG 16 (Peace, justice and strong institutions). In the future the programme is expected to have bigger impact on SDG 17 (Partnerships for the goals), SDG 16 (Peace, justice and strong institutions), SDG 10 (Reduced inequalities), SDG 8 (Decent work and economic growth), SDG 12 (Responsible consumption and production). The research also shows a big difference between the programme's actual and desired impact on SDG 7 (Affordable and clean energy), SDG 10 (Reduced inequalities), SDG 12 (Responsible consumption), SDG 13 (Climate action). Researchers identified twelve capabilities as essential for an e-Governance specialist toward the achievement of the SDGs.

Key words: *e-government, Sustainable Development, Clean Energy*

Plastic Pollution

Dr Renu Bansal

Department of Botany, Government MS College, Bikaner

Plastic pollution is a global environmental issue that threatens the health of human and the plants. This is a serious problem and 11 -12 million metric tons of plastic is entering the ocean each year. This is very harmful for marine life it alters habitats and reduce the ability of ecosystem to adapt the climate changes. It can also impact human health, food security and economics. Plastic is a polymeric material means a material whose molecules are very large and usually resemble long chains made up of endless series of interconnected links, Natural polymers like rubber and silk exist in abundance but synthetic plastics are non-biodegradable and have harmful effects on the plants. Most plastic break down into micro plastics which can enter the human body through inhalation and absorption method. This may cause respiratory disease, asthma and cardiovascular disease. Plastic and its resulting degradation to land scapes may cause severe mental health conditions including anxiety and depression. The simplest way to reduce plastic waste is to avoid unnecessary and single use plastics support business who are reducing plastic waste and reuse existing plastic, say not to disposable plastic cutlery, straws and other single use plastic.

Keywords: *Plastic, polymeric material, no- biodegradable.*

Role and Importance of Education and Capacity Building for Sustainable Development in India

Sandeep Harchandani

Assistant Professor, Department of ABST
Government Commerce Girls College, Kota
Email ID – sandeepdayalkota@gmail.com

Education and capacity building for sustainable development (ESD) is the process of equipping people with the knowledge and skills to protect the planet and improve their well-being. It can help people make informed decisions and take action to address issues like climate change, biodiversity loss, and resource overuse. Education for Sustainable Development empowers people with the knowledge, skills, values, attitudes and behaviors to live in a way that is good for the environment, economy, and society. It encourages people to make smart, responsible choices that help create a better future for everyone. The way we live is not sustainable: Humans are depleting the planet's resources. Climate change is affecting us and all species, damaging ecosystems and leading to unprecedented environmental degradation. Learning is key to finding solutions and creating a more sustainable world. We must learn to live for our planet. Capacities for Sustainable Development Six interdependent capacities are necessary for the successful pursuit of sustainability: (i) capacity to measure progress toward sustainable development, (ii) capacity to promote equity within and between generations, (iii) capacity to adapt to shocks and surprises, (iv) capacity to transform the system onto more sustainable development pathways, (v) capacity to link knowledge with action for sustainability, and (vi) capacity to devise governance arrangements that allow people to work together in exercising the other capacities. India is working on education and capacity building for sustainable development in a number of ways, including: Access to education. Quality of education. Environmental education India has incorporated environmental education into the curriculum for students ages 6–18. This includes project-based activities and incorporating environmental education into existing subjects.

Keywords:- *Capacity Building; Sustainable Development; Environmental education.*

Studies on the Distribution of Chlorophycean Algae of Mangli River, Bundi District (Rajasthan)

Ruchi Sagar* and Dilip Kumar Rathore¹

*Research Scholar, Department of Botany, Government College, Bundi (Rajasthan)

¹Associate Professor, Department of Botany, Government College, Bundi (Rajasthan)

Corresponding Author: Ruchi Sagar, ruchi198989verma@gmail.com

Bundi district is a part of Haroti region and it is known for its richness in flora and fauna. Mangali river is a tributary of the Mangli River in Rajasthan. The Chlorophyceae is a large and important class of freshwater green algae. They include some of the most common species, as well as many members that are important both ecologically and scientifically. Total 23 green algal species belongs to 11 genera have been identified from study areas i.e. Mangli River in various seasons during 2021 to 2024. Algal identification has been done with the help of standard keys and monographs. Higher algal diversity has been found in and around the catchment area of the river with seasonal fluctuations. Some dominant algal species such as *Actinastrum hantzschii*, *Chlorococcum infusionum*, *Scenedesmus arcuatus*, *Scenedesmus bijugatus*, *Tetraedon minimum*, *Ankistrodesmus falcatus* were observed in all season. So, the species distribution of the Chlorophyceae are scattered and showing with species richness. The diversity is studied for the scientific purpose so that further research can be extended on these algae and how these can be utilized economically and medicinally.

Keywords: *Mangli River, Chlorophyceae, Green Algae, Species Distribution.*

Agriculture and Food Security

Dr. Sameer Singhal

Assistant Professor (ABST), Government college, Tonk

The growing global population, climate change, and environmental degradation pose significant challenges to food security. Sustainable agriculture offers a promising solution to enhance food security by promoting practices that are environmentally friendly, economically viable, and socially equitable. This paper explores sustainable agricultural techniques, such as crop rotation, agroecology, permaculture, and integrated pest management, which aim to maintain soil health, conserve water, reduce greenhouse gas emissions, and minimize dependency on synthetic inputs. By examining case studies and recent advancements, this research highlights how sustainable farming practices contribute to resilient food systems capable of withstanding climate fluctuations. Furthermore, it addresses the role of policy, education, and technology in supporting sustainable agriculture and identifies barriers to adoption in different socioeconomic contexts. Emphasis is placed on the importance of community involvement, access to resources, and farmer education to implement sustainable methods effectively. This study concludes that a transition towards sustainable agriculture is essential not only for achieving global food security but also for fostering biodiversity, reducing environmental impact, and promoting long-term resilience in food production systems.

Keywords: *Environmental, resilience, greenhouse gas emissions.*

Photocatalytic Degradation of Organic Dyes Using Nanoparticles for Wastewater Treatment

¹Sanju Mahich, ¹Vijay Devra, ²Amanpal Singh

¹Janki devi Bajaj Government Girls College, Kota-324001, India

²Department of Physics, University of Rajasthan, Jaipur-302004, India

Email id- smahich1997@gmail.com

Due to the toxic effect of organic dyes, their removal from waste water has received significant attention in green area concern. Graphene oxide (GO)/ Graphitic carbon nitride (g-C₃N₄)/Fe have emerged as potential photocatalysts for their properties like nontoxicity, earth abundancy nature, appropriate band gap matched with solar spectrum, and high absorption coefficient. Here we report a X-ray diffraction (XRD), Fourier transform infrared (FTIR), Raman, scanning electron microscopy (SEM), and UV-Vis spectroscopy were used to characterise the as synthesized nanoparticles. The particle size was analysed by Transmission electron microscopy and specific surface area is analysed by the BET. Tauc's model was used to determined optical band gap. The photocatalytic activity of synthesized nanoparticles was examined in visible light. Effect of various parameter such as initial dye concentration, pH, amount of photocatalyst was studied.

Keywords: Nanoparticles, Photocatalytic degradation, Organic Dyes

Revolutionizing Chrysanthemum Production: Advances in Biotechnology and Genetic Modification

Sashi^{1*}, Satpal Baloda², Surinder Sehrawat³

^{1,2,3}Department of Horticulture, CCSHAU, Hisar, Haryana

*Corresponding author email: yadvatinu2020@gmail.com

Chrysanthemum, a popular ornamental flower, has been a focus of genetic research and biotechnological innovation in recent years. Advances in genetic modification and biotechnology have enabled scientists to introduce desirable traits in chrysanthemum, revolutionizing its production and

applications. One of the most revolutionary tools in this field is *Agrobacterium*-mediated gene transfer, a widely used technique for introducing foreign genes into plants. This method involves the use of *Agrobacterium tumefaciens*, a soil bacterium that naturally transfers part of its DNA (T-DNA) into the plant genome, causing genetic changes. In biotechnology, scientists have harnessed this natural mechanism to introduce desirable traits into chrysanthemums, such as enhanced flower colour, disease resistance and tolerance to environmental stresses like drought and salinity. *Agrobacterium*-mediated transformation is particularly effective for generating stable, genetically modified plants, offering a reliable approach to improving the commercial and ornamental value of chrysanthemum varieties. This method has become a cornerstone of chrysanthemum biotechnology, facilitating the development of high-value crops with traits that enhance their marketability and resilience. Additionally, we explore the use of biotechnological techniques like CRISPR/Cas9, tissue culture and genetic engineering to develop novel chrysanthemum varieties with improved ornamental value and potential medicinal applications. Beyond ornamental uses, chrysanthemums have potential medicinal applications due to their bioactive compounds, such as flavonoids and terpenoids, which possess anti-inflammatory, antioxidant, and antimicrobial properties. These advances have far-reaching implications for the horticulture industry, enabling the production of high-value chrysanthemum crops with reduced environmental impact.

Keywords: *Chrysanthemum*, *genetic modification*, *Agrobacterium*, *CRISPR/Cas9*, *tissue culture*.

Sustainable Agriculture: Integrating Organic Farming and Permaculture for a Resilient Future

Dr Seema Vyas

Assistant professor, P. G. Department of Botany, Govt. M.S. College
Bikaner

saur.seema@gmail.com

This study explores the synergies between organic farming and permaculture in promoting sustainable agriculture. Organic farming's emphasis on chemical-free production and permaculture's design principles for regenerative ecosystems are analyzed for their potential to enhance environmental stewardship, social equity, and economic viability. The integration of these approaches is shown to improve soil health, biodiversity, and water conservation while ensuring long-term food security. The research highlights the benefits of this integrated approach, including: Enhanced ecosystem services, Increased crop yields and diversity, Improved livestock health and productivity, reduced greenhouse gas emissions, Empowered local communities and rural livelihoods. Case studies and research findings demonstrate the effectiveness of this holistic approach in mitigating climate change, supporting rural livelihoods, and fostering sustainable development.

***Keywords:** Sustainable Agriculture, Organic Farming, Permaculture, Regenerative Ecosystems.*

The Impact of Social and Cultural Environment on Human Health

Dr. Shailendra Gehlot

Associate Professor Sociology

Government College Gudamalani Barmer, Rajasthan

In recent years, social scientists and social epidemiologists have turned their attention to a growing range of social and cultural variables as antecedents of health. These variables include SES, race/ethnicity, gender and sex roles, immigration status and acculturation, poverty and deprivation, social networks and social support, and the psychosocial work environment, in addition to aggregate characteristics of the social environments such as the distribution of income, social cohesion, social capital, and collective efficacy. Comprehensive surveys of current areas of research in the social determinants of health can be found in various researches. This paper focuses on presenting the key research findings for a few selected social variables—SES, the psychosocial work environment, and social networks/ social support. These variables are highlighted because of their robust associations with health status and their well-documented and reliable methods of measuring these variables, and because there are good reasons to believe that these variables interact with both behavioral as well as inherited characteristics to influence health. Race/ethnicity, another set of important variables with robust associations to health, is addressed.

Solar Power Projects and Biodiversity

Dr. Sukharam

Associate Professor, Govt Dungar College, Bikaner

Solar power projects can have both positive and negative impacts on biodiversity: Positive impacts. Solar energy can help mitigate climate change, which is a major threat to species diversity. Solar power facilities can also be used to restore degraded land, which can create new habitats for wildlife. Solar power projects can have negative impacts on biodiversity in a number of ways, including: Habitat fragmentation: Solar facilities can divide up wildlife habitats and migration corridors with fences and landscape changes. This can reduce the total amount of habitat and change its spatial configuration. The bright lights and noise from solar facilities can disrupt wildlife behavior and natural habitats. Solar panels can be a collision risk for birds, bats, and insects, especially because they can resemble bodies of water. Evaporation ponds: Evaporation ponds for concentrating solar-thermal power (CSP) plants can be a drowning risk for wildlife. Solar facilities are often built on land that has been graded and packed with dirt, gravel, or mowed grass, which can harm local biodiversity.

The type of solar infrastructure, the landscape, and the way the facility is designed and located can all affect its impact on biodiversity. For example, bird diverters and wildlife fencing can help reduce the risk of collisions. Biodiversity impacts associated to solar power projects. Solar plants have been shown to create positive biodiversity impacts when compared to other types of intensive land use.

**Studies on Selected Plants of J.D.B. Govt. Girls College
Campus Kota Rajasthan**

Muskan Baghera and Mamta Choudhary

Department Of Botany, Janki Devi Bajaj Government Girls College

Gmail id: *muskanbaghera@gmail.com

The present study has been done in jdb govt. girls college campus. The college is located in Kota District, Rajasthan. In this survey many plants such as *Plumeria pudica*, *Alstonia scholaris*, *Holoptelea integrifolia*, *Aegle marmelos*, *Cassia senna* are observed that these plants are located in campus and have high medicinal value. *Plumeria pudica* is soothing for the body, mind and soul the flowers of champa tree have a strong, sweet fragrance that is used in perfumes and incense. *Alstonia scholaris* bark contain the alkaloids ditamine, echitenine echitamine and strictamine. *Holoptelea integrifolia* is used for timber which makes cheap furniture and also used as firewood in rural parts. *Aegle marmelos* fruits contains vitamins and minerals, particularly vitamin A, C, calcium and B6, B12 and B1. *Cassia senna* is used in chronic constipation, irritable bowel syndrome, rectal surgery, weight loose.

Key words: *Medicinal value, Vitamin.*

Importance of Environmental Sustainability for Life

Sunita Gahlot

Associate professor Home science
Research scholar, SKD university, Hanumangarh

Environmental sustainability is the key to ensuring the survival and well-being of life on earth. The natural environment provides essential resources such as, air, water and food, which are necessary for human existence. However, human activities have led to significant environmental degradation, threatening the very foundation of life. Environmental sustainability is crucial for conserving natural resources. The depletion of fossil fuels, deforestation, and water pollution, have severe consequences on the environment. It is essential for protecting biodiversity. Sustainable agriculture practices and conservation efforts can help protect endangered species. Environmental sustainability is critical in mitigating climate change. Transitioning to renewable energy sources and reducing carbon emissions can help combat climate change. Environmental sustainability is vital for life on earth, the conservation of natural resources, protection of biodiversity and mitigation of climate change are essential for ensuring the survival and well-being of future generation. Individual actions, government initiatives and international corporation are necessary to achieve environmental sustainability.

Key words: *Environment, sustainability, resources, degradation, conservation, biodiversity, climate change.*

E-waste Management: A Paradigm Shift Needed

Surendra Kumar Bagaria

Assistant Professor, Department of Chemistry, Govt. Science College, Sikar
(Raj.) 332001

E-mail: skbagaria87@gmail.com

One secondary source of precious and valuable metals is electronic trash. Urban mining of these metals has drawn a lot of interest lately because of its lucrative potential, expanded economic opportunities, ability to provide a living, and potential to help achieve the Sustainable Development Goals (SDGs) 2030 agenda. Due to the presence of hazardous chemicals, the substantial amount of e-waste also proves to be an insurmountable task. Due to its detrimental effects on the environment and human health, the massive production of e-waste has presented a number of obstacles for current treatment solutions. The majority of wealthy nations have defined system boundaries, technical know-how, and promising e-waste management technologies. However, because of a number of obstacles and a dearth of pertinent methods, the situation in emerging nations is different. The main issues affecting India's entire e-waste value chain include illegal dumping, a lack of data inventorization, and a lack of treatment choices. In order to provide a sustainable e-waste value chain, secure resources, societal well-being, less environmental effect, and overall sustainable development, this paper addresses strategic solutions that comply with current legislation. Additionally, as a future path for the Indian context, pertinent solutions were identified and explored, including life cycle assessment, the 4R principle, extended producer responsibility, polluter pays, circular resource management, eco-product design, and bioleaching. It is imperative and strongly advised that the unorganized sector be formally included into an open recycling system.

Keywords: E-waste, Mining, Chemical Pollution, Recycling.

Environmental Effects of E-Waste: Present scenario in India

Surendra Kumar Verma

Assistant Professor, Department of Physics, Govt. Science College, Sikar
(Raj.) 332001

Email: kumawatsurendra91@gmail.com

Precious and valuable metals can also be found in electronic garbage. The economic potential, expanded commercial opportunities, source of livelihood, and ultimate achievement of the Sustainable Development Goals (SDGs) 2030 agenda have all contributed to the recent surge in interest in urban mining of these metals. At the same time, the substantial amount of e-waste proves to be an overwhelming problem because of the hazardous chemicals present. Because of the enormous amount of e-waste generated and its detrimental effects on the environment and human health, there are several problems with the current treatment alternatives. Potential e-waste management technology, technological know-how, and defined system boundaries are present in the majority of developed nations. The situation in developing nations, however, differs because of a number of obstacles and a dearth of pertinent policies. Illegal dumping, a lack of data inventories, and a lack of treatment alternatives are the main issues plaguing India's whole e-waste value chain. Therefore, the strategic interventions that comply with current legislation are the focus of this article. These interventions are essential for a sustainable e-waste value chain, resource security, social well-being, decreased environmental consequences, and overall sustainable development. In addition, several pertinent methods were identified and considered as potential future directions for the Indian context, including life cycle assessment, the 4R principle, extended producer responsibility, polluter pays, circular resource management, eco-product design, and bioleaching. Formally integrating the unorganized sector into an open recycling system is essential and strongly advised.

Keywords: *Bioleaching, Eco-product, Environment, Pollution.*

Public-Private Partnerships (PPPs) for Sustainable Development

Dr. Sunit Meel

Assistant Professor (Geography),
Government Girls College Taranagar, Churu

Public-private partnerships (PPPs) are collaborative arrangements between government entities and private sector organizations aimed at addressing developmental challenges while leveraging the strengths of both sectors. They play a critical role in promoting environmental sustainability by pooling resources, expertise, and innovation to achieve common goals. Key Features of PPPs for Sustainability: Resource Mobilization, Innovation and Expertise, Risk Sharing. Examples of PPPs in Sustainability: Renewable Energy Projects, Waste Management Systems, Smart Cities Initiatives. Challenges are Regulatory Hurdles, Financial Constraints, Accountability. To maximize the potential of PPPs, governments should foster an enabling environment through clear policies, incentives for green investments, and robust monitoring mechanisms. Such partnerships can significantly accelerate progress toward achieving the United Nations Sustainable Development Goals.

Keywords- PPP, Innovation, Resource, Renewable.

Sustainable Development: Challenges and Goals

Dr. Sucheta Gupta

Associate Professor, Political Science
Government College, Bibirani
suchetaguptakhandelwal@gmail.com

Sustainable development has been on the agenda since the late 1980s. As we endeavour to construct a world that fulfils present needs without jeopardizing the ability of future generations to meet their own, we confront a multitude of obstacles that threaten to impede our progress. Overutilization of resources and environmental decline, Population Growth and Urbanization., Poverty and Social Disparity, War and Instability, Suitability and Availability, Governmental Issues. The United Nations states that sustainable development's goals cover three core aspects that include: economic growth, social inclusion and environmental protection. The first two focused on reducing poverty and inequality around the world. These aspects go hand in hand with the third one 'environmental protection', which ensure that developmental goals work in tandem with environmental policies.

***Key Words:** Social Disparity, Economic Growth, Environmental Protection.*

Sustainable Development and Business Strategies: An Exploratory Study

Dr. Shailendra Singh Charan

Associate Professor, Department of ABST,
S.P.C. Govt. College, Ajmer

The sustainable development has recently started to gain attention in studies. The concerns have been raised about sustaining the earth, which has been thought-provoking topic for not only academic practice but also for businesses strategies. The main objective of the paper is to explore how sustainable development is integrated into the strategy of businesses and examine the role of sustainable practices to the creation and development for competitive benefits to businesses.

***Keywords:** Sustainable Development, Business Strategies, Sustainable Practices, Competitive Benefits.*

Sustainable Economic and Business Strategies: A Path to Resilient Growth

Dr. Vineeta Arora

Assistant Professor, Department of ABST
Govt. Bangur PG College, Pali

E-mail: vineetaarora.lean@gmail.com

This paper explores the economic and business strategies essential for fostering sustainability and achieving resilient growth in an era marked by environmental and social challenges. As global economies confront the urgent need to mitigate climate impacts, businesses are increasingly adopting sustainable practices that balance economic goals with environmental stewardship. This research examines critical economic frameworks like green economics and the circular economy, which emphasize minimizing waste and optimizing resource usage, and explores the role of environmental cost accounting in driving sustainable economic decisions.

Key business strategies highlighted include building sustainable supply chains, integrating Corporate Social Responsibility (CSR) initiatives, and leveraging green technologies to reduce environmental footprints. The paper also discusses financial mechanisms such as green bonds, carbon pricing, and government incentives that promote investment in sustainability. Stakeholders, including consumers, investors, and regulatory bodies, play pivotal roles in pushing organizations toward sustainable practices, transforming market dynamics and business objectives. Through case studies of industry leaders, this paper underscores the practical applications and impacts of sustainable strategies, while addressing the challenges that companies face, such as financial constraints and regulatory inconsistencies across regions. The paper concludes with a focus on emerging trends like digital transformation and sustainable consumption models, suggesting a pathway toward a future where economic growth aligns with sustainability goals.

Keywords: *Sustainability, Green Economy, Circular Economy, Corporate Social Responsibility, Sustainable Financing.*

Tackling Environmental Health Risks through Natural Farming

Dr Deepa Swamy

Government Arts Girls college, Kota

deepaswamy9@gmail.com

Environmental health hazards pose significant risks to both human and ecological well-being. These hazards arise from pollutants, industrial activities, deforestation, and unsustainable agricultural practices. They contribute to air and water pollution, soil degradation, and loss of biodiversity, leading to severe health issues such as respiratory problems, cardiovascular diseases, and even cancer in humans. The degradation of natural resources and ecosystems disrupts the delicate balance necessary for sustaining life, resulting in detrimental effects on flora and fauna. One of the most effective solutions to mitigate these environmental health hazards is the adoption of natural farming practices. Natural farming, also known as organic or sustainable farming, emphasizes the use of eco-friendly techniques that work in harmony with nature. It avoids the use of synthetic chemicals, fertilizers, and pesticides, which are major contributors to environmental pollution. Instead, it relies on compost, crop rotation, green manure, and biological pest control to maintain soil fertility and manage pests. Natural farming enhances soil health by promoting the activity of beneficial microorganisms and earthworms, which improve soil structure and nutrient availability. This method also increases biodiversity on farms, providing habitats for various organisms and helping to control pests naturally. By reducing dependency on external inputs, natural farming lowers the carbon footprint associated with the production and transportation of synthetic agrochemicals. Moreover, natural farming practices help in conserving water resources through efficient water management techniques like mulching and drip irrigation. These methods reduce water wastage and enhance the resilience of crops to climatic variations, thus ensuring food security. Additionally, the produce from natural farming is free from harmful chemical residues, offering safer and healthier food options to consumers.

In conclusion, addressing environmental health hazards through natural farming not only fosters a healthier environment but also supports sustainable agriculture and food security. By embracing natural farming, we can protect our ecosystems, improve public health, and create a sustainable future for generations to come.

Key words: *Environmental health hazards, Natural farming.*

The Role of AI (Artificial Intelligence) Technology in the Environmental Conservation

Dr Bhartendu Gautam

Assistant Professor, Department of Geography
Government College, Bundi, Rajasthan, India
Email: bhartendu.gautam.111@gmail.com

Artificial intelligence (AI) is a collection of technologies that allow machines to perform tasks that are usually associated with human intelligence. AI systems work by ingesting large amounts of labelled training data, analysing that data for correlations and patterns, and using these patterns to make predictions about future states. AI technology is emerging as a powerful tool which change everything in the world either in the positive or negative manner. AI can play a vital role in finding the solution of various problems. Environment degradation is a major world-wide problem of present time. In a world where the delicate balance of nature is constantly threatened by human activities, innovative solutions are urgently needed to safeguard our planet's diverse ecosystems. Artificial Intelligence (AI) has emerged as a powerful tool in the field of environmental conservation, offering new avenues for research, monitoring, and proactive intervention. The research emphasises upon the finding the potential role of AI not only in the environmental conservation but also in the sustainable environmental development.

Key Words: Artificial intelligence (AI), Technologies, Environment Degradation, Ecosystems, Sustainable Environmental Development.

Exploring the Phytochemical, Antioxidant, and Anti-microbial Activity of Wheatgrass Juice Fortified with Tukh malanga seeds

Dr. Sonal Prasad

Faculty of Bio-Sciences, Institute of Bio-Sciences & Technology, Shri Ramswaroop Memorial University, Lucknow –Deva road, Barabanki-225003, Uttar Pradesh, India

sonalpd10@gmail.com

The current research work has been done on the fortified blend of *wheatgrass* and *tukh malanga* (*Basil seeds*) exploring their potential health effects on human health by evaluating its antioxidant, phytochemical and antimicrobial properties. *Wheatgrass* and *tukh malanga* have individually gained attention for their unique nutritional profiles and medicinal properties. Consuming these nutrient-dense superfoods, which are rich in natural bioactive compounds, may promote overall health and provides specific benefits including increased immunity, heart health, and a reduced risk of chronic illnesses. The extract results assessed against DPPH exhibited remarkable IC₅₀ values in a concentration-dependent manner proving it as a potential antioxidant. The activities of the extract assessed against DPPH was concentration dependent with IC₅₀ value of 0.264 mg/ml at 517 nm. The phytochemical analysis were also assessed by spectrophotometric method. The flavonoid and phenolic content of the extract were found to be 19.68 mg/ml at 415 nm and 0.3745 mg/ml at 765 nm respectively. Total alkaloid content in the extract was evaluated as 12.7 µg/ml. Chelation activity was found to be 27.078%. The value of antimicrobial activity evaluated against the microbes, *E.coli* and *S.typhii* is 13.9 and 9.5 respectively. The activity was evaluated by the method of Agar Well Diffusion Method. The outcome of this substantial research demonstrated that the fortified wheatgrass juice with tukhmalanga can provide a nutrient-dense and potentially valuable beverage option with potent antioxidant qualities that can fight free radicals, significantly reducing oxidative stress and lowering the risk of chronic diseases. As a result, it may be employed successfully in future nutraceutical and therapeutic applications in the management of a range of disorders.

Keywords: *Triticum aestivum*, *tukh malanga*, *chelation*, *phenolic content*, *flavanoid content*.

Local Development in a Global World: Challenges and Opportunities

Dr. Vinod Kumar

Assistant Professor in Political Science, Govt. Arts College, Sikar

Email: bharia.vinod@gmail.com

The paper discusses whether local development is still a policy instrument in a globalized world. Territories throughout the world are experiencing greater international competition, and respond by using local resources in an innovative way. Their effectiveness faces important challenges, such as compatibility of goals, innovation, interaction of the forces of development, and strengthening of institutions. What can be learned from local experiences? How does the local actors' participation in local development policies improve results? How can local productive systems compete within the global markets? The cornerstones are institutional change, agreement among the local actors, networks, innovation, entrepreneurship and resilience.

Keywords: Endogenous, development, entrepreneurship, innovation, institutions, local initiatives.

Environment Resources Management and Role of Indian Government

Vivek Kumar Nagar

Assistant Professor (Economics), Govt. College Baran (Raj.)

Email Id- vivekkumarnagar@gmail.com

Environnement ressources such as water, forest, land and atmosphere are public goods having two properties indivisibility and non-excludability. Service offered by environment resources are indivisible because when a person uses it does not reduce the amount of this resource for the use by another person. Because of the property of non-excludability of natural

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resources nobody can be stopped from using them by charging prices. Due to these properties we cannot define and implement property rights for natural resources. There is a free riding problem in the use of natural resources. Natural resources are excessively used beyond their regenerative capacity resulting in their degradation. Environmental resources suffer massive exploitation due to free market or no market .So the solution of this problem is the government management of natural resources . Indian government recognized this phenomena long before at the time of constitution making. It took the responsibility of protecting, preserving and improving the natural environment in directive principles of state policy and fundamental duties of the constitution. Government enacted various environmental laws and adopted policies and programs for protecting the environment such as : Wildlife (Protection) Act 1972, Water (Prevention and Control of Pollution) Act 1974, Air (Prevention and Control of Pollution) Act 1981, Environment (Protection), Ozone Depleting Substances (Regulation and Control) Rules 2000, Biological Diversity Act 2002, National Green Tribunal Act 2010

The historical trajectory of property rights has witnessed the transition of rivers and forests from communal resources to state ownership. Concurrently, environmental governance has emerged as a pivotal function of the state. However, historical precedents demonstrate that certain environmental resources were effectively managed as common-pool resources by local communities prior to the advent of state ownership, which was subsequently posited as an alternative to private property for ensuring their sustainable management. Recognizing this Indian government enacted The Schedule Tribes and Other Traditional Forest Dwellers (Recognition) of Forest Rights Act 2006.

Key Words- *Environment, Management, Property Rights, Indivisibility and Sustainable.*

Use of Citric Acid Functionalized Fe₃O₄ Nanoparticles as Magnetically Separable and Reusable Heterogeneous Catalyst for Efficient and Sustainable Synthesis of Medicinally Privileged Heterocycles

Sarita Khandelwal¹, Saraswati Agarwal², Yogesh Kumar Tailor³

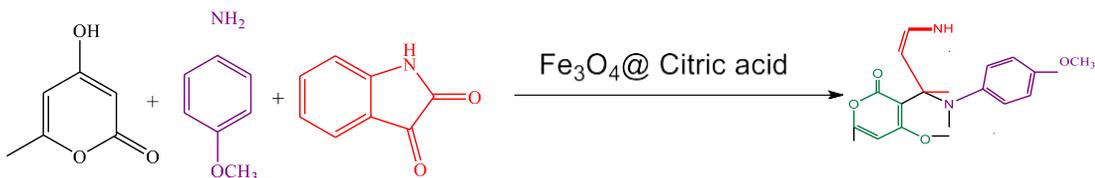
^{1,2} Department of Chemistry, JDB Government Girls College, Kota, India.

³ Department of Chemistry, Government College, Kota, 324001, India.

An efficient and sustainable synthetic protocol has been presented to synthesize dispirooxindoles incorporating indeno/chromeno/pyrano/benzooxazine, privileged heterocyclic substructures. The synthetic protocol involves three component reaction between 4-hydroxycoumarin/dimedone/1,3-indandione/ 4-hydroxy-6-methyl-2-pyrone, 4-methoxyaniline and isatin in ethanol/water mixture using citric acid modified Fe₃O₄ nanoparticles as magnetically separable, recyclable and reusable heterogeneous catalyst. Magnetically retrievable citric acid modified Fe₃O₄ nanoparticles, as catalyst, were successfully synthesized and characterized by physicochemical characterization including scanning electron microscopy (SEM), transmission electron microscopy (TEM), Fourier-transform Infrared spectroscopy (FT-IR), energy-dispersive X-ray spectroscopy (EDX), and X-ray diffraction (XRD).

Keywords: *dispiroheterocycles, citric acid modified Fe₃O₄ nanoparticles*

indeno/chromeno/pyrano-oxazine



Model Reaction

Climate Change and Water pollution: Status of Glaciers as per the Current Report of Central Water Commission

Dr. Rohit Kumar Meena¹, Dr. Pinky Meena²

¹Assistant Professor, Department of Political Science,

²Assistant Professor, Department of History Govt P.G. College Gangapur city

E.Mail- rohitkumar2905@gmail.com

E. Mail- pmeena.pinky90@gmail.com

The biggest concern about climate change today is related to water and air pollution. Earlier climate change was caused by natural processes, but today its main cause is human activities. Damage caused by humans has led to the extinction of many species on Earth. Today, major water resources are in crisis. In particular, glaciers, which are the largest water reserves on earth, are in danger. A recent report of the Central Water Commission has pointed out that the size of lakes in glacier areas around the world, especially in five states of India, is increasing. The main reason for this increase is the melting of glaciers, which is forming lakes. The study has found that the area of these lakes has increased by 40 percent between 2011-2024. States like Ladakh, Uttarakhand, Himachal Pradesh, Sikkim and Arunachal Pradesh in India are the most affected by these changes. These lakes can cause disasters like 'glacier lake outburst flood' in the future. The Kedarnath tragedy and the Sikkim incident last year are similar examples, where floods caused devastation due to bursting of lakes located at high altitudes. This change is not limited to India only. Countries like Bhutan, Nepal and China are also not untouched by this crisis. Due to climate change, the amount of water evaporation has also increased, due to which disasters like floods are increasing continuously. Glaciers located in the Himalayas, Arctic and Antarctica, which are the source of 70 percent of the earth's drinking water, can not only cause floods but can also cause water crisis in the future. These icebergs were kept by nature as 'fixed deposits', which provide water to the rivers in summer. They provide water for farming, gardening and other such works, which are the basis of life.

Keywords- Climate Change, Glaciers, Glacier Lake, Outburst Flood.

Emerging Technologies and Advancements for Enhancing Our Ecosystem

Dr. Rajpal Singh

Associate Professor (Physics), Govt. M.S. College for women, Bikaner

Email - rajubkn@gmail.com

The Earth's ecosystem has been experiencing environmental degradation since the advent of industrialization. The rapid growth of the human population is placing immense pressure on natural resources. To accommodate the needs of a rising population, urban expansion and industrial development are contributing to climate change. Our planet is confronted with numerous environmental challenges. The effects of climate change are negatively impacting all areas of life. Pollution of the air, water, and soil is harming the environment. The loss of habitat, alongside climate change and human activities, is putting biodiversity at risk of extinction and endangerment. The burning of fossil fuels has contributed to global warming and climate change. The urgent need to transition to renewable and clean energy sources has become increasingly clear. Day by day, people are recognizing the significance of a clean environment that they once overlooked. In this article, we highlight new technologies, innovations, and inventions that are contributing to environmental improvement such as electric vehicles, bioplastics, recycling technology, solar power, hydrogen fuel cells, power storage batteries, carbon capture and storage technology, greywater recycling system, eco-friendly aircraft engine etc.

Keywords– *Environment, Technology, Pollution etc.*

Species Diversity and Distribution Pattern of Big Size Trees in Jhalawar District of Rajasthan

Ramniwas Vaishnav¹ and Dr. Prahlad V.C.²

1. Ph.D Scholar –Forestry (Silviculture and Agroforestry)-College of Horticulture and Forestry, Jhalawar-326023, Agriculture University, Kota (Raj)

2. Assistant Professor- Forestry, College of Horticulture and Forestry, Jhalawar -326 023, Agriculture University, Kota (Raj)

Email: - vcprahlad@gmail.com

Email: - ramvilas954@gmail.com

Ancient big size trees are a resource that contributes to a region's natural and cultural heritage. A field study was carried out to analyze the species diversity, distribution pattern of big size trees (BSTs) in Jhalawar district of Rajasthan. The result revealed that total 240 trees (>50cm DBH) of 27 species was surveyed, where *Ficus religiosa* was overwhelmingly dominant, followed by *Ficus benghalensis*, *Mangifera indica*, *Azadirachta indica*, *Madhuca indica* and *Tamarindus indica*. These six dominant tree species are indigenous, multipurpose and sacred. The IVI was reported for Pipal (55.9), Mango (39.03), Mahua (36.67), Neem (34.47) and Tamarind (27.62) respectively. Species richness index showed highest 2.19 at Residential location (S4L1) and lowest 1.68 for Farmland location (S4L2) of Pidawa site and less at Jhalawar site (S1) in general. The spatial distribution patterns implied that there were more big trees in farmland locations than in residential and roadside locations. In terms of biometric characters these tree ranges from 50.96 cm in Teak to 214.97 cm in Pipal for DBH(cm), 9.75m in Lasoda to 25.00m in Pipal for Height(m) and 16m in Semal to 46 m in Bargad for Crown width(m). It is also observed that these BSTs are habitat for many faunal species. These old and big trees can be identified as Heritage trees in the region, which increases the ecotourism potential and conserves biodiversity.

Keywords; *Big size trees, Heritage trees, Biodiversity, Tree Outside Forest.*

Reviewing the Potential of Ethanol Based Flex Fuels in Sustainable Transportation

Anju Agrawal

Professor, Department of Chemistry, Government College, Kota

agrawalanju09@gmail.com

Ethanol, a versatile biofuel, is naturally produced through sugar fermentation or petrochemical processes like ethylene hydration. Beyond its role as an alternative fuel, ethanol serves various functions, including as a medical antiseptic, disinfectant, solvent, and in organic compound synthesis.

Flex fuels, including E10 (10% ethanol, 90% gasoline), E20 (20% ethanol, 80% gasoline), and E85 (85% ethanol, 15% gasoline), present a range of ethanol-gasoline blends with distinct characteristics and challenges. E10 is widely adopted globally, requiring no modifications to standard internal combustion engines (ICE) and functioning seamlessly with existing infrastructure. E20 strikes a balance between environmental performance and fuel efficiency, often compatible with modern engines. In contrast, E85, known for substantial environmental benefits, necessitates flex fuel vehicles (FFVs) or engine modifications for optimal operation. Research underscores significant emission reductions with ethanol blends. For instance, E20 reduces carbon monoxide emissions by 50% in two-wheelers and 30% in four-wheelers, while hydrocarbon emissions decrease by 20% compared to regular gasoline.

In conclusion, ethanol-based flex fuels offer a promising solution to address transportation sector challenges, including emission reduction and energy security. The choice among ethanol blends (E10, E20, E85) depends on factors like vehicle compatibility and environmental goals. While ethanol production holds promise, it necessitates addressing diverse challenges, including feedstock availability, facility expansion, climate-related concerns, pricing, and water use. Shifting away from water-intensive crops like sugarcane toward less water-dependent alternatives is vital for sustainability and water conservation.

Keywords: *Ethanol, Flex Fuels, Sustainable Transportation, Bio-Fuel, Fuel Blending.*

Assessment of Water Quality in the Metal Mining Area of Rajsamand

Sneha Keelka¹, Pallavi Kaushik²

Govt. College, Degana, Nagaur

Centre of Advanced Studies, Department of Zoology, University of Rajasthan, Jaipur, 302004

Contact details: snehakeelka@gmail.com

The management of natural and anthropogenic waste by unscientific method are direct source of soil contamination in developing countries such as India. The regular extraction of metals like zinc, lead and their processing in the mining region of Rajpura Dariba has resulted in addition of elevated metal pollution in the soil and water of the surrounding area. This heavy metal Pollution causes the degradation of the quality of water and poses a huge risk to the ecosystem. The present study was designed to assess the water quality of Rajpura Dariba in terms of metal contamination. For the research water samples were collected in pre and post monsoon seasons from crop lands, dumping yard near to the mining area and were analysed for quality parameters. From the results it has been identified that water samples are highly polluted by heavy metal contamination and are not suitable agriculture and other domestic uses.

Keyword: *Water quality, Pollution, Heavy metal, Anthropogenic sources, Rajpura Dariba.*

Sustainable Strategies in Business and Economics:A Blueprint for the Future

Dr. Suresh Choudhary

Assistant Professor (Business Administration)
Govt. Kamla Modi Girls College, Neemkathana

The urgent global need for environmental sustainability has placed immense pressure on businesses and economies to develop strategies that balance growth with responsible resource use. This paper, titled "Sustainable Strategies in Business and Economics: A Blueprint for the Future," explores a range of innovative approaches and frameworks that can drive sustainability across industries. By examining green economic policies, sustainable business models, and technologies that promote environmental stewardship, this study provides a comprehensive blueprint for integrating sustainable practices into economic and business processes.

Key topics include the circular economy, green supply chains, corporate social responsibility, and the role of government incentives and regulations in fostering sustainable growth. Case studies of leading companies and regions are presented to illustrate successful strategies and highlight both the challenges and opportunities associated with sustainable development. Findings suggest that while obstacles such as high costs and regulatory complexities exist, advances in technology, changing consumer preferences, and supportive financial mechanisms create a favourable environment for sustainability. This paper concludes by emphasizing the critical role of sustainable strategies in securing economic resilience and ecological balance for future generations.

Keywords: *Environmental sustainability, Strategies, Green economic policies, Sustainable Business models, Corporate social responsibility.*

AI: The Modern Frankenstein

Uzma Khanam

Guest Faculty, Janki Devi Bajaj Government Girls College, Kota

E MAIL: uzmakhanam953@gmail.com

This article explores the parallels between Mary Shelley's *Frankenstein*, the first science fiction novel, and the contemporary advancements in Artificial Intelligence (AI). It reflects on the shared ambition of creating a reasoning being and the ethical challenges that arise. Drawing insights from literature, the article underscores the need to temper scientific pursuits with foresight and accountability. While Victor Frankenstein's creation was shaped by emotion and ultimately led to his ruin, AI represents a rational entity, devoid of morality, with the potential to surpass humanity and challenge its creators. The discussion raises profound questions about the implications of such creations on human history and the responsibility that accompanies technological progress.

Keywords: Artificial Intelligence, Frankenstein, ethical accountability, scientific progress, humanity, morality, technological advancement.

Green Fuel: An Alternative to Traditional Fossil Fuels

Zulfiya Sheikh

Professor Department of Zoology

Government Meera Girls College, Udaipur, Rajasthan, India

Email: zulfiyasheikh@gmail.com

Green fuel, also known as biofuel or alternative fuel, represents a significant step towards reducing the environmental impact of traditional fossil fuels. Derived from organic materials such as plants, algae, and waste, green fuels are a renewable energy source designed to lower carbon emissions and promote sustainability. The production and utilization of green fuels, including bioethanol, biodiesel, and biogas, are pivotal in addressing global

energy challenges and mitigating climate change. Bioethanol, produced from crops like corn and sugarcane, offers a cleaner alternative to gasoline by significantly reducing greenhouse gas emissions. Biodiesel, derived from vegetable oils and animal fats, serves as a substitute for conventional diesel, contributing to a decrease in particulate matter and carbon monoxide emissions. Biogas, generated from organic waste through anaerobic digestion, not only provides a renewable energy source but also helps in managing waste effectively. The adoption of green fuels is driven by the need to diversify energy sources, reduce dependency on non-renewable resources, and minimize environmental pollution. Advancements in technology have improved the efficiency and cost-effectiveness of green fuel production, making it a viable option for large-scale implementation. Furthermore, the transition to green fuels supports the development of a circular economy, where waste materials are repurposed, contributing to overall sustainability.

In conclusion, green fuels play a crucial role in the transition towards a low-carbon economy. By harnessing the power of renewable resources, green fuels offer a sustainable and environmentally friendly alternative to traditional fossil fuels, paving the way for a cleaner and more sustainable future.

Keywords: *Fossil fuels, Global energy challenges, Green fuels, Sustainability.*

GIS: IAES-2024/332

Economic and Business Strategies for sustainability

Rakesh Meena

Assistant Professor EAFM, S.G.P.B. Govt. Girls College Pali

Rakeshmeena2050@gmail.com

Sustainability in business and economics has become a critical focus as companies and governments strive to balance growth with environmental and social responsibility. Economic and business strategies for sustainability involve a shift from traditional profit-maximization models to approaches that integrate long-term ecological and social value creation.

A key strategy is the adoption of the circular economy, where businesses reduce waste by reusing resources, recycling products, and

designing for product longevity. This approach minimizes environmental impact and encourages resource efficiency, leading to both cost savings and enhanced brand reputation. Green innovation and the development of eco-friendly technologies are central to sustainability. Companies investing in renewable energy, energy-efficient products, and sustainable supply chains not only reduce carbon footprints but also align with evolving consumer preferences for environmentally responsible products.

Another essential strategy is corporate social responsibility (CSR), where businesses go beyond profit-making to contribute positively to society. This can involve fair labour practices, ethical sourcing, and investing in community development. Furthermore, companies that adopt sustainable financial strategies, such as green bonds or impact investing, can access new funding sources while driving positive change.

Governments play a crucial role by creating regulatory frameworks and incentives that encourage sustainable practices. Policies supporting carbon pricing, renewable energy adoption, and sustainable infrastructure are key to fostering a green economy. In conclusion: Ultimately, businesses that integrate sustainability into their core strategies can achieve long-term profitability while promoting environmental stewardship and social equity. Sustainability is not only an ethical imperative but also a competitive advantage in today's global market.

GIS: IAES-2024/333

Sacred Groves of Sawai Madhopur district of Rajasthan: An Ethnobotanical Study

Prashant Rao

Asst Professor, Botany

Shaheed Captain Ripudaman Singh Govt College, Sawai Madhopur

This study examines the sacred groves of Sawai Madhopur district in Rajasthan, India, focusing on their ethnobotanical significance, cultural heritage, and role in biodiversity conservation. Sacred groves are traditionally protected forested areas, revered by local communities for their spiritual and ecological importance. These spaces harbor a variety of plant species, some rare and medicinal, contributing to the biological richness of

the region. Through ethnobotanical surveys, interviews with local communities, and analysis of plant species, this research documents the flora within these groves and explores the traditional knowledge associated with their use in folk medicine, rituals, and conservation practices. The findings reveal that sacred groves in Sawai Madhopur serve as living repositories of indigenous plant knowledge, offering insight into sustainable practices that have been upheld for generations. However, modernization, shifts in religious practices, and socio-economic pressures threaten the survival of these groves. This study highlights the urgent need for policies that support local stewardship and integrate ethnobotanical knowledge into conservation frameworks.

GIS: IAES-2024/334

Ecorestoration Using Karanj (*Pongamia pinnata*): An Amenable Oilseed Tree with Apposite Phyto-Plasticity on Kota Stone Minespoil in Rajasthan (India)

S. Kala^{1*}, B.L. Mina³, H.R. Meena², Shakir Ali², Ashok Kumar² and I. Rashmi²

^{1*}Senior Scientist (Forestry), ICAR- IISWC, Research Centre, Kota -324002, Rajasthan, India

²ICAR- IISWC, Research Centre, Kota -324002, Rajasthan, India

³ICAR-NBSS&LUP-Regional Centre -Udaipur-313001, Rajasthan

*Corresponding author e-mail: kalaforestry@gmail.com

The UN Decade on Ecological Restoration (2021–2030) emphasizes mitigating climate change, recovering biodiversity, and reversing environmental degradation. Mining activities, particularly open-cut and strip mining, generate significant waste rock that adversely impacts ecosystems. This study explores sustainable ecological restoration using resilient tree species to rehabilitate mine spoil dumps at ASI-Laxmipura mines, Ramganjmandi, Kota, Rajasthan, conducted by ICAR-IISWC-RC-Kota from 2016–2024. Four fast-growing tree species: *Acacia nilotica*, *Inga dulce*, *Pongamia pinnata*, and *Ficus racemos*, were evaluated for survival, productivity, and ecological benefits on mine spoil sites. Results indicated *Pongamia pinnata* (Karanj) outperformed others in pod yield (7.57 kg/tree), seed yield (3.94 kg/tree), and growth parameters, demonstrating superior survivability, carbon biomass accumulation, and resistance to drought and

stress. Enhanced outcomes were attributed to systematic treatments including pit size optimization, root media inputs, and mulching. Dust load estimation revealed Karanj's superior capacity for dust accumulation (0.97 mg/cm²), followed by Manila Tamarind, Gular, and Bael. Phyto-sociological surveys across pre-mining, post-mining, and buffer zone sites highlighted Karanj's plasticity in biomass production, flowering, fruiting, and seed quality. Its biofuel potential underscores its suitability for silvipasture technologies, ensuring profitable and sustainable use of mine waste dumps. This systematic screening of tree-borne oilseed species provides a model for developing biofuel parks and promoting ecological and financial success. Karanj's high environmental adaptability and economic potential make it an ideal candidate for sustainable restoration of degraded landscapes across Southeast Rajasthan.

Keywords: *Kota Stone Mines, Phyto-Plasticity, Legume trees, Oilseed, Biofuel, Rehabilitation, Ecorestoration*

GIS: IAES-2024/335

Particle Size Effect on Assessment of Heavy metals Associated with Road Dust at an Industrial City Kota, Rajasthan

Bhairu lal Kahtik Naraniya*, Bharat Singh Meena, Ultra Chandrawat, Manju Meena

Department of Chemistry, Government College, Kota

*E-mail: bhairulalkhatik067@gmail.com

The concentration of six heavy metals, including lead (Pb), chromium (Cr), cadmium (Cd), copper (Cu), zinc (Zn), and nickel (Ni), were examined in road dust particles that were collected from five zones in Kota city in order to understand the particle size effect. Keeping this in mind, this study aims to determine concentrations of selected metals in 50 road dust samples in summer months (March, April, May and October, 2024) under meteorological influence. The samples were separated into four particle size fractions [(i) <37µm, (ii) 37µm - 53µm, (iii) 53µm - 75µm, (iv) 75µm - 150µm] and analyzed using Atomic Absorption Spectrophotometric method. However, the trace metal concentrations increased with the decrease of dust particle size in all samples. The smaller particle size fraction has a higher heavy metal content, low density, high mobility in runoff, and thus is a higher risk for the residents of Kota city.

Key word: *Heavy Metals, particle size, meteorological influence, road dust.*

Environment and Sustainability; - Through the Perspective of Arts and Literature

Dr Santosh Jain

Principal Government college Luni

Environment and sustainability; looking at a first glance seem to be two different fields. Almost after the industrial revolution for centuries it seems impossible two parallelly carry these two aspects together. Most of the development has taken a great toll on the environment. Whether it is forest wealth, mine reserves, water resources, the sky, the earth, the air, the fire and the snow all are eschewed of their complete existence. Literature has long back cried aloud hoarse for the healthy relation between men and nature. Authors from classical to contemporary literature have been loud for their love of nature. Most of the tragedies of Shakespeare cry aloud with heroes disaster. All these scenes have background ignited with sorrow, suffering a loss. Whether it is King Lear on heath or Macbeth with the witches or Orphelia drowning herself in the sorrows of nature, or Hemlet's woods walking in determination.

Wordsworth who was the child of nature, cried about the suffering of men and their solace in nature. The lap of nature has Devine restoring qualities. A singing reaper girl is not solitary but a part of nature. Daffodils give everlasting happiness through the inward eyes. Keats and Shelley In their hope say when winter comes can spring be far behind. Collin's Evening, Thomson's Seasons, Blake's The Tiger and the Lamb, or Gray's country churchyard are abound in hush hush of city life and recluse under the tree near a stream of water.

Even the contemporaries like Maya Angelou who got awarded for her environmental poem The tree river and mountain reminded the US and the developed nations to stop the race of blind industrial mania, automation, excavation, nuclear weapons' accumulation, wars, biological weapons, researchers heading to massacring civilization. We need to stop our desire of accumulation and ceasing of rights of children, poor, weak. And stop being too greedy and ambitious at the cost of weak and nature because nature is not weak It rebounds.

Evaluate the Effect of Some Heavy Metals on Seed Germination of *Raphanus sativus* Variety Pusa Himani in Laboratory

Dr. Rajshree Gupta

Professor, Botany

E mail - rajshreegupta@rocketmail.com

Cultivators adjacent to industries irrigate their crops with polluted water from factories. This has resulted in a colossal damage to their crops. Most heavy metal pollution of rivers and consequently of soil is caused by agricultural, industrial and domestic water. Most of the effluents and wastes contain heavy metals in an amount sufficient enough to cause toxicity to crop plants. Heavy metals are hazardous pollutants as they are toxic, often accumulated and even biomagnified by plant parts including seeds. In the present study the critical and toxic levels of heavy metals for radish were used. I used five concentrations (10,50,100, 200 and 500 ppm) of five different heavy metals viz Cu, Cd, Pb, Ni and Zn, (also with control) in the present investigation determining their toxicity effect on seed germination of *Raphanus sativus* variety Pusa himani. The experiments were laid on Latin square design in the laboratory, using petri plates with three replicates for each treatment. Pusa himani is a European or temperate variety of *Raphanus sativus* (radish). The best characteristic of this variety is the root formation even at 112 degree F temperature. It matures in 30- 35 days. On the day of termination of the experiment (11th day), a number of germinated seeds were recorded. The average values of triplicate experiments were tabulated. The seed germination in *Raphanus sativus* variety Pusa himani was badly affected by the application of heavy metals. At 10 ppm concentration Nikhil showed the same seed germination as in control that is 95% but it decreased to 93% copper, 80% cadmium, 85% Lead and 90% Zinc, by the application of other heavy metals at this concentration over control. The order of heavy metal toxicity to seed germination was Cd>Pb>Zn>Cu>Ni. The various treatments differed significantly among themselves and also with control. The study has ecological implications as the co-occurrence of copper, cadmium, lead, nickel and zinc is common in contaminated soils.

Seasonal Phytoplankton Community of Nakki Lake, Mount Abu

Kinjal Makwana¹ and Pravina Rathore²

¹Govt. PG. College (Under Vsy), Mavli (Udaipur), Rajasthan

²Department of Botany, Bhupal Noble's University, Udaipur, Rajasthan
Email id. – kinjalmakwana393gmail.com

Present research describes the population of phytoplankton in the lake Nakki of Rajasthan. Results depict a total of 24 species under five different classes. Phytoplankton was dominant by Bacillariophyceae (54%) followed by Chlorophyceae (21%), Cyanophyceae (17%) and Charophyceae and Euglenophyceae (4%) respectively. All the phytoplankton groups recorded their seasonal maxima during summer followed by winter and rainy season. The most dominant occurrence of phytoplankton species was *Microcystis aeruginosa*, *Spirogyra sp.*, *Zygnema sp.*, *Ulothrix sp.*, *Synedra ulna*, *Navicula sp.*, *Amphora ovalis*, *Cymbella affinis*, *C. Tumida* and *Licmophora sp.* Whereas the least occurred species was *Tabellaria fenestrata* and *Fragillaria crotonensis*. The study explains a rich biodiversity of phytoplankton, in lake Nakki with dominance of *Synedra tabulate*, *Cymbella tumida* and *Cymbella affinis* (Diatoms) which remarks the evidence of probable organic pollution. Excessive presence of *Microcystis aeruginosa* in all the season with blooming nature truly regarded as eutrophic with the initial signal of eutrophication.

Keywords: *Phytoplankton diversity, Bacillariophyceae, Nakki Lake, Organic pollution.*

Scientific Innovations for Environmental Sustainability

Kamala Ratnoo

Assistant Professor (English) Govt. Girls P.G. College,

Magra Punjala Jodhpur

E-MAIL-ID: kamalaratnoo1977@gmail.com

In the face of escalating environmental challenges, the race towards finding sustainable solutions has never been more critical. This pursuit has sparked a wave of innovative technologies and practices aimed at not only mitigating the adverse effects of human activities on the planet but also paving the way for a sustainable future, from ground breaking carbon capture and storage technologies to genetic engineering for conservation, and sustainable agriculture practices, the landscape of environmental sustainability is witnessing transformative changes. Carbon Capture and Storage (CCS) technologies are essential in mitigating climate change effects by capturing carbon dioxide emissions from industrial sources and securely storing them underground to prevent their release into the atmosphere. CRISPR technology has significantly impacted genetic engineering offering precise and efficient tools for editing the DNA of organisms. The transition towards renewable energy is gaining momentum, driven by significant advancements in technology and increased environmental awareness. The biotechnology sector is at the forefront of scientific innovation, creating revolution in fields ranging from medicine to environmental conservation.

Keywords - *Innovative, agriculture, technologies, renewable, genetic engineering.*

Microwave Assisted Digestion for Lead analysis in Yoghurt Samples using Atomic Absorption Spectrophotometer

Monika Dakshene, Arti Bansal, Garima Chawla, Renuka Jain
Government College Kota

The study investigates the concentration of lead in various yoghurt samples using a microwave-assisted digestion method, followed by analysis via atomic absorption spectrophotometry (AAS). The research focuses on 80 random samples, categorized into four types of yoghurt: sour, sweet, flavoured, and homemade, sourced from different areas of Kota city.

The results indicated that the lead concentrations in the yoghurt samples varied, with the mean cadmium levels for sour, sweet, flavoured, and homemade yoghurt being 0.0301 ± 0.0058 mg/L, 0.0269 ± 0.0052 mg/L, 0.0397 ± 0.0096 mg/L, and 0.0150 ± 0.0041 mg/L, respectively. Notably, the flavoured yoghurt samples exhibited the highest concentration of cadmium, while the homemade yoghurt samples contained the lowest levels.

It is significant to note that the cadmium concentrations in all sample categories exceeded the World Health Organization's (WHO) permissible limit of 0.0026 mg/L, raising concerns about potential health risks associated with the consumption of these dairy products. This finding underscores the importance of continuous monitoring and regulation of heavy metal contamination in food products to ensure consumer safety and compliance with international health standards.

Keywords: *Yoghurt, heavy metals, atomic absorption spectrophotometry, microwave digestion.*

Perovskites for Dye Degradation: A Promising Avenue for Environmental Remediation

¹Dr. Uttra Chandrawat, ²Dr. Manju Meena, ²Dr. Bharat Meena, ³Sanket Kumar

¹Professor, ²Associate Professor, ² Govt. College, Kota, ³Assistant Professor, Govt. College, Baran

Email:- chandrawatuttra@gmail.com

Email: sanket271195@gmail.com

Perovskites, a class of materials with exceptional optical and electrical properties, have garnered significant attention for their potential in environmental remediation, particularly in the degradation of synthetic dyes. These pollutants, commonly found in industrial effluents, pose severe environmental and health risks. This study explores the efficacy of perovskite-based photocatalysts in breaking down harmful dyes, showcasing their enhanced photocatalytic activity under visible light irradiation. Key findings include: Enhanced photocatalytic efficiency: Perovskites exhibit superior dye degradation rates compared to traditional photocatalysts. Tunable properties: Structural modifications and doping enable tailored optical and electronic properties, optimizing performance. Stability and reusability: Perovskites demonstrate remarkable stability and reuse potential.

The research underscores the potential of perovskites as versatile and efficient catalysts for dye degradation, offering a promising solution for mitigating environmental pollution. Future directions include scaling up perovskite-based technologies and exploring their applicability in real-world wastewater treatment scenarios.

Keywords: *perovskites, visible light irradiation, photocatalytic efficiency, industrial effluents.*

Conservation of The Great Indian Bustard in the Sorsan Region of Rajasthan: Threats, Recommendations, and Measures

Roopal Jain¹ and Dr. Smriti Johari²

Research scholar¹ and Professor ²,
Department of Zoology, Janki Devi Bajaj Govt. Girls College Kota,
Rajasthan, India

Email: jain.roopal611@gmail.com & smritiparesh@gmail.com

The Great Indian Bustard (*Ardeotis nigriceps*) is a critically endangered species, once widespread across the Indian subcontinent, now facing severe threats to its survival, particularly in the Sorsan region of Rajasthan. This paper examines the primary threats to the Great Indian Bustard, including habitat loss due to agricultural expansion, poaching, electrocution from power lines, and impacts from climate change. It highlights the urgent need for effective conservation strategies, emphasizing the importance of community engagement, habitat restoration, and legal protections. The study proposes actionable recommendations tailored to the Sorsan region, including the establishment of protected areas, the implementation of wildlife-friendly infrastructure, and the promotion of ecotourism. By exploring successful case studies from similar ecosystems, this paper aims to provide a comprehensive framework for the conservation of the Great Indian Bustard, ultimately contributing to the preservation of this iconic species and its habitat in Rajasthan.

Keywords: Legal protections, wildlife-friendly infrastructure, ecotourism.

Role of Change Management Strategies in Implications of Governance Policies

Dr. Shweta Swami

Assistant Professor, S.D. Govt. College, Beawar (Raj.)

This study looks into how change management strategies affect how corporate governance policies are perceived. As businesses navigate increasingly complex legal frameworks and stakeholder expectations, effective change management is essential to the successful adoption of governance frameworks. The study's primary objective is to identify the best change management strategies that facilitate the incorporation and application of governance policies across various industries. This qualitative study covers case studies of businesses that have effectively changed their governance processes through targeted change management programs. The results emphasize how important leadership participation, communication, and employee involvement are to creating a moral and law-abiding culture. The paper also identifies typical transitional issues that businesses encounter, like reluctance to change and a lack of proper training, which may make it challenging to successfully apply governance.

The study concludes that coordinated change management strategies are necessary for the successful implementation of governance policies. Ethical behavior, accountability, and transparency can be enhanced by aligning governance objectives with organizational culture. It is recommended that leaders and lawmakers prioritize change management as a key element of efforts to reform government. This involves the requirement for ongoing assessment and strategy modification in reaction to shifting external conditions. The relationship between governance and change management is better understood thanks to this study, which also provides useful information for businesses trying to strengthen their governance frameworks in a rapidly changing environment.

Keywords- Governance, Change Management.

Global Challenges and Local Solutions: Empowering Communities for Sustainable Development

Rajendra Prasad Meena

Assistant Professor of English Literature Government College
Jamwaramgarh Jaipur

Email: durajbyadwal@gmail.com

The world faces numerous global challenges, including climate change, poverty, inequality, and social injustice. These issues require collaborative efforts and innovative solutions. This project explores the potential of local solutions to address global challenges, emphasizing community-led initiatives and grassroots approaches.

By examining successful local models, we identify key factors contributing to their effectiveness: Community engagement and participation, Contextual understanding and cultural sensitivity, Innovative use of technology and resources, Collaborative governance and partnerships. Case studies from diverse regions highlight: Renewable energy initiatives in rural India, Sustainable agriculture projects in African communities, Waste management innovations in Latin American cities, social entrepreneurship programs in Southeast Asian villages. These local solutions demonstrate: Improved livelihoods and economic growth, enhanced environmental sustainability, Increased social cohesion and community resilience, Effective governance and policy influence. This research underscores the importance of: Decentralized decision-making and community ownership, Context-specific solutions tailored to local needs, South-South cooperation and knowledge sharing, Integrated approaches addressing multiple challenges. By scaling up local solutions and fostering global connections, we can: Amplify impact and leverage resources, Foster inclusive and equitable development Address global challenges through collective action.

This research paper contributes to the discourse on sustainable development, highlighting the potential of local solutions to drive transformative change and ensure a more resilient future for all.

Keywords: *global challenges, local solutions, sustainable development,*

Studies on Plant Diseases of Various Crops in Agriculture land of Jaipur Division

Hemlata Khatana* and Dr. Mamta Choudhary**

Department of Botany, Janki Devi Bajaj Government Girls College, Kota

email: mamtachoudharyishu@gmail.com

The present study has been done in an agriculture land of Jaipur division. The village Deoli is located in Tonk, Tahsil of Tonk, District in the State of Rajasthan in India. The Deoli is located in the south east part of the state of Rajasthan. This area is full of vegetables and many crops. In this survey many vegetable plants such as *Zea mays*, *Solanum melongena*, *Abelmoschus esculentus*, *Saccharum officinarum*, *Sorghum Vulgare*, are observed that these plants are infected by pathogen. The diseases Little Leaf of bringle Caused by a plant pathogenic mollicute, phytoplasma (earlier) known as mycoplasma like organism or MLO The diseases Leaf of spot disease in lady finger Caused by a plant fungus *Cercospora malayensis* and *Cercospora abelmoschi* Sunburn damage will be found on lemons or other citrus fruit growing on the outside of the tree.

The bacterial fungal and viral infection along with infestations by insects result in plant diseases and damage.

Keywords: Deoli(Tonk), Crops Diversity, Pathogens

Challenges of Using Plastic on Environmental Health

Dr. Bharati Veerwal*

Associate professor, Maharana Pratap Govt PG College, Chittorgarh

Email address- veerwal.b@gmail.com

Plastic pollution has become one of the most pressing environmental challenges of the 21st century, with significant implications for ecosystems, wildlife, and human health. The widespread production and disposal of plastics contribute to environmental degradation in numerous ways, from the accumulation of plastic waste in oceans and landfills to the release of toxic

chemicals. Key challenges include the persistence of plastics in the environment due to their non-biodegradable nature, which results in long-lasting contamination of soils and water bodies. Additionally, plastics break down into microplastics, which are ingested by marine life and subsequently enter the food chain, posing direct risks to human health. Chemical additives in plastics, such as phthalates and bisphenol A (BPA), can leach into the environment, exhibiting endocrine-disrupting and carcinogenic properties that threaten biodiversity and public health. The global reliance on single-use plastics and the limited capacity for recycling exacerbate these issues, calling for urgent policy reforms, technological innovations, and public awareness to reduce plastic waste and mitigate its environmental impact.

Keywords- Plastic, BPA, Pollution.

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Global Challenges and Local Solutions

Urmila Meena

Assistant professor Govt. College Gangapur city

Refers to the idea that while many issues, such as climate change, poverty, and health crises, are worldwide in scope, effective responses often emerge from localized actions and innovations. Here are some key points to consider: Climate Change: Local communities can adopt renewable energy sources, promote sustainable agriculture, and create green spaces, helping to mitigate climate change effects while fostering resilience. Poverty Alleviation: Microfinance initiatives and community-led development projects empower local populations, providing them with the resources to improve their livelihoods. Public Health: Grassroots health campaigns can effectively address local health needs, such as vaccination drives and education on hygiene practices, tailored to specific community contexts. Biodiversity Conservation: Local stewardship of natural resources, such as community-managed forests or marine reserves, can protect ecosystems and preserve biodiversity. Cultural Preservation: Local solutions often incorporate traditional knowledge and practices, ensuring that responses are culturally relevant and sustainable. By leveraging local strengths and engaging community members, societies can create innovative and effective solutions that address global challenges while fostering social cohesion and empowerment.

Innovative Agricultural Machinery for Sustainable Development in Rajasthan: Addressing Environmental and Resource Challenges

Suman Chaudhary

Assistant Professor in Geography, Govt Dungar College, Bikaner

Agriculture plays a crucial role in Rajasthan's economy and food security; however, traditional practices have put pressure on natural resources, causing issues like soil erosion, groundwater depletion, and loss of biodiversity. Recently, innovative agricultural machinery has proven to be transformative, supporting sustainable practices that address these challenges. This paper examines the impact of modern agricultural machinery on sustainable development in Rajasthan, a state characterized by arid and semi-arid conditions. Modern Agriculture technology is changing the agricultural landscape: precision agriculture equipment like the 'Krishi Yantra' tractor-mounted sensors help small farmers in districts like Jhunjhunu and Jodhpur monitor soil moisture and nutrient levels, enabling water-efficient and nutrient-sensitive farming. Solar-powered pumps, introduced in regions such as Barmer and Jaisalmer, have reduced dependency on diesel and facilitated irrigation access in remote areas. Drip irrigation systems, supported under the Pradhan Mantri Krishi Sinchai Yojana (PMKSY) scheme, have been widely adopted by farmers in Udaipur and Bundi, cutting water usage in crops like cotton and guar while improving yield. Conservation tillage machinery, such as the Happy Seeder, is helping prevent stubble burning, particularly in the wheat-growing areas of Ganganagar and Hanumangarh.

This study also analyzes the adoption trends, socio-economic impacts, and environmental benefits of these technologies, focusing on how local government programs support smallholder farmers in adopting sustainable machinery. Findings emphasize the need for region-specific innovations and policies tailored to Rajasthan's distinct Agro-ecological settings, highlighting that sustainable machinery is key to achieving environmental resilience and economic viability for Rajasthan's farmers. In conclusion, sustainable agricultural machinery significantly enhances productivity and resource conservation in Rajasthan. With the right policies and awareness initiatives,

Rajasthan can become a model for sustainable agriculture in arid regions through local integration of advanced machinery and practices.

Keywords: - *Sustainable agriculture, Agricultural machinery, Precision agriculture, Solar- powered pumps, Conservation tillage, Resource conservation, Environmental resilience, Pradhan Mantri Krishi Sinchai Yojana (PMKSY), Agro-ecological adaptation.*

GIS: IAES-2024/349

A Comprehensive Evaluation of Environmental Accounting Practices in Emerging Countries with Special Reference to Selected Indian Companies

Sunil Kumar Kumawat

Assistant Professor, S.D. Govt. College, Beawar

This study examines environmental accounting practices in developing countries, with a specific focus on a few Indian companies. As global environmental issues increase, strong environmental accounting is crucial for sustainable business practices. This study aims to evaluate the extent to which environmental considerations are incorporated into Indian companies' accounting and reporting systems. By looking at the environmental policies, practices, and disclosures of a sample of companies from various industries, the study identifies significant trends, challenges, and best practices in environmental accounting. The study employs a mixed-methods approach, combining quantitative data analysis with qualitative insights from stakeholder and industry expert interviews. The results show that the selected firms' environmental accounting practices range significantly, which may be ascribed to a variety of factors such as stakeholder pressure, regulatory compliance, and CSR initiatives. Some organizations lag behind, primarily due to a lack of resources and awareness, while others show advanced practices by integrating environmental costs into financial reporting and decision-making.

According to the study's findings, improving environmental accounting procedures is essential for Indian businesses looking to increase sustainability, accountability, and transparency. The creation of established norms and more training for accounting experts are among the suggestions

made for legislators and corporate executives to promote a more thorough adoption of environmental accounting. By emphasizing the vital role that environmental accounting plays in attaining long- term sustainability and economic success, this study adds to the larger conversation on sustainable business practices in emerging markets.

Keywords- Accounting Practices, Global Environmental Issues, Sustainability.

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Cultivating Health: Addressing Environmental Hazards through Natural Farming Practices

Dr. Aparna Kumawat

Professor in Zoology, Govt. Meera Girls' College, Udaipur
aparnakumawat7@gmail.com

Environmental health hazards such as pesticide contamination, soil degradation, water pollution, and air quality deterioration are a great concern to the health of humankind, biodiversity, and the stability of ecosystems on the globe. Surprisingly, these problems are partially caused by conventional farming practice, which is heavily based on synthetic fertilizers and pesticides, monoculture and other forms of production in agriculture. They lead to soil depletion of nutrients, water toxicity, and greater greenhouse gas emissions. Such risks, therefore, affect directly agricultural workers exposed to the chemicals but have wider consequences in the communities surrounding where health problems are brought forth through respiratory disorders, neurological diseases, and different kinds of cancer. Natural farming appears to be an alternative form that is sustainable and ecologically friendly as it answers such challenges by encouraging harmonizing practices with the environment instead of exploiting it. It provides an opportunity for developing fertile soils, conserves water quality, and saves resources, besides reducing bad emissions. The major features of natural farming include minimizing the chemical inputs, facilitating biodiversity, maintaining soil fertility, conserving water, and reducing harmful emissions. Most of the key methods, like crop rotation, cover cropping, composting, application of green manures, and biological pest control all enhance the soil building function by

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maintaining healthy self-renewing ecosystems. It is further beneficial in that the chances of toxic chemicals minimize risk, buildup of fertility, conservation of water, and ecological balance recapture. It also contributes to carbon sequestration in soil, enhanced water retention capabilities, and the support of pollinators and other good organisms necessary in the food chain. Natural farming provides for more food security through the yield of stronger and healthier crops that are fewer disease outbreaks and pest incidence. The difficult path toward natural farming, however, requires education, supportive policies, and economic stimuli to encourage farmers to enter into those practices.

GIS: IAES-2024/351

India: Environment Laws in India

Dr. Gunjika Dubey

Professor, Political Science Government Arts College, Kota (Raj.)

The need for protection and conservation of environment and sustainable use of natural resources is reflected in the constitutional framework of India and also in the international commitments of India. The Constitution under Part IVA (Art 51A-Fundamental Duties) casts a duty on every citizen of India to protect and improve the natural environment including forests, lakes, rivers and wildlife, and to have compassion for living creatures. Further, the Constitution of India under Part IV (Art 48A-Directive Principles of State Policies) stipulates that the State shall endeavor to protect and improve the environment and to safeguard the forests and wildlife of the country.

Several environment protection legislations existed even before Independence of India. However, the true thrust for putting in force a well-developed framework came only after the UN Conference on the Human Environment (Stockholm, 1972). After the Stockholm Conference, the National Council for Environmental Policy and Planning was set up in 1972 within the Department of Science and Technology to establish a regulatory body to look after the environment-related issues. This Council later evolved into a full-fledged Ministry of Environment and Forests (MoEF).

Some of the important legislations for environment protection are as follows:

- The National Green Tribunal Act, 2010

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- The Air (Prevention and Control of Pollution) Act, 1981
- The Water (Prevention and Control of Pollution) Act, 1974
- The Environment Protection Act, 1986
- The Hazardous Waste Management Regulations, etc.

These important environment legislations have been briefly explained in the succeeding paragraphs. The National Green Tribunal Act, 2010.

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Eco-Synergy: Integrating Biology and Sustainability for a Resilient Future

Anita Kumari

Assistant professor, Maharana Pratap govt pg college, Chittorgarh

email address- anitakumarikataria@gmail.com

The concept of eco-synergy emphasizes the integration of biological sciences and sustainability principles to foster a resilient future in the face of environmental challenges. As ecosystems worldwide experience unprecedented pressures from climate change, pollution, and resource depletion, the need for innovative, nature-based solutions has become critical. Eco-synergy seeks to harmonize human activity with natural processes, using insights from ecology, genetics, and environmental science to develop sustainable practices in agriculture, urban development, and resource management. By focusing on circular economy models, biodiversity conservation, and regenerative practices, eco-synergy promotes resilient systems that not only reduce environmental impacts but also enhance ecosystem services and human well-being. This approach advocates for cross-disciplinary collaboration, bringing together biologists, ecologists, policymakers, and engineers to co-create adaptive strategies that harness the self-sustaining capabilities of nature. Through this lens, eco-synergy envisions a future where human systems are deeply integrated with the environment, fostering resilience and sustainability across social, economic, and ecological dimensions.

Keywords- *Eco-synergy, environmental challenges, ecosystem.*

Role of Regional Rural Banks in Sustainable Rural Development

Balmukand Meena

Assistant Professor of EAFM, Govt Pg College, Jhalawar

balmukandmeena1993@gmail.com

Regional Rural Banks (RRBs) play a crucial role in fostering sustainable rural development in India. Established to provide credit and financial services to the rural populace, RRBs aim to enhance the standard of living in rural areas while promoting economic growth. Their primary focus is on serving the agricultural sector, small businesses, and marginalized communities, thereby addressing the needs of the rural economy.

One of the key contributions of RRBs is facilitating access to credit for small farmers and entrepreneurs who might otherwise be excluded from the formal banking system. By offering affordable loans, RRBs empower individuals to invest in agricultural practices, enhance productivity, and diversify their income sources. This access to finance supports initiatives that promote sustainable agricultural practices, such as organic farming and water conservation, contributing to long-term environmental health.

Moreover, RRBs contribute to rural development through financial literacy programs and capacity-building initiatives. These efforts equip rural communities with the knowledge and skills necessary to manage their finances effectively and make informed economic decisions.

In summary, RRBs are integral to sustainable rural development by providing essential financial services, promoting responsible agricultural practices, and enhancing the overall economic resilience of rural communities. Their localized approach enables them to address specific regional challenges, fostering inclusive growth and sustainable livelihoods in rural areas.

CONCLUSION: In conclusion, Regional Rural Banks (RRBs) are vital to sustainable rural development by providing essential financial services, supporting agricultural innovation, and enhancing the economic resilience of rural communities. Their focus on accessibility and financial literacy empowers marginalized populations, promotes responsible practices, and

fosters inclusive growth. As facilitators of government initiatives and local development projects, RRBs significantly contribute to improving living standards and ensuring long-term sustainability in rural areas.

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Challenges and Local Solutions of Digital Divide and Technology Access

Mukesh Panecha

Assistant Professor

S.G.P.B Government Girls College Pali (Rajasthan)

Email: panecha.mukesh@gmail.com

The digital divide refers to the gap between individuals, communities, or regions who have access to modern information and communication technology (ICT) and those who do not. This divide affects a variety of factors, including access to the internet, computers, smartphones, and digital literacy skills. As technology becomes increasingly central to nearly all aspects of life—education, healthcare, business, and government services—the digital divide has significant social and economic implications.

Key Aspects of the Digital Divide: Access to Technology, Digital Literacy, Affordability, Socio-economic and Geographic Barriers, Quality of Access
Implications of the Digital Divide: Education: The COVID-19 pandemic highlighted the critical role of technology in education. Students without reliable internet access or devices were at a significant disadvantage in participating in remote learning. Economic Opportunity: Many job applications, hiring processes, and skill-building resources are now primarily online. Those without access to the internet or devices face challenges in finding employment or advancing their careers. Health and Healthcare: Access to online healthcare services and telemedicine can be life-saving, especially in underserved areas. Without reliable internet, many communities are cut off from these services. Social Inclusion and Civic Engagement: Many political processes, such as voting registration, public discourse, and access to government services, are increasingly moving online. Lack of digital access means disenfranchisement for those left behind.

Local Solutions to Bridge the Digital Divide:

To close the digital divide, a combination of community-based and technological solutions must be implemented at local levels, often with the involvement of governments, non-governmental organizations (NGOs), and private sector companies. Here are some effective approaches: Expanding Infrastructure and Connectivity, Affordable Devices and Connectivity, Digital Literacy Programs, Leveraging Mobile Technology, Partnerships with Private Sector and Governments, Rural and Remote Area Focus. In conclusion: Bridging the digital divide requires a multifaceted approach that combines infrastructure development, digital literacy training, affordable access to devices and connectivity, and local community engagement. The digital divide is not only a technological issue but also a social one, and addressing it is essential for ensuring equitable access to opportunities in an increasingly digital world.

GIS: IAES-2024/355

Environmental Degradation: A Major Issue

Mrs. Rajbala

Associate professor in botany, S.R.R.M Govt. college Jhunjhunu (Raj.)

Environmental degradation is the disintegration of the earth or deterioration of the environment through consumption of assets, for example, air, water and soil; the destruction of environments and the eradication of wildlife. It is characterized as any change or aggravation to nature's turf seen to be pernicious or undesirable. Ecological effect or degradation is created by the consolidation of an effectively substantial and expanding human populace, constantly expanding monetary development or per capita fortune and the application of asset exhausting and polluting technology. It occurs when earth's natural resources are depleted and environment is compromised in the form of extinction of species, pollution in air, water and soil, and rapid growth in population. Environmental degradation can happen in a number of ways. There are a number of different techniques that are being used to prevent this, including environmental resource protection and general protection effects.

Keywords - Environmental resources, Techniques, extinction etc.

Building Capacity for Environmental Protection and Sustainable Development through Education

Dheer Singh

Swami Gopaldas Government Girls College, Churu, Rajasthan, 331001
singhdheer1420@gmail.com

Environmental protection and sustainable development require a skilled and knowledgeable workforce. This study examines the effectiveness of education and capacity building initiatives in enhancing environmental protection and sustainable development. The research adopts a mixed-methods approach, combining survey research and case studies to investigate the impact of education and capacity building on environmental protection and sustainable development. The findings highlight the significance of education and capacity building in promoting environmental protection and sustainable development, underscoring the need for integrated approaches that combine formal education, training, and community engagement.

Keywords: *Environmental Protection, Capacity Building, Education, Sustainable Development*

Sustainable Development: - Challenges and Opportunities for Innovative World

Priyanka Jagarwar

Assistant professor, Department of BADM
Government commerce Girls college, Kota
Email id:- priyankajagarwar7@gmail.com

In this research I am looking into the formation, implementation of actions and habits, completed environmentally conscious people, working in the most polluting industries. With the findings of this research, I wish to create a basis for further research of the sociological and psychological factors, influencing pro-environmental behaviour. The research question that I wished to uncover was: How does the professional identity of people working in large corporations relate to their personal sustainability ideals? To answer the

research question, I first examine the developments of environmental sustainability ideals in society, particularly to the changing attitude of the last decade. Second, I analyze the psychological and sociological concepts that may influence the formation of pro-environmental behaviour. Finally, 10 semi-structured interviews were conducted with environmentally sustainable individuals working in highly polluting industries. The study revealed that because of their exposure, companies, operating in unsustainable fields have created very extensive environmental sustainability for their employees. Significant differences in cultural mentality were observed between companies, operating in Europe and other regions. The main factors, influencing pro-environmental behaviour were established as: personal social circles; consumed information channels, and policy in the country of residence. Economic reasons were the most common to restrict successful execution of pro-environmental behaviour.

Keywords: pro-environmental behaviour, sustainability, company culture, industry, conscious consumption.

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Eco – Textiles for Sustainable Development

Dr. Anjali Sharma

Associate Professor, Govt. M.S. College for Women, Bikaner

The textile sector is thought to be the most detrimental to the environment worldwide. The textile industry's environmental issues arise throughout certain production steps and extend all the way to the final product. Toxic compounds are created by the succeeding fabric during production processes like bleaching and dyeing, which subsequently spread throughout our ecosystem. In the course of the production.

Pollution management in processes is just as important as ensuring that a product is free of harmful effects. Due to unsustainable existing practices, the textile industry has a significant environmental impact. As a result, businesses, environmentalists, and consumers are searching for ways to lower the carbon footprint of the textile sector. Thus, there is need to produce the textile materials which are eco-friendly.

Key Words: - Textile Industry, Eco-textiles, Sustainable process.

Adaptation of Flora and Fauna in Response to Global Change

Sunayana Singh

Department of Zoology

MSJ Government College, Bharatpur, Rajasthan

Go2sunayana@gmail.com

The adaptation of flora and fauna in the context of global change is a critical area of study as ecosystems face unprecedented pressures from climate change, habitat destruction, pollution, and invasive species. As the planet experiences rising temperatures, changing precipitation patterns, and increased frequency of extreme weather events, many species face unprecedented challenges to their survival. Flora and fauna exhibit various adaptive strategies to cope with these changes, including phenotypic plasticity, shifts in geographical distribution, and alterations in life cycles. For instance, many plant species are modifying their growth patterns and flowering times in response to changing climatic conditions, while animals are migrating to more suitable habitats or altering their behaviours to find food and shelter.

However, the ability of species to adapt is often limited by the pace of change and the availability of suitable habitats. Fragmentation and degradation of ecosystems further hinder these adaptive processes, leading to potential declines in biodiversity. Some species may face extinction if they cannot keep pace with the rapid environmental shifts. This adaptation dynamic highlights the importance of conservation efforts and habitat protection to facilitate the resilience of ecosystems. By understanding the mechanisms and limitations of adaptation in flora and fauna, we can better inform strategies to mitigate the impacts of global change and promote biodiversity conservation, ensuring the health of our planet's ecosystems for future generations.

Keywords: *Environment, flora, fauna.*

MNREGA, Social Audit and Rural Development: A Study of Some Selected Gram Panchayats in Kota District

Meena Kumari Meena

Assistant Professor in ABST, Govt. college Ramganjmandi

Email id – kcc1545@gmail.com

The objective of this research paper has been to study the impact of Individual factors, functional and financial factors under social audit in MNREGA scheme in Kota district of Rajasthan. Social audit is a tool to bring community participation in the implementation and monitoring of government schemes. In order to ensure transparency, accountability and public participation in MNREGA Programme, it is conducted twice a year. Gram Panchayat has been given the right to conduct social audit. Social audit benefits the deprived groups and ensures transparency and accountability in the work done under MNREGA.

Keywords:- MNREGA, social audit, Job card, Gram Panchayat (GP), Transparency.

Green Chemistry's Significance for a Sustainable Environment

Dr. Suraj Prakash

Assistant Professor (Chemistry), Govt. College, Kolayat

Email – suraj12345sp@gmail.com

Prominent global specialists discuss the study and use of green chemistry and engineering to solve contemporary environmental and societal problems. With chapters on green chemistry and engineering research, environmentally benign chemical process design and synthesis, green methods to reduce and/or clean up environmental pollution, the development of biomaterials, biofuel, and bioenergy production, biocatalysts, and green chemistry policies and ethics, they address environmental sustainability. With its quiet promise of causing significantly less apparent harm to the environment, green chemistry has brought about a relatively quick and favourable

paradigm change in the general use and management of natural resources and raw materials for the development of civilization. The chemical and biochemical technologies that are being researched, improved, and ultimately created to support environmental sustainability are discussed in this work. It offers current knowledge on a few chosen domains where green chemistry concepts are being adopted to protect and enhance the environment. Economics, environmentally friendly technology for more environmentally friendly processes and techniques, and green strategies to reduce air and water pollution are covered in this article.

Keywords – Chemistry, Environment, Technology etc.

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Education and Capacity Building as Pillars of Sustainable Development

Prof. Geeta Sharma

Dept. of Drawing and Painting, S.R.K. P Govt. P.G.College Kishangarh

Sustainable development is a framework for meeting the needs of the present without compromising the ability of future generations to meet their own. It integrates environmental protection, social equity, and economic growth, creating a balanced approach to progress. Education and capacity building are essential to achieving this balance, as they equip individuals, communities, and institutions with the skills, values, and knowledge to address complex sustainability challenges.

Embedding sustainability in education fosters environmental stewardship, social responsibility, and economic resilience. By including topics like climate change, resource management, and ethical consumption within curricula, educational systems can cultivate a generation that understands and prioritizes sustainable practices. Beyond schools, informal education through community programs also plays a crucial role in spreading awareness and motivating action. Capacity building complements education by providing the practical tools, skills, and resources that communities need to implement sustainable strategies effectively. These initiatives include training in sustainable agriculture, renewable energy, waste management, and adaptive governance. Capacity-building efforts empower local

institutions and governments, helping them develop the resilience and adaptability required to address issues like environmental degradation, resource scarcity, and social inequalities. Education and capacity building form a powerful, interconnected approach to sustainable development. Education raises awareness and fosters a mindset geared toward long-term change, while capacity building ensures that individuals and communities have the practical ability to make sustainable decisions. This integrated approach promotes a society that is informed, capable, and ready to engage with sustainable solutions, laying the foundation for a more resilient, inclusive, and sustainable future.

GIS: IAES-2024/363

The Environmental Reconsciousness in Bishnoi Community

Dr. Manju Bishnoi

Assistant Professor English, Govt. College Osian Jodhpur

The Bishnoi community, primarily located in the Thar Desert regions of Rajasthan, India, is renowned for its deep-rooted environmental consciousness. Founded in the 15th century by Guru Jambheshwar (also known as Guru Jambhoji), the Bishnois follow a set of 29 principles (the "Bishnoi" rules) that emphasize living in harmony with nature. These principles are aimed at preserving the environment, protecting wildlife, and promoting sustainable living. Key aspects of their environmental consciousness include: **Tree Conservation:** The Bishnois are famous for their love for trees, especially the Khejri tree, which is central to their way of life. They consider cutting down trees to be a sin and have historically engaged in tree planting and preservation efforts. One of the most significant incidents reflecting their commitment was the "Khejarli Massacre" of 1730, where 363 Bishnois sacrificed their lives to protect Khejri trees from being felled by a ruler's soldiers. **Wildlife Protection:** The community is also known for its protection of animals, especially endangered species such as blackbuck antelope and chinkara. They have long adhered to a principle of non-violence toward animals, and their efforts to protect wildlife are rooted in both spiritual beliefs and a practical understanding of ecological balance. **Water Conservation:** Living in a desert region, water conservation has always been vital for the Bishnoi community. They have traditionally built step wells and other water conservation systems to ensure the sustainable use of water resources. **Sustainable Agriculture:** The Bishnois practice sustainable farming, avoiding the use of chemical pesticides and fertilizers. Their

farming methods are closely aligned with maintaining soil fertility and promoting biodiversity.

Overall, the Bishnoi community has long served as a model of sustainable living, demonstrating how spiritual beliefs can align with environmental stewardship. Their deep respect for nature and the environment is a core part of their identity and continues to inspire environmental movements worldwide.

GIS: IAES-2024/364

Ecological Issues: Economic Viability and Societal Responsibility

Dr. Manju Lata, Dr. Priyanka Yadav
M.S.J.Govt. College, Bharatpur

Environmental pollution represents an obstacle to the economical exploitation of natural resources. In developed international locations, the guidelines for safety of the environment are stricter than in growing countries. Accordingly, to get a license to open mines involves prolonged approaches which in turn reason put off. Indian government have also started out to position stringent conditions in region concerning environmental pollution. Therefore, ecological problems can be completely avoided, however such measures are highly-priced. Some environmental results of mining are deforestation, land damage, water pollution and hydrological harm, air pollution, noise pollutants, floor vibration and rock dispersal, and visible impact. Such environmental effects are increasing each day due to the fact the size of character mining operations is increasing as mining of lower grade deposits increases. The present-day trend in the direction of floor mining, and mine mechanization, is also stressful such issues.

The usage of environmental requirements as criteria for selection making in a developing country like India has to be properly assessed. If the norms of advanced nations are applied in India, expenses could be very excessive. Accordingly, the standards selected should be compatible with the country's economic situation.

Keywords: *Environmental Pollution, Ecological issues, Economical exploitation.*

Economic and Business strategies for sustainability

Abha Agrawal

Assistant professor, Govt. College Gangapur city

Sustainability in business and economics focuses on practices that promote environmental health, social equity, and economic viability. Here are key strategies: **Circular Economy**- Implement processes that minimize waste through recycling and reusing materials. **Product Life Extension**: Design products for durability and easy repair to extend their lifecycle. **Sustainable Supply Chains**: Choose suppliers that adhere to sustainable practices and fair labor standards. **Local Sourcing**: Reduce carbon footprints by sourcing materials closer to production sites. **Energy Efficiency**: Invest in solar, wind, or other renewable energy sources for operations. **Energy Management Systems**: Utilize technology to monitor and optimize energy use. **Green Product Development**: Develop products that use sustainable materials and have minimal environmental impact. **Life Cycle Assessment (LCA)**: Analyze the environmental impacts of products from creation to disposal. **Sustainable Business Models**, **Subscription Services**, **Corporations**, **Corporate Social Responsibility (CSR)**, **Transparency and Reporting**: Regularly disclose sustainability practices and impacts to stakeholders. **Innovation and Technology**: Invest in innovative technologies that reduce environmental impact. **Digital Solutions**: Utilize big data and AI to optimize resources and minimize waste. **Stakeholder Engagement**: Work with stakeholders—including customers, employees, and investors—to promote sustainable practices. **Education and Training**: Provide training for employees on sustainability practices and their importance. **Regulatory Compliance and Advocacy**: Stay compliant with environmental regulations to avoid fines and improve public perception. **Advocate for Sustainability**: Support policies and initiatives that promote sustainable practices in the industry. **Financial Strategies**: Allocate capital towards projects that generate positive social and environmental outcomes and explore green bonds or sustainable investment funds for capital.

By implementing these strategies, businesses can enhance their sustainability while also improving their competitive advantage and long-term profitability.

Economic and Business Strategies for Sustainable Tourism: Approaches for a Greener Future

Ayushi Agrawal

Assistant Professor,

Department of EAFM, Govt. Commerce Girls College, University of Kota,
Rajasthan

Email id- apayushiagrawal1108@gmail.com

Sustainability in tourism is becoming increasingly important as the industry faces challenges related to environmental impact, resource depletion, and cultural preservation. This paper examines the economic and business strategies that can help tourism companies adopt more sustainable practices while maintaining profitability. The focus is on practical approaches such as reducing waste, using renewable energy, and supporting local communities to ensure that tourism development benefits everyone in the long term. Businesses can implement strategies like eco-friendly infrastructure, energy-efficient technologies, and responsible waste management to lower costs and attract eco-conscious travelers. Additionally, adopting the principles of a circular economy, which focuses on reusing and recycling resources, can help reduce environmental damage and create more efficient operations. Green certifications and sustainability labels also play an important role in building trust with customers who prioritize environmentally friendly practices.

Collaboration between businesses, local governments, and communities is crucial for creating a balanced tourism model that supports economic growth while protecting natural and cultural resources. By working together, stakeholders can ensure that tourism contributes positively to local economies without overburdening the environment or local cultures. This paper highlights that sustainable tourism is not just a trend but an essential approach for the future of the industry, requiring both businesses and consumers to prioritize sustainability in their decisions.

Keywords: *sustainable tourism, business strategies, circular economy, eco-friendly practices, local communities, renewable energy.*

Environmental Sustainability

Priyanka Yadav

Assistant Professor, Department of BADM Government Commerce Girls
College, Kota

Email ID –priyankadiva27@gmail.com

The principles of sustainable development are becoming extremely relevant for organizations. In the case of universities, these institutions can act as agents in promoting these principles within society. The literature contains a wide range of studies which show how universities may play a critical role in disseminating sustainability principles on the one hand, and their translation into practice, on the other. At present, many higher education institutions are becoming more aware of their impact on the environment, and trying to understand the environmental needs and implications of their operations. Going further, some universities are incorporating sustainability principles into their activities. One of the questions that universities are now facing is how education for sustainable development can be translated into practice so that it can be effective in transforming society. This paper will discuss the need for and the usefulness of integrative approaches to implement sustainable development in higher education. In addition to a theoretical review of the state of the art, the paper will use case studies from the Hamburg University of Applied Sciences (Germany) and Bournemouth University (UK) to illustrate the effectiveness of integration of sustainable development principles in university research and teaching.

Keywords: *Environmental sustainability; Universities; Overview; Challenges.*

Equilibrium isotherm and Thermodynamic study of Ni (II) onto Agriculture soil

Deepak Hada¹ Shweta Saxena²

Maa Bharti P.G. College, Kota, Rajasthan

Department of Chemistry, Maa Bharti P.G. College, Kota, Rajasthan

deepakhada1989@gmail.com shwetaxena1911@gmail.com

The mechanism of Ni(II) adsorption in agricultural soil was studied in a batch environment. The adsorption of Ni (II) onto soil was studied in relation to temperature, contact time etc. In this study, adsorption increased with an increase in temperature. At different temperatures (30°C-50°C), the thermodynamic parameters including ΔH , ΔS and ΔG were calculated using the slope and intercept of the $\ln K_d$ vs. $1/T$ plots. ΔH values (6.309 KJ/mol⁻¹) revealed an endothermic reaction. The adsorption process for soil is more spontaneous due to negative values of ΔG (-2.3717 KJ/mol⁻¹) at 303 K. Among the isotherms, The Langmuir adsorption model best fitted with results in a maximum Ni (II) adsorption capacity (Q_{max}) of 5.63 mg/g at 303 K. The results suggested that soil is a suitable adsorbent for the recovery and adsorption of Ni ions.

Keywords: Nickel (II), Agriculture soil, thermodynamic parameters, Isotherms etc.

A Study on Environmental Sustainability

¹Dr. Savita Chaudhary and ²Amita Nehra

¹Professor, ²Assistant Professor

Department of chemistry, Shri Kalyan Rajkiya kanya Mahavidyalaya Sikar

Environmental Sustainability is a concept gaining increasing importance which seeks to ensure preservation of natural resources for the sake of next generations. Its idea is meeting requirements of the present generations without compromising on the ability of our next generations to sustain them. Environmental sustainability is a global issue requiring contribution from and collaboration between various parties, which can include businesses,

individuals and also governments if seen from a big perspective. It involves a multitude of activities which include water treatment, waste reduction, pollution control, resource conservation by using renewable methods etc.

Keywords: *Sustainability, Renewable, Environment, Survival, Eco-friendly.*

GIS: IAES-2024/370

Assessment of Antifeedant Effect of Annona Seed Extracts Against *Callosobruchus Maculatus*

Mosmee Meena¹ and Surabhi Shrivastava²

¹Department of zoology Janki Devi Bajaj Govt. Girls College, Kota² Former
Principal, Rajasthan Higher Education Services

mosmeemeena100@gmail.com

The pulse beetle *Callosobruchus maculatus* (Fab.) is an obnoxious pest of several pulses. Pesticides are undoubtedly effective for averting pest attacks but the wide spreads and discriminate use of pesticides has grossly poisoned almost every component of the biosphere. Thus, this study is aimed at search of an Eco-friendly pesticides as Annona seeds extract against *Callosobruchus maculatus*. It has been proved that lower concentration of Annona seed extracts was more effective against bruchid attack under longer period of storage.

The Antifeedant effect of A.S.E. in ether at minimum 100% mortality of *Callosobruchus maculatus* (fab.) was found out at 0.20% concentration A.S.E.in ether was found effective 95.14% seed protection. Same concentration of A.S. alcoholic extracts was also effective up to 94.0% seed protection. 0.10% A.S.E. in ether causing about 50% mortality of *Callosobruchus maculatus* (fab.) resulted in 84.65% seed protection. While its alcoholic extracts @0.10% showed 83.4% seed protection. Hence its alcoholic extracts work found less effective in comparison to its ether extract.

Key Words: *Callosobruchus maculatus, Antifeedant activity, Annona Seed extract, Cowpea, bruchid.*

Balancing Innovation with Sustainability: A Path to a Greener Future

Poonam Maini

Assistant Professor, Department of Economics Government Arts College,
Kota

The rapid surge in new technologies has ushered in advancements across manufacturing and service sectors, driving significant progress. However, this swift technological shift has also introduced substantial challenges, particularly concerning health and environmental impact. Despite the complexity of sustainability assessment, the development of clean technologies offers a pathway to creating products that are less harmful to the environment. By focusing on reducing pollution, lowering energy consumption, and enhancing recycling capabilities, we can move closer to a sustainable future. To achieve this, it is essential to integrate sustainability principles into technological development. Researchers and decision-makers must work together to propose innovative concepts, frameworks, and methods that will shape technology toward more sustainable outcomes.

Keywords: Innovations, Environment, Sustainable Future, Recycling
Submitted by:

GIS: IAES-2024/372

Green Method of Synthesis the Novel Multi-substituted 3-(4, 5-diphenyl-1H-imidazol-2-yl)-1H-indole Derivatives by Using Efficient Amberlyst A-15 Recyclable Catalyst

Dr. Narendra Nirwan

Department of Chemistry, SPC Government College, Ajmer, India
Email Id: drnirwann@gmail.com

The novel class of multi-substituted indolyimidazole derivatives series substituted 3-(4,5-diphenyl-1H-imidazol-2-yl)-1H-indole was synthesized utilising a green and efficient one-pot four components condensation of indole-3-carbaldehyde, benzil, ammonium acetate and various amines under microwave irradiation using Amberlyst A-15 as a recyclable catalyst. The catalyst Amberlyst A-15 has recovered from the reaction mixture and reused

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repeatedly for the next reaction. The key advantage of this process involves eco-friendly, very short reaction time, cost-effectiveness with the reusability of catalyst, easy workup, and purification of the product with excellent yields. FTIR, ¹HNMR and Mass spectrometric studies analyzed and established the structures of all newly synthesized compounds.

Keywords: Indolyimidazole, Eco-friendly, Microwave irradiation.

GIS: IAES-2024/373

Impact of Textile Effluent on Ground Water of Pali

Dr. Kamlesh Gaggar

Professor (Hindi), Government College Lunie

mail: kameshgaggarg67@gmail.com

Pali known Manchester of Rajasthan. About more than 800 units engaged in cloth furnishing activities. The cloth making process discharge textile effluent in huge amount. Most of units discharge it without any treatment and ultimately reached in groundwater. As result physiochemical characteristics like pH, metal composition, conductivity, turbidity, hardness etc. of ground water changes. In this paper through some light on present status of physiochemical characteristics of ground water and possible solutions of problem.

Keywords: cloth furnishing, textile effluent, physiochemical characteristics.

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Impact of Tourism on Environment

Rohitash Yadav

Asstt. professor in Geography

Govt Kamla Modi Girls CollegeNeem Ka Thana (Raj)

Email ID- rohitash.geog@gmail.com

Tourism is traveling for leisure, pleasure, or business purposes and visiting various destinations, such as cities, countries, natural attractions, historical sites, and cultural events, to experience new cultures, activities, and environments. Tourism can take many forms, including domestic, or

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traveling within your country, and international tourism, or visiting foreign countries. It can also involve sightseeing, adventure tourism, eco-tourism, cultural tourism, and business tourism, and it's a huge contributor to the global economy, generating jobs and income in many countries. It involves many businesses, including airlines, hotels, restaurants, travel agencies, tour operators, and transportation companies. While tourism is often associated with negative environmental effects, such as pollution and habitat destruction, it can also have positive impacts on the environment when managed sustainably. Here are some ways tourism can benefit the environment: Funding for Conservation Efforts, awareness and education, Sustainable Tourism Practices, Incentives for Protecting Natural Resources, Sustainable Infrastructure Development, Economic Value of Ecosystem Services, Restoration Projects Supported by Tourists, Supporting Local, Sustainable Products, Creation of Eco-Friendly Certifications

Tourism, if not managed responsibly, can have several negative impacts on the environment. These effects arise from the high demand for resources, infrastructure development, and human activity in sensitive ecosystems. Here are some of the key negative environmental impacts of tourism: Overcrowding and Habitat Destruction, Pollution: Resource Depletion: Tourism often leads to the overuse of natural resources, putting pressure on local ecosystems, Climate Change, Waste Generation, Overtourism and Seasonal Stress, Carbon Footprint of Tourism Activities. In conclusion: While tourism has the potential to provide economic and social benefits, it also poses significant environmental challenges. Unregulated or poorly managed tourism can lead to ecological degradation, resource depletion, pollution, and climate change.

GIS: IAES-2024/375

Role of Chemistry in Environmental Sustainability

Dr. Kanchan Verma

Assistant professor, Maharana Pratap govt PG college, Chittorgarh

Email address- kvmaurya88@gmail.com

Chemistry plays a pivotal role in advancing environmental sustainability by providing scientific insights and innovative technologies to address critical environmental challenges. Through the development of green chemistry

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principles, the field is focused on designing chemical processes and products that minimize hazardous substances, reduce waste, and improve energy efficiency. Chemistry enables sustainable solutions in diverse areas, including renewable energy, pollution control, waste management, and resource conservation. For instance, catalytic processes and biodegradable materials are essential to reducing greenhouse gas emissions and plastic waste. Advances in chemical analysis and environmental monitoring further help detect and mitigate pollutants in air, water, and soil, contributing to ecosystem health. Moreover, chemistry underpins the creation of alternative energy sources such as solar cells, hydrogen fuels, and battery technology, supporting a transition away from fossil fuels. Through collaboration with policy, industry, and communities, chemistry's innovations are integral to fostering sustainable practices that promote a cleaner, healthier planet.

Keywords- *Pollution, Renewable energy, Green chemistry.*

GIS: IAES-2024/376

Leveraging Ancient Wisdom for Environmental Sustainability

¹Dr. Rajni Meena, ²Lokesh Kumar Meena

¹Professor, Chemistry

²Assistant Professor, Political Science

Seth RL Saharia Government PG College,

Kaladera, Jaipur (Raj)

Email: rajnimeena0209@gmail.com

Email: luckybyadwal@gmail.com

There are ancient knowledge systems that include useful insights that can be used to address present environmental concerns. These systems offer sustainable methods to the management of resources, agriculture, and the preservation of ecosystems. An old practice is one that emphasizes harmony with nature and the sustainable use of resources. This practice is rooted in a profound understanding of the natural cycles and ecosystems that are found in the area. The use of traditional agricultural practices, such as crop rotation, mixed cropping, and agroforestry, are examples of sustainable land management practices that reduce the amount of soil that is depleted and encourage the growth of biodiversity. In a similar vein, indigenous water

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conservation strategies such as step wells, rainwater collection, and terracing ensure efficient utilization of limited water resources without causing the environmental degradation that is associated with contemporary systems. These tried-and-true methods, which have been modified over the course of several generations, support the resilience of ecosystems and lessen the ecological footprint that human activity leaves behind.

It is possible that combining this old knowledge with contemporary technology could result in the development of novel and culturally sensitive approaches to the problem of environmental sustainability. It is also important to recognise and preserve this knowledge because it helps to preserve biodiversity, it shows respect for cultural heritage, and it gives local communities the ability to act as stewards of their environment. We are able to discover sustainable pathways for a more harmonious connection with our world by exploring ancient knowledge. This allows us to strike a balance between the demands of humans and the integrity of the environment.

Key Words: *Ancient Knowledge, Environmental Sustainability, Traditional Practices, Biodiversity Conservation, Resource Management.*

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Environmental Health Hazards and Organic Farming

Dr. Neeta Garg

Professor, Department of Chemistry
Seth RL Saharia Govt. College Kaladera, Jaipur
Email:- drngarg@yahoo.com

The role of organic farming in achieving agricultural sustainability, focusing on its environmental and socio-economic impacts. organic farming, characterized by the avoidance of synthetic chemicals and the adoption of natural agricultural processes, presents a sustainable alternative to conventional farming practices. The environmental benefits of organic farming are significant, including improved soil health, enhanced biodiversity, reduced pollution, and a lower carbon footprint. These practices contribute to the preservation of ecosystems and mitigate the impacts of climate change. From a socio-economic perspective, organic farming offers health benefits by reducing exposure to harmful chemicals for both consumers and farmers. Economically, while it provides access to niche

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markets and potentially higher product prices, it also poses challenges such as higher production costs and the need for more labour-intensive practices. Additionally, organic farming can strengthen community ties and support local food systems, contributing to the preservation of cultural and traditional agricultural methods. It concludes that organic farming is a key element in the pursuit of sustainable agriculture, offering multiple environmental and socio-economic benefits.

Keywords:- Environment, Sustainable, Agriculture, Biodiversity.

GIS: IAES-2024/378

Global Challenges and Local Solutions

Babu Lal Jat

**Assistant Professor, Maharana Pratap Government P.G. College
Chittorgarh**

Email-babulaljat961983@gmail.com

Global challenges local solutions program supports organizations and communities at try to solve global problems on a local level. A special gels ground round to support community foundation dealing with refugee crisis caused by the war in Ukraine is open now with the decision of the Charles Stewart foundation. A founder of the global changes local solutions European granting program, which is operated by the academy for the development of philanthropy in Poland. A culture of responsibility around climate change is created in a small town through local climate friendly actions. Li is a little town in the north of Finland. Back in 2012, it realized the climate change is really changing the world and that the town is part of that change. Did you know that the Arctic is the area most affected by global warming? There were no resources or expertise to make a change there, but what there was and still is a shared will. So, it begins everyone was welcome to participate and do you know who got the most excited? The children. Every child in the town is now participating: they are measuring the consumption of water, heat and electricity in school and day care centers and receive 50% of the saving they make the learn that. It makes sense to be climate friendly and the learn that it depends on their own actions. In Li so far, carbon emissions have been cut by. 60%. People want to make change and show that it is possible to tackle a climate change.

Nanosensors in agriculture: Recent Aspects and Scope

Dr Swati Bugalia

Assistant Professor, Department of Chemistry, University of Rajasthan,
Jaipur, 302004

Email: swati.bugalia@gmail.com

Nanotechnology is emerging and most growing field of science which covers all dimensions like physics, chemistry, material science, biology, environment, health and agricultural sector. Over the past few years, it has gained great attention in the field of agriculture due to the higher demand of food materials by awfully growing population as it is basic need for live hood. Apart from ensuring global food security for public, agricultural scientists are facing lots of problems namely deficiency of multi-nutrients in soil, unceasingly downfall in soil organic matter, recession in crop yields, climate change, microbial attacks, shrinking in agricultural land, poor soil quality, water availability and shortage of labour etc in agricultural field. It deals with particles having are very small size (1-100 nm) and highly reactive which make their properties differ from bulk of material. Since this technology is ecofriendly, increases crop production and economically beneficial that is why extremely used for genetic improvement of crops, pollution monitoring, soil fertility and quality improvement, insect-pest management, monitoring soil condition, nutrient balance in soil, nanopesticides, monitoring remediation of soil and water, agricultural diagnostics, sustainable agriculture, self life enhancement of agricultural products, recyclization of agricultural wastes, plant disease management, precision farming, growth regulation and many more.

One of the most innovative example is nano-urea which was firstly introduced by Indian farmers fertilizer Cooperative Limited (IFFCO) in the world that can enhance the farmers crop yields with reducing environmental pollution as it decreases the useless concentration of nitrogen in soil and environment. Currently, nanosensors are used for detection of pesticides (e.g., fluorescence nanosensor containing CuO-MWCNTs nanomaterial used for glyphosate pesticide detection and electrochemical sensors containing CuO nanomaterial used for methyl parathion pesticide detection), detection of food brone pathogens (*Brevetoxins*, *E Coli*, *salmonella* etc) by nuclic

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acids, protein and other indicators, detection of toxic elements contaminating the environment such as heavy metals cadmium, mercury, lead, silver etc (for example; ICTS nanosensor containing gold nanomaterial used for the detection of Pb and Cd, colorimetric nanosensor containing mesoporous silica nanoparticles (MSN) used for the detection of Hg), detection of plant pathogens (e.g., Au(AuNPs) used to recognise the gram negative *E. Coli* bacterial strains, the presence of Tomato ringspot virus, Arabis Mosaic virus can be revealed by Fe₃O₄/ SiO₂ base nanosensors), detection of veterinary drugs, detection of growth promoters present in soil(AgNPs), for monitoring and tagging of food items, to examine the micronutrients, to detect the genetic modification in plants. These nanosensors can also detect temperature, soil quality, soil moisture content, micronutrients present in the soil, BOD, COD, DO, water quality and facilitate speedy reliable and prior information to improve cultivation.

GIS: IAES-2024/380

Impact of Covid -19 on People with Mild Dementia

Dr Anubhuti Tiwari

Professor in Botany, Government College Dudu

The COVID-19 pandemic has significantly impacted individuals with Dementia. This commentary explores the multifaceted effects of the pandemic on this vulnerable population, including accelerated cognitive decline, increased behavioral symptoms. It also discusses the role of remote neuropsychological evaluations as a valuable tool for monitoring cognitive function during the pandemic, as highlighted by recent research. The commentary emphasizes the need for resilient and adaptable care models that integrate technology, enhance caregiver support, address health disparities, and ensure continuous social engagement.

Keywords : *Covid-19, Dementia, neuropsychological evaluation*

Natural Farming with Sustainable Development

Anita Yadav

Asstt. Professor, Govt College, Jaipur

Natural farming is a sustainable and eco-friendly agricultural practice that can help with sustainable development in several ways. Natural farming is a chemical-free farming system that uses natural resources and minimizes the need for synthetic chemicals. Natural farming techniques like using cow dung and urine, recycling crop residues, and intercropping with legumes can improve soil health.

Key words: natural farming, intercropping, soil health

QuEChERS-Quick, Easy, Cheap, Effective, Rugged and Safe Approach for Pesticide Detection in Frgiculture and food Products

Arshad Hussain zafri

Assistant professor, Govt.Girls College, Taranagar, Churu (Rajasthan)

Pesticide multi-residue methods (MRMs) are complicated, arduous, time-consuming, entail high volumes of solvents, and are thus costly. Considering that the time spent on instrumental analysis is constantly increasing due to the introduction of new analytes and instrument techniques, laboratories are often unable to evaluate as many samples as they would want. Moreover, many conventional MRMs do not adequately cover some key analytes (highly basic, acidic, and very polar compounds). To cover such analytes, laboratories must therefore execute arduous single analyte tests, which is frequently not practicable. As a result, there is a large grey area of pesticides that most laboratories do not routinely monitor. There has been a widespread tendency in the recent decade to develop speedier analytical procedures. Different automated instrument-based extraction processes established in the mid-1990s to speed up extraction did not succeed in replacing traditional multi-residue methodologies. The QuEChERS-method was developed by Michelangelo Anastassiades in the years 2001 and 2002, a simple, selective,

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and rapid multi-residue approach for determining 18 veterinary medicines in milk. However, due to its high capacity for polar and particularly basic chemical extraction, it was also tested on pesticide residue detection in plant material with significant success. It involves Determination of Pesticide Residues Using GC-MS and/or LC-MS/MS Following Acetonitrile Extraction/Partitioning and Clean-up by Dispersive SPE. The initial strategy was refined over time to broaden both the pesticide and commodity reach.

GIS: IAES-2024/383

Impact of Soil in Catchment Area of Moral Dam: A Survey

Dr. Vandana Ankodia

Associate Professor, Department of Chemistry, Govt. College, Bundi

Soil is basic to human life on Earth. Soil is a vital part of the natural environment. It is important for plants, animals, rocks landforms, lacks and river. As the main purpose of this article, the level of soil pollution in the catchment areas of Morel River basin as a result of man-made activity transformation of soils in different zones play an important role, as well as processes occurring in soils as a result of their impact. Soil pollution will cause vegetation loss and reduce plant growth and development, eventually resulting in soil erosion and desertification.

GIS: IAES-2024/384

Exploring the Biochemical Mechanisms of Biodiesel Production from Microalgae

Komal Sharma¹ and Mrs. Jyoti Pathak²

¹Assistant Professor, ²Associated Professor

LBS Govt. College, Kotputli

The increasing global demand for sustainable energy has sparked significant interest in bio diesel as an alternative to fossil fuels. Micro algae have emerged as a promising feed-stock for bio diesel production due to their high lipid content, fast growth rates, and ability to thrive in non-arable land using waste water. This review explores the various techniques involved in the production of bio diesel from micro algae, covering methods for algal cultivation, harvesting, lipid extraction, and transesterification processes.

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Additionally, advancements in genetic engineering, co-culture systems, and bio-refinery integration are discussed. This review highlights the key species of micro algae commonly utilized for bio diesel production, discusses their biochemical properties, and evaluates their advantages and challenges in industrial-scale bio diesel synthesis. Challenges such as economic viability, scaling issues, and environmental concerns are also examined, along with future prospects for improving the efficiency and sustainability of micro algal bio diesel production.

Key words- Sustainable energy, Bio diesel, Micro-algae, Transesterification etc.

GIS: IAES-2024/385

Law, Policy, and Governance for Environmental Protection: A Political Review

Dr. Jyoti Deval

Professor (Political Science), S.P.C. Government College, Ajmer, Rajasthan
M. 9414516424, Email: deval.jyoti2016@gmail.com

Environment policies of the Government of India includes legislations related to environment. In the Directive Principles of State Policy, Article 48(a) says “the state shall endeavor to protect and improve the environment and to safeguard the forests and wildlife of the country”; Article 51-A states that “it shall be the duty of every citizen of India to protect and improve the natural environment including forests, lakes, rivers, and wildlife and to have compassion for living creatures.” India is one of the parties of the Convention on Biological Diversity (CBD) treaty. Prior to the CBD, India had different laws to govern the environment. The Indian Wildlife Protection Act 1972 protected biodiversity. It was amended later multiple times. The 1988 National Forest Policy had conservation as its fundamental principle. In addition to these acts, the government passed the Environment (Protection) Act 1986 and Foreign Trade (Development and Regulation) Act 1992 for control of biodiversity. Notably, the government has passed various legislations to curb the damage caused to the environment such as the Environmental Protection Act, 1986, Forest Conservation Act, 1980, Water Prevention and Control of Pollution Act, 1974, Biological Diversity Act, 2002, Public Liability Insurance Act 1889 and National Green Tribunal Act,

2010. According to Article 48 (A) of the Indian Constitution, the state shall try to protect and improve the environment. It should also endeavor to safeguard forests and wildlife of the country. According to Article 51(A) (g) of the Indian Constitution, every citizen of India has a fundamental duty to protect and improve the natural environment including forest, lakes, rivers, and wildlife and should have compassion for living creatures.

Keywords: Forests, Protection, Biodiversity, Development and Regulation.

GIS: IAES-2024/386

Study of Science and Technology from a Social and Cultural Perspective

Alka Jangir

Assistant Professor, S. B. D Government College, Sardarshahar

Email : alkaashaliya@gmail.com, Contact : 9530022505

The study of science and technology from a social and cultural perspective is an interdisciplinary approach that explores the ways in which scientific knowledge and technological innovations shape, and are shaped by, society and culture. This field delves into the influence of science and technology on social values, cultural norms, and everyday life, as well as their impact on social change. By examining the ethical, political, and social implications, this perspective highlights how scientific and technological developments contribute to issues like equity, accessibility, and power dynamics. It also addresses the reciprocal relationship, where social and cultural factors influence scientific agendas, technological design, and adoption. Through this lens, the study fosters a critical understanding of the role of science and technology in cultural identity and societal progress, aiming to equip policymakers, technologists, and the public with insights to guide the responsible and inclusive development of science and technology in diverse cultural contexts.

Additionally, this study explores how the language and narratives surrounding scientific and technological developments influence public perception and acceptance. The ways in which scientific concepts are communicated — through media, educational systems, or political discourse

— can greatly impact whether a community views a technology as beneficial or disruptive. This understanding of narrative framing is essential, as it often shapes the collective memory and legacy of scientific advancements, determining whether a society will embrace a technology as a path forward or resist it as a cultural threat.

Keyword: Society, Culture, Cultural perspective, political discourse.

GIS: IAES-2024/387

Economic and Business Strategies for Sustainability

Himanshu Garg

Asst. Prof., Govt Commerce College, Kota

As global challenges such as climate change, resource depletion, and social inequality intensify, sustainability has emerged as a critical focus for businesses. Economic and business strategies for sustainability involve integrating environmental, social, and governance (ESG) factors into corporate operations to drive long-term growth while minimizing negative impacts on society and the environment. These strategies encompass a wide range of initiatives, from adopting circular economy models and reducing carbon emissions to fostering ethical supply chains and investing in renewable energy sources. Businesses are increasingly recognizing that sustainability is not only a moral imperative but also a source of competitive advantage. By innovating around sustainable products and services, companies can differentiate themselves, attract eco-conscious consumers, and unlock new market opportunities. Additionally, aligning business practices with the United Nations Sustainable Development Goals (SDGs) provides a framework for measuring impact and ensuring that companies contribute positively to global challenges. Risk management plays a crucial role, as businesses that fail to adapt to environmental regulations and shifting consumer preferences may face reputational damage, financial losses, or regulatory penalties. Effective strategies also involve transparent reporting through frameworks like the Global Reporting Initiative (GRI) to build trust with stakeholders. Ultimately, the shift toward sustainable business practices not only contributes to environmental and social goals but also strengthens long-term profitability and resilience in an increasingly resource-constrained and interconnected world.

Quantitative Study of Regional Disparity of Financial Inclusion among the districts of Rajasthan

Rahul Verma

Assistant Professor

Department of E.A.F.M., Govt. Commerce College Kota

The Indian economy has been a developmental economy which has always been keen for wholistic developmental of the masses which has an economic as well as social aspect right from the onset of the first five-year plan. During the nineties, the policies adopted by the government led them to believe that with higher growth rate, the wholistic development could be achieved. With a higher growth rate of above 7% came the challenge of loop sided development and it was necessary to have inclusiveness for all sections of the economy. It was realized that it is necessary to provide proper social as well as economic infrastructure for robust development and one of the important infrastructures is a well-established and strong financial sector. Through this sector all the sections of the economy would accelerate on the path of development. The rise of non-institutional sources of credit which much of the small agriculturist were forced to taken has raised an alarming situation in the year 2003 when the NSSO survey revealed that the credit through these sources has reached a level of nearly 45% of the credit in the economy. The policymakers of the then time were facing a double-edged sword where in one place they must increase the institutional source of financing and at the other end keeping the socialistic view of including every vulnerable section of the society also in providing the access to the developmental tool. With this thought in the background, the policymakers in the eleventh five-year plan made the inclusive growth of the masses as the key objective for the plan period. The plan focusses on the inclusiveness of all the sections of the society through sustainable financial systems which will have manifold effects of ensuring social equality and economic growth with stability for the economy. Rajasthan is a state which has been on a slow developmental trajectory and despite adopting various measures by the State Government it still belongs to below- average state in the financial inclusion index. In order to understand the trend of financial inclusion in state over a

period, this study was thought to be undertaken. To understand the regionality which persists among the divisions of the state the research work thesis has been a done and is compiled under the title "Quantitative study of regional disparity of Financial Inclusion among the districts of Rajasthan".

Keywords: Financial Inclusion in Rajasthan, Regionality in Financial Inclusion, Financial Inclusion and Disparity in Rajasthan State, Financial Inclusion and trend of disparity for Financial Inclusion.

GIS: IAES-2024/389

Fiscal Consolidation in Rajasthan: An Empirical Analysis

Chetna Vijay

Assistant Professor, Department of Hindi
Govt. College Parabtsar, Didwana, Kuchaman

After the global economic crisis in 1991, the fiscal position of the central as well as state governments of Rajasthan has worsened. The high fiscal deficit, the unproductive expenditure and tax distortion as percentage to GSDP ratio has become Questionable. To overcome these deficits and Debt Problems the center and state governments has taken some measures for improving the fiscal health of the central and state governments. This study examines the fiscal consolidation process after adopting the Fiscal Responsibility and Budget Management (FRBM) Act of the state government of Rajasthan in 2005. The Objective of FRBM Act was to control the fiscal deficit to 2.5% of the Gross State Domestic Product (GSDP) and revenue deficit at Zero percent level by 2020-21. This study analyses the experience of the fiscal management of Rajasthan and improvement in the fiscal situation of Rajasthan. The study is based on secondary data. The data has been taken from the reports of center for Monitoring Indian Economy (CMIE) and the RBI Database. It was concluded that up to 2020-21, under the rule based framework, the state government was able to control the fiscal deficit and revenue deficit near about the FRBM target. During the study period after implementation of VAT and FRBM Act the revenue collection has increasing trend. Expenditure has also increased during the study period. We can say that the the state government of Rajasthan achieving their fiscal consolidation target on revenue side and fiscal deficit and debt side and a

marginal cut of public expenditure on health and education during the study period.

GIS: IAES-2024/390

Effect of Heavy Metals on Haematological Parameters of Mouse

Dr. Jaishree Daverey

Associate Professor, Department of Zoology
Janki Devi Bajaj Government Girls College, Kota

With technological advancement, combined with specialization in all fields, there is a constant release of trace elements. Complexity increases owing to simultaneous or successive exposure of the general population to different physical, chemical, biological and physiological factors of the environment. Therefore, in the present investigation, the effect of cadmium is taken into consideration using Haematological parameters.

Six weeks old Swiss albino mice were treated with Cadmium Chloride at the dose rate of 20 ppm “*ad libitum*”. The animals were sacrificed by cervical dislocation at each post-treatment interval of 1, 2, 4, 7, 10, 14 & 28 days. It was found that the values of Red Blood Corpuscles, White Blood Corpuscles, Haemoglobin, Packed Cell Volume, Mean Corpuscular Haemoglobin Concentration and Lymphocyte percentage declined till day 10, 7, 4, 7, 4, and 7 respectively. Recovery started after the respective intervals but could not regain the normal level till the last interval.

Values of Mean Corpuscular Volume, Mean Corpuscular Haemoglobin and Monocyte percentage elevated during the early intervals without regaining the normal levels till the end of experimentation. Percentage of neutrophils showed a biphasic increase on day 1 and 7. Changes in haematological parameters may be due to defective haemopoiesis, intravascular cell damage and hypersensitive nature of leucocytes to toxicants.

The Importance of Urban Forests & Green Spaces in Carbon Budget in Indian Cities

Robin Kumar Saini¹, Poonam Jaiswal²

^{1,2} Department of botany, Janki Devi Bajaj Government Girls College, Kota
Email:- robinsaini2003@gmail.com

Urban forests and green spaces play a vital role in Carbon budget in urban cities. Currently increasing urban population is causing increases CO₂ and greenhouse gases emissions due to enhanced energy consumption, transportation and industrial pollution. It also causes concrete buildings leading to insufficient green spaces in many cities in India. In recent years, urban forests and green spaces have emerged as crucial components in climate change mitigation, sequestering urban CO₂, reducing greenhouse gases, and improving air quality. Notably, studies reveal that these natural assets absorb approximately 250 million tons (MT) of CO₂ annually, equivalent to 10% of urban CO₂ emissions. By mitigating heat island effects, urban forests and green spaces reduce energy consumption, support local biodiversity, and promote ecological balance. This paper proposes strategic measures for integrating green infrastructure into policy making and city planning, effectively managing urban carbon budgets, and fostering sustainable and resilient cities in India.

Keywords: urban forests, green spaces, carbon budget

Environmental Governance in India: Challenges and Issues

Deva Ram

Assistant Professor (Political Science)

MBC Govt. Girls College, Barmer

Environmental governance refers to the system and processes that promote and protect sustainable development by managing and intervening human activities. In short, it defines how the country and the people interact with and manage its environment and natural resources. Environment governance in India is a complex interplay of laws, rules, policies, institutions and initiatives all that aimed to protect and promote environment. Environmental governance system plays a crucial role in economic development and sustainable development. Environmental governance has been continuously evolving as per the need to manage the country's diverse environmental challenges. Through combination of environmental legislation policies, initiatives and institutions, mechanisms India aims to protect its environment while pursuing sustainable development. Addressing existing challenges and implementing effective measures will be crucial for enhancing environment protection in India and ensuring a healthier and more sustainable future.

Keywords: Governance, Sustainable, Legislation, Environment.

Urban Planning and Design with an Approach in Sustainable Urban development

Nirmala Meena

Assistant Professor of Geography, Govt. College Antah. (Baran) Raj.,
nlroyalsbbj14975@gmail.com

Urban design and planning is the process of shaping the Physical setting for life to deal with the three dimensional space in cities, towns and villages, and its objectives relies in accordance with the vision of the future that is the result of today's human profound attention to environmental damage. as well as it is the emergence of social, cultural and economic problem which has caused by industrial growth is a necessity which is inevitable in this era. There is a strong relationship between urban design and sustainability, which led to the development in the Cities. The emergence of urban design knowledge is the result of expert's profound look at this knowledge that the quality of space is not accidental but the result of conscious actions. At the same time, the idea of sustainable development among decision -makers and thinkers was a fundamental and very important issue. The Urban Development Strategy is a strategic approach that is now welcomed in many countries around the world, especially developing countries. The present study uses an interpretive and descriptive method to investigate the concepts of urban design and its relation to sustainable development theory by adopting library studies to interpret and link these two categories. The aim of this study is to investigate the dimension of sustainable urban development theory on knowledge urban design. In this research, it is attempted to categorize the common goals of these two disciplines after defining each topic of urban design and sustainable urban development. In order to reach the final point of each, attention to other strategies and goals will lead to more comprehensive response to the needs of both nations.

Keywords: *urban, urban design, Urban development, Sustainable development*

Functionalized Polysaccharide based Hydrogels as High-Capacity Adsorbents for Dye Removal from Aqueous Solution

Renuka Jain

Department of Chemistry, Government College Kota,
Kota (Rajasthan)-324005, India

The discharge of synthetic dyes from textile, leather, and various industrial processes poses a significant environmental concern due to their toxic and non-biodegradable nature. Hydrogels, as versatile polymeric materials with high water content and tunable properties, offer a promising solution for dye removal from wastewater. This study investigates the development and optimization of hydrogel-based systems for the adsorption and removal of dyes from aqueous solutions. By modifying hydrogels with functional groups that enhance dye affinity, the study explores various hydrogel compositions, including natural and synthetic polymers, to achieve high adsorption capacities and reusability. Factors such as swelling behavior, crosslinking density, adsorption kinetics, and the effects of pH and temperature on dye removal efficiency are systematically examined. Results indicate that these hydrogel systems can selectively adsorb and remove a range of dye molecules, including anionic and cationic dyes, with removal efficiencies exceeding 90% under optimal conditions. The findings highlight the potential of hydrogel technology as an effective, eco-friendly approach to dye-contaminated wastewater treatment and underscore its applicability in industrial and environmental management.

Keywords: *Hydrogel adsorbents; Dye removal; Wastewater treatment; Adsorption capacity; Functionalized hydrogels; Synthetic dyes.*

Integrating Green Finance for Sustainable Economic Growth: Challenges and Opportunities

Ms. Manvi Shekhawat

Assistant Professor, Department of EAFM

Govt. Bangur PG College, Pali

E-mail: mahi17064@gmail.com

The integration of environmental sustainability into banking and finance has become a critical response to global ecological challenges. This paper delves into the expanding role of green finance as a tool to promote sustainable economic development, examining how it bridges the gap between financial systems and environmental objectives. Green finance encompasses a range of financial products and services, including green bonds, sustainable investment funds, and eco-friendly banking operations that align with environmental priorities. The study reviews the current landscape of green financing initiatives and evaluates their effectiveness in fostering sustainability. Through an analysis of case studies from pioneering banks and financial institutions, the research identifies key strategies employed to incorporate environmental considerations into financial practices. It also outlines the challenges such as regulatory hurdles, limited awareness, and varying levels of commitment among stakeholders. Additionally, the paper explores the role of policy frameworks and international agreements in shaping the growth and adoption of green finance.

The economic impact of green finance is assessed from both developing and developed country perspectives, emphasizing the transformative potential of aligning financial flows with sustainable development goals. Recommendations are provided for enhancing collaborative efforts among financial institutions, policymakers, and corporations to establish a resilient and sustainable financial ecosystem. By implementing integrative approaches that include technological innovations and enhanced transparency, the research suggests a pathway toward a future where economic growth is harmonized with environmental stewardship. The findings of this paper aim to contribute to ongoing dialogues on how banking

and finance sectors can support global sustainability efforts while navigating the challenges that accompany this transition.

Keywords: Green Finance, Sustainable Investment, Environmental Sustainability, Banking Policy, Economic Growth

GIS: IAES-2024/396

Village Tourism in India: Opportunities and Challenges

Dr. Khushboo Niyarta

Assistant Professor (Business Administration),

Govt. Commerce Girls College, Kota

Email- kniyarta@gmail.com

Tourism may be explained as a socio-economic activity which has enough competence to create large scale employment without compromising with the environment and the ecology of tourism destination. According to UNWTO, 'Rural Tourism is a type of tourism activity in which the visitor's experience is related to a wide range of products generally linked to nature-based activities, agriculture, rural lifestyle / culture, angling and sightseeing'. Rural area has the features that are un-urban in its own way such as lower population density, exquisite landscape and most of the land usage is dominated by agriculture and forestry along with traditional social structure and lifestyle. It implies those conditions that are unmatched with urban areas. Budget being key element, there is a concern for travel transportation and accommodation. After that the tourist place must add 'value' or perception related to this tour. For instance, the origin of remarkable arts has often been in villages. Applique art work of Pipili gain prominence, recognition and significant tourism site due to the master artisans who create the artistic canopy for the Rath yatra every year at Jagannath Temple, Puri since 10th century. Likewise, Pochampalli village in Tamil Nadu is world famous for its IKAT products handwoven in both silk and cotton. Mana Village, located in Chamoli District is popularly known as the 'last Indian village' from the border of India and China' in the Himalayas. This identity is itself very exciting for many Indian travellers to visit here at least once, apart from its scenic views and mythological significance. The Uttarakhand Government

interestingly calls it “Tourism Village.” Furthermore, Mattur village in Karnataka takes pride in being purely Sanskrit speaking residents. When a particular village is able to provide that value, its pollution free environment, closeness to roots, rich culture and traditions provide that escapism and a much needed change from day to day life. When a person decides to become a tourist, different stakeholders become a part of his tourism experience. From State government to local Panchayat, from religious groups to travel operators, from tour guides to travel agencies, all these play an important role accomplishing objectives of tourism. When these stakeholders share a common vision of promotion of tourism in village gets fulfilled, which implies employment generation, economic upliftment. This paper attempts to study all key factors that makes village tourism attractive, challenges and opportunities faced. An attempt is also made to understand its advantages and disadvantages as a contributor to the Indian economy.

***Keywords:** Village tourism, economy, value addition*

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The Role of Capacity Building in Promoting Sustainable Development in Developing Countries

Dr. Dhanwanti Bishnoi

Associate Professor, Department of GPEM
Govt. M.S. College For Women's, Bikaner (Raj.)
Mail- dhanwanti045@gmail.com

Capacity building is a cornerstone for sustainable development in developing countries, where communities often face significant economic, environmental, and social challenges. This paper explores how targeted capacity-building initiatives empower individuals and institutions to drive sustainable growth from within, transforming local potential into actionable, long-lasting change. Through skill development, institutional support, and knowledge transfer, capacity building equips communities with the tools to tackle pressing issues like climate adaptation, resource management, and economic resilience. Drawing on successful case studies from sectors such as agriculture, healthcare, and renewable energy, this research demonstrates the transformative power of capacity building when aligned with local needs and cultural contexts.

The study also underscores the importance of collaborative partnerships—between governments, non-profits, and international organizations—in scaling up these efforts. Ultimately, this paper argues that capacity building is not just a mechanism for immediate improvement but a fundamental strategy for achieving the Sustainable Development Goals (SDGs) and fostering self-reliant, resilient societies capable of thriving amidst global challenges. The findings underscore that sustainable development in these regions is best achieved through a holistic approach that builds on local strengths, unlocking pathways to a more equitable and sustainable future.

Keywords: *Capacity Building, Sustainable Development, Developing Countries, Community Empowerment, Resilience*

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Biodegradable Plastics: Innovations, Applications, and Environmental Impact in the Pursuit of Sustainability

Charu Agarwal

Assistant Professor

S.R. K. P. Govt. P. G. College, Kishangarh

This research paper focuses on biodegradable plastics as a key innovative material in the quest for environmental sustainability. As traditional plastic waste continues to pose significant challenges to ecosystems and human health, the development and application of biodegradable alternatives have gained prominence. The paper will begin by defining biodegradable plastics, including the various types such as polylactic acid (PLA), polyhydroxyalkanoates (PHA), and starch-based polymers. It will explore their production processes, sourcing of raw materials, and how they differ from conventional plastics in terms of biodegradability and environmental impact.

A detailed analysis of applications in sectors such as packaging, agriculture, and consumer products will be provided, showcasing case studies that illustrate successful implementations. This section will highlight the benefits of using biodegradable plastics in reducing litter and landfill waste, as well as their role in promoting circular economy principles. The research will also critically evaluate the challenges associated with biodegradable plastics,

including their performance compared to traditional plastics, potential contamination in recycling streams, and the need for appropriate industrial composting facilities. Additionally, the paper will discuss consumer perceptions and market trends influencing the adoption of these materials.

In conclusion, the paper will propose future directions for research and development in biodegradable plastics, emphasizing the need for innovation in material design, waste management practices, and regulatory frameworks. This topic aims to provide a comprehensive understanding of biodegradable plastics as a transformative solution for achieving sustainability in the global materials landscape.

Keywords: polylactic acid (PLA), polyhydroxyalkanoates (PHA), starch-based polymers, biodegradable, recycling.

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Collaborative Approaches to Sustainability in Business Ecosystems: Strategies for Enhancing Resilience and Innovation

Kirti Raman

Assistant Professor

Shri Ratanlal Kanwarlal Patni Government P.G College, Kishangarh This paper examines collaborative approaches to sustainability within business ecosystems, emphasizing the importance of partnerships among businesses, governmental bodies, and non-governmental organizations (NGOs) to drive sustainable practices and innovation. As global challenges such as climate change, resource depletion, and social inequality intensify, traditional business strategies alone are insufficient. The study highlights successful case studies where collaboration has led to significant advancements in sustainability, focusing on areas such as supply chain management, product lifecycle management, and community engagement.

The research identifies key factors that contribute to effective collaboration, including shared goals, trust, transparent communication, and resource sharing. It also explores the role of technology in facilitating these collaborations, particularly through digital platforms that enable knowledge sharing and stakeholder engagement.

Additionally, the paper addresses potential challenges in collaborative sustainability efforts, such as differing organizational cultures, competing interests, and measurement of impact. Strategies for overcoming these challenges are proposed, emphasizing the need for adaptive governance structures and continuous stakeholder engagement.

Ultimately, this research underscores that collaborative approaches are not only vital for achieving sustainability goals but also for enhancing the resilience and competitiveness of businesses within their ecosystems. By fostering partnerships and leveraging collective strengths, organizations can innovate more effectively and contribute to a sustainable future. This defined topic provides a comprehensive framework for exploring the intersection of collaboration, sustainability, and business strategy in today's interconnected economy.

Keywords: Business ecosystems, adaptive governance, stakeholder engagement, leveraging, sustainability efforts

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Health Benefits of Economically Important Cruciferous Vegetables

Pratibha Payal

Assistant Professor, Department of Chemistry
Govt. Dungar College, Bikaner
pratibha.payal111@gmail.com

Cruciferous vegetables involve various economically important species like vegetable species, spice plants, feed plants and edible oil plants, belongs to the family *Brassicaceae*. Vegetables such as broccoli, brussels sprouts, cabbage, cauliflower, kale, radish, turnip, watercress, and wasabi belong to the family. These are unique source of biologically active sulphur and nitrogen containing compounds along with carotenoids (beta-carotene, lutein, and zeaxanthin), flavonoids, anthocyanins, coumarins, phyosterols, terpenes, vitamins C, E, K, and folate, and minerals such as potassium, calcium, and selenium, and are rich source of dietary fibre. Glucosinolates (GSL) and S-methylcystine sulfoxide (SMCSO) are the characteristic secondary

metabolites that have beneficial effects on human health with high economic value. They are consumed in the diet in the form of a fresh, steamed, or cooked. During the preparation, chewing, and digestion of foods, sulphurous vegetables are broken down to form biologically active compounds such as glucosinolates, indoles, nitriles, thiocyanates, and isothiocyanates. Research studies have demonstrated their positive effect in prevention of metabolic disorders, asthma and Alzheimer's disease, along with antimicrobial, antioxidant, nematocidal and allelopathic, cancer preventive and cardioprotective activity.

GIS: IAES-2024/401

The Gandhian Approach to Sustainable Development: Relevance and Application in Contemporary Global Challenges

Dr. Binu Kumawat

Assistant professor, Government Arts Girls college Kota

Email- binukumawat1983@gmail.com

Sustainable development refers to the approach of meeting present needs without compromising the ability of future generations to meet their own. It integrates economic growth, social inclusion, and environmental protection, aiming to achieve a balanced and equitable improvement in the quality of life. The Gandhian approach to sustainable development is rooted in the principles of simplicity, self-reliance, non-violence, and ecological balance. Mahatma Gandhi advocated for a way of life that prioritized the well-being of all, focusing on the equitable distribution of resources and the promotion of a sustainable, just economy. His philosophy encourages the use of local resources, decentralization of production, and the minimization of consumerism, all while fostering harmony between humans and nature. By advocating for rural development, small-scale industries, and the reduction of material desires, Gandhi's approach aims for a holistic model of development that respects environmental limits and promotes social equity.

This research paper would explore how Mahatma Gandhi's principles of simplicity, self-reliance, non-violence, and ecological balance provide a unique framework for addressing modern sustainable development issues. It

would analyze the applicability of Gandhian thought in the context of current global challenges such as climate change, resource depletion, inequality, and overconsumption, while evaluating its potential to influence policies and practices in both developed and developing nations. The paper could also examine the integration of Gandhian concepts into modern sustainability models, particularly focusing on local, community-based solutions, ethical consumption, and sustainable economic growth.

Keywords:- *sustainable development, Gandhian approach, environment, growth, lifestyle.*

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Impact of Environmental Disturbances and Community Hygiene on the Spread of Malaria Falciparum

Dr. Smriti Johari*¹, Kusum Lata Vaishnav², and Dr. Surabhi Chittora³

¹Professor, Department of Zoology, Government JDB Girls College,
Kota, Rajasthan, India

²Research Scholar, Department of Zoology, Government JDB Girls College,
Kota, Rajasthan, India

³Former Research Scholar, Department of Zoology, Career Point University,
Kota, Rajasthan, India

*Corresponding author address: email: - smritiparesh@gmail.com,
9413351033

Malaria, caused by *Plasmodium falciparum*, remains a significant global health challenge, particularly in regions with poor environmental management and inadequate community hygiene. This study examines the interplay between environmental disturbances—such as deforestation, urbanization, and climate change—and hygiene practices in influencing the transmission dynamics of *P. falciparum*. Environmental changes often create favourable breeding conditions for *Anopheles* mosquitoes, the primary vector, by increasing stagnant water bodies and reducing natural mosquito predators. Concurrently, poor sanitation and improper waste disposal amplify vector density and human-vector contact. Our findings highlight the role of altered land use patterns, water management practices, and temperature

fluctuations in increasing malaria prevalence. Furthermore, the lack of community engagement in maintaining hygiene, coupled with limited access to healthcare resources, exacerbates the disease burden in vulnerable populations. Targeted interventions, including promoting sustainable environmental policies and enhancing community-based sanitation programs, are critical to reducing transmission. This study underscores the need for integrated strategies addressing environmental and societal factors to mitigate the spread of *P. falciparum* and improve global malaria control efforts.

Keywords: *Malaria, Plasmodium falciparum, environmental disturbances, deforestation, climate change*

GIS: IAES-2024/403

Survey on the Prevalence of Mosquito Borne Diseases in the Slum Areas of Kota (Rajasthan)

Dr. Smriti Johari^{1*} and Dr. Surabhi Chittora²

¹Professor, Department of Zoology, Government JDB Girls College,
Kota, Rajasthan, India

²Former Research Scholar, Department of Zoology,
Career Point University, Kota, Rajasthan, India

*Corresponding author address: email: - smritiparesh@gmail.com,
9413351033

Mosquito-borne diseases pose significant public health challenges, particularly in underserved communities with inadequate living conditions. This study surveys the prevalence of mosquito-borne diseases, including dengue, malaria, chikungunya, and filariasis, in the slum areas of Kota, Rajasthan. The study involved field surveys, interviews, and medical data collection to assess disease incidence and the socio-environmental factors contributing to their spread. Results indicate a high prevalence of mosquito-borne diseases, with seasonal surges correlating with monsoon rainfall. Poor sanitation, inadequate waste disposal, and stagnant water bodies were identified as primary breeding sites for mosquitoes. Limited access to

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healthcare facilities and lack of awareness about disease prevention further aggravated the situation. Notably, *Aedes aegypti* and *Anopheles stephensi* were the dominant vector species identified during larval sampling, correlating with the prevalence of dengue and malaria, respectively. The findings underscore the urgent need for community-centric interventions, including awareness campaigns on mosquito-borne disease prevention, distribution of insecticide-treated nets, and the establishment of functional waste management systems. Enhancing public health infrastructure and conducting regular vector surveillance are recommended to mitigate disease outbreaks in these vulnerable areas. This study provides a comprehensive overview of the mosquito-borne disease burden in the slum areas of Kota and highlights the critical role of improved sanitation, education, and healthcare access in reducing morbidity and mortality. Addressing these challenges can significantly improve the quality of life for residents in such high-risk communities.

Keywords: *Mosquito-borne diseases, dengue, malaria, chikungunya, Aedes aegypti, Anopheles stephensi*

Heterosis studies for different qualitative and quantitative traits in bottle gourd genotypes

¹Tanvi Mehta, ¹DS Duhan, ¹Nidhi Sehgal, ¹Sudesh and ¹Ravi Gautam
¹Department of Vegetable Science, CCS, Haryana Agriculture
University (CCSHAU), Hissar-125004

The heterosis studies was carried out at the Research Farm, Department of Vegetable Science, CCS Haryana Agricultural University, Hisar involving twenty diverse bottle gourd F₁ hybrids along with nine parents and two commercial checks during *spring-summer* and *rainy* season 2020. Various quantitative characters *viz.*, days to 50% emergence, number of primary branches per vine, nodes to first male flower, nodes to first female flower, days to first male flower opening, days to first female flower opening, sex ratio (F/M), days to first fruit harvest, internodal length, length of fruit, diameter of fruit, vine length at the time of final harvest (m), 100 seed weight (g), number of fruits per vine, fruit yield per vine kg and fruit yield per hectare (q/ha) in both *spring-summer* and *rainy* season 2020 while eight quantitative traits like ascorbic acid, calcium, sodium, protein, TSS (%), standard germination %, vigour index I and II were analyzed only in *spring-summer* season 2020 for heterosis studies. The crosses GH-28 x NDBG-104 followed by GH-26 x NDBG-15 and GH-25 x Pusa Santushti during *spring-summer* 2020, GH-28 x NDBG-104 in line with GH-25 x Pusa Santushti and GH-27 x Pusa Samridhi over *rainy* season 2020 were the best heterotic crosses over the standard check HBGH-35 for yield characters like number of fruits and yield per vine in kg. For qualitative traits, two crosses GH-28 x NDBG-15 and GH-26 x Pusa Samridhi for ascorbic acid and GH-28 x Pusa Samridhi and GH-27 x Pusa Santushti for protein content showed significant standard heterosis over HBGH-35 hybrid check. While, GH-27 x NDBG-15 had maximum positive and significant heterosis for both calcium and sodium content. The F₁ hybrid, GH-25 x Pusa Santushti was most heterotic for seed germination, GH-27 x Pusa Samridhi and GH-26 x NDBG-15 surpassed standard check HBGH-35 for vigour index I and II respectively.

Key words- *Heterosis, quantitative, qualitative, fruit per vine, spring-summer and rainy season.*

Impact of branding and packaging on consumer buying behaviour for basmati rice

Pooja Rani

Department of Commerce & Management
NIILM University, Kaithal -136027

In the highly competitive market of basmati rice, the roles of branding and packaging are crucial in shaping consumer purchasing decisions. With growing consumer awareness regarding environmental concerns, brands are compelled to juggle market competitiveness and sustainability. Basmati rice, celebrated for its quality and heritage, gains from brand messaging that conveys authenticity, ethical sourcing, and dedication to environmentally friendly practices. These factors create a robust brand identity that resonates with environmentally aware customers and strengthens loyalty by aligning the product's values with those of the consumer. Innovations in packaging play a vital role in upholding these values, as sustainable packaging materials—like biodegradable, recyclable, or refillable options—are becoming more popular than conventional choices. Packaging design elements that blend visual appeal with eco-friendly attributes, such as transparent eco-windows, simple heritage designs, and resealable features, improve functionality while minimizing environmental impact. Furthermore, clear labeling that explains sourcing methods, health advantages, and certifications such as organic or fair trade further enhances the consumer's relationship with the product, facilitating informed buying decisions. Psychological elements in packaging design, such as color palettes that reflect nature and culturally meaningful symbols, affect purchasing decisions by forging emotional bonds with customers. Premium basmati rice brands gain significant advantages from high-quality, eco-friendly packaging, identifying themselves as responsible environmental options. This analysis finds that a holistic strategy to branding and packaging, based on sustainability, can offer a competitive edge, fulfill changing consumer demands, and make a positive impact on global environmental objectives

Keywords: Basmati rice, market, consumer, branding

Studies on Genetic Variability in Spinach Beet (*Beta vulgaris* L. var. *bengalensis* Roxb.)

Abhishek*, Shiv Pratap Singh¹

*Department of Horticulture, Maharana Pratap Horticulture University,
Karnal, Haryana 125001

¹ Department of Vegetable Science, Dr. YS Parmar University of
Horticulture and Forestry Solan, Himachal Pradesh 173230

Present study was conducted during rabi season 2020-2021 at the experimental research farm of the Department of Vegetable Science, College of Horticulture and Forestry, Neri, Hamirpur, Himachal Pradesh to know the extent of variability, genotypic coefficient of variation and phenotypic coefficient of variation, heritability and genetic advance in spinach beet. The experiment was conducted by using 15 genotypes (11 local genotypes and 4 commercial varieties) of spinach beet (*Beta vulgaris* L. var. *bengalensis* Roxb.) and the data was statistically analyzed under RCBD design. The study revealed significant differences among the genotypes for all the horticultural characters indicating considerable variability. The highest total yield per plant was recorded by the genotype P-COHF-NERI-11 (95.33) followed by P-COHF-NERI-4 (85.13), P-COHF-NERI-3 (84.06), P-COHF-NERI-1 (81.46) and P-COHF-NERI-2 (80.20). High magnitude of GCV and PCV was recorded for the traits like fresh weight of leaves, dry weight of leaves and ascorbic acid content. High estimates of heritability and genetic advance were recorded by the horticultural traits fresh weight of leaves, dry weight of leaves and ascorbic acid content, days to 50 percent germination, harvest duration, number of cuttings, days to first cutting respectively which suggested that the heritability in these traits was mainly due to the additive effects and selection was effective for these traits.

Keywords: Spinach Beet, Variability, Genetic advance, Heritability

MHD flow of Kuvshinski Fluid Through Porous Medium with Temperature Gradient Heat Source

Annu Banshiwal

Department of Mathematics, Janki Devi Bajaj Govt. girls College, Kota
MHD free convection time dependent flow of a viscous, dissipative, incompressible, electrically conducting, non-Newtonian fluid name as Kuvshinski fluid past an infinite vertical plate is considered. The plate is moving with uniform velocity in the direction of flow. Analytical solutions have been obtained for velocity, temperature and concentration using perturbation technique. The effects of governing parameter on flow quantities are discussed with the help of graphs.

Empowering Local Communities to Solve Global Problems

Priyanshi Jeliya

Assistant Professor, Govt. Girls College, Baran
Email: Jeliyapriyanshi1999@gmail.com,6777929764

The complexity of global challenges such as climate change, poverty, and social inequality demands innovative, multifaceted solutions. Traditional top-down approaches have often struggled to address these issues effectively, which underscores the importance of empowering local communities to become central agents of change. Empowering local communities means fostering their autonomy, enhancing their capacity for self-reliance, and promoting inclusive participation in decision-making processes. Local communities possess invaluable knowledge and understanding of the challenges they face, making them uniquely positioned to develop context-specific solutions. This approach encourages a deeper sense of ownership and responsibility, which is essential for the success and sustainability of global solutions. Moreover, empowering communities can help bridge the gap between global policies and local realities, ensuring that initiatives are more relevant and tailored to the needs of those most affected. Local empowerment involves creating platforms for education, providing access to

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resources, building leadership capacities, and fostering collaboration among diverse stakeholders. It encourages people to leverage their creativity, resilience, and resourcefulness to solve problems ranging from environmental sustainability to social justice.

Ultimately, empowering local communities to address global challenges requires a shift in mindset from viewing them as passive recipients of aid to recognizing them as proactive contributors to the global good. By investing in community-driven solutions, we can build a more inclusive, equitable, and resilient world where local action propels global progress. Through this approach, global problems can be tackled with greater relevance, effectiveness, and sustainability, leading to a more balanced and interconnected world.

Key words - Local Leadership, Global Impact,

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Impact of Wetland Loss on Heron Species

Pooja Goswami* Dr. Meenakshi Mayangar

Government College, Kota (Rajasthan) 7014999987,

poojagoswami2781@gmail.com

Wetland degradation and loss due to urban expansion, agricultural conversion, and climate change have significantly impacted heron populations worldwide. The resulting decrease in habitat quality often caused herons to migrate to suboptimal habitats, which may increase intraspecific competition and vulnerability to predation. The global decline in wetland habitats poses a serious threat to heron species, which depend on these ecosystems for critical life - sustaining resources including food, nesting sites and refuge. This study explores the impact of wetland loss on heron populations, with particular emphasis on shifts in distribution, change in abundance, and alterations in species –specific behaviors in response to habitat degradation. Conservation efforts must prioritise the protection and restoration of wetland habitats to mitigate the decline of heron species.

Keywords: *Agricultural conversion, Intra-specific competition, Predation, Urban expansion, Wetland loss.*

Need of Local Solutions for Sustainable Development

Dr. Shraddha

Assistant professor, Govt college, Loonkaransar

Geographical atmosphere is major factor for requirements of facilities and gadgets in an area for human to live. Human tries to make environmental changes by using equipment and other gadgets to make environment suitable for him. Atmospheric temperature is very important element of the environment. We use air conditioner for making it comfortable for us.

Technologies are not region specifically designed these are same for all the countries. There is great need to identify, indigenous practices and making them more efficient with our scientific research. These practices are area specific, need based and eco-friendly. Thus more research and development is needed for sustainable development in this area.

Variability Studies in Bottle Gourd [*Lagenaria siceraria* (Mol.) Standl.] under Semi-Arid Conditions of Haryana

Nidhi Sehgal^{1*}, VPS Panghal¹, DS Duhan¹, Dev Vart Yadav², Vinod Kumar³ and Tanvi Mehta¹

¹Department of Vegetable Science, College of Agriculture, CCS HAU, Hisar- 125 004, India

²Department of Genetics & Plant Breeding, College of Agriculture, CCS HAU, Hisar- 125 004, India

³Directorate of Research, MHU Karnal- 132 001, India

The current investigation was conducted at Research Farm and laboratory of the Department of Vegetable Science, CCS Haryana Agricultural University, Hisar during *kharif* 2018 and summer 2019. A total of twenty diverse accessions of bottle gourd acquired from NBPGR, New Delhi were utilized for the variability studies. The analysis of variance revealed highly significant differences among 20 accessions for all 18 quantitative traits, suggesting that there is sufficient variability for all the characters examined

in the study. In the current investigation, the magnitude of phenotypic coefficient of variation (PCV) was higher to that of genotypic coefficient of variation (GCV) for all the traits under examination suggesting that the apparent variation is attributed to environmental factors in addition to the genotypes. This further indicates improvement in fruit yield will be done by selection through these traits only on phenotypic basis. High GCV and PCV estimates were reported for the traits, namely, number of primary branches, fruit length (cm), fruit diameter (cm), length-diameter ratio of fruit, number of fruits per vine and fruit yield per vine (kg); while moderate GCV and PCV estimates were recorded for the characters viz., nodes to first female flower, days to anthesis of first pistillate flower, female-male flower ratio and vine length at final harvest (m). Low GCV and PCV values were estimated for days to anthesis of first staminate flower and days to first fruit harvest.

Keywords: Bottle gourd, variability, genotypic coefficient of variation, phenotypic coefficient of variation

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Influence of different irrigation regimes and foliar application of nano urea on productivity of potato (*Solanum tuberosum* L.)

Himanshu¹ and Hans Raj²

¹Ph D research scholar, Department of Vegetable Science, CCS HAU, Hisar, Haryana, India 125004

²Assistant professor, Department of Vegetable Science, CCS HAU, Hisar, Haryana, India 125004

This study was carried out at the research farm of the Department of Vegetable Science, CCS Haryana Agricultural University, Hisar during rabi season of 2022-23. The treatment combination comprising of four irrigation levels, *i.e.*, application of irrigation at 20 mm CPE, 30 mm CPE, 40 mm CPE and as per recommendation and four nitrogen fertilization treatments *viz.*, T₁: control, T₂: 100% nitrogen as basal, T₃: 75% nitrogen as basal and 25% nitrogen as nano urea foliar application, T₄: 50% nitrogen as basal and 50% nitrogen as nano urea foliar application, that were laid out in a split plot

design with three replications. The results showed that the maximum plant height at harvest (55.61 cm), fresh weight of haulm at maturity (91.54 q/ha), total tuber yield (264.85 q/ha), marketable tuber yield (228.05 q/ha) and total NPK uptake by crop (102.49, 16.65, 73.04 kg/ha, respectively) were recorded at 30 mm CPE irrigation level. Among nitrogen fertilizer treatments, the maximum plant height at harvest (59.48 cm), leaf area at 45 DAP (2653 cm²), fresh weight of haulm at maturity (100.57 q/ha), total tuber yield (281.91 q/ha), marketable tuber yield (248.71 q/ha) and total NPK uptake by crop (119.84, 17.78, 83.96 kg/ha, respectively) were noted at application of 75% nitrogen as basal and 25% nitrogen as foliar application of nano urea. Maximum water use efficiency was noted at irrigation level of 40 mm CPE and at application of 75% nitrogen as basal and 25% nitrogen as foliar application of nano urea. Maximum net returns (85998 Rs/ha) and B-C ratio (1.47) were recorded at irrigation level of 30 mm CPE along with application of 75% nitrogen as basal and 25% nitrogen as foliar application of nano urea.

Keywords: *Potato, Nutrient, Nano urea, Irrigation, NPK uptake, Water use efficiency*

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Role of Ancient women in Environmental Conservation

¹Dr. Anju Mittal, Dr. Anita Surana

¹(Botany Department)²(History department) Government College Jaipur

Women Symbolize 'Prakriti' means 'Nature' in Indian Philosophy. she creates and nurtures the creation to bloom. She signifies 'shakti' – the power that drives the system. True, that the status of Indian women has eroded significantly since the Vedic Times. Nevertheless, with the spread of education and social reforms 20th century experienced reawakening and a gradual uprise. An appraisal of the historical background to environmental protection in India would indicate that forests & wildlife were considered as

vital ingredients of the global system. Here, the entire scheme of environmental preservation was essentially duty-based. In this sense, the ancient Indian society accepted the protection of the environment as its duty to do so. Opening up the Hindu mythology, the Vedas, Puranas, Upanishads, and other ancient scriptures of the Hindu religion have given a detailed description of trees, plants, wildlife and their importance to people. Yajnavalkya Smiriti prohibited the cutting of trees by prescribing punishment for such acts. Kautilya's Arthashastra, written in the Mauryan period, realized the necessity of forest administration and Ashoka's 5th Pillar Edict expressed his view about the welfare of creatures in the State. Evidence from civilizations with the ecosystem and their needs maintained harmony with the environment. The ancient women beliefs show the relation of human being and plants. Our ancestors linked various Gods and Goddesses with several plants for their conservation and named as sacred plants. Our ancestors lived and spent their lives in nature. They had a very strong belief on the basis of their knowledge about the valuable qualities of plants.

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Challenge and Future aspects: Chemical Waste Management of Agriculture

Kavita Singh Choudhary

Assistant Professor Chemistry, Government Girls' College Ajmer

Agriculture and related industries are one of the most strategic sectors for many countries. Globally abundant agricultural wastes (AWs) are being generated each day to fulfil the increasing demands of the fast growing population. Chemical wastes in the form of solid wastes that are usually generated from the use of Pesticides, Insecticides and Herbicides on the farm or store in the form of Pesticides containers or bottles. Most of the farmers mishandle These Chemical rich compounds that result in random environmental hazards. Reportedly around 2% of these chemicals still remain in the random environmental effects. Pesticides, Insecticides and Herbicides accumulate in the soil which harms the beneficial microbes for the farm activities. Many environmental hazards Chemical reactions stimulate and catalase like Chemical oxidation processes using hydrogen peroxide, ozone, combined ozone peroxide enhanced oxidation by catalytic

reagent. Advanced Oxidation Processes are particularly appropriate for effluent containing refractory, toxic or non-biodegradable materials like fertiliser, pesticides and insecticide from water and soil. We need to find a safe way for bio economy based on various AW management strategies. Which involves reduction, reusing, recycling and minimising use of AWs to boost sustainable agriculture and minimise environmental pollutants.

Keywords:- *Chemical Waste, Agriculture wastes, No biodegradable, Advance oxidation processes*

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Sulfonic acid-functionalized Silica Coated Magnetic Nanoparticles as a Novel and Efficient Catalyst for the Cost-effective Synthesis of Medicinally Privileged Dispiroheterocycles

Yogesh Kumar Tailor¹, Sarita Khandelwal²

¹Department of Chemistry, Government College, Kota, 324001, India

²Department of Chemistry, JDB Government Girls College, Kota, 324001, India

An efficient and sustainable synthetic protocol has been presented to synthesize dispirooxindoles incorporating privileged heterocyclic substructures. The synthetic protocol involves three component reaction between 4-hydroxycoumarin/dimedone/ 1,3-indandione/ 4-hydroxy-6-methyl-2-pyrone, 4-methoxyaniline and isatin in ethanol/water mixture using Sulfonic acid-functionalized silica coated magnetic nanoparticles as magnetically separable, recyclable and reusable heterogeneous catalyst. Magnetically retrievable, sulfonic acid-functionalized silica coated magnetic nanoparticles as catalyst, were successfully synthesized and characterized by physicochemical characterization including scanning electron microscopy (SEM), transmission electron microscopy (TEM), Fourier-transform Infrared spectroscopy (FT-IR), energy-dispersive X-ray spectroscopy (EDX), and X-ray diffraction (XRD).

Keywords: *dispiroheterocycles, Sulfonic acid-functionalized silica coated magnetic nanoparticles, indeno/chromeno/pyrano- oxazine.*

Removal of organic Pollutants Using Green Synthesized Metal Nano-catalysts

Ajay Rathore, Naveen Mittal*, Vijay Devra

Department of Chemistry: Janki Devi Bajaj
Government Girls College, Kota (Raj.)

*Department of Chemistry, Government college, Kota

In the current reports, stable, distributed nanosized iron nanoparticles (FeNPs) have been produced by biosynthesis employing plant extract without the addition of a protective atmosphere. In aqueous solutions, the biomolecules in leaf extract serve as reducing and stabilising agents. FeNPs were synthesised and characterised using Fourier transform infrared spectrophotometry and UV visible spectrophotometry. The FTIR peak at 3000 cm^{-1} and the maximum UV-visible absorption peak at 250 nm in the investigation validate the synthesis of zerovalent iron nanoparticles. The generated nanoparticles were employed as a catalyst to accelerate the organic contaminant orange G degradation. In addition to being a good substitute, the biosynthesised Fe-NPS is anticipated to have a significant impact on the environmental revolution and the field of catalysts.

Keywords: *Iron Nanoparticles, Azadirachta Indica (Neem), Catalyst, Orange G.*

Mechanothermally Mediated Dual Calcination Synthesis of ZnO doped Zn(NCN) Nanocomposites as Robust and Efficient Photocatalyst for Degradation of Pollutant

^aParmeshwar Lal Meena, ^{a,b}Lata Kumari Chhachhia, and ^aAjay Kumar Surela

^aDepartment of Chemistry, University of Rajasthan, Jaipur-302004 (India)

^bS.R.K.P. Govt. P.G. College, Kishangarh-305802 (India)

Email:-parmeshwar1978@gmail.com

Current work describes the mechanothermal mediated synthesis of ZnO doped Zn(NCN) nanospheres nanocomposites employing mechanical grind mixing of urea and zinc acetate under solvent free conditions followed by dual calcination at 550°C, and the photocatalytic proficiency of the produced nanomaterials was investigated for the photo-mineralization of Rhodamine B (RhB) organic dye pollutant under visible light illumination. The synthesis of ZnO doped Zn(NCN) nanomaterial was conducted utilizing weight ratios of urea and zinc acetate by 2:1, 4:1, 6:1, and 8:1. The produced samples were called Zn(NCN)/ZnO (2:1), Zn(NCN)/ZnO (4:1), Zn(NCN)/ZnO (6:1), and Zn(NCN)/ZnO (8:1), respectively. The XRD and FTIR results confirmed that in the prepared nanocomposites the ZnO coexistence with Zn(NCN) in a tetragonal lattice structure with a space group of . The existing of ZnO in the Zn(NCN) has surprisingly reduced the band gap of Zn(NCN) from 4.32 eV to ~2.87 eV and enabled it for the photo-excitation under visible light radiation due to this the Zn(NCN)/ZnO (6:1) nanocomposite exhibited remarkable photo-mineralization activity toward the RhB dye and degraded almost 99% of dye within 90 min of visible light exposure in acidic medium at pH=2. The photo-decolorization process was mainly regulated by h^+ followed by $\bullet O_2^-$ oxidative active species.

Keywords:- Zn(NCN)/ZnO, Zinc cyanamide, Rhodamine B, Photo-mineralization

Multicomponent Synthesis of Structurally Diverse and Drug-like Spiroheterocycles with Privileged Substructures using a Green Bio-organic and Recyclable Catalyst in Aqueous Medium

Asha Verma¹, Dinesh Kumar Arya²

¹Department of Chemistry, University of Rajasthan, Jaipur 302004, India

²Department of Chemistry, Acharya Narendra Dev College, University of Delhi, Delhi 110019, India

ashauorverma82@gmail.com

An efficient and environmentally friendly domino approach for the synthesis of spiroheterocycles with favoured heterocyclic substructures has been reported using taurine (2-aminoethanesulfonic acid) as a green, sustainable, bio-organic and recyclable catalyst in a three-component reaction of isatins, 1,3-diketones, and 1-naphthylamine in aqueous media. The current synthetic process explains the synthesis of spiroheterocycles spiroannulated with indeno[1,2-b]quinoline. The present synthetic method is cost-effective, has excellent yield, shorter reaction time and is environmentally friendly because of the synthetic efficiency, operational simplicity, and reusability of the catalyst and molecular diversity and is expected to make significant contributions not only to drug discovery studies but also to pharmaceutical and therapeutic chemistry.

Keywords: *Multicomponent reactions, environmentally friendly, green and sustainable bio-organic catalyst taurine (2-aminoethanesulfonic acid), spiroheterocycles, indenoquinolines*

Title: Zero-Budget Natural Farming: A Pathway to Sustainable and Low-Cost Agriculture

1. **Author: Pooja S Beleri, Research Scholar, Indian Institute of Seed Science, RS, Bangalore-65.**
2. Author: Kiran Kotyal, Ph.D. Scholar, Institute of Agri-Business Management, UAS, GKVK, Bangalore-65
E-mail: poojasb091@gmail.com

Zero-Budget Natural Farming (ZBNF) presents a viable approach to sustainable agriculture by eliminating reliance on chemical inputs, significantly reducing cultivation costs and restoring ecological health. This method, developed and promoted in India, primarily Andhra Pradesh, encourages using locally sourced materials, such as cow dung and urine and natural inoculants to enhance soil fertility and biodiversity. Since its inception, ZBNF has shown promise in mitigating climate impacts through reduced water use, lower greenhouse gas emissions, and resilient crop yields, especially in drought-prone areas. Current data from Andhra Pradesh indicates that ZBNF reduces cultivation costs by approximately INR 3,000 to 22,000 per acre and decreases water usage by 50 to 60 per cent making it ideal for resource-scarce regions. With state support, Andhra Pradesh aims to transition six million farmers to ZBNF by 2024, covering eight million hectares by 2026. Studies reveal that ZBNF improves farmer livelihoods, enhances climate resilience and aligns with Sustainable Development Goals (SDGs) for zero hunger, clean water, and climate action.

Keywords: *Zero-Budget Natural Farming, sustainable agriculture, soil fertility, climate resilience, natural inputs, Andhra Pradesh, India, Sustainable Development Goals (SDGs), agroecology, low-cost farming.*

A Review on Morphometric Analysis Based Sub-basins Prioritization of Mahi Upper River Basin Using Geospatial Approach

*Suresh Chandra Jat, P. K. Singh², Nirmalya Kumar Nath¹, Abhinav Kumar¹, Pritam Das¹, Hasmukh Kumar¹

¹ Ph.D. student, Soil and Water Engineering, CTAE, MPUAT

² Retd. Professor, Soil and Water Engineering, CTAE, MPUAT
Maharana Pratap University of Agriculture and Technology, Udaipur,
Rajasthan, 313001

*Corresponding Author Email: ersureshjat92@gmail.com

Contact no: 8003129562

The morphometric study and subsequent prioritization of basins are crucial for managing the natural resources in the basin. One of the best and most efficient methods for delineating, analysing morphometric parameter values, and prioritising sub-basins are geospatial approaches. The research was carried out for the Mahi upper river basin is delimited by the Aravalli hills to the north and northwest, the Malwa Plateau to the east, the Vindhyas to the south, and the Gulf of Khambhat to the west (Figure 1). It drains via Madhya Pradesh, Rajasthan, and Gujarat having overall catchment area of 26039 km², with an asymmetric drainage system. Morphometric parameters analysis of Mahi Upper basin divided in 41 sub-basins was done by analysing linear, areal and relief characteristics. Drainage density of basin varies from 1.070 to 1.243 km/km² showing very coarse drainage pattern having high permeability of sub-soil, vegetation cover is dense and low relief. Influence of geology on drainage system in basin is demonstrated by the bifurcation ratio, which is 2.112 for the basin and varies from 1.72 to 12.23 for 41 sub-basins. The basin having elongation ratio value as 0.70 shows that the geometry of basin is elongated. The 41 sub-basins prioritized using morphometric analysis utilising GIS with AHP criteria and determining the values of compound parameters. According to prioritization, sub-basin 3 ranked the highest priority among the 41 sub-basins for adopting the suitable measures in future. The study's findings will be useful for managing and evaluating water resources as well as choosing the best recharge scheme for water management.

Keywords: Mahi upper river basin, Sub-basin, Morphometric analysis, GIS, AHP, Prioritization, Remote Sensing,

A Review on Evapotranspiration Estimation in Agricultural Water Management

*Leena Rani Mishra¹, P. K. Singh², Nirmalya Kumar Nath¹, Abhinav Kumar¹,
Pritam Das¹, Sachin Suryawanshi¹

¹ Ph.D. student, Soil and Water Engineering, CTAE, MPUAT

² Retd. Professor, Soil and Water Engineering, CTAE, MPUAT
Maharana Pratap University of Agriculture and Technology, Udaipur,
Rajasthan, 313001

*Corresponding Author Email: leena.rani.mishra@gmail.com

Contact no: 7978335940

Evapotranspiration (ET), the process of water moving from the soil to the atmosphere through plants, is a key factor in the water cycle and agricultural water management. Accurate ET estimation is crucial for sustainable agricultural water resource planning, management, and regulation. It helps ensure a balanced water supply, mitigates water scarcity, and prevents wasteful water use. Since ET is the primary way irrigation and rainwater are consumed by crops, improving water use efficiency and achieving sustainable water management in agriculture relies on accurate ET estimates. This paper explores the latest advancements in ET estimation techniques, including the integration of precision agriculture, remote sensing, satellite technology, and machine learning algorithms, highlighting their potential to significantly improve the accuracy of ET estimates and enable more precise agricultural water management.

Keywords: *Agriculture, Management, Evapotranspiration, Machine learning, Remote Sensing, Precision agriculture*

Smart Metering Mechanism in Planter for Sustainable Development

***Er. Narendra Kumar Yadav¹, Dr. Sanwal Singh Meena²**

¹Phd Research Scholar, ²Associate Professor and Head, Department of Farm Machinery and Power, Maharana Pratap University of Agriculture and Technology, Udaipur, Rajasthan-313001

*Correspondence email: narendrakumaryadav27@gmail.com.

Contact: [9149682152](tel:9149682152)

Sustainable development in Precision agriculture is a farming technique that uses agricultural technology to increase farm production while minimizing environmental impact with enhanced crop performance. Precision agriculture's success is determined by how well it can be used to measure, manage, and evaluate crop production's space-time continuum. The precision planting of crops is progressing in the country, however there is no indigenous precision planting machines available in the country. Some imported substitutes are available but being too costly are beyond the reach of common farmers. There are various types of planters which have different types of seed metering mechanisms which are working by attached with ground wheel; these mechanisms are of mechanical type and they use drive through gears, chains or belts from the ground wheel and while transmitting power, there exists some transmission losses. Due to continuous friction between moving parts, these components are subjected to wear and tear. The sensor system in the machine helps in proper metering of seeds and thus further reduces the losses. Therefore, this review article aiming to provide knowledge about electronic metering of seeds that would be an indigenous and cost-effective substitute for imported planters. The metering unit would be synchronized with the D.C motor with the help of proximity sensor and micro controller. Thus, the precision farming can be achieved with the help of smart metering mechanism by avoiding multiple seed dropping and missing voids, keeping row to row and seed to seed distance constant. By keeping the above points in view, an effort is made to develop a battery-operated corn planter based on electronic sensor metering mechanism. This will share major workload of operator for providing ease in planting operation. The developed planter will ensure precise planting, less drudgery, timeliness, economic viability and eco-friendly machine with scope to be adopted by the small to marginal farmers of the country.

Keywords: *Metering mechanism, Electronic unit, sensor, Precision agriculture, D.C motor*

Knowledge And Usage Of Energy Conservation Equipment And Methods By Rural Families

Meenu, Dr. Binoo Sehgal

Department of Resource Management and Consumer Science, I. C. College
of Community Science, CCS Haryana Agricultural University, Hisar
E-mail – meenujakhar1998@gmail.com

Energy is very essential in the entire process of evolution, growth and survival of the world. The endeavour to reduce energy consumption by utilizing less of an energy service is known as energy conservation. The energy consumption of Indian households is estimated to account for almost 40% of the country's total energy consumption. The study was conducted in Hisar district from Haryana state and four villages (Ludas, Rawalwas Khurd, Siswal and Neoli Kalan) adopted by College of Home Science under RAWE programme in the past years were purposively selected. For objective I, 50 respondents were randomly selected from each village. Thus, the total sample size was 200. Under objective II, knowledge about all the equipment and methods for energy conservation was imparted to 100 selected rural respondents (25 from each village) who were showing interest and were willing to gain knowledge. Gain in knowledge was studied after 30 days of imparting knowledge to 100 rural respondents. Questions were asked regarding willingness of respondents to adopt the energy conservation equipment. The results show that maximum number of respondents (59.5%) belonged to the age group of 20-35 years, 89.5 percent were married, educated up to 10+2 (27.5%) and farming was main family occupation (27.5%). 90.0 percent of the respondents had pre-knowledge regarding pressure cooker followed by CFL (74.5 %), box type solar cooker (34.5%), solar fan (33.0%), Improved *chulha* (MDV *chulha*)(30.5%) and solar inverter (30.0%). Maximum gain in knowledge was found about solar dryer (M.S.=0.82) followed by solar lantern, solar tubewell and solar room cooler. Maximum increase in adoption was found about LED (7.0%) followed by improved *chulha* (6.0%), CFL (5.0%) and solar fan (2.0%). The maximum gain in knowledge regarding energy conservation methods was found about “Buy domestic LPG stove with star level or ISI mark” (M.S.=0.79) followed

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by “Lighting should be installed according to the task to be done” (M.S.=0.77) and “Let the cold food extracted from the fridge come to normal temperature before cooking” (M.S.=0.75). The maximum increase in adoption of energy conservation methods was found about “Cover the utensil with a lid to speed up the cooking process” i.e. 74.0 percent followed by “Clean the condenser coils 3-4 times a year” i.e. 68.0 percent and “Dirty bulbs and tube lights reduce illumination, so keep them clean” i.e. 67.0 percent. After gaining knowledge, six respondents had adopted improved *chulha* (MDV *chulha*) and four respondents had adopted pressure cooker; two respondents had adopted solar light and solar fan; seven respondents had purchased LED, and many of the respondents were willing to adopt these equipment in future.

Keywords: *Energy conservation, adoption, knowledge gain, equipment and methods*

Future of Farming: Leveraging AI, ML and Remote Sensing for Sustainable Development

Hari Krishna. B¹, Machanuru Ravi Teja² and A. Sai ram³

¹Assistant Professor (Agronomy), Professor Jayashankar Telangana State Agricultural University, Hyderabad

²Scientist, ICAR- IARI, Assam.

³Ph.D. Scholar, Water Technology Center, ICAR- IARI, New Delhi.

The future of sustainable agriculture lies in the intelligent integration of emerging technologies to address the growing challenges of climate variability, resource scarcity, and food insecurity. This research investigates the application of Artificial Intelligence (AI), Machine Learning (ML), and Remote Sensing in precision farming to enhance productivity while minimizing environmental impact. Multispectral data from satellite and drone imagery were combined with ground-based observations to monitor crop health, soil moisture, and climatic factors across multiple agroecological zones.

ML models, including Random Forest and Convolutional Neural Networks, were developed to predict yields, detect early pest and disease onset, and support data-driven input management. Results showed a 92% improvement in yield prediction accuracy over traditional methods. Remote sensing-enabled irrigation optimization reduced water usage by 34%, while AI-driven disease detection systems led to a 50% reduction in pesticide application. Overall resource efficiency increased by 35%, indicating strong alignment with the UN Sustainable Development Goals, particularly SDG 2 and SDG 12.

This study demonstrates that AI, ML, and remote sensing technologies offer a viable and scalable framework for climate-resilient, sustainable farming. The approach sets the stage for future research into adaptive, intelligent agricultural systems capable of meeting the demands of a changing world.

Keywords: *Precision Agriculture, Artificial Intelligence, Machine Learning, Remote sensing, Sustainable farming, Yield prediction, Climate resilience, Smart Farming, SDGs.*

PART- B

इंदु बाला कुमावत
सहायक प्राध्यापक राजकीय महाविद्यालय ओसियां
जय नारायण व्यास विश्वविद्यालय

प्रकृति और आदिवासी

प्रकृति और आदिवासी का संबंध बहुत गहरा और प्राचीन है। आदिवासी समाज प्रकृति को अपनी माता मानते हैं और इसके साथ अपने जीवन को जोड़कर रखते हैं। वे प्रकृति के विभिन्न तत्वों को देवता मानते हैं और इनकी पूजा करते हैं।

आदिवासी समाज की जीवनशैली प्रकृति पर आधारित है। वे जंगल से अपनी आवश्यकताओं की पूर्ति करते हैं और वनस्पति को अपने स्वास्थ्य के लिए महत्वपूर्ण मानते हैं। मिट्टी और जल को वे अपने जीवन के लिए आवश्यक तत्व मानते हैं और इनकी पूजा करते हैं।

प्राकृतिक त्योहार आदिवासी समाज के लिए प्रकृति के साथ जुड़ने का एक तरीका है। वे फसल काटने के त्योहार, वर्षा के त्योहार आदि मनाते हैं, जो उनके जीवन को संतुलित और समृद्ध बनाते हैं। आदिवासी समाज प्रकृति के साथ सामंजस्य बैठकर रहते हैं और इसके संसाधनों का उपयोग करते हुए भी इसका सम्मान करते हैं।

प्रकृति और आदिवासी के बीच के संबंध का महत्व बहुत अधिक है। यह संबंध प्रकृति के संरक्षण में योगदान देता है। सांस्कृतिक विविधता का संरक्षण करता है, पारंपरिक ज्ञान का संरक्षण करता है। समुदायिक जीवन का पोषण करता है और मानवता के मूल्यों का पोषण करता है।

आदिवासी समाज के अधिकारों का सम्मान करना, प्रकृति के संरक्षण में आदिवासी समाज का सहयोग लेना, आदिवासी संस्कृति का संरक्षण करना, प्रकृति और आदिवासी के बीच के संबंध के बारे में जागरूकता फैलाना और आदिवासी समाज के लिए आर्थिक और सामाजिक समर्थन प्रदान करना इस संबंध को मजबूत बनाने के लिए आवश्यक है।

इन्दु बाला कुमावत

सहायक आचार्य

राजकीय महाविद्यालय ओसियां

जलवायु परिवर्तन के सामाजिक आयाम

डॉ. प्रियंका जैन

सहायक आचार्य समाजशास्त्र

राज. महाविद्यालय देवली (लॉक)

[द्वार7007 / हउंपसण्ववउ](mailto:drp7007@hupsonbvtz)

प्रत्येक जीव अपने पर्यावरण की उपज है। पर्यावरण में वे सभी भौतिक एवं अभौतिक, प्राकृतिक एवं मानव निर्मित वस्तुएं एवं शक्तियां सम्मिलित हैं जो मनुष्य को प्रभावित करती हैं। जलवायु परिवर्तन वैश्विक स्तर पर मौजूदा प्रमुख सामाजिक मुद्दों में से एक है जिसने व्यापक रूप से मानव समाज को प्रभावित किया है। इस शोध विषय का उद्देश्य जलवायु परिवर्तन का समाज पर प्रभाव को उजागर करना है। जलवायु परिवर्तन जिसमें अत्यधिक वर्षा, अकाल, भूकंप, भूस्खलन, ग्लेशियर का पिघलना, तापमान में बढ़ोतरी आदि सम्मिलित हैं, के कारण समाज में संघर्ष, कुपोषण गरीबी, भुखमरी, असमानता, प्रवासन जैसे परिणाम उत्पन्न हुए हैं। तापमान में वृद्धि, अत्यधिक वर्षा एवं अकाल जैसी स्थिति ने बेरोजगारी, प्रदूषण की स्थिति जैसी समस्याओं का खतरा भी समाज में बढ़ा दिया है जिसका प्रभाव मानव के शारीरिक एवं मानसिक स्वास्थ्य पर अत्यंत हानिकारक है। जलवायु संबंधित घटनाओं ने मनुष्य के आवास, आय, भोजन, स्वास्थ्य पर प्रतिकूल प्रभाव डालकर गरीबी की स्थिति को उत्पन्न किया है। विशेष सामाजिक समूह जैसे बच्चे, वृद्ध, दिव्यांग, महिलाएं, श्रमिक एवं निम्न समूह जलवायु संकट के प्रति अत्यधिक संवेदनशील हैं। जलवायु बदलाव ने समाज में गरीब-अमीर जैसी असमानता को जन्म दिया है। समाजशास्त्रियों को जलवायु परिवर्तन एवं उसमें बढ़ती सामाजिक असमानता से संबंधित मुद्दों की प्रभावी कार्यकारी योजना बनाई जानी चाहिए।

मुख्य शब्द :— जलवायु परिवर्तन, सामाजिक असमानता, प्रवासन।

वैश्विक नवाचार और चुनौतियाँ: प्रौद्योगिकी और इंजीनियरिंग समाधान

Manoj Kumar

Assistant Professor of Mathematics

Govt. College Osian, Jodhpur

manojrajera@gmail.com

वैश्विक स्तर पर नवाचार तेजी से बढ़ रहे हैं, जिनमें प्रौद्योगिकी और इंजीनियरिंग का महत्वपूर्ण योगदान है। ये नवाचार न केवल मानव जीवन को आसान बना रहे हैं, बल्कि बड़े पैमाने पर वैश्विक चुनौतियों का समाधान भी प्रस्तुत कर रहे हैं। जलवायु परिवर्तन, ऊर्जा संकट, जल संसाधनों की कमी, स्वास्थ्य सेवाओं की सीमित पहुँच, और बढ़ती जनसंख्या जैसी समस्याएँ हमारे सामने हैं, जिन्हें हल करने के लिए नए

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तकनीकी और इंजीनियरिंग दृष्टिकोण आवश्यक हैं। प्रौद्योगिकी में कृत्रिम बुद्धिमत्ता (AI), मशीन लर्निंग, इंटरनेट ऑफ थिंग्स (IoT), और स्वच्छ ऊर्जा जैसे क्षेत्रों में लगातार प्रगति हो रही है। इन नवाचारों ने विभिन्न क्षेत्रों में क्रांति ला दी है, जैसे स्मार्ट सिटीज़, नवीकरणीय ऊर्जा उत्पादन, और जल प्रबंधन। इसके अलावा, जैव प्रौद्योगिकी और नैनो तकनीक में भी उन्नतियाँ हो रही हैं, जो चिकित्सा और पर्यावरणीय समाधान प्रदान कर रही हैं। इंजीनियरिंग समाधान जैसे स्मार्ट इंफ्रास्ट्रक्चर, स्वचालित परिवहन प्रणालियाँ, और ऊर्जा इमारतें कुशल, सतत विकास के लिए नए रास्ते खोल रही हैं। हालाँकि, इन नवाचारों के साथ चुनौतियाँ भी हैं, जैसे साइबर सुरक्षा, डेटा गोपनीयता, और तकनीकी असमानता आदि। अतः यह आवश्यक है कि वैश्विक स्तर पर सरकारें, उद्योग, और समाज मिलकर प्रौद्योगिकी और इंजीनियरिंग समाधानों को सतत, समावेशी और सुरक्षित रूप में लागू करें। इससे हम न केवल इन चुनौतियों का सामना कर सकते हैं, बल्कि भविष्य के लिए एक बेहतर और टिकाऊ दुनिया का निर्माण भी कर सकते हैं।

KeyWords- जलवायु परिवर्तन, कृत्रिम बुद्धिमत्ता (AI), नवीकरणीय ऊर्जा, सतत विकास

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पर्यावरण और जल प्रबंधन

प्रो. (डॉ) अनीता गुप्ता

से.मं.च.चौ. राजकीय महाविद्यालय, आबूरोड,

(सिरोही-राजस्थान)

पर्यावरण का अर्थ 'भौतिक परिवेश से है जो पृथ्वी के जैव जगत को आवृत किये हुए है तथा जिसके प्रभाव से जीवन स्पंदित होता है। हमारे चारों ओर पर्यावरण (परि. आवरण) भौतिक एवं जैविक तत्वों से मिलकर बना है। भौतिक तत्वों में क्षेत्रों की भौगोलिक स्थिति, उच्चावच, मिट्टी, खनिज, चट्टाने, सौर प्रकाश, तापमान, वायुमंडलीय गैसें, जल आदि सम्मिलित है इसे भौतिक पर्यावरण कहते हैं। पर्यावरण के जैविक तत्वों में वनस्पति, जीव जंतु, सूक्ष्म जीव एवं मानव सम्मिलित है। ये ही जैविक तत्व मिल कर जैविक पर्यावरण की रचना करते हैं। स्पष्ट है कि पर्यावरण एक भौतिक एवं जैविक संकल्पना है जो वायुमंडल, स्थलमंडल, जलमंडल और जैवमंडल का प्रतिनिधित्व करती है।

प्रत्येक जीव अपने अस्तित्व एवं विकास के लिए भौतिक दशाओं पर आश्रित है। जैवमंडल के सभी जीव एक दूसरे पर आश्रित है। पर्यावरण की कार्यप्रणाली को बनाए रखने में इन जैविक तत्वों की दोहरी भूमिका होती है। जैविक तत्व पर्यावरण के उत्पाद होते हैं और परस्पर क्रिया द्वारा ये तत्व स्वयं पर्यावरण के निर्माण में सहयोगी तत्व के रूप में कार्यकर पारिस्थितिकीय उत्पादकता को निर्धारित करते हैं।

सार्वजनिक भूमि पर चराई प्रतिबन्धित, अतिचारण करने के कारण सूखे, पर्णपाती वन का झाड़ू जंगलों में परिवर्तित होना, सस्ती और कड़ी घास जैसे केरिसा स्पिनेरम, अकेसिया वोडेस्टा । अत्यधिक चराई के कारण जमीन सख्त तथा रंधरहित हो गई है,। जैव तत्वों की कमी के साथ भू-अपरदन और भूस्खलन का खतरा बढ़ा है। प्रकृति पर पहला प्रहार संसाधन विदोहन के साथ प्रारंभ हो जाता है, दूसरा प्रहार यांत्रिक

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प्रक्रिया में वस्तु विनिर्माण के समय होता है। कारखानों में विनिर्माण के समय संसाधनों की खपत तो होती ही है साथ ही उनसे निकलने वाली जहरीली गैसें एवं अपशिष्ट पर्यावरण को बहुत अधिक प्रदूषित कर देता है। मानव की प्रगति के साथ ही उसकी आवश्यकताओं में वृद्धि हुई है, साथ ही जनसंख्या में भी तीव्र वृद्धि हो रही है। विकास के साथ ही उपभोक्तावादी संस्कृति को बढ़ावा मिल रहा है। मानव की अनेक वस्तुओं के संग्रहण एवं उपभोग की लिप्सा द्रुत गति से बढ़ती जा रही है। इन सभी के कारण संसाधन विदोहन, कारखाना विनिर्माण एवं उसी के अनुसार व्यापार, यातायात, भवन एवं अन्य निर्माण कार्य बड़े पैमाने पर होने लगे हैं। इन सभी का कुप्रभाव हमारे पर्यावरण पर पड़ा है।

पर्यावरण से सम्बन्धित सामाजिक मुद्दे हैं जैसे— सामाजिक मुद्दे पर्यावरण की गुणवत्ता भूगर्भीय संसाधनों का अत्यधिक दोहन मृदा

भूमि का अति उपयोग तथा दुरुपयोग जल खनिज जंगल जनसंख्या वृद्धि वनस्पति तेल औद्योगिकीकरण सिंथेटिक पदार्थों के प्रयोग से पर्यावरण पर प्रभाव शहरी तथा ग्रामीण भूमि उपयोग पर्यावरण के प्राकृतिक कारकों जैसे जल, मिट्टी वायु पर प्रभाव पहाड़ी व शहरी बस्तियों पर प्रभाव

जल संरक्षण व प्रबंधन की आवश्यकता —इन सभी मुद्दों में जल प्रमुख मुद्दा है। पृथ्वी पर जीवन सर्वप्रथम जल में उत्पन्न और विकसित हुआ। जल जीवन का आधार है। जल का स्वच्छ एवं प्रदूषण रहित बने रहना मनुष्य के साथ साथ सभी जीवधारियों के लिए एक अपरिहार्यता है। लेकिन मनुष्य की आधुनिक जीवन शैली और अनियंत्रित गतिविधियों ने आज सभी जलस्रोतों को प्रदूषित कर दिया है। निश्चित ही जल ही जीवन है। सबसे बहुमूल्य स्रोत— मानव जीवन की बुनियादी आवश्यकताओं के साथ साथ उसके तमाम क्रियाकलापों के लिए बेहद आवश्यक है। भारत में इमदाद (नडेपकल) के कारण भूगर्भीय जल का दोहन बहुत महत्वपूर्ण मुद्दा बन गया है। स्वच्छता नहीं रखने से जल प्रदूषित हो जाता है अतः बीमारियों का जनक माना जाता है। भूगर्भीय जलदोहन से इसके स्तर में कमी आती है जिससे जीवन व उसकी रक्षा का खतरा बढ़ जाता है। अकालग्रस्त क्षेत्रों में नलकूपों से सिंचाई पर रोकथाम के हेतु प्रोत्साहित किया जाता है अतः जलस्तर के हास की समस्या को ग्रामीण क्षेत्रों में देखा जा सकता है। जहाँ भूमि की सिंचाई, तालाबों व नहरों से होती है। भू जल में कमी से कुल फसल उत्पादन पर खतरा पैदा हो जाता है। हर जगह 'पानी ही पानी और पीने के लिए एक बूंद नहीं' वाली स्थिति सिर्फ समुद्र के मध्य नहीं होती, बल्कि उन स्थानों पर भी औद्योगिक और घरेलू प्रयोग के कारण पानी में तमाम किस्म के जहरीले पदार्थ उस प्रयोग के लिए बेकार कर देते हैं। जलस्रोतों की गहराई फ्लोराइड चहानों की भीतरी तह तक जा पहुंची है। जहाँ यह धीमा जहर पानी में घुल मिलकर उसे पीने अयोग्य बना रहा है। अस्तु इस तत्व की रक्षा के लिए आधुनिक मनुष्य को असीमित महत्वकाक्षाओं पर लगाम लगाकर एक संतुलित जीवन अपनाना होगा ताकि जैवमंडल का शुद्ध, प्राकृतिक स्वरूप बचा रह सके। इस हेतु जल प्रबंधन व संरक्षण की महत्ती आवश्यकता है ताकि भविष्य में जल संरक्षित किये जा सकें अतः जल संरक्षण हेतु विभिन्न प्रयास किये जा सकते हैं

अस्तु, बाँध, अवरोध, सीढ़ीनुमा खेत की मेढ़ वानिकी आदि ऐसे यांत्रिक ढाँचे हैं जो मृदा अपरदन और जल प्रवाह को रोकने में सहायक हैं, विशेषकर ढलानों पर जलाशयों का प्रबन्धन एक महत्वपूर्ण विषय है। जहाँ से जल गुरुत्वाकर्षण के प्रभाव से एक जलधारा में जाकर मिलता है। हरियाणा के पंचकुला में सुखोमाजरी, जलाशय निर्माण की सफलता में जन सहयोग का बड़ा महत्व है। अतः कुएं, तालाब, झालेरें और बावड़ियों का रखरखाव किया जाना चाहिए। इनके पानी की नियमित जाँच की जाए, आवश्यकता के अनुसार इनका क्लोरीकरण किया जाना चाहिए, इन्हें बरसाती नालों से जोड़कर जल संग्रहण की व्यवस्था की जाए। इस प्रकार भारी जलसंकट का सामना करने के लिए पानी की परियोजना एवं प्रबन्धन पर विशेष बल देने की आवश्यकता है।

भारतीय समाज पर वैश्वीकरण के प्रभाव का एक समाजशास्त्रीय अध्ययन

डॉ.हरिचरण मीना

प्रोफेसर

समाजशास्त्र विभाग

ष.कै.रि.सि.राजकीय महाविद्यालय

सवाईमाधोपुर

भारतीय समाज सांस्कृतिक विविधता में एकता एवं सांस्कृतिक समृद्धि वाला समाज है। भारत में कभी से कन्याकुमारी एवं कच्छ से अरुणाचल तक विभिन्न धर्म एवं सम्प्रदाय जाते मजहब एवं संस्कृति के लोग निवास करते हैं एवं उनके रहन सहन खान पान वेषभूषा बोलचाल भाषा रीतिरिवाज में विविधता के होते हुए सभी भारतीय समाज का अभिन्न अंग हैं। वैश्वीकरण एक प्रक्रिया है जिसके द्वारा पूरे विश्व की सामाजिक इकाई उनकी संस्कृतियों और अर्थव्यवस्थाएं परस्पर जुड़ जाती हैं। यह एक ऐसी सतत प्रक्रिया है जो संचार व प्रौद्योगिकी प्रचार प्रसार के कारण अनवरत चलती रहती है। यह पूरे विश्व के आधुनिक समाज को नियंत्रित करती है एवं पूरे विश्व में आवश्यकता की सभी वस्तुएं मांग के अनुरूप उपलब्ध होने में सहूलियत प्रदान करती है। वैश्वीकरण में विचार विचारधाराएं भूमिकाएं सांस्कृतिक मान्यताओं का अद्यतित आदान प्रदान होता है। यह सामाजिक मुद्दों को नए एवं अनूठे तरीकों से हल करने की अनुमति देता है। वैश्वीकरण संस्कृति समाज राजनीति पर्यावरण अर्थव्यवस्था को प्रभावित करने वाली प्रक्रिया है।

वैश्वीकरण का भारतीय समाज की संस्कृति संगीत फिल्म परिवार विवाह जाति व्यवस्था धर्म परम्परा भाषा व्यापार अर्थव्यवस्था रोजगार शिक्षा स्वास्थ्य संस्कार इत्यादि पर सकारात्मक एवं नकारात्मक दोनों प्रकार से देखा जा सकता है। वैश्वीकरण को भारतीय समाज में संस्कृति का सजातीयकरण एवं ग्लोकलाइजेशन के रूप में देखा जा सकता है। महिलाओं पर वैश्वीकरण के प्रभाव को अधिकार स्वतंत्रता न्याय के प्रति जागरूकता महिला सशक्तिकरण तकनीकी शिक्षा वैश्विक मंचों पर पहुंचना रहन सहन इत्यादि में सकारात्मक प्रभाव के रूप में देखा जा सकता है दूसरी ओर एकल परिवार तलाक होना विवाह संस्था पर बढ़ता खतरा कुटीर उद्योगों पर खतरा दोहरी जिम्मेदारी इत्यादि को नकारात्मक प्रभाव के रूप में देखा जा सकता है। युवाओं पर भी वैश्वीकरण के प्रभाव को गुणवत्तापूर्ण शिक्षा उच्च पैकेज सैलरी स्टार्टअप पश्चिमी एवं भारतीय मूल्यों का सम्मिश्रण के रूप में सकारात्मक प्रभाव के रूप में देखा जा सकता है वहीं दूसरी ओर युवाओं का विदेश की ओर पलायन परम्परागत भारतीय मूल्यों की अवहेलना इत्यादि को नकारात्मक प्रभाव के रूप में देखा जा सकता है।

मुख्य शब्दावली:— सांस्कृतिक विविधता, सांस्कृतिक समृद्धि, सतत प्रक्रिया, प्रौद्योगिकी, सहूलियत, अद्यतित आदान प्रदान, सजातीयकरण एवं ग्लोकलाइजेशन

मेघदूत में पर्यावरण-प्रेम

Dr. Seema Choudhary

Professor (Sanskrit)

Government College, Bundi (Rajasthan)

Mail id: seemachoudhary.mailme@gmail.com

कालिदास का मेघदूतम् प्रकृति प्रेम व सूक्ष्म पर्यावरणीय चिन्तन का सर्वोत्तम ग्रन्थ है। इसके प्रायः प्रत्येक पद्य में प्रकृति की आशा भरी आत्मा की वेदना का चित्रण है। संयत, गम्भीर और प्रशान्त व्याकुलता पद-पद पर दर्शनीय है। मेघदूतम् में कवि ने प्रकृति और मानव को एक नवीन एवं मौलिक रूप से परस्पर जोड़ दिया है। मानव जीवन तथा प्राकृतिक जीवन के संगन्धन को एक आवश्यकता और अद्वितीय आनन्द के रूप में प्रस्तुत कर कवि ने अपने सूक्ष्म पर्यावरण चिन्तन का परिचय दिया है।

मेघदूतम् में कालिदास ने अपने प्रकृति प्रेम तथा पर्यावरण चिन्तन को न केवल हृदयग्राही बनाया है अपितु सर्वात्मना रसाप्लावित कर उसमें निमग्न कर देने वाला भी बनाया है। प्रकृति एवं पर्यावरण के मूल तत्त्व पृथिवी, जल, वायु, अग्नि, आकाश ही नहीं वन, पशु-पक्षी, आश्रम, नदियाँ, पर्वत-पहाड़ का निपुण चित्रण व्यंजना शैली में करते हुए यह सन्देश दिया है कि - जनानां हितम् प्रकृतिसंरक्षणे निहितम्।

कालिदास को मेघ अत्यधिक प्रिय है। मेघ के बिना पर्यावरण की कल्पना नहीं की जा सकती है और पर्यावरण के बिना जीवन असंभव है। मेघ को ही काव्य का आधार बनाकर लिखा गया है - 'मेघदूतम्'। मेघ से प्राणिमात्र परिचित है। पशु-पक्षी से लेकर राज-राज कुबेर के अनुचर यक्ष तक उसका स्वागत और सम्मान करते हैं। स्थूल और सूक्ष्म, दृश्य और अदृश्य सभी पदार्थ मेघ के आगमन से प्रभावित होते हैं। महाकवि ने मेघ को साधु, सौम्य, सुभग और आयुष्मान् कहा है। उसका संचय त्याग के लिए है इसलिए वह 'परोपकारिन्' भी है। प्रजापालन में प्रजापति, नीलाम्बर से विष्णु तथा महेश की समता रखता है। मेघ की आयु सृष्टिकाल के समान सनातन है। प्रजा की सृष्टि, स्थिति और संहार तीनों में उसका भाग है। वह अमर ब्रह्मचारी है इसलिए पुरातन होते हुए भी नित्य युवा है। प्रतिवर्ष वह अपना काया कल्प स्वतः कर लेता है। जीवन-जल को धारण करने के कारण वह जीमूत है। जल का सर्वत्र वहन करने से वह अम्बुवाह या वारिवाह है। जल का अपने अन्दर मेहन करने से वह मेघ है। अपनी प्रियतमा सौदामिनी से सदा संयुक्त रहने से वह तडित्वान् है। वह अर्धनारीश्वर शिव के समान अपनी प्रियतमा विद्युत् को गोद में बिठाये देश-विदेश घूमता रहता है। यह विद्युत् ही वर्षा करती है। कवि कालिदास ने वायु के प्रहार को सहन करने के कारण मेघ को 'घन' कहा है। उसके अन्दर जलराशि भरी है, अतः वह 'स्तम्भितान्तर्जलौघः' भी है। जल की एक संज्ञा 'वृष' भी है। वृषहीन पुरुष को पुरुषार्थ के अयोग्य माना गया है। अनन्त वृषशक्तिमान् मेघ को ही सोपान बनाकर भगवान् शिव मणितट या

मणिपर्वत पर आरोहण करते हैं। जल-वृष की एक संज्ञा इन्द्र भी हैं। बलाकामिथुन गर्भाधान हेतु मेघ की सेवा करते हैं। इसलिए इन्द्र के प्रधान पुरुष की एक संज्ञा 'बलाहक' भी है। इन्द्र को कालिदास ने कुमारसंभवम् में भी वृषा की संज्ञा दी है तथा मेघ को वृषन्धि कहा है। 'यास्क' मेघ के पर्यायों में वराह का उल्लेख करते हैं। कालिदास ने भी मेघ को इस रूप में देखा है। उन्होंने मेघ को जीमूत, जलमुच् और प्रकृति-पुरुष तथा मघोनः भी कहा है।

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पर्यावरणीय स्थिरता के लिए एकीकृत दृष्टिकोण का विकास

Megha Gupta

Assistant Professor (Sanskrit)
Government College, Bundi (Raj.)
E-Mail - 16meggupta@gmail.com

"दुर्वहमत्र जीवितं जातं प्रकृतिरेव शरणम्।

शुचि-पर्यावरणम्॥"

प्रकृति हमारी शरणस्थली है। पर्यावरणीय स्थिरता वर्तमान और भविष्य में मानव कल्याण की कुंजी है। पर्यावरणीय स्थिरता से आशय है कि प्राकृतिक संसाधनों का प्रबन्धन इस रीति से किया जाए, जिससे वर्तमानकालीन आवश्यकताओं की पूर्णता के साथ भविष्य के लिए भी संसाधनों की उपलब्धता सुनिश्चित हो सके। पर्यावरणीय स्थिरता में ही सतत विकास अन्तर्निहित है। सतत विकास से प्राकृतिक संसाधनों की सुरक्षा होती है, पारिस्थितिक सन्तुलन निरन्तर रहता है तथा जलवायु परिवर्तन के दुष्प्रभाव को भी कम किया जा सकता है।

प्रस्तुत आलेख में पर्यावरणीय स्थिरता हेतु एकीकृत दृष्टिकोण विकसित करने के लिए पर्यावरणीय उद्देश्यों को सम्बोधित करने वाली नीति व नियोजन को प्रोत्साहित करना, योजनाओं के निर्माण में पर्यावरणीय घटकों को सम्मिलित करना तथा सामाजिक-आर्थिक विकास परियोजनाओं और प्राकृतिक संसाधनों के कुशल प्रबन्धन के मध्य सन्तुलन स्थापित करना आदि ध्यातव्य बिन्दु हैं। पर्यावरणीय स्थिरता प्राप्त करने के लिए नवीकरणीय संसाधनों पर निर्भर रहना, कार्बन उत्सर्जन को कम करके जलवायु परिवर्तन को नियंत्रित करना, जलापूर्ति को संरक्षित करना, अपशिष्ट प्रबन्धन तथा वृक्षारोपण जरूरी हैं। पर्यावरण प्रदूषण और जनसंख्या वृद्धि के कारण प्राकृतिक संसाधनों के असंतुलित दोहन के परिणामस्वरूप जलवायु परिवर्तन इस मार्ग

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में बहुत बड़ी चुनौतियां हैं। अतः प्राकृतिक संसाधनों का संतुलित व संयमित उपभोग पृथ्वी पर मानव प्रजाति के जीवन व सुसमृद्धि के लिए अनिवार्य है।

Key Words: -पर्यावरणीय स्थिरता, एकीकृत दृष्टिकोण, विकास

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कला द्वारा पर्यावरण संरक्षण

सोहन लाल बलाई

सह आचार्य— चित्रकला

राजकीय मूकूक बंिार महाविद्यालय,
जयपुर (राजस्थान)

ई-मेल [सइतंस/हउपसण्ववउ](mailto:saints/hupsonbav)

कला का इतिहास उतना ही पुराना है, जितना की मानव सभ्यता के विकास का इतिहास है। मनुष्य ने प्रकृति की गोद में रहकर अपने विकास की गाथा लिखी। कला और पर्यावरण का बहुत पुराना सम्बन्ध है। कला का अस्तित्व मानव उत्पत्ति के साथ ही हुआ है। मनुष्य ने अपने भावों के व्यक्त करने के लिए चित्र, मूर्ति, भाषा, संकेत आदि का प्रयोग करने लगा तभी से कला का विकास प्रारम्भ हुआ। मनुष्य प्रकृति की गोद में रहकर अनेक प्राकृतिक कला कृतियों का निर्माण करने लगा। चित्रों के माध्यम से अपने प्रकृति प्रेम को प्रदर्शित करने लगा और पर्यावरण संरक्षण के लिये जागरूक करना प्रारम्भ किया। आदिकाल से वर्तमान तक अनकों ग्रन्थों, शिलालेखों, शैलचित्रों, अजन्ता—एलोरा आदि की गुफाओं, ऐतिहासिक भवनों में अनेक चित्रकारों ने अथक परिश्रम से अतिसुन्दर प्राकृतिक कलाकृतियों का सृजन किया। इन कलाकृतियों के माध्यम से जनमानस को पर्यावरण संरक्षण के लिये जागरूक करने का सन्देश दिया है।

ज्ञमलवतके — प्राकृतिक, पर्यावरण, शैलचित्रों, कलाकृतियां ।

वैश्विक कला बाजार और भारतीय कला की चुनौतियां

डॉ. आशीष कुमार श्रृंगीए डॉ. सतीश शर्मा

सहायक आचार्य चित्रकला,

राजकीय महाविद्यालय बूंदी

सहायक आचार्य चित्रकला

शहीद जीतराम राजकीय महाविद्यालय नगर(भरतपुर)

ashiitwishaa@gmail.com

कला मानव जीवन का अभिन्न एवं अनिवार्य अंग है। इस तथ्य से इन्कार नहीं किया जा सकता कि कलाओं के माध्यम से हम तत्कालीन युग की अवस्था, सभ्यता और संस्कृति से परिचित होते हैं। आदिकाल से वर्तमान युग तक लोगों के विचार, विश्वास, महत्वाकांक्षाएं, रीति रिवाज आदि कलाओं के माध्यम से अभिव्यक्ति पाते रहे हैं। इसी कारण विविध कला रूप एवं शैलियां पल्लवित और पोषित होती रही है। वर्तमान में वैश्वीकरण एक व्यापक अवधारणा है, जिसमें पूंजीवाद व उद्योगवाद को सम्मिलित किया जा सकता है। वैश्वीकरण के इस दौर में कलाएं भी देश काल की सीमाओं को लांघकर नई बाजार तलाश रही है। कला में उपभोक्तावादी संस्कृति का वर्चस्व बढ़ रहा है। यह समय की आवश्यकता के साथ-साथ एक चुनौती भी है, क्योंकि कला बाजार के अनुरूप ही कला कर्म और विविध रचनात्मक प्रवृत्तियां अपनी-अपनी दशा व दिशाएं निर्धारित कर रही है।

वैश्वीकरण से जहां समाज भौतिकतावाद की ओर उन्मुख हुआ है वहीं सामाजिक व आर्थिक मूल्य भी तीव्रता से परिवर्तित हो रहे हैं। ऐसे परिवेश के परिप्रेक्ष्य में कलाकारों, कला समीक्षकों, कला प्रेमियों और सहृदय प्रेक्षकों को इस परिवर्तनशील सामाजिक, सांस्कृतिक व सौंदर्य शास्त्रीय मूल्यों तथा नवीन अन्वेषणों से साक्षात्कार करते रहना होगा। इनके लिए कला में नित नवीन प्रतिमानों की आवश्यकता से मुंह नहीं फेरा जा सकता। वही कलाएं पूंजीवादी लोगों का अधिकार बनती जा रही है, ऐसी परिस्थितियों ने समस्त ललित कलाओं में कई प्रकार की चुनौतियों को जन्म दिया है।

key word :- वैश्वीकरण, कला बाजार, सौंदर्य शास्त्रीय मूल्यों, ललित कलाओं, चुनौतियों

चौमूँ तहसील के कृषि प्रारूप पर नगरीकरण का प्रभाव:

Shaitan MalJat

Assistant professor- Geography

SCRS Govt. College

Sawai Madhopur (Raj)

Mail ID- shaitankulhari@gmail.com

चौमूँ तहसील राजस्थान के जयपुर ग्रामीण जिले का एक उपखंड मुख्यालय है। जो जयपुर शहर से दक्षिण पश्चिम दिशा में 30 किलोमीटर की दूरी पर जयपुर बीकानेर राष्ट्रीय राजमार्ग पर स्थित है। चौमूँ शहर जयपुर का उपग्रह नगर है। चौमूँ जयपुर को ताजा फल तीव्र में वर्तमान लेकिन है। रहा प्रसिद्ध हेतु आपूर्ति दुग्ध एवं सब्जी - देखने बदलाव में प्रारूप कृषि के तहसील चौमूँ कारण के नगरीकरण बढ़ते से गति बढ के शहर जयपुर तरफ एक पर क्षेत्र भूमि कृषि के यहां है। मिला कोते नगरीकरण एवं जयपुर के चारों ओर रिंग रोड परियोजनाओं के क्रियान्वयन से, तो दूसरी और चौमूँ के बढ़ते जनसंख्या आकर एवं नगरीकरण के कारण यहां की कृषि भूमि पर लगातार आवासीय कालोनियां एवं औद्योगिक क्षेत्र के विस्तार हो रहा है। साथ ही कृषि भूमि की कीमतों में तेजी से वृद्धि होने से यहां के भूमि उपयोग प्रतिरूप में कृषि भूमि का हिस्सा कम होने लगा है। तथा कृषि प्रारूप पर नगरीकरण का प्रभाव स्पष्ट परिलक्षित हो रहा है।

की वर्ड :कृषि भूमि, नगरीकरण, फल सब्जी एवं दुग्ध आपूर्ति, जनसंख्या आकर, आवासीय कालोनियां,भूमि उपयोग, उच्च कीमत, परिलक्षित

जलवायु परिवर्तन तथा पर्यावरणीय प्रभाव

प्रधान सिंह मीना

सहायक आचार्य (गणित विभाग)

राजकीय महाविद्यालय, गंगापुर सिटी

Gmail: LLPMEENA89@GMAIL.COM

हमारे प्राचीन धर्म ग्रंथों में प्रकृति को माँ के समान पूजनीय बताया है। आधुनिक युग में हम भौतिक सुख-सुविधाओं की पूर्ति के लिए इसी देव स्वरूपा प्रकृति को नुकसान पहुँचा रहे हैं। प्रकृति ही पर्यावरण है हम कितने स्वार्थी हो गये हैं कि अपने जीवित रहने के लिए तो प्रयत्न करते हैं परन्तु जो प्रकृति और पर्यावरण, हमें जीवनदान देता है, उसे जीवित रखने के लिए कोई प्रयत्न नहीं कर रहे हैं।

वैश्वीकरण की अवधारणा ने संपूर्ण विश्व को प्रभावित किया है। व्यक्ति, समाज, धर्म, संस्कृति, साहित्य, बाजार यहाँ तक कि प्रकृति और पर्यावरण पर भी इसका प्रभाव स्पष्ट परिलक्षित होता है। आज जिस प्रकार द्रुत गति से पर्यावरण प्रदूषित हो रहा है उससे संपूर्ण मानव जाति पर खतरा मंडरा रहा है। जलवायु परिवर्तन, पृथ्वी के तापमान में वृद्धि, अम्लीय वर्षा, बढ़ता जलसंकट, भूस्खलन, जंगलो और जीवों का लुप्त होना, कार्बनडाईऑक्साइड की मात्रा में वृद्धि, ओजोन परत का क्षरण, ग्रीन हाउस गैसें, बढ़ता प्लास्टिक प्रदूषण, प्राकृतिक संसाधनों में कमी, नवीकरणीय ऊर्जा स्रोतों में कमी, चक्रवात व तूफानों का आना, वर्षा में कमी, हिमनदों पर मंडराता खतरा आदि पर्यावरणीय खतरे वर्तमान पीढ़ी के सामने सुरसा की तरह मुँह खोले खड़े हैं।

आज हम पर्यावरण को बचाने के लिए राष्ट्रीय और अन्तर्राष्ट्रीय स्तर पर संधियाँ और समझौते कर रहे हैं। स्थानीय स्तर पर लोगों को जागरूक किया जा रहा है। यह इस पीढ़ी और आने वाली पीढ़ी के लिए अच्छे संकेत हैं।

अभी भी समय है कि समय रहते पर्यावरण को बचा ले तो आने वाली पीढ़ी की दुर्दशा नहीं होगी। हम इस पृथ्वी के पर्यावरण को नष्ट करके दूसरे ग्रहों पर जीवन की संभावना तलाश रहे हैं। वैश्वीकरण से हम भौतिक सुख-सुविधाएँ तो जुटा लेंगे परन्तु प्रकृति ने जो हमें अनमोल प्राकृतिक संसाधनों का खजाना दिया है उसे कहीं से जुटा पायेंगे।

मेवाती लोकगीतों में पर्यावरण-चेतना

रामजीत यादव

सहायक आचार्य, हिन्दी

शहीद जीतराम राजकीय महाविद्यालय, नगर, डीग (राजस्थान)

एवं शोधार्थी, हिन्दी विभाग, राजस्थान विश्वविद्यालय, जयपुर (राज.)

E-mail- ramjeetyadav311279@gmail.com

‘मेवात’ दिल्ली और जयपुर के मध्य में आबाद क्षेत्र विशेष है। ‘मेव’ जाति की बहुलता के कारण इस अंचल को मेवात कहा जाता है। ‘मेवात’ की बोली ‘मेवाती’ कहलाती है। इसी बोली में यहाँ के लोकसाहित्य का सृजन हुआ है। लोकगीत लोकसाहित्य की सर्वाधिक प्रचलित विधा है। मेवाती लोकगीतों में मेवात की लोकसंस्कृति का यथार्थ चित्रण हुआ है। मेवाती लोकगीतों में बिरहड़ा, मरसिया, हम्द व नात, सिंगलवाटी, रतवाई तथा मेवाती रसिया आदि ऐसे लोकगीत हैं जो अन्य क्षेत्रों में नहीं पाये जाते। ‘मेवात’ क्षेत्र का प्रमुख व्यवसाय कृषि एवं पशुपालन है। किसान स्वभाव से ही पर्यावरण प्रेमी होता है। कृषक पेड़-पौधों, पशु-पक्षियों, पहाड़, झील, नदी तथा तालाब आदि से जुड़ा होने के कारण उनसे अगाध स्नेह रखता है। मेवाती लोकगीतों में छायादार एवं फलदार पेड़-पौधों, लतायों, फल-फूलों, पशु-पक्षियों, पहाड़, नदी तथा तालाब आदि पर्यावरण के विभिन्न उपादानों का सजीव चित्रण हुआ है। मेवाती कृषक संस्कृति तथा पर्यावरण चेतना की सहज एवं स्वाभाविक अभिव्यक्ति मेवाती लोकगीतों में देखने को मिलती है। पक्षियों का कलरव मेवाती किसान का जागरण गीत हुआ करता था। गाय-भैंस, भेड़-बकरी, ऊँट आदि पशु तथा किसान अन्धोन्ध्याश्रित थे जो परस्पर एक दूसरे का पालन-पोषण करते थे। बैल, पाड़ा व ऊँट आदि के बिना कृषि कार्य असम्भव था इसलिए ये किसान के अभिन्न अंग थे। पशुओं के खाद से मिठी उपजाऊ एवं प्रदूषण मुक्त रहती थी। आज यंत्रीकरण, रसायनिक खादों एवं कीटनाशकों के प्रयोग से पर्यावरण प्रदूषित हो रहा है। किसान का सम्पूर्ण जीवन पेड़-पौधों के बीच गुजरता है। किसान के आँगन से लेकर खेत-खलियान आदि सभी जगह के हरे-भरे पेड़-पौधे लहराते रहते हैं। मेवाती लोकगीतों में बाग-बागानों का वर्णन है जिनमें किसान की पर्यावरण चेतना अभिव्यजित हुई है। सम्पूर्ण मेवात में फैली अरावली पर्वत माला जिसे स्थानीय भाषा में ‘काला-पहाड़’ कहा जाता है। यह ‘मेवात’ का मेरुदण्ड है जिसमें अनेक प्रकार के पेड़-पौधे एवं पशु-पक्षी निवास करते हैं इस पहाड़ से मेवाती बहुत प्रेम करते हैं। यही उनकी पर्यावरण चेतना का सबसे बड़ा प्रमाण है एक ‘बिरहड़ा’ लोकगीत में ‘काले-पहाड़’ का जिक्र हुआ है—

“इत दिल्ली उत आगरा, इत अलवर बैराट।

कालो पहाड सुहावणों, जाके बीच बसे मेवात।”

बीज शब्द — ‘मेवात’, ‘मेव’, ‘मेवाती’, लोकसाहित्य, लोकगीत, बिरहड़ा, मरसिया, रतवाई, हम्द व नात, सिंगलवाटी, काला पहाड़, पर्यावरण-चेतना।

सांस्कृतिक धरोहर का सौंदर्यआत्मक मूल्य सामाजिक परिदृश्य की कलात्मक यात्रा

ध्रुव

सहयक प्रोफेसर, (ड्राईंग) Govt. College, बीदासर

Email id- uniquelife0@gmail.com

सांस्कृतिक धरोहरें जैसे ताज महल कुतुब मीनार और अन्य ऐतिहासिक स्थल हमारे समाज की सुंदरता और गौरव का प्रतीक हैं। इन स्थलों का सौंदर्य केवल उनके स्थापत्य या कलात्मकता में नहीं है बल्कि हमारे इतिहास और परंपराओं की झलक में भी है। आज बढ़ते प्रदूषण और पर्यावरणीय असंतुलन से इनकी सुंदरता खतरे में है। उदाहरण के लिए ताज महल पर चढ़ता पीलापन तेजाबी वर्षा का परिणाम है जो संगमरमर की सफेदी को प्रभावित कर रहा है।

पर्यटन की अत्यधिक गतिविधियों से इन स्थलों पर दबाव बढ़ रहा है। पर्यटकों के कारण न केवल धरोहरों का संरचनात्मक क्षरण हो रहा है बल्कि आसपास का क्षेत्र कचरे और गंदगी से भर गया है। लोग स्वच्छता पर ध्यान नहीं देते और बिना सोचे समझे कचरा फेंक देते हैं जिससे इन स्थलों का आकर्षण और कलात्मकता घटती जा रही है। इन सांस्कृतिक धरोहरों को सहेजने के लिए हम सभी का कर्तव्य है कि हम पर्यावरण और स्वच्छता पर ध्यान दें ताकि आने वाली पीढ़ियां भी इनके सौंदर्य और आत्मिक मूल्य का अनुभव कर सकें। इन धरोहरों को संरक्षित रखने के लिए सरकार और स्थानीय समुदायों ने कुछ कदम उठाए हैं लेकिन यह भी हमारी व्यक्तिगत जिम्मेदारी है कि हम इन स्थलों की स्वच्छता और सुरक्षा में योगदान दें। जब हम इन स्थानों पर जाते हैं तो हमें यह याद रखना चाहिए कि वे हमारे पूर्वजों की अमूल्य धरोहर हैं जिनमें हमारी संस्कृति और विरासत की झलक मिलती है।

प्रत्येक व्यक्ति का दायित्व है कि वह इन स्थलों की स्वच्छता बनाए रखे और अपने आसपास के लोगों को भी इसके लिए प्रोत्साहित करे। हमारे ये छोटे-छोटे प्रयास इन अनमोल धरोहरों को सुरक्षित और संरक्षित रखने में बहुत बड़ा योगदान दे सकते हैं जिससे ये धरोहरें सदियों तक हमारी सांस्कृतिक पहचान की गवाही देती रहेंगी।

Keywords- सांस्कृतिक धरोहरें पर्यटन पर्यावरण

भवभूति प्रणीत उत्तररामचरित में पर्यावरणीय संचेतनता

डॉ. वर्षा खण्डेलवाल

सहायक आचार्य – संस्कृत

बाबू शोभाराम राज. कला

महाविद्यालय, अलवर

E-mail- varsha.khandelwal32@gmail.com

संस्कृत साहित्य के अग्रगण्य नाटककार महाकवि भवभूति ने अपने नाटक उत्तररामचरित में पर्यावरण के प्रति अपनी गहन संवेदनशीलता प्रकट की है। भवभूति ने प्राकृतिक तत्वों के माध्यम से नाटक को सुशोभित किया है। महाकवि ने प्रकृति का वर्णन बहुत ही गम्भीरता और गुरुता से किया है। उन्होंने पर्यावरण संरक्षण से संबंधित तथ्य भी स्पष्ट किये हैं। जैसे उन्होंने नदियों के बारे में बताया है कि वे वानीरलताओं से युक्त है और वे वानीरपुष्पों से सुवासित है। वे शीतल और स्वच्छ जल वाली है और श्यामफल जम्बूफलों के गिरने से ध्वनित है। महाकवि भवभूति ने प्राकृतिक तत्वों के माध्यम से पर्यावरण संचेतना के विभिन्न उदाहरण प्रस्तुत किए हैं। उन्होंने भूमि, पर्वत, पक्षी, ऋतु, वन, तपोवन, नदी आदि के विषय में अपने विचार बहुत ही गम्भीरता से वर्णित किये हैं। इनमें उन्होंने पर्यावरण संवेदनशीलता के प्रति अपना गहन प्रेम प्रदर्शित किया है।

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हिंदी उपन्यासों में पर्यावरण विमर्श-

डॉ प्रणु शुक्ला ,सहायक आचार्य हिंदी

राजकीय महाविद्यालय टोंक,(राजस्थान)।

चलदूरभाष-7597784917

[अणुडाक-pranu.rc55@gmail.com](mailto:pranu.rc55@gmail.com)

हिन्दी साहित्य में पर्यावरण विमर्श पर लिखे गए लेखों और रचनाओं से पता चलता है कि पर्यावरण और मानव जीवन एक-दूसरे से जुड़े हैं। मानव का अस्तित्व पर्यावरण पर ही निर्भर है। पर्यावरण के प्रति संवेदनशीलता बढ़ाने और पर्यावरण संरक्षण के लिए साहित्यकारों ने कई रचनाएं की हैं। इन रचनाओं में प्रकृति के सौंदर्य का वर्णन, पर्यावरण प्रदूषण, ग्लोबललाइजेशन जैसी समस्याओं पर चिंतन, और इन समस्याओं के समाधान के लिए सुझाव दिए गए हैं।

पर्यावरण चिंतन को केन्द्र में रखे हुये कुछ प्रमुख उपन्यास निम्नलिखित है - नीलकण्ठ हुआ मरंग घोडा" (महुआमाजी), रह गई दिशाँए इसी पार (संजीव), हिडिम्बा (एस

आर हरनोट), कुइयाँजान (नासिरा शर्मा) इस उपन्यासों में पर्यावरण चिंतन सम्बंधी आधुनिक प्रश्नों को प्रमुखता से उठाया। इस शोधपत्र में हिंदी साहित्य के पर्यावरणवादी सरोकारों का विश्लेषण किया गया है। जिसके आधार पर हम साहित्य एवं पर्यावरण के अंतर संबंध को विश्लेषित कर सकते हैं।

पर्यावरण पारिस्थितिकी एवं सतत पर्यटन विकास

प्रो. डॉ गजेन्द्र सिंह,
आचार्य भूगोल,
राजकीय महाविद्यालय टोंक।

सामान्यतः पर्यटन एक प्रदूषण विहीन उद्योग माना जाता है। परंतु समय के साथ यह उद्योग भी प्रदूषण विहीन ना होकर प्रदूषण का एक मुख्य कारक बनता जा रहा है। जहां बढ़ते पर्यटन विकास के परिणाम सड़कें, रेल लाइन होटल वेस्ट हाउस एवं अन्य आधारभूत आवश्यक संसाधनों के विकास में परिणाम स्वरूप भौतिक एवं सामाजिक सांस्कृतिक संसाधनों पर दबाव बढ़ता जा रहा है जिसका परिणाम उन क्षेत्रों में भौतिक एवं सांस्कृतिक प्रदूषण बढ़ता जा रहा है जिसका परिणाम लैंडस्लाइड, बाढ़, जल एवं वायु प्रदूषण, ट्रैफिक जाम, गार्बेज, कूड़ा करकट का डिस्पोजल इत्यादि वन्य जीव संपदा पर पढ़ रहा है, को प्रमाणित कर रहा है जो कालांतर में जाकर पर्यटन उद्योग को भी नकारात्मक रूप से प्रभावित करते हैं। आवश्यकता है कि पर्यटन का विकास एन्वायरमेंट फ्रेंडली हो ताकि पर्यटन का विकास इस तरह से किया जावे जो पर्यावरण एवं परिस्थिति के अनुकूल हो, जिसको पर्यावरण एवं स्थिति पर कोई नकारात्मक प्रभाव न पड़े। मात्रात्मक पर्यटन पर केंद्रित पर्यटनविकास गुणात्मक पर्यटन विकास हो, जो पर्यटन उद्योग एवं पर्यावरण दोनों के हित में हो और परिणाम स्वरूप पर्यटन का सतत विकास में सहायक होगा।

प्राचीन भारत में पर्यावरण संरक्षण के लिए कानून, नीति और शासन

मिथलेश सोलंकी

सहायक आचार्य इतिहास

राजकीय कला कन्या महाविद्यालय कोटा

mithleshsolanki.angel3@gmail.com

भारत में पर्यावरण संरक्षण ऐतिहासिक काल से ही मुख्य चेतना का विषय रहा है। हिंदू धर्म के वेद, पुराण, उपनिषद और अन्य प्राचीन ग्रंथों में पेड़-पौधों, वन्यजीवों और लोगों के लिए उनके महत्व का विस्तृत वर्णन किया गया है। याज्ञवल्क्य स्मृति ने पेड़ों को काटने पर रोक लगाते हुए ऐसे कृत्यों के लिए दंड का प्रावधान किया है। मौर्य काल में लिखे गए कौटिल्य के अर्थशास्त्र में वन प्रशासन की आवश्यकता को महसूस किया गया और अशोक के पंचम स्तंभ शिलालेख में राज्य में प्राणियों के कल्याण के बारे में उनके विचार व्यक्त किए गए। मोहनजोदड़ो और हड़प्पा की सभ्यताओं के साक्ष्यों ने यह भी साबित कर दिया है कि छोटी आबादी पारिस्थितिकी तंत्र के अनुरूप रहती थी और उनकी ज़रूरतें पर्यावरण के साथ सामंजस्य बनाए रखती थीं। इस प्रकार, हिंदू समाज वनों की कटाई और पशु प्रजातियों के विलुप्त होने से होने वाले प्रतिकूल पर्यावरणीय प्रभावों के प्रति सचेत था। पर्यावरण मानव जीवन के साथ-साथ समाज के विकास में भी महत्वपूर्ण भूमिका निभाता है। बढ़ती तकनीकी उन्नति और औद्योगीकरण के साथ, पर्यावरण की शुद्धता भयावह सीमा तक खतरे में पड़ गई है। पर्यावरण की रक्षा और सुधार की आवश्यकता मानव जाति और ग्रह पृथ्वी पर अन्य जीवन रूपों के शांतिपूर्ण अस्तित्व के लिए इतनी अनिवार्य है कि पर्यावरण का अधिकार मानव अधिकार के रूप में उभरा है। यह शोधपत्र भारतीय पर्यावरण न्यायशास्त्र के विविध तत्वों से शुरू होता है। पर्यावरण संबंधी समस्याओं से निपटने में अंतर्राष्ट्रीय प्रयासों पर भी प्रकाश डाला गया है। अंततः, लेखक पर्यावरण कानून के भारतीय अनुभव और स्वच्छ और स्वस्थ पर्यावरण में रहने के मानव अधिकार के परिणामी उपकरण पर प्रकाश डालता है।

की वडस - पर्यावरण, पारिस्थितिकी तंत्र, कल्याण, न्यायशास्त्र, शासन

मानवता, प्रकृति और उर्दू साहित्य में पर्यावरणीय चेतना"

Dr. Shahnaz

Assistant professor, Urdu

Govt. College, Bundi

यह आलेख मानवता, प्रकृति और उर्दू साहित्य में पर्यावरणीय चेतना के आपसी रिश्तों का विश्लेषण करता है। उर्दू साहित्य ने हमेशा से मानवता और प्रकृति के बीच गहरे संबंधों को समझाया है, और इसमें प्राकृतिक सौंदर्य के साथ-साथ पर्यावरणीय संकटों को भी प्रमुखता से चित्रित किया गया है। उर्दू शायरी, गद्य और काव्य में प्रकृति के प्रति संवेदनशीलता और मानवता के साथ उसके संबंधों की गहरी समझ पाई जाती है।

उर्दू साहित्य में शायरों और लेखकों ने प्राकृतिक सौंदर्य का महत्व बताया, साथ ही पर्यावरणीय संकटों की गंभीरता को भी उजागर किया। मीरजा ग़ालिब, अल्लामा इक़बाल, और फैज़ अहमद फैज़ जैसे साहित्यकारों ने अपने कार्यों में प्रकृति को न केवल एक कवि की प्रेरणा, बल्कि मानवता के अस्तित्व से जुड़ा हुआ तत्व बताया। उदाहरण स्वरूप, इक़बाल ने अपनी कविताओं में मानवता के उत्थान और प्रकृति के संरक्षण के बीच सामंजस्य की बात की है। यहां कुछ शेर दिए जा रहे हैं जो प्रकृति, मानवता और पर्यावरणीय चेतना के संदर्भ में शायरी की भावना को व्यक्त करते हैं:

1. **ग़ालिब-** "हज़ारों ख्वाहिशें ऐसी कि हर ख्वाहिश पे दम निकले, बहुत निकले मेरे अरमां लेकिन फिर भी कम निकले।" इस शेर में ग़ालिब ने जीवन की लालसा और प्रकृति से संबंध की गहराई को व्यक्त किया है। यह शेर मानवता की इच्छाओं और उनके परिणामों पर विचार करता है, जो प्रकृति और जीवन के सामंजस्य से जुड़ा होता है।
2. **इक़बाल-** "तू शेर है, तेरे दांतों में नशीला जहर है, अगर तू समंदर में डूबे तो तुझे धरती का करम मिलेगा।" इक़बाल की शायरी में वह प्रकृति से संबंधित एक आदर्श परिकल्पना पेश करते हैं, जिसमें समंदर, पृथ्वी और मानव का रिश्ता चित्रित किया गया है। इस शेर में पर्यावरण की सुदृढ़ता और प्रकृति के साथ मानव के सामंजस्य का संदेश है।
3. **फैज़ अहमद फैज़-** "हम देखेंगे, लाजिम है कि हम भी देखेंगे, वो दिन कि जो ताजो, तख्तो, मक्सरो से हटाए जाएंगे।" फैज़ का यह शेर सामाजिक और पर्यावरणीय बदलाव की ओर इशारा करता है, जिसमें यह संदेश

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है कि आने वाला समय मानवता और प्रकृति के बीच संतुलन लाएगा, और अन्याय और असंतुलन समाप्त होगा। मीर तकी मीर "बाजू ऐ हुन्न तुझे क्या बताऊँ, अब तकदीर भी हमारी है, एक ख्वाब ही तो है वो जो खुशबू से महक रहा है। मीर तकी मीर का यह शेर प्रकृति के सुंदर पहलुओं और उसकी खुशबू की ओर इशारा करता है, जो हमें जीवन की असलियत और हकीकत से जोड़े रखता है। यह शेर यह दर्शाता है कि प्रकृति और पर्यावरण का संरक्षण मनुष्य के लिए एक अद्वितीय आवश्यकता है। इन शेरों के माध्यम से उर्दू शायरी ने पर्यावरणीय चेतना, प्रकृति की सुंदरता और मानवता के बीच सामंजस्य स्थापित करने का संदेश दिया है। यह आलेख यह भी दर्शाता है कि उर्दू साहित्य ने समय-समय पर पर्यावरणीय संकटों के प्रति जागरूकता फैलाने का कार्य किया है, और साहित्य के माध्यम से समाज में इस मुद्दे पर विचार-विमर्श को बढ़ावा दिया है। साहित्यकारों ने मनुष्य के प्राकृतिक संसाधनों के प्रति अनदेखी और उनके अत्यधिक शोषण पर चिंता व्यक्त की है। अंततः, उर्दू साहित्य में पर्यावरणीय चेतना न केवल सांस्कृतिक धरोहर का हिस्सा है, बल्कि यह आज के समय में हमें प्राकृतिक संसाधनों के संरक्षण और पर्यावरणीय संतुलन की ओर प्रेरित करता है।

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सतत विकास और अक्षय उर्जा

लेखक शीशराम

सहायक आचार्य भूगोल
स्वामीविवेकानन्द राजकीय महाविद्यालय
खेतड़ी नीमकाथाना

mail ID pooniasr81@gmail.com

सतत विकास मानव की मूलभूत आवश्यकताओं को पूरा करने के साथ-साथ उसके बेहतर जीवन स्तर की आकांक्षा को भी साकार करने की अवधारणा है। विश्व की सम्पूर्ण जनसंख्या को बेहतर जीवन स्तर तभी प्रदान किया जा सकता है जब संसाधनों का उपयोग स्तर सभी जगह भविष्य को ध्यान में रख कर किया जाए :-

सतत विकास की आवश्यकता :-

सबके लिए समान, न्याय संगत, सुरक्षित, शांतिपूर्ण, समृद्ध विकास और पर्यावरण संरक्षण को व्यापक यप से समाविष्ट करने के लिए सतत विकास की आवश्यकता 1983 में संयुक्त राष्ट्र संघ महासभा द्वारा स्थापित ब्रंटलैण्ड आयोग के दिमाग की उपज थी। वर्ष 2015 में सतत विकास एजेण्डा 2030 के भाग के रूप में भारत सहित संयुक्त राष्ट्र के सभी सदस्य देशों द्वारा 17 गोल्स को अपनाया गया और इन गोल्स की प्राप्ति हेतु 169 टारगेट्स वाली 15 वर्षीय योजना 01 जनवरी 2016 से लागू की गई।

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एंजेण्डा 2030 के गोल्स 07 में किफायती एवं स्वच्छ ऊर्जा को शामिल किया गया है सामाजिक, आर्थिक विकास के लिए ऊर्जा सुरक्षा एक पूर्ण आवश्यकता है। ऊर्जा की उपलब्धता लोगों की आय एवं उत्पादकता बढ़ाने स्वास्थ्य देखभाल जल व शिक्षा तक पहुंच बढ़ाने तथा उनकी समग्र खुशहाली में सुधार रिन में सक्षम बनाती है। सतत विकास गोल 07 का उद्देश्य वर्ष 2030 तक किफायती, विश्वसनीय एवं कुशलतापूर्ण ऊर्जा सेवाओं की सार्वभौतिक उपलब्धता सुनिश्चित करना है। इन प्रयासों में कुशल एवं स्वच्छ ऊर्जा प्रदान करने हेतु बुनियादी ढांचे का विस्तार तथा प्रौद्योगिकी का उन्नयन करना महत्वपूर्ण है। सतत विकास के लिए अक्षय ऊर्जा अत्यन्त महत्वपूर्ण है। ऊर्जा के परम्परागत स्रोतों से पर्यावरण को अत्यधिक हानी पहुंचती है। पर्यावरण संरक्षण के लिए अक्षय ऊर्जा अत्यन्त महत्वपूर्ण है।

की वर्ड :- सतत विकास, अक्षय ऊर्जा

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वैश्वीकरण, आर्थिक विकास और बाज़ार अवसर

प्रो. (डॉ.) जयराम बैरवा

आचार्य समाजशास्त्र

बाबू शोभाराम राजकीय कला महाविद्यालय अलवर

डंपस प्क: [कतर्णपतंतुडंपत्/हउंपसणबवउ](#)

वैश्वीकरण एक शब्द है जिसका उपयोग यह वर्णन करने के लिए किया जाता है कि कैसे दुनिया भर के देश, लोग और व्यवसाय अधिक परस्पर जुड़े हुए हैं, क्योंकि प्रौद्योगिकी, परिवहन, मीडिया और वैश्विक वित्त जैसी ताकतें वस्तुओं, सेवाओं, विचारों और लोगों के लिए पारंपरिक सीमाओं और सीमाओं को पार करना आसान बनाती हैं। वैश्वीकरण लाभ और चुनौतियाँ दोनों प्रदान करता है। यह कई लोगों के जीवन की गुणवत्ता में सुधार के लिए आर्थिक विकास का जबरदस्त अवसर प्रदान कर सकता है। यह श्रमिकों, अर्थव्यवस्थाओं और पर्यावरण के कल्याण के साथ चुनौतियों का भी कारण बन सकता है क्योंकि व्यवसाय वैश्वीकरण कर रहे हैं और अन्य विश्व क्षेत्रों में व्यवसाय करने की कम लागत का लाभ उठाने के लिए देशों के बीच अपने संचालन को स्थानांतरित कर रहे हैं। आज एक गांव पूरा विष्व है और विष्व एक गांव है कहने का तात्पर्य यह है कि आज हम जब सुबह खड़े होते हैं तो सम्पूर्ण विष्व के दर्शन करते हैं चाहे वो किसी भी रूप में क्यों ना हो। इस प्रकार व्यवसाय, संस्कृति, वस्तुओं एवं अर्थव्यवस्था में वैश्वीकरण नजर आता है।

वैश्वीकरण कई देशों के लिए आर्थिक विकास का अनुभव करने के अवसर पैदा करता है। आर्थिक वृद्धि किसी अर्थव्यवस्था द्वारा समय के साथ उत्पादित वस्तुओं और सेवाओं की मात्रा में वृद्धि है। इसे पारंपरिक रूप से सकल घरेलू उत्पाद (जीडीपी) या सकल राष्ट्रीय उत्पाद (जीएनपी) में प्रतिशत परिवर्तन के रूप में मापा जाता है। ये दो उपाय, जिनकी गणना थोड़े अलग तरीके से की जाती है, किसी देश द्वारा उत्पादित वस्तुओं और सेवाओं के लिए भुगतान की गई कुल राशि है। आर्थिक विकास को मापने के एक उदाहरण के रूप में, एक देश जो 2010 में वस्तुओं और सेवाओं में 9,000,000 डॉलर बनाता है और फिर 2011 में 9,090,000 डॉलर बनाता है, 2011 के लिए उसकी नाममात्र आर्थिक विकास दर 1 प्रतिशत है। देशों की आर्थिक वृद्धि को वर्गीकृत करने का एक तरीका उन्हें तीन समूहों में विभाजित करना है: (ए) औद्योगिकीकृत, (बी) विकासशील, और (सी) कम विकसित राष्ट्र। औद्योगिकीकृत देशों की अर्थव्यवस्थाएं निजी उद्यम (व्यवसाय) के लिए स्वस्थ माहौल और उपभोक्ता अभिव्यक्तियों की विशेषता रखती हैं, जिसका अर्थ है कि व्यापार माहौल उपभोक्ताओं की दीर्घकालिक इच्छाओं और जरूरतों को पूरा करने पर केंद्रित है। इन देशों में उच्च साक्षरता दर, आधुनिक प्रौद्योगिकी और उच्च प्रति व्यक्ति आय है। ऐतिहासिक रूप से, औद्योगिकीकृत देशों में संयुक्त राज्य अमेरिका, कनाडा, जापान, दक्षिण कोरिया, ऑस्ट्रेलिया, न्यूजीलैंड और अधिकांश पश्चिमी

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यूरोपीय देश शामिल हैं। नव औद्योगिक देशों में रूस और अधिकांश पूर्वी यूरोपीय देश, तुर्की, दक्षिण अफ्रीका, चीन, भारत और ब्राज़ील शामिल हैं।

कम विकसित देशों, जिन्हें अल्प विकसित देशों के रूप में भी जाना जाता है, में व्यापक गरीबी, कम प्रति व्यक्ति आय और जीवन स्तर, कम साक्षरता दर और बहुत सीमित तकनीक है। अक्सर इन देशों में स्वस्थ व्यापारिक समुदाय का समर्थन करने के लिए मजबूत सरकार, वित्तीय और आर्थिक प्रणालियों का अभाव होता है। उनकी अर्थव्यवस्थाएँ कृषि और कच्चे माल के उत्पादन (जैसे खनन और लकड़ी उद्योग) पर केंद्रित होती हैं। दुनिया में कई कम विकसित देश हैं, जिनमें से अधिकांश अफ्रीका और एशिया में स्थित हैं। विकासशील राष्ट्र वे हैं।

जो कृषि और कच्चे माल के उत्पादन पर आधारित अर्थव्यवस्थाओं से औद्योगिकीकृत अर्थव्यवस्थाओं में परिवर्तन कर रहे हैं। वे शिक्षा, प्रौद्योगिकी और प्रति व्यक्ति आय के बढ़ते स्तर को प्रदर्शित करते हैं। इन देशों की सरकारों ने व्यापार और आर्थिक निवेश को आकर्षित करने के लिए व्यापार के माहौल में सुधार लाने के लिए आम तौर पर मजबूत प्रगति की है। विकासशील देशों की सूची बढ़ती जा रही है, जिनमें लैटिन अमेरिका और एशिया के कई देश शामिल हैं। आमतौर पर, सबसे महत्वपूर्ण विपणन अवसर औद्योगिक देशों के बीच मौजूद होते हैं, क्योंकि उनके पास आय का उच्च स्तर होता है, जो बाजारों के निर्माण के लिए आवश्यक सामग्रियों में से एक है। हालाँकि, इन देशों में कई उत्पादों के लिए बाजार संतृप्ति पहले से ही मौजूद है।

दूसरी ओर, विकासशील देशों में जनसंख्या का आधार बढ़ रहा है, और हालांकि अधिकांश अन्य देशों से सीमित संख्या में वस्तुओं और सेवाओं का आयात करते हैं, इन देशों में दीर्घकालिक विकास की संभावनाएं मौजूद हैं। अक्सर, विकासशील देशों में विपणन को शिक्षक होना चाहिए, जो अपरिचित, नए उत्पादों और सेवाओं और उनके द्वारा प्रदान किए जाने वाले लाभों के बारे में आबादी को शिक्षित करने के लिए विपणन तकनीकों का उपयोग करते हैं। जैसे-जैसे आर्थिक विकास की डिग्री बढ़ती है, वैसे-वैसे किसी देश पर केंद्रित विपणन प्रयास का परिष्कार भी बढ़ता है।

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‘जयशंकर प्रसाद के साहित्य में प्रकृति प्रेम’

Anju Sharma

Assistant professor (Hindi)

SCRS Government PG College Sawai Madhopur

साहित्य समाज का ही प्रतिबिंब है। समाज जैसा है और जैसा होना चाहिए यह साहित्य हमें बताता है। एक अच्छे समाज के लिए मानव के साथ-साथ स्वच्छ व स्वस्थ पर्यावरण का होना भी अति आवश्यक है इसीलिए साहित्य में पर्यावरण के प्रति जागरूकता रही है। हिंदी साहित्य में कवि जयशंकर प्रसाद ने मानव जीवन के कल्याण सुख और आनंद के लिए पर्यावरण को अत्यधिक महत्व दिया और उसे सर्वोपरि माना। कवि जयशंकर प्रसाद ने प्रकृति और मानव के बीच मधुर संबंध

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स्थापित करने की चेष्टा की । कवि कहता है- 'ले चल मुझे भुलावा देखकर मेरे नाविक धीरे-धीरे ।'

यह कहकर वे प्रकृति के नजदीक ही जाना चाहते हैं।

उनकी कामायनी रचना तो संदेश ही यह देती है कि अगर पर्यावरण का संरक्षण न किया गया तो जो प्रकृति जीवन देती है वह मृत्यु का द्वारा बन जाएगी। कामायनी में आधुनिकता का विरोध करते हुए चरखे की बात करते हैं। वे कहते हैं कि- 'चल रही तकली धीरे धीरे' उनके आंसू, झरना, लहर, कानून कुसुम आदि रचनाओं में प्रकृति प्रेम को सर्वोपरि मानते हैं ।

कुंजी शब्द – चेष्टा, प्रतिबिंब

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मनरेगा, सामाजिक लेखापरीक्षा और ग्रामीण विकास : कोटा जिले की कुछ चयनित ग्राम पंचायतों का अध्ययन

Meena Kumari Meena

Assistant Professor in ABST and Researcher, Govt.college ramganjmandi

Email id – kcc1545@gmail.com

इस शोध पत्र का उद्देश्य राजस्थान के कोटा जिले में मनरेगा योजना में सामाजिक अंकेक्षण के अंतर्गत व्यक्तिगत कारकों, कार्यात्मक और वित्तीय कारकों के प्रभाव का अध्ययन करना है। सामाजिक अंकेक्षण सरकारी योजनाओं के क्रियान्वयन और निगरानी में सामुदायिक भागीदारी लाने का एक साधन है। मनरेगा कार्यक्रम में पारदर्शिता, जवाबदेही और जनभागीदारी सुनिश्चित करने के लिए इसे वर्ष में दो बार आयोजित किया जाता है। ग्राम पंचायत को सामाजिक अंकेक्षण करने का अधिकार दिया गया है। सामाजिक अंकेक्षण से वंचित समूहों को लाभ मिलता है और मनरेगा के तहत किए जाने वाले कार्यों में पारदर्शिता और जवाबदेही सुनिश्चित होती है।

कीवर्ड:- मनरेगा, सामाजिक अंकेक्षण, जॉब कार्ड, ग्राम पंचायत (जीपी), पारदर्शिता

पारिस्थितिक स्त्रीवाद (इको-फेमिनिज़्म)

डॉ. मीनाक्षी चौधरी

सह आचार्य (हिन्दी)

रा. डूंगर महाविद्यालय, बीकानेर।

पारिस्थितिकी और स्त्रीवाद के संयोग से ही पारिस्थितिक स्त्रीवाद का जन्म हुआ। यह एक ऐसी विचारधारा है जिसमें जीवनदायिनी स्त्री और प्रकृति को प्रतिष्ठित किया गया है। पारिस्थितिक स्त्रीवाद एक सामाजिक और राजनीतिक आंदोलन है, जो महिलाओं के दमन एवं शोषण तथा पर्यावरण क्षरण के मध्य एक गहरा संबंध स्वीकार करता है। पारिस्थितिक नारीवादी चिन्तकों का मत है कि परिवार तथा समाज में स्त्रियों के शोषण, दमन तथा उनकी दोगम दर्जे की स्थिति को स्वीकार करने की मानसिकता एवं प्रकृति का अंधाधुंध दोहन और विनाश करने की मानसिकता एवं पितृसत्तात्मक मनोवृत्ति के मध्य गहन संबंध है। पारिस्थितिक स्त्रीवाद लैंगिक विभेद, पर्यावरण प्रदूषण, नस्लभेद, वर्गभेद, प्रजातिभेद एवं अन्य सामाजिक विषमताओं में गहन अन्तर्संबंध स्वीकार करता है तथा 'इको फेमिनिज़्म का मकसद समाज में पुराने समय से चले आ रहे अधिकार और उसकी संरचना को शिथिल करना है। स्त्री-पुरुष भेद के बिना मनुष्य को मनुष्य के रूप में देखने, समझने और मानने वाले एक संसार के सृजन में इको फेमिनिज़्म काम करता आ रहा है।'¹

पर्यावरण के सभी अवयवों के अस्तित्व के लिए पृथ्वी और स्त्री को समान रूप से आदर सहित पोषित करना चाहिए। लेकिन इसके विपरीत पितृसत्तात्मक समाज जीवनदायिनी पृथ्वी (प्रकृति) और स्त्री का सदियों से शोषण करता रहा है। पुरुष-प्रधान समाज प्रकृति और स्त्री को उपभोग की दृष्टि से देखता है। पुरुष के इसी दृष्टिकोण ने पृथ्वी और मानवी को विनाश के कगार पर लाकर खड़ा कर दिया है। 'स्त्रियों ने इस भयानक एवं संकटपूर्ण अवस्था के कारण समझ लिए। इसलिए उसने अपने आपको, पृथ्वी को, पृथ्वी की अन्य शोषित जातियों, नस्लों, जीव-जन्तुओं तथा गरीबों को पितृसत्तात्मक पूँजीवादी अधिकारी वर्गों से तथा उनकी गलत व्यवस्था से बचाने का दायित्व अपने ऊपर ले लिया। पृथ्वी और स्त्री को तथा अन्य उपेक्षित वर्गों को पितृसत्तात्मक पूँजीवादी शोषण से बचाने के लिए प्रकृति के साथ मिलकर जीने की जो नवीन विचारधारा फेमिनिज़्म और पारिस्थितिकवाद दोनों के संयोग से रूपायित हुई है उसे इको-फेमिनिज़्म कहा जाता है।'²

पारिस्थितिक स्त्रीवाद या इको-फेमिनिज़्म की व्याख्या सर्वप्रथम फ्रान्स्वा द यूबोन ने 1974 में प्रकाशित 'द फेमिनिज़्म ओय ला मार्त' (द टाइम फॉर इको फेमिनिज़्म) नामक पुस्तक में की। यूबोन के अनुसार वर्तमान युग में पारिस्थितिक संकट के मुख्य कारण पुरुष केन्द्रित व्यवस्था है। उनके आक्रमणों से लड़कर मनुष्य की भलाई के लिए भूमि को बचाना ही पारिस्थितिक स्त्रीवाद का मूल उद्देश्य है। 'इको-फेमिनिज़्म अन्य पारिस्थितिकी प्रतिरोधी संगठनों से मिलकर एक नयी मानवीयता का विकास करना चाहता है।'³ इसके बाद सन् 1962 में रेचल कर्सन ने प्रथम व द्वितीय विश्वयुद्ध के दौरान हुई प्रकृति की दुर्दशा और त्रासदी का वर्णन अपनी पुस्तक 'साइलेंट स्प्रिंग' में किया। इस पुस्तक की व्यापक चर्चा हुई और सत्तर के दशक में इको फेमिनिज़्म की अवधारणा का उदय हुआ। 1970 में पारिस्थितिक स्त्रीवाद को पाठ्यक्रम में स्थान मिलना आरम्भ हो गया। मेडम नेस्त्रा किंग, मेरी डॉली और सूसन ग्रिफ प्रमुख पारिस्थितिक स्त्रीवादी चिंतक रहीं, जिन्होंने अपनी रचनाओं के माध्यम से इस अवधारणा पर पर्याप्त प्रकाश डाला, जिससे यह अवधारणा व्यापक चिंतन के साथ शैक्षिक क्षेत्र में स्थापित हो सकी। प्रसिद्ध पारिस्थितिक स्त्रीवादी चिंतक करोलिन मेरचेन्ट द्वारा लिखित पुस्तक 'द डेथ ऑफ 'नेचर' का प्रकाशन 1980 में हुआ, जिसमें उन्होंने स्त्री और प्रकृति के बीच घनिष्ठ संबंध का उल्लेख किया। उन्होंने माना कि एक स्त्री की हत्या प्रकृति की हत्या है।

पर्यावरणीय वकालत में काव्य और साहित्य का योगदान

कमलेश कुमार जोशी

सहायक आचार्य (हिंदी), एस बी डी राजकीय महाविद्यालय, सरदारशहर

Mail- joshikamlesh675@gmail.com

पर्यावरणीय संकट आज एक वैश्विक चुनौती बन चुका है, और इसके समाधान हेतु विभिन्न दृष्टिकोणों की आवश्यकता है। साहित्य और काव्य, जो मानवीय संवेदनाओं और सामाजिक मुद्दों को प्रभावी रूप से प्रस्तुत करते हैं, पर्यावरणीय वकालत में महत्वपूर्ण भूमिका निभाते हैं। काव्य और साहित्य, न केवल समाज की समस्याओं को उजागर करते हैं, बल्कि ये मानवता और प्रकृति के बीच संतुलन स्थापित करने के लिए प्रेरित करते हैं। साहित्यकार और कवि पर्यावरणीय संकट के बारे में अपनी रचनाओं के माध्यम से जागरूकता फैलाते हैं, जिससे समाज में एक संवेदनशीलता और जागरूकता का विकास होता है।

काव्य रचनाएँ जैसे कवि सुमित्रानंदन पंत की षडैताष या रविंद्रनाथ ठाकुर की खंशीष जैसी रचनाएँ, प्रकृति और मानव जीवन के बीच गहरे रिश्ते को रेखांकित करती हैं। साहित्यिक दृष्टिकोण से यह रचनाएँ पर्यावरणीय संकट के कारणों और प्रभावों को समझाने के साथ-साथ समाधान के रास्ते भी प्रस्तुत करती हैं। इसके अलावा, पर्यावरणीय साहित्य में प्रकृति के संरक्षण की आवश्यकता और भविष्य पीढ़ियों के लिए प्राकृतिक संसाधनों के संरक्षण की दिशा में कदम उठाने का आग्रह किया जाता है। इस प्रकार, काव्य और साहित्य के माध्यम से पर्यावरणीय वकालत को एक नई दिशा मिलती है, जो न केवल विचारशीलता को बढ़ावा देती है, बल्कि समाज में सकारात्मक परिवर्तन की प्रेरणा भी देती है।

Keywords: पर्यावरणीय वकालत, काव्य और साहित्य, जागरूकता

वैश्विक स्थिरता की दिशा में बंजर भूमि का प्रबंधन: टोंक, राजस्थान में चुनौतियाँ और अवसर

डॉ नरेन्द्र कुमार चंदेल

सहायक आचार्य - भूगोल

राजकीय महाविद्यालय, टोंक

बंजर भूमि का प्रभावी प्रबंधन, विशेष रूप से टोंक, राजस्थान जैसे अर्ध-शुष्क क्षेत्रों में, वैश्विक स्थिरता की दिशा में महत्वपूर्ण कदम है। यह शोध बंजर भूमि के पुनर्स्थापन में पर्यावरणीय चुनौतियों और अवसरों का मूल्यांकन करता है, जिसमें जल संसाधनों की कमी, मृदा क्षरण, जैव विविधता की कमी और जलवायु परिवर्तन के प्रभाव शामिल हैं। इस अध्ययन में वैश्विक नवाचारों और स्थायी प्रथाओं का विश्लेषण किया गया है, जो इस क्षेत्र की पारिस्थितिकी और समाज-आर्थिक आवश्यकताओं के अनुरूप हैं। क्षेत्रीय आंकड़ों, नीतिगत विश्लेषण और

हितधारकों की अंतर्दृष्टियों के आधार पर, जल संरक्षण, मृदा स्वास्थ्य पुनर्स्थापन, और हरित आवरण पुनःस्थापना के लिए एकीकृत दृष्टिकोणों की प्रभावशीलता पर विचार किया गया है। निष्कर्ष स्थानीय अधिकारियों और समुदायों को बंजर भूमि के प्रबंधन में मदद करते हुए वैश्विक स्थिरता लक्ष्यों की प्राप्ति के लिए अनुकूल दृष्टिकोण प्रदान करते हैं। यह शोध पर्यावरणीय स्थिरता प्राप्त करने में स्थानीय स्तर पर बंजर भूमि के प्रबंधन में नवाचारों और व्यावहारिक समाधानों के महत्व को उजागर करता है।

कीवर्ड्स: बंजर भूमि प्रबंधन, वैश्विक स्थिरता, पर्यावरणीय स्थिरता, टोंक राजस्थान, जल संरक्षण, मृदा पुनर्स्थापन, जैव विविधता संरक्षण, जलवायु अनुकूलता, हरित आवरण पुनर्स्थापना, एकीकृत दृष्टिकोण।

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अलवर प्रजामंडल की पर्यावरण संरक्षण नीतियाँ

Manoj Kumar

(Assistant Professor) History

Govt.Girls College Tapukra (Khairthal-Tijara)

अलवर प्रजामंडल की 1938 में स्थापना के बाद से ही रियासत में कार्य करने हेतु पांच सदस्यों की एक कार्यकारिणी का गठन किया गया। इसमें सरदार नथू सिंह को अध्यक्ष व पंडित हरि नारायण को सचिव बनाया गया, हालांकि प्रजामंडल ने पंजीयन से पूर्व ही अपने उद्देश्यों का निर्धारण कर लिया था। प्रजामंडल का प्रमुख उद्देश्य रियासतों में उत्तरदाई शासन की स्थापना व सामाजिक-आर्थिक सुधार लाते हुए समाज में एक शैक्षिक जागृति उत्पन्न करना था। अलवर प्रजामंडल ने पर्यावरण संरक्षण की दिशा में कदम बढ़ाते हुए रियासत में खादी के प्रचार प्रसार पर बल दिया। खादी के प्रचार प्रचार के लिए ही प्रजामंडल ने अलवर रियासत में विशाल खादी प्रदर्शनी का आयोजन किया। प्रजामंडल ने रियासत में पर्यावरण की महता समझते हुए पर्यावरण को शिक्षा से जोड़ते हुए रियासत में बढ़ाए गए शिक्षण शुल्क का विरोध किया। अलवर में पारिस्थितिकी तंत्र को बनाए रखने में सहायक सूअरों को मारने पर प्रतिबंध लगा दिया था जिससे किसानों की फसलों को नुकसान पहुंचने लगा। पर्यावरण को बचाते हुए इन किसानों की समस्याओं का समाधान भी अलवर प्रजामंडल द्वारा दूर करने का प्रयास किया गया जिसके लिए रियासत सरकार को भी पर्यावरण संरक्षण हेतु विभिन्न नीतियों का निर्माण करना पड़ा।

हिंदी उपन्यासों में पारिस्थितिक संकट

श्री रामकेश मीना

पद नाम:- सह आचार्य

संस्था:- राजकीय महाविद्यालय, बारां

ई-मेल आई.डी. - ramkeshm171@gmail.com

प्रकृति पर मनुष्य की विजय को लेकर ज्यादा खुश होने की जरूरत नहीं, क्योंकि ऐसी हर जीत हमसे अपना बदला लेती है। पहली बार तो हमें वही परिणाम मिलता है जो हमने चाहा था, लेकिन दूसरी और तीसरी दफा इसके अप्रत्याशित प्रभाव दिखाई पड़ते हैं जो पहली बार के प्रत्याशित प्रभाव का प्रायः निषेध कर देते हैं। इस तरह हर कदम पर हमें यह चेतावनी मिलती है कि हम प्रकृति पर शासन नहीं करते, जैसे कोई विजेता विदेशी लोगों पर शासन करता है। हम प्रकृति पर इस तरह शासन नहीं कर सकते जैसे हम उसके बाहर खड़े हों, क्योंकि मांस, रक्त और मस्तिष्क सहित प्रकृति से जुड़े हुए हैं और उसी के बीच हमारा अस्तित्व है। प्रकृति पर हमारी उस्तादी का मतलब सिर्फ इतना है कि दूसरे प्राणियों के मुकाबले प्रकृति को जानने और उसके नियमों को सही ढंग से लागू करने की सामर्थ्य हममें ज्यादा है। समय बीतने के साथ-साथ हमारा प्रकृति के इन नियमों के बारे में ज्ञान भी बढ़ता जाता है और उसी के साथ प्रकृति के पारंपरिक स्वरूप में हस्तक्षेप करने के तात्कालिक और दूरगामी परिणामों के बारे में हमारी समझ भी बढ़ती जाती है। यह ज्ञान जितना आगे बढ़ेगा, उतना ही मनुष्य को प्रकृति के साथ अपनी अविभाज्यता का ज्ञान होगा। उसी के साथ मस्तिष्क और पदार्थ, मनुष्य और प्रकृति, चेतना और शरीर से संबंधित अंतर्विरोध की प्रकृतिविरोधी व्यर्थता का अहसास होगा।

संकेत शब्द :- प्रकृति, परिणाम, हस्तक्षेप, अन्तर विरोध, प्राणी

राजस्थान के कोटा जिले की रामगंजमंडी तहसील के खेड़ली गांव में जलग्रहण क्षेत्र प्रबंधन में जीआईएस तकनीकी के उपयोग द्वारा भौगोलिक अध्ययन

1. संजय सिंह गुर्जर, डॉ. एल. सी. अग्रवाल,
2. शोधार्थी, भूगोल विभाग, कोटा विश्वविद्यालय, कोटा एवं सहायक आचार्य, भूगोल विभाग, राजकीय महाविद्यालय, रामगंजमंडी
3. शोध पर्यवेक्षक, भूगोल विभाग, कोटा विश्वविद्यालय, कोटा एवं प्रोफेसर, भूगोल विभाग, राजकीय कला महाविद्यालय, कोटा।

GIC: IAES 2024 - INTERNATIONAL CONFERENCE

जलग्रहण क्षेत्र भूमि की सतह है जो एक विभाजन से घिरी होती है, जो अपवाह को एक सामान्य बिंदु पर पहुंचाती है। जलग्रहण क्षेत्र प्रबंधन में मूल रूप से भूमि की सतह और वनस्पति का प्रबंधन शामिल होता है ताकि जलग्रहण क्षेत्र में गिरने वाले अधिकतम पानी का संरक्षण और उपयोग किया जा सके और किसान और उसके समाज को दीर्घकालिक लाभ के लिए मिट्टी का संरक्षण भी किया जा सके। जलग्रहण क्षेत्र प्रबंधन का तात्पर्य मिट्टी और जल संसाधनों के बुद्धिमानी से उपयोग से है, ताकि लाभकारी उपयोग के लिए स्वच्छ, समान जल आपूर्ति प्रदान की जा सके और अतिप्रवाह को नियंत्रित किया जा सके। इस परियोजना कार्य के लिए अध्ययन क्षेत्र खेड़ली गाँव है, जो राजस्थान राज्य के कोटा जिले के रामगंजमंडी तहसील में आता है। खेड़ली गाँव में मानसून पूर्व अवधि में पीने और कृषि उद्देश्यों के लिए पानी की उपलब्धता की कमी होती है। पानी की कमी के कारण कृषि उत्पादन कम हो जाता है। पानी की समस्या को कम करने के लिए खेड़ली गांव में जलग्रहण क्षेत्र प्रबंधन आवश्यक है। जीआईएस प्लेटफॉर्म का उपयोग करके किए गए जलग्रहण क्षेत्र अध्ययनों से यह निर्विवाद है कि जीआईएस की विशेष विश्लेषण क्षमताएं बेहतर वाटरशेड मॉडलिंग तकनीकों की कुंजी हैं। जीआईएस-आधारित वाटरशेड मॉडलिंग पद्धति नीचे की सतह की स्थलाकृति के डिजिटल चित्रण या डिजिटल एलिवेशन मॉडल से शुरू होती है। भुवन, सर्वे ऑफ इंडिया टोपोशीट और रिमोट सेंस डेटा का उपयोग करके भूमि और पानी जैसे प्राकृतिक संसाधनों की उपलब्धता का अध्ययन किया जाता है। समोच्च मानचित्र, जल निकासी मानचित्र, भूमि उपयोग भूमि पैटर्न मानचित्र और पानी की आवश्यकता और अपवाह गणना के आधार पर वाटरशेड संरचनाएं प्रस्तावित की गई हैं। खेड़ली गांव के लिए संरचनाओं का डिज़ाइन और लागत अनुमान अनुशंसित है।

कीवर्ड: जलग्रहण क्षेत्र प्रबंधन, जीआईएस, डिजिटल ऊंचाई मॉडल, जलग्रहण संरचनाएं।

डिजिटल सरकार और सतत विकास

श्री पदमाराम जाखड़, श्री गुमानाराम
सहायक आचार्य(इतिहास)
SRDRL राजकीय महाविधालय नावा शहर
सहायक आचार्य(भूगोल)
SRDRL राजकीय महाविधालय नावा शहर

सतत विकास आधुनिक समाजों के लिए चिंता और चुनौती है, चाहे वह विकासशील देश हों या विकसित देश। वर्तमान और भावी पीढ़ियों की भलाई के लिए प्राकृतिक संसाधनों सहित सभी प्रकार के संसाधनों का मितव्यतापूर्वक प्रबंधन करने के लिए सुशासन महत्वपूर्ण है। यदि सरकारें पारदर्शिता, जवाबदेही और दक्षता बढ़ाना चाहती हैं, तो डिजिटल परिवर्तन सरकारों में बदलाव का एक प्रमुख कारक हो सकता है। ई-सरकार सतत और समावेशी आर्थिक विकास, सामाजिक विकास और पर्यावरण संरक्षण को बढ़ावा देने के लिए एकीकृत नीतियों और सार्वजनिक सेवाओं की सुविधा प्रदान करती है। ई-सरकार कुशल संसाधन प्रबंधन में योगदान देती है, और इसलिए भविष्य में उनके उपयोग को होने वाले नुकसान से बचने के लिए वर्तमान में प्राकृतिक संसाधनों के उपयोग को बेहतर बनाने में मदद कर सकती है। इस शोधपत्र का उद्देश्य सतत विकास पर ई-सरकार के प्रभाव का विश्लेषण करना है। 2003-2018 की अवधि में 103 देशों के नमूने के लिए एक लॉगिट मॉडल का उपयोग करते हुए, परिणाम बताते हैं कि ई-सरकार विकास एक देश के लिए सतत विकास प्राप्त करने के लिए एक सकारात्मक निर्धारक है, जो समायोजित शुद्ध बचत द्वारा दर्शाया गया है, जो देश के आर्थिक, सामाजिक और पर्यावरणीय विकास को समाहित करता है। यह अध्ययन इस बात का प्रमाण प्रदान करता है कि ई-गवर्नेंस विकासशील और संक्रमण अर्थव्यवस्थाओं में सतत विकास प्राप्त करने की संभावना को बढ़ाता है। परिणाम यह भी बताते हैं कि आर्थिक विकास और प्रति व्यक्ति सकल राष्ट्रीय आय पूरे नमूने में सतत विकास में महत्वपूर्ण सकारात्मक प्रभाव हैं और कम आयु निर्भरता और प्राकृतिक संसाधन सम्पनता वाले देशों में सतत विकास होने की अधिक संभावना है। ई-गवर्नेंस विकसित करने से सतत विकास को बढ़ावा मिलता है, खासकर विकासशील और संक्रमण अर्थव्यवस्थाओं में।

कुँजी शब्द: सतत विकास, ई-गवर्नेंस, समायोजित शुद्ध बचत, प्राकृतिक संसाधन

पर्यावरण नीतियां : सरकारों के सामने चुनौतियां

लाल चन्द मीणा

सहायक आचार्य (राजनीति विज्ञान)

एस बी डी राजकीय महाविद्यालय सरदारशहर (चुरू)

E-mail: lalchandmeena36@gmail.com

पर्यावरण एक वैश्विक विषय है। आज इसके प्रभावी संरक्षण की आवश्यकता है। इस दिशा में विश्व भर के देश कम कर रहे हैं, लेकिन हर देश की अपनी समस्याएं हैं जिसका सामना सरकारों को करना पड़ रहा है। विकासशील देशों के सामने आर्थिक, तकनीकी और वित्तीय चुनौतियां हैं। पर्यावरणीय नीतियों को प्रभावित ढंग से लागू करने में राजनीतिक और संस्थागत बाधाएं भी आड़े आती हैं। पर्यावरण संरक्षण के लिए दीर्घकालिक प्रतिबद्धता की आवश्यकता होती है। एक देश के राजनीतिक बदलाव से नीतियों में उलट फेर या निरंतर में कमी आ सकती है। पर्यावरण संरक्षण की नीतियां नागरिकों के दैनिक जीवन को प्रभावित करती हैं। अगर सरकार की नीतियों का परिणाम उच्च लागत अथवा कुछ प्रतिबन्ध होते हैं तो सार्वजनिक विरोध हो सकता है। अपर्याप्त बुनियादी ढांचागत विकास भी इसमें बाधक है। नीतियों को लागू करने के लिए नवीकरणीय ऊर्जा, अपशिष्ट प्रबंधन में सुधार आदि के लिए बुनियादी ढांचे के उन्नयन की आवश्यकता होती है, जो अभी तक पूरी तरह से विकसित नहीं हो सका है। इन चुनौतियों का उचित ढंग से समाधान करने के लिए संतुलित दृष्टिकोण की आवश्यकता है, जो पर्यावरणीय लक्ष्य को आर्थिक, सामाजिक और राजनीतिक वास्तविकताओं को साथ जोड़ते हैं।

बीज शब्द : पर्यावरण संरक्षण, विकासशील देश, नागरिक, नवीकरणीय ऊर्जा, तकनीकी

माउंट आबू

सीमा चारण

सहायक आचार्य (इतिहास) राजकीय महाविद्यालय ,शिवगंज

Email- rajeevcharan76@gmail.com

माउंट आबू, राजस्थान का एकमात्र हिल स्टेशन, भारत के प्रमुख पर्यटन स्थलों में से एक है। यह अपनी प्राकृतिक सुंदरता, सुखद मौसम और ऐतिहासिक महत्त्व के लिए जाना जाता है। अरावली पर्वत श्रृंखला में बसा माउंट आबू पर्यटकों के लिए एक आदर्श गंतव्य है, जो उन्हें शहरी जीवन की भीड़-भाड़ से दूर शांति और सुकून का अनुभव कराता है। हालांकि, यहाँ पर्यटन में कई संभावनाएँ और चुनौतियाँ मौजूद हैं, जो इसके विकास और संरक्षण दोनों भूमिका निभाती हैं। प्राकृतिक सौंदर्य—माउंट आबू में खूबसूरत झीले, हरे-भरे जंगल, पहाड़, और वन्य जीवन पर्यटकों को आकर्षित करते हैं। नक्की झील और गुरु शिखर जैसी जगहें इसकी प्राकृतिक खूबसूरती का प्रमुख हिस्सा हैं।

धार्मिक और सांस्कृतिक महत्व— माउंट आबू में दिलवाड़ा जैन मंदिर, अचलगढ़ किला, और अन्य धार्मिक स्थल हैं जो हर साल लाखों श्रद्धालुओं को आकर्षित करते हैं। यहाँ विभिन्न धर्मों के श्रद्धालुओं के लिए महत्वपूर्ण स्थलों की उपस्थिति इसे धार्मिक पर्यटन के लिए आदर्श बनाती है। जलवायु और स्वास्थ्य पर्यटन यहाँ का मौसम गर्मियों में ठंडा और सर्दियों में ठंडा रहता है, जिससे यह साल भर पर्यटकों के लिए आकर्षक बना रहता है। इसके अलावा, ताजगी से भरपूर बातावरण इसे स्वास्थ्य पर्यटन के लिए भी उपयुक्त बनाता है। वन्य जीवन पर्यटन – माउंट आबू वन्यजीव अभयारण्य वन्य जीवन प्रेमियों के लिए एक प्रमुख आकर्षण है। यहाँ तेंदुए, काले भालु, और पक्षियों की कई दुर्लभ प्रजातियाँ पाई जाती हैं, जो प्रकृति प्रेमियों और पर्यावरण संरक्षकों को आकर्षित करती हैं। पर्यावरणीय समस्याएँ पर्यटन के बढ़ते दबाव के कारण माउंट आबू में पर्यावरणीय असंतुलन हो रहा है। जंगलों की कटाई, पानी की कमी, और प्रदूषण जैसे मुद्दे यहाँ की पारिस्थितिकी को प्रभावित कर रहे हैं। अत्यधिक पर्यटन का दबाव .हर साल बड़ी संख्या में पर्यटक आते हैं, जिससे यहां की प्राकृतिक और सांस्कृतिक धरोहरों पर दबाव बढ़ता है। अत्यधिक जनसंख्या के कारण ठहरने और यातायात की समस्याएँ उत्पन्न हो रही हैं। आवास और बुनियादी ढाँचे की कमी माउंट आबू में सीमित होटलों और अन्य पर्यटक सुविधाओं के कारण अक्सर आवास की कमी हो जाती है। इसके अलावा, सड़क, परिवहन, और जल निकासी की समस्याएँ यहाँ के बुनियादी ढाँचे पर दबाव डाल रही हैं। जलवायु परिवर्तन का प्रभाव .जलवायु परिवर्तन के कारण माउंट आबू का मौसम भी प्रभावित हो रहा है। अनियमित बारिश और बढ़ते तापमान से यहाँ का आकर्षण कम हो सकता है और स्थानीय वनस्पति व जीव जंतु भी प्रभावित हो सकते हैं। पर्यावरणीय संरक्षण सरकार और स्थानीय संगठनों को मिलकर यहाँ के पर्यावरण को संरक्षित करने के लिए ठोस कदम उठाने चाहिए। पर्यटन स्थलों पर

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कूड़ा प्रबंधन, पानी की बचत, और वृक्षारोपण जैसे प्रयास किए जा सकते हैं। सतत पर्यटन स्थानीय निवासियों को सतत और जिम्मेदार पर्यटन के बारे में जागरूक किया जाना चाहिए, ताकि पर्यटन विकास के साथ-साथ पर्यावरण की रक्षा भी हो सके। बुनियादी ढाँचे में सुधार सड़क, बिजली, पानी, और आवास सुविधाओं में सुधार करना आवश्यक है। इससे न केवल पर्यटकों को बेहतर सुविधाएँ मिलेंगी, बल्कि स्थानीय लोगों के जीवन स्तर में भी सुधार होगा।

माउंट आबू में पर्यटन के विकास की अत्यधिक संभावनाएँ हैं, लेकिन इसके साथ ही कई चुनौतियाँ भी हैं। सतत और समग्र विकास के माध्यम से इन चुनौतियों का सामना किया जा सकता है। पर्यावरण और सांस्कृतिक धरोहरों का संरक्षण करके माउंट आबू को एक आदर्श और टिकाऊ पर्यटन स्थल के रूप में विकसित किया जा सकता है।

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जिला का फतेहपुर में वायु प्रदूषण की समस्या

डॉ. नोहू कुमार

सहायक प्राध्यापक भूगोल सरकारी महाविद्यालय खैराड़ी

वायु प्रदूषण प्रमुख पर्यावरणीय मुद्दों में से एक है। यह कैंसर श्वसन संबंधी बीमारियों और उच्च मृत्यु दर जैसे गंभीर स्वास्थ्य प्रभाव उत्पन्न कर सकता है। शहरीकरण और जनसंख्या वृद्धि ने शहरों और शहरी क्षेत्रों में वायु प्रदूषण को एक बड़ी चुनौती बना दिया है।

का फतेहपुर जिला जो इस अध्ययन का विषय है देश के सबसे अधिक प्रदूषित क्षेत्रों में से एक है। चिंता के मुख्य वायु प्रदूषक धूलकण (PM₁₀) और गंधक डाइऑक्साइड (SO₂) हैं। भारत के अन्य हिस्सों की तुलना में राष्ट्रीय राजधानी क्षेत्र दिल्ली के आसपास भारी उद्योगों का उच्च अनुपात यातायात के साधनों की अधिकता और खेतों के अपशिष्ट को जलाने से वायु प्रदूषण के प्रमुख स्रोत हैं। वायु प्रदूषण के अन्य स्रोत ईट भट्टे स्थानीय ताप और वाहनों के धुएँ हैं।

यह अध्ययन मुख्य रूप से दीर्घकालिक समयावधि से संबंधित है जिसमें वायु प्रदूषकों (PM₁₀ और SO₂) और मौसम संबंधी पहलुओं को शामिल किया गया है। औद्योगिक इकाइयों के खुलने और बंद होने की जानकारी को इस कार्य के लिए एक विशेष मूल्य के रूप में माना जा सकता है। इस डेटा के उद्देश्य पिछले 35 वर्षों के दौरान का फतेहपुर जिले में विशेष

औद्योगिक इकाइयों के बंद होने या खुलने से पहले और बाद में हवा की गुणवत्ता के स्तर की तुलना करना है। अब तक किसी ने भी इस डेटा सेट्स का व्यापक विश्लेषण के लिए उपयोग नहीं किया है।

मुख्य शब्द: शहरी क्षेत्र प्रदूषण च्छ10एँ2ए उद्योग

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पर्यावरण संरक्षण और सामाजिकता

दिनेश

कुरकुरे

सहायक प्राचार्य, समाजशास्त्र, छत्रपति शिवाजी कला महाविद्यालय, भीड

वर्तमान वैश्विक परिप्रेक्ष्य में पर्यावरण संरक्षण की आवश्यकता पहले से कहीं अधिक महत्वपूर्ण हो गई है। विश्व की तीन प्रमुख चुनौतियों में से एक पर्यावरण प्रदूषण है। भारतीय समाज की सतत विकास प्रक्रिया के अंतर्गत पर्यावरण संरक्षण का महत्व हमेशा से रहा है। लेकिन आधुनिक जीवन शैली और भौतिकवाद ने इसे खतरे में डाल दिया है। ऐसे में समाज की भागीदारी की महत्ता और बढ़ जाती है। भारत के सामाजिक संरचना में ऐसे अनेक पहलू मौजूद हैं जो पर्यावरण को सुरक्षित रखने की दृष्टि से प्रेरक हैं। जनसंख्या वृद्धि, वनों की कटाई, अत्यधिक भौतिकवाद, और संयुक्त परिवार व्यवस्था का ह्रास जैसे कारक, न केवल भारतीय समाज की एकजुटता को कमजोर करते हैं, बल्कि पर्यावरण प्रदूषण के लिए भी जिम्मेदार हैं।

इन परिस्थितियों में समाज के हर व्यक्ति की यह जिम्मेदारी बनती है कि वे पर्यावरण संरक्षण के प्रति जागरूक हों और इसके लिए प्रयास करें। स्थायी विकास, पारिवारिक मूल्यों की पुनर्स्थापना, और पर्यावरणीय नैतिकता जैसे दृष्टिकोणों को अपनाना समय की आवश्यकता है। हमारी सांस्कृतिक विरासत और परंपराओं में पर्यावरण को संरक्षित रखने के अनेक सूत्र छिपे हैं, जिन्हें अपनाकर हम न केवल पर्यावरण को बचा सकते हैं, बल्कि आने वाली पीढ़ियों के लिए एक स्वच्छ और सुरक्षित वातावरण प्रदान कर सकते हैं।

राष्ट्रीय राजमार्ग एवं चित्तौड़गढ़ में पर्यटन की संभावनाएं

निर्मल कुमार देसाई , सह आचार्य

महाराणा प्रताप राजकीय महाविद्यालय चित्तौड़गढ़

Email-nirmaljio1975@gmail.com, mobile no.-6377291848

प्रस्तावना:--पर्यटन प्राचीन काल से मानव समुदाय द्वारा किया जाता रहा है।मानव एक स्थान से दूसरे स्थान पर धार्मिक, सांस्कृतिक, शिक्षा के लिए जाते रहे। मानव सभ्यता के विकास के साथ पर्यटन का क्षेत्र व्यापक हो गया । पर्यटन में व्यक्ति अपना अवकाश कालीन समय पर्यटक के रूप में व्यतीत करता है । पर्यटन विश्व के कई देशों की अर्थव्यवस्था का आधार बन गया है । पर्यटन को उद्योग का दर्जा मिल गया है पर्यटन से रोजगार के अनेक अवसर पैदा होते हैं। परिवहन ,होटल, रेस्टोरेंट ,गाइड, ट्रेवल एजेंट प्रत्यक्ष एवं स्थानीय लोगों को अप्रत्यक्ष रूप से रोजगार मिलता है । पर्यटन से प्राप्त रोजगार में क्षेत्र का आर्थिक एवं सामाजिक विकास होता है पर्यटन से प्राप्त आय से गरीबी दूर होती है।

भारत एवं राजस्थान पर्यटन :--भारत विश्व का सातवां बड़ा देश है भारत में भौतिक, सांस्कृतिक, धार्मिक, ऐतिहासिक, लोक कला, तीज त्यौहार की विविधता पर्यटकों को आकर्षित करती हैं। विश्व के अनेक देशों के पर्यटक भारत में पर्यटन के लिए आते हैं भारत में पर्यटन को उद्योग का दर्जा दिया । पर्यटन को बढ़ावा देने के लिए एवं पर्यटकों को आकर्षित करने के लिए परिवहन होटल एवं सुरक्षा तथा अन्य सुविधाओं में निरंतर सुधार कर रहे हैं। पर्यटन देश में सकल घरेलू उत्पाद का 4.6 प्रतिशत हिस्सा रखता है भारतीय पर्यटन मंत्रालय निरंतर पर्यटन स्थलों की मूलभूत सुविधाओं के विकास के लिए कार्यरत हैं ।53.36 लाख पर्यटक 2001 में भारत आए थे जो बढ़कर 1.09 करोड़ विदेशी पर्यटक 2019 में भारत भ्रमण के लिए आए । दक्षिणी एशिया, पूर्वी एशिया, पश्चिम एशिया ,पूर्व यूरोप, अफ्रीका, उत्तरी,दक्षिण अमेरिका चीन ,बांग्लादेश से पर्यटक भारत में घूमने के लिए आते हैं। टेबल डेटा-भारत पर्यटन सांख्यिकी 2021 ,पर्यटन मंत्रालय, भारत सरकार । 1981 में 1.28 मिलियन 1991 में 1.68 मिलियन 2001 में 2.54 मिलियन 2011 में 6.31 मिलियन तथा 2020 में 2.74 मिलियन पर्यटक भारत में आए भारत में विदेशी पर्यटक मुख्यतः महाराष्ट्र, तमिलनाडु, दिल्ली ,उत्तर प्रदेश राजस्थान पश्चिम बंगाल ,बिहार और कर्नाटक राज्य में अधिक आते हैं। भारत में प्राकृतिक सौंदर्य, वन्य जीव, सांस्कृतिक परंपराएं, पारिस्थितिकी, प्राचीन स्मारक जैसे अजन्ता, एलोरा, एलिफेंटा गुफाएं ,ऐतिहासिक दुर्ग ताजमहल आदि पर्यटकों को

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भारत में आकर्षित करते हैं। राजस्थान में पर्यटन:-- भारत सरकार के सहयोग से राजस्थान में निरंतर पर्यटन का विकास हो रहा है। राज्य में पर्यटन को बढ़ावा देने के लिए पर्यटन विभाग के द्वारा पर्यटकों को आकर्षित करने के लिए किया जा रहे हैं। पर्यटन साहित्य मुद्रण प्रिंट एवं इलेक्ट्रॉनिक मीडिया के माध्यम से विज्ञापन जारी कर, राष्ट्रीय अंतरराष्ट्रीय सेमिनार एवं आर्ट गैलरी में भागीदारी, फिल्म, फोटो, श्रव्य दृश्य सामग्री प्रचार प्रसार कर पर्यटन स्थलों की जानकारी पर्यटन विभाग के द्वारा प्रचारित की जा रही है। राजस्थान में मनाए जाने वाले मेलों एवं त्योहार के द्वारा पर्यटकों को आकर्षित किया जा रहा है। पर्यटन विभाग तीज एवं गणगौर मेला, जयपुर, पुष्कर मेला, अजमेर, मारवाड़ उत्सव, जोधपुर, चंद्रभागा मेला, झालावाड़, ऊंट उत्सव, बीकानेर, पतंग उत्सव, जयपुर, मरू उत्सव, जैसलमेर, कुंभलगढ़ उत्सव, राजसमंद, मेवाड़ उत्सव, उदयपुर, ब्रज उत्सव, भरतपुर, दुर्ग महोत्सव, चित्तौड़गढ़ में आयोजित कर पर्यटकों को आकर्षित कर रहा है।

GIS: IAES-2024/35

पर्यावरण विषयक वैदिक मनीषा

डा. पूजा बुन्देल
शोधच्छात्रा (साङ्ख्य-योग, श्री ला.ब.शा.रा.सं. विद्यापीठ)
poojabundel2011@gmail.com 9013048817
पृथ्वीराजचौहान राज. महाविद्यालय, अजमेर
bhargavaarchana79@gmail.com

अर्चना भार्गव
व्याख्याता, संस्कृत
सम्राट्

पर्यावरण पद परि+अवरण इन दो शब्दों का समाहार है जिसका अभिप्राय है “चारों ओर का आवरण”। “परितः आवृणोति जीवजगदिति पर्यावरणम्” अर्थात् हमारे चारों ओर विद्यमान पञ्चमहाभूतों – पृथ्वी, जल, तेज, वायु और आकाश का आवरण ही पर्यावरण है। वेद में पर्यावरण के अर्थ में परिधि, परिभू, परिवृत् आदि शब्द प्रयुक्त हुए हैं। वैदिक मनीषा प्रकृति के इन सभी घटकों के प्रति मातृत्व भाव रखती है। वैदिक काल में अरण्य के शान्त एवं निर्मल वातावरण में ही ज्ञान एवं साधना के केन्द्ररूप ऋषियों के आश्रम थे। उन ऋषियों को यह आभास था कि प्रकृति की गोद में ही स्वस्थ जीवन पल्लवित हो सकता है। प्राकृतिक वातावरण के सात्त्विक प्रभाव के कारण ही ऋषियों का जीवन मौलिक चिन्तन और सहज व्यवहार के परिपूर्ण हुआ है। वैदिक

साहित्य को प्रत्येक मन्त्रमौलिकता के साथ जीवन की वास्तविकताओं से जुड़ा है। प्रकृति के कण-कण से तादात्म्य रखता है।

वैदिक-अरण्य-संस्कृति प्रकृति के चर-अचर तत्त्वों के प्रति आत्मीय, सहिष्णु, सन्तुलित एवं आदर्श दृष्टिकोण रखती है। बरगद, पीपल, गङ्गा, गाय आदि को पूज्य मानकर उनका संरक्षण करती है। कदम-कदम पर इनके विवेकपूर्ण उपयोग हेतु मन्त्रोच्चार करती है। अथर्ववेद के एक मन्त्र में ऋषि पृथ्वीमाता के शस्यश्याममाला होने की कामना करता हुआ करता है कि हे भूमि! मैं तुम्हारा जो भाग खोदूँ, वह पुनः शीघ्र भर जाये। हे इच्छाओं को पूरा करने वाली पृथ्वी! मैं तुम्हारे हृदय को चोट न पहुंचाऊँ –

यत् ते भूमे विखनामि क्षिप्रं तदपि रोहतु ।

मा ते मर्म विमृग्वरि मा ते हृदयमर्पिपम् ॥¹

वैदिक नियम प्रकृति से न्यूनतम आहरण एवं अधिकतम पुनर्भरण का विधान करते हैं ताकि अनन्त काल तक यह सृष्टि बिना बाधा के चलती रहे – “शतं हस्तं समाहर सहस्रहस्तं सं किर”। किन्तु दुर्भाग्यवश आधुनिक भौतिकवादी संस्कृति हमें अपने प्राचीन आदर्शों से विचलित कर रही हैं और पर्यावरण सन्तुलन को भी स्खलित कर रही है। भारतीय ऋषियों ने पर्यावरण के रक्षण एवं संवर्धन में अपनी मनीषा का सर्वाधिक प्रयोग किया है। समस्त विज्ञान को वैदिक मन्त्रों में समाविष्ट करने वाले ऋषियों ने विनाश के भय से वैज्ञानिक प्रयोगों की अपेक्षा आध्यात्मिक विषयों का अधिक मनन किया है। उन तत्त्वज्ञों ने प्रकृति के विरुद्ध कभी कोई काम नहीं किया। वैदिक काल में तत्त्वज्ञानी गुरु केवल विवेकी विद्यार्थियों को ही विशिष्ट विद्यायें सिखाते थे। किन्तु आज ज्ञान-विज्ञान सार्वजनिक होने से अविवेकी और अल्पमति लोग भी साधनों का दुरुपयोग कर पर्यावरण विषयक दुष्परिणामों को आमन्त्रित कर रहे हैं। आज का मानव स्वयं को सृष्टि का अङ्ग न मानकर सृष्टि को ही अपनी कृति मान बैठा है।

अथर्ववेद के पृथिवी सूक्त के ६३ मन्त्रों में किसी सम्प्रदाय विशेष, जाति विशेष अथवा देव विशेष का कथन न होकर अखिल धरती की चिन्ता है। पर्यावरण की चिन्ता करने वाले लोग इस सूक्त को 'विश्वगीत' घोषित कर सकते हैं। इस सूक्त की

¹ अथर्ववेद, पृथिवीसूक्त १२.१

प्रथम पङ्क्ति “सत्यं बृहत् ऋतमुग्रम् दीक्षा, तपो ब्रह्म यज्ञः पृथिवीं धारयन्ति”² में कहा गया है कि पृथ्वी तेजस्विता से सुरक्षित रहती है। यदि पर्यावरण को बचाना है तो जीवन को विलासिता से बचाना होगा। विकास के नाम पर हम प्रकृति का शोषण आवश्यकता की पूर्ति के लिए कम और विलास के लिए अधिक करते हैं। सुविधा जुटाने के नाम पर आधुनिक विज्ञान मनुष्य को विलासिता का दास बनाता जा रहा है जबकि वेदविज्ञान मनुष्य को ऋतु के अनुकूल जीवन व्यतीत करना सिखाकर इतना समर्थ बनाता है कि उसे विलासिता के कृत्रिम साधनों की आवश्यकता ही नहीं रहती।

वेद में मानव और प्रकृति के मध्य में प्रगाढ सम्बन्ध स्थापित करते हुए कहा गया है कि पृथ्वी माता है, अन्तरिक्ष भ्राता है और द्युलोक पिता है। ये विपत्तियों से रक्षा कर हमारा कल्याण करते हैं। इनके विपरीत जाने पर हमारा ही पतन होगा अर्थात् पर्यावरण का अवनमन होने से मानव का भी अवनमन निश्चित है। अथर्ववेद में कहा गया है कि ‘महत्-उल्ब’ (ओजोन की परत) पृथ्वी की रक्षा करती है। इसको क्षति पहुंचाना उसी प्रकार विनाशकारी होगा जैसे गर्भस्थ बालक की झिल्ली से छेड़छाड़ करना। यजुर्वेद में भी ऋषि ने पर्यावरण के प्रति अपनी चिन्ता व्यक्त की है और शान्त वातावरण की कामना की है –

**“द्यौः शान्तिरन्तरिक्षं शान्तिः पृथिवी शान्तिरापः शान्तिरोषधयः
शान्तिः ।**

**वनस्पतयः शान्तिर्विश्वेदेवाः शान्तिर्ब्रह्म शान्तिः सर्वे शान्तिः शान्तिरेव शान्तिः
सा मा शान्तिरेधि” ॥³**

वैदिक ऋषियों ने पर्यावरण के प्रत्येक महत्त्वपूर्ण घटक का दैवीकरण कर प्रकृति को संरक्षण प्रदान किया। वैदिकवाङ्मय में पञ्चमहाभूतों को देवता मानकर उनसे वातावरण की शुद्धि हेतु प्रार्थनाएं की गई हैं। ब्रह्माण्ड का सबसे महत् तत्त्व है ‘सूर्य’। सूर्य से पृथ्वी, पृथ्वी से प्रकृति और प्रकृति से पुरुष की उत्पत्ति हुई है। इस प्रकार मनुष्य की मानसिक और शारीरिक संरचना में प्रकृति के गुण समाये हैं। अतः प्रकृति की रक्षा में ही उसकी सुरक्षा निहित है। किन्तु दुर्भाग्य! मानव ने अपने धार्मिक ग्रन्थों का अनुसरण करने के स्थान पर केवल भौतिक स्वार्थों की पूर्ति हेतु अपना सर्वस्व दांव पर लगा दिया। फलतः आज प्रकृति में असन्तुलन उत्पन्न हो गया है और

² अथर्ववेद, पृथिवीसूक्त १२.१.१

जीव-जगत् खतरे मे पड गया है। प्रकृति किं वा पर्यावरण मातृतुल्या है। यदि उसका पोषण और रक्षण नहीं होगा तो मानव-सन्तति का भी पोषण और रक्षण सम्भव नहीं है। प्रतिवर्ष ५ जून को 'विश्व पर्यावरण दिवस' मनाने पर्यावरण समस्याओं पर विचार एवं चिन्ता उजागर करने से ही हमारे कर्तव्य की इतिश्री नहीं हो जाती। अतः पर्यावरण विषयक समस्याओं का गहन अध्ययन कर उनके निराकरण हेतु वैदिक नियमों की पुनः स्थापना एवं परिपालना करना ही प्रस्तुत शोधपत्र का उद्देश्य है। पर्यावरण संरक्षण एवं पारिस्थितिकी की सन्तुलन हेतु हमें वैदिक मनीषियों के समान ही प्राकृतिक तत्त्वों को आत्मवत् एवं देवसदृश समझकर इनका संरक्षण करना होगा।

GIS: IAES-2024/36

अंतर्राष्ट्रीय पर्यावरण समझौते और राष्ट्रीय गवर्नेस: कार्यान्वयन एवं बाधाएँ

डॉ. निधि यादव,

आचार्य, राजनीति विज्ञान

एस. पी. सी. गवर्नमेंट कॉलेज, अजमेर

Email - nidhiyadav313@gmail.com

अंतर्राष्ट्रीय पर्यावरण समझौते वैश्विक पर्यावरणीय चुनौतियों से निपटने के लिए महत्वपूर्ण उपकरण हैं, जो देशों के बीच सहयोग को बढ़ावा देते हैं। यह अध्ययन अंतर्राष्ट्रीय पर्यावरण समझौतों के राष्ट्रीय स्तर पर कार्यान्वयन की प्रक्रिया का विश्लेषण करता है, जिसमें विभिन्न देशों की नीतियों, विधियों और कार्यान्वयन तंत्रों का मूल्यांकन किया गया है। अध्ययन में यह दर्शाया गया है कि कैसे अंतर्राष्ट्रीय प्रतिबद्धताएँ स्थानीय संदर्भों में अनुकूलित की जाती हैं और इनका प्रभाव स्थानीय पर्यावरणीय प्रथाओं पर पड़ता है। इसके अतिरिक्त, यह शोध राजनीतिक, आर्थिक और सामाजिक कारकों की भूमिका को भी उजागर करता है, जो राष्ट्रीय गवर्नेस में अंतर्राष्ट्रीय समझौतों के प्रभावी कार्यान्वयन को प्रभावित करते हैं। परिणामस्वरूप, यह स्पष्ट होता है कि सफल कार्यान्वयन के लिए समन्वय, पारदर्शिता और स्थानीय समुदायों की भागीदारी आवश्यक है। यह अध्ययन नीति निर्माताओं के लिए एक मार्गदर्शिका प्रस्तुत करता है, जिससे वे अंतर्राष्ट्रीय पर्यावरण समझौतों को प्रभावी ढंग से लागू कर सकें और सतत विकास लक्ष्यों की प्राप्ति में योगदान कर अंतरराष्ट्रीय पर्यावरण समझौतों (आईईए) की जटिल गतिशीलता और राष्ट्रीय स्तर पर उनके कार्यान्वयन पर प्रकाश डालता है, जो जलवायु परिवर्तन, जैव विविधता हानि और

प्रदूषण जैसी वैश्विक पर्यावरणीय चुनौतियों को संबोधित करने में इन समझौतों की महत्वपूर्ण भूमिका पर प्रकाश डालता है। अनुसंधान पेरिस समझौते, जैविक विविधता पर कन्वेंशन और क्योटो प्रोटोकॉल सहित विभिन्न IEAs का एक व्यापक अवलोकन प्रदान करके शुरू होता है, उनके उद्देश्यों, तंत्रों और भाग लेने वाले देशों द्वारा की गई प्रतिबद्धताओं की जांच करता है।

GIS: IAES-2024/37

पर्यावरण संरक्षण एवं भारतीय संविधान

डॉ. सुनीता मीणा

प्रोफेसर (राजनीति विज्ञान), बी.एस.आर. राजकीय कला महाविद्यालय, अलवर

Email: drsunita2003@gmail.com, मोबाइल: 7976484832

विश्व पटल पर दृष्टिपात करें तो हम देख सकते हैं कि संपूर्ण विश्व में भारत ही एक ऐसा देश रहा है जहां पर पर्यावरण संरक्षण के लिए आदिकाल से ही चिंता व्यक्त की गई है। हमारे धर्म शास्त्रों में भी प्रकृति के सभी घटकों के प्रति आदर की भावना बनी रहे इस हेतु मनुष्य के दैनिक जीवन के क्रियाकलापों को पर्यावरण से जोड़ा गया है। यही नहीं पर्यावरण संरक्षण के बाबत पिछले 60 दशकों में विधि के शासन में विधायिका ने भी समय-समय पर पर्यावरण संरक्षण तथा प्रदूषण के निवारण की दिशा में अधिनियम को पारित कर संपूर्ण भारत राष्ट्र में लागू किया गया है। साथ ही देश का मजबूत आधार स्तंभ न्यायपालिका ने भी अपने न्यायिक सक्रियता के माध्यम से अनेक प्रकार के ऐतिहासिक निर्णय दिए हैं जो पर्यावरण को संरक्षित व सुरक्षित करने में महत्वपूर्ण भूमिका निभाते हैं। चाहे वह यमुना नदी के तट पर चर्म शोधन शाला से संबंधित मामला रहा हो, या आगरा में तेल परिशोधन कारखाने से ताजमहल जैसी विश्व धरोहर को नष्ट होने से बचाने का मामला रहा हो या दिल्ली में डीटीसी बसों में सीएनजी लागू करने का मामला रहा हो या दिल्ली की औद्योगिक इकाइयां जो दिल्ली में प्रदूषण फैला रही थी जिनके बंद होने का ऐतिहासिक निर्णय यह सब निर्णय पर्यावरण संरक्षण को दृष्टिगत रखते हुए किए गए हैं ताकि भारत का प्रत्येक नागरिक जिसे संविधान में मूलभूत अधिकार दिए गए हैं स्वस्थ रहकर अपना जीविकोपार्जन कर सके।

15 अगस्त 1947 को भारत को अंग्रेजों की दासता से मुक्त कर के एक स्वतंत्र राष्ट्र घोषित किया गया था। स्वतंत्र राष्ट्र को संचालित करने के लिए तत्कालीन समय में डॉक्टर राजेंद्र प्रसाद की अध्यक्षता में संविधान निर्माण समिति का गठन किया गया जिसमें 26 नवंबर 1949 को भारत का संविधान निर्मित कर राष्ट्र को सुपुर्द किया जिसके कुछ प्रावधान जिसमें अनुच्छेद 5, 6, 7, 8, 9, 60, 324, 366, 367, 380, 388, 391, 392, 393 तथा 394 तो इसी दिवस से लागू कर दिए गए परंतु पूर्णरूपेण भारत का संविधान 26 जनवरी 1950 को लागू किया गया। संविधान निर्मात्री समिति में प्रारूप समिति के अध्यक्ष डॉक्टर भीमराव अंबेडकर तथा उनके सहयोगी जो कि तत्कालीन परिस्थितियों से वाकिफ थे। उनकी दूरदर्शिता का अंदाजा इससे लगाया जा सकता है कि उनके द्वारा संविधान में जो प्रावधान किए गए उनके परिणाम भविष्य को दृष्टिगत रखते हुए ही किए गए थे। उनकी दूरदर्शिता का उदाहरण है कि पर्यावरण संरक्षण हेतु उनके द्वारा संविधान निर्माण के समय से ही प्रावधान रखे गए ताकि भविष्य में इस विभीषिका से किस प्रकार बचा जा सके। इस बाबत उन्होंने संविधान में विशेष प्रकार के प्रावधानों को निरूपित किया है। भारतीय संविधान हमारे देश के लिए एक आधारभूत विधि है इसके प्रावधानों को भारत का नागरिक, गैर नागरिक, राज्य, व राज्य की इकाइयां मानने के लिए बाध्य है। इस कारण से भी हम भारत के नागरिकों का एक प्रकार से संवैधानिक दायित्व होता है कि हम सब पर्यावरण संरक्षण से संबंधित संवैधानिक उपबंध को जानें, पहचानें व समझें तथा उन प्रावधानों का अक्षरशः पालन करें। इस हेतु न केवल भारतीय जनमानस बल्कि राज्य का भी संवैधानिक दायित्व बनता है, कि वह भी अपने सुलभ स्रोतों के माध्यम से पर्यावरण संरक्षण को ज्यादा से ज्यादा प्राथमिकता देकर जनमानस को परिस्थितिकी तंत्र को बिगड़ने से रोकने के लिए राज्य को कठोर से कठोर कदम ही क्यों ना उठाने पड़े उसे बिगड़ते पर्यावरण प्रदूषण को तो रोकना ही होगा अन्यथा आने वाली पीढ़ियां राज्य को कभी माफ नहीं करेंगी।

मेरा यह शोध पत्र भारतीय संविधान में पर्यावरण संरक्षण संबंधी मुख्य संवैधानिक उपबंध कौन-कौन से हैं, तथा न्यायपालिका किस प्रकार पर्यावरण संरक्षण में महत्वपूर्ण भूमिका निभाती है इन बिंदुओं पर आधारित होगा।

पर्यावरण संरक्षण के लिए अलवर प्रजामंडल की नीतियां।

मनोज कुमार

सहायक प्रोफेसर, राजकीय बालिका महाविद्यालय टपूकड़ा (खैरथल-तिजारा)
अलवर प्रजामंडल की 1938 में स्थापना के बाद से ही रियासत में कार्य करने हेतु पांच सदस्यों की एक कार्यकारिणी का गठन किया गया। इसमें सरदार नल्लू सिंह को अध्यक्ष व पंडित हरि नारायण को सचिव बनाया गया, हालांकि प्रजामंडल ने पंजीयन से पूर्व ही अपने उद्देश्यों का निर्धारण कर लिया था। प्रजामंडल का प्रमुख उद्देश्य रियासतों में उत्तरदाई शासन की स्थापना व सामाजिक-आर्थिक सुधार लाते हुए समाज में एक शैक्षिक जागृति उत्पन्न करना था। अलवर प्रजामंडल ने पर्यावरण संरक्षण की दिशा में कदम बढ़ाते हुए रियासत में खादी के प्रचार प्रसार पर बल दिया। खादी के प्रचार प्रचार के लिए ही प्रजामंडल ने अलवर रियासत में विशाल खादी प्रदर्शनी का आयोजन किया। प्रजामंडल ने रियासत में पर्यावरण की महता समझते हुए पर्यावरण को शिक्षा से जोड़ते हुए रियासत में बढ़ाए गए शिक्षण शुल्क का विरोध किया। अलवर में पारिस्थितिकी तंत्र को बनाए रखने में सहायक सूअरों को मारने पर प्रतिबंध लगा दिया था जिससे किसानों की फसलों को नुकसान पहुंचने लगा। पर्यावरण को बचाते हुए इन किसानों की समस्याओं का समाधान भी अलवर प्रजामंडल द्वारा दूर करने का प्रयास किया गया जिसके लिए रियासत सरकार को भी पर्यावरण संरक्षण हेतु विभिन्न नीतियों का निर्माण करना पड़ा।

जलवायु परिवर्तन का भारतीय कृषि पर प्रभाव व राजस्थान राज्य की वर्तमान स्थिति

डॉ. सीमा वर्मा

डॉ. रजनी तसीवाल

डॉ. अभिलाषा जैन

आचार्य, इतिहास

आचार्य, राजनैतिक विज्ञान

सहायक

आचार्य, भूगोल राजकीय महाविद्यालय(टोंक)

राजकीय महाविद्यालय(टोंक)

राजकीय महाविद्यालय(टोंक)

समस्त मानव सभ्यता इस तथ्य से पूर्णतया सहमत हैं कि भारतीय किसान कई पीढ़ियों से खेती के लिये मौसमी बरसात पर निर्भर रहे हैं। भारतीय इतिहास का प्रत्येक चरण इस बात का साक्ष्य है कि सभ्यताओं का विकास नदियों के किनारों पर और नदियों के आस पास के क्षेत्रों में हुआ है। मानव ने सभ्यताओं के विकास का क्रम प्रारंभ किया। प्राचीन मानव ने आधुनिक मानव तक का सफर तय किया। आधुनिकता की दौड़ने मौसम चक्र को भी अछूता नहीं छोड़ा है। मौसम की एक सुनिश्चित श्रृंखला हुआ करती थी। बदलते मौसम के कारण आज का किसान व भारतीय कृषि सबसे अधिक प्रभावित हो रहे हैं। देश में फसल उत्पादन का कम ज्यादा होने का मूल कारण कम वर्षा होना, अत्यधिक वर्षा होना, फसलों पर कीड़े लगना, बेमौसम बरसात का होना, बाढ़ का आना, सूखा पड़ जाना व ओलों की वोछार आदि है।

मौसम चक्र में आये कुछ परिवर्तनों से देश में नियमित बाढ़, चक्रवात और सूखे जैसी प्राकृतिक आपदायें बढ़ती जा रही हैं। इन आपदाओं की लगातार आवृत्ति से यह तो कहा जा सकता है कि भारत भी जलवायु परिवर्तन से प्रभावित देशों में से एक है। भारतीय किसान यदि घर- पशुशाला और खेत के बीच उचित सामंजस्य रखता है तो बाजार पर उसकी निर्भरता कम होती है और कठिन समय (प्राकृतिक आपदा) में भी उसकी खांदा सुरक्षा बनी रहती है। क्योंकि एक या दो गातिविधियों के नुकसान से पूरी प्रक्रिया नष्ट नहीं होती है।

जलवायु परिवर्तन के दुष्प्रभावों से भारतीय कृषि को बचाने के लिये हमें किस प्रकार अपने संसाधनों का प्रयोग करना है। हम किन पर्यावरण के साथी तरीकों का इस्तेमाल करे जिनसे मृदा का उत्पादकता को बरकरार रख सकें। यह सोचनीय प्रश्न है।

आधुनिक हिंदी कविता में अभिव्यक्त पर्यावरणीय चेतना

डॉ. मेघराज मीना

सहायक आचार्य, हिन्दी Meghrajmeena9988@gmail.com
शहीद हेमराज मीना राजकीय महाविद्यालय, सांगोद (कोटा)

हिंदी साहित्य में आदिकाल, भक्तिकाल, रीतिकाल और आधुनिक काल तक सभी काल खण्डों में प्रकृति के सौंदर्य से लेकर प्रकृति के क्रूरतम रूप का भी कवियों ने अपनी रचनाओं में मार्मिक वर्णन किया है। आधुनिक हिंदी साहित्य में पर्यावरणीय चेतना के लिए अनेक रचनाएँ की गई हैं, इनमें पर्यावरण के गूढ़ रहस्यों एवम् तथ्यों को उद्घाटित किया गया है।

आज पर्यावरण मानवीय जीवन के सरोकारों में सबसे अधिक महत्त्वपूर्ण है। पर्यावरण संरक्षण के प्रति पूरा विश्व चिन्तित है, क्योंकि मानव जीवन की डोर इसके साथ बंधी है। प्रकृति मानव जीवन का अभिन्न अंग है और प्रकृति के साहचर्य में ही मानव का विकास संभव है। प्रकृति और पर्यावरण के बगैर मानव-जीवन की कल्पना भी नहीं की जा सकती है।

प्रसाद की कामायनी का पहला ही पद पर्यावरण का उत्कृष्ट उदाहरण है-
हिमगिरि के उत्तुंग शिखर पर
एकबैठ शिला की शीतल छांह
एक पुरुष भीगे नयनों से
देख रहा था प्रलय प्रवाह
प्रसाद ने प्रकृति को ही सौंदर्य और सौंदर्य को ही प्रकृति माना है।

काशीनाथ सिंह की कहानी जंगल जातकम पर्यावरण को बचाने को लेकर अच्छी कोशिश कही जा सकती है। जिस परिवेश में बैठकर लेखक ने कहानी की रचना की है वह चिपको आंदोलन के आसपास का समय है। लेखक ने समय की मांग को संवेदनात्मक धरातल पर प्रस्तुत किया है जंगल का मानवीकरण करते हुए लेखक ने बरगद बांस पीपल सभी वृक्षों की भूमिका को सही दिशा दी है
मानव जीवन एवं पर्यावरण एक दूसरे के पर्याय हैं। जहां मानव का अस्तित्व पर्यावरण से है वहीं मानव द्वारा निरंतर किए जा रहे पर्यावरण के विनाश से हमें भविष्य की चिंता

सताने लगी है। हमारे प्राचीन वेदो ऋग्वेद सामवेद यजुर्वेद एवं अथर्ववेद में पर्यावरण के महत्व को दर्शाया गया है।

हिंदी साहित्य में आदिकाल से लेकर आधुनिक काल तक प्रकृति को हमेशा विशिष्ट स्थान मिला है। पर्यावरण चेतना की समृद्ध परंपरा हमारे साहित्य में रही है ,वह आज भी उतना ही प्रासंगिक है

प्रसिद्ध कवि रूपेश कन्नौजिया की पंक्तियां हैं-
प्रकृति तो हमेशा ही मेरी सुंदर मां जैसी है,
गुलाबी सुबह से माथा चूम कर हंसते हुए उठती है,
गर्म दोपहर में ऊर्जा भर के दिन खुशहाल बनाती है,
रात की चादर में सितारे जड़कर मीठी नींद सुलाती है,
प्रकृति तो हमेशा ही मेरी सुंदर मां जैसी है,

आदिकालीन कवि विद्यापति की रचित पदावली प्रकृति वर्णन की दृष्टि से अद्वितीय है-
मौली रसाल मुकुल भेल ताब
समुखहिं कोकिल पंचम गाय।

भक्तिकालीन कवियों में कबीर सूर तुलसी जायसी की रचनाओं में प्रकृति का कई स्थलों पर रहस्यात्मक- वर्णन हुआ है। तुलसी ने रामचरितमानस में सीता और लक्ष्मण को वृक्षारोपण करते हुए दिखाया है –
तुलसी तरुवर विविध सुहाए
कहुं कहुं सिया कहुं लखन लगाएं।

रीतिकालीन कवियों में बिहारी पद्माकर देव सेनापति ने प्रकृति में सौंदर्य को देखा परखा है बिहारी का एक दोहा देखने योग्य है-
चुवत स्वेद मकरंद कन
तरु तरु तरु विरमाय
आवत दक्षिण देश ते
थक्यों बटोही बाय।

आधुनिक काल में प्रकृति के सौंदर्य का उपादान क्रूर दृष्टि का शिकार होना प्रारंभ हो जाता है मैथिलीशरण गुप्त के साकेत में चंद्र ज्योत्सना में रात्रि कालीन बेला की प्राकृतिक छटा का मुग्ध कारीवर्णन है-

चारु चंद्र की चंचल किरणें

खेल रही है जल थल में

स्वच्छ चांदनी बिछी हुई है

अवनि और अंबर तल में

छायावादी काव्य में प्रकृति का सूक्ष्म और उत्कट रूप दिखाई देता है। प्रसाद पंत निराला महादेवी वर्मा में पर्यावरण चेतना यत्र तत्र पाई जाती है। पंत को तो प्रकृति का सुकुमार कवि भी कहा गया है पंत की यह पंक्तियां देखने योग्य है

छोड़ दुरुमों की मृदु छाया

तोड़ प्रकृति से भी माया

बाले तेरे बाल जाल में

कैसे उलझा दूं लोचन

GIS: IAES-2024/41

प्रकृति पर मानव का दृष्टिकोण

श्री रामा केश मेहता

सहायक प्राचार्य

राजकीय महाविद्यालय चकराता

9414446221

ईमेल आईडी: ramkeshm171@gmail.com

प्राकृतिक संसाधनों के दोहन को लेकर अधिक सतर्क रहने की आवश्यकता है, क्योंकि हर विजय हमें अपने दृष्टिकोण को बदलने के लिए प्रेरित करती है। पहली बार हम वही परिणाम प्राप्त करते हैं, जो हमने सोचा था, लेकिन दूसरी और तीसरी बार इसके नकारात्मक प्रभाव दिखने लगते हैं, जो पहली बार के सकारात्मक परिणाम को लगभग नकार देते हैं। इस प्रकार, प्रत्येक कदम पर हमें यह समझना आवश्यक है कि हम प्रकृति पर शासन नहीं कर सकते, जैसे कोई भी व्यक्ति अन्य लोगों पर शासन नहीं कर सकता। हम प्रकृति पर इस तरह शासन नहीं कर सकते जैसे हम उसके बाहर खड़े हों, क्योंकि मानव, वनस्पति, और खनिज सभी प्रकृति का हिस्सा हैं और इसके बीच हमारे उत्तरदायित्व जुड़े हुए हैं। प्रकृति पर हमारी विचारधारा केवल इतनी होनी चाहिए कि अन्य जीवों की तरह हम भी प्रकृति को समझें और उसके नियमों

को सही तरीके से अपनाएं। समय के साथ-साथ हमारी जानकारी और समझ इन नियमों के बारे में बढ़ती है और इसके साथ-साथ प्रकृति के अंतरंग स्वरूप को समझने और उसके परिणामों के दूरगामी प्रभावों के बारे में हमारी सोच भी विकसित होती है।

जितना अधिक यह ज्ञान बढ़ेगा, उतना ही मानव को प्रकृति के साथ अपनी परस्पर निर्भरता का बोध होगा। इसके साथ ही, वनस्पति और खनिज, मानव और प्रकृति, बुद्धि और शरीर के बीच संतुलन स्थापित करने की प्रकृतिप्रेरित दृष्टिकोण की भावना उत्पन्न होगी। प्रकृति के साथ हमारा समर्पण केवल ज्ञान और अनुशासन का नहीं, बल्कि उसके अद्भुत और अनूठे स्वरूप को समझने और सम्मान देने का है।

GIS: IAES-2024/42

जयशंकर प्रसाद के साहित्य में प्रकृति प्रेम

अंजू शर्मा

सहायक प्रोफेसर (हिन्दी)

एससीआरएस गवर्नमेंट पीजी कॉलेज सवाई माधोपुर

साहित्य समाज का ही प्रतिबिंब है। समाज जैसा है और जैसा होना चाहिए यह साहित्य हमें बताता है। एक अच्छे समाज के लिए मानव के साथ-साथ स्वच्छ व स्वस्थ पर्यावरण का होना भी अति आवश्यक है इसीलिए साहित्य में पर्यावरण के प्रति जागरूकता रही है। हिंदी साहित्य में कवि जयशंकर प्रसाद ने मानव जीवन के कल्याण सुख और आनंद के लिए पर्यावरण को अत्यधिक महत्व दिया और उसे सर्वोपरि माना। कवि जयशंकर प्रसाद ने प्रकृति और मानव के बीच मधुर संबंध स्थापित करने की चेष्टा की। कवि कहता है- 'ले चल मुझे भुलावा देखकर मेरे नाविक धीरे-धीरे।'

यह कहकर वे प्रकृति के नजदीक ही जाना चाहते हैं।

उनकी कामायनी रचना तो संदेश ही यह देती है कि अगर पर्यावरण का संरक्षण न किया गया तो जो प्रकृति जीवन देती है वह मृत्यु का द्वारा बन जाएगी। कामायनी में आधुनिकता का विरोध करते हुए चरखे की बात करते हैं। वे कहते हैं कि-

‘चल रही तकली धीरे धीरे’

उनके आंसू, झरना, लहर, कानून कुसुम आदि रचनाओं में प्रकृति प्रेम को सर्वोपरि मानते हैं।

कुंजी शब्द – चेषा, प्रतिबिंब

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पर्यावरण संरक्षण एवं भारतीय संविधान

डॉ. सुनीता मीणा, प्रोफेसर (राजनीति विज्ञान), बी.एस.आर. राजकीय कला
महाविद्यालय, अलवर

Email: drsunita2003@gmail.com, मोबाइल: 7976484832

विश्व पटल पर दृष्टिपात करें तो हम देख सकते हैं कि संपूर्ण विश्व में भारत ही एक ऐसा देश रहा है जहां पर पर्यावरण संरक्षण के लिए आदिकाल से ही चिंता व्यक्त की गई है। हमारे धर्म शास्त्रों में भी प्रकृति के सभी घटकों के प्रति आदर की भावना बनी रहे इस हेतु मनुष्य के दैनिक जीवन के क्रियाकलापों को पर्यावरण से जोड़ा गया है। यही नहीं पर्यावरण संरक्षण के बाबत पिछले 60 दशकों में विधि के शासन में विधायिका ने भी समय-समय पर पर्यावरण संरक्षण तथा प्रदूषण के निवारण की दिशा में अधिनियम को पारित कर संपूर्ण भारत राष्ट्र में लागू किया गया है। साथ ही देश का मजबूत आधार स्तंभ न्यायपालिका ने भी अपने न्यायिक सक्रियता के माध्यम से अनेक प्रकार के ऐतिहासिक निर्णय दिए हैं जो पर्यावरण को संरक्षित व सुरक्षित करने में महत्वपूर्ण भूमिका निभाते हैं। चाहे वह यमुना नदी के तट पर चर्म शोधन शाला से संबंधित मामला रहा हो, या आगरा में तेल परिशोधन कारखाने से ताजमहल जैसी विश्व धरोहर को नष्ट होने से बचाने का मामला रहा हो या दिल्ली में डीटीसी बसों में सीएनजी लागू करने का मामला रहा हो या दिल्ली की औद्योगिक इकाइयां जो दिल्ली में प्रदूषण फैला रही थी जिनके बंद होने का ऐतिहासिक निर्णय यह सब निर्णय पर्यावरण संरक्षण को दृष्टिगत रखते हुए किए गए हैं ताकि भारत का प्रत्येक नागरिक जिसे संविधान में मूलभूत अधिकार दिए गए हैं स्वस्थ रहकर अपना जीविकोपार्जन कर सके।

15 अगस्त 1947 को भारत को अंग्रेजों की दासता से मुक्त कर के एक स्वतंत्र राष्ट्र घोषित किया गया था। स्वतंत्र राष्ट्र को संचालित करने के लिए तत्कालीन समय में डॉक्टर राजेंद्र प्रसाद की अध्यक्षता में संविधान निर्माण समिति का गठन किया गया जिसमें 26 नवंबर 1949 को भारत का संविधान निर्मित कर राष्ट्र को सुपुर्द किया

जिसके कुछ प्रावधान जिसमें अनुच्छेद 5, 6, 7, 8, 9, 60, 324, 366, 367, 380, 388, 391, 392, 393 तथा 394 तो इसी दिवस से लागू कर दिए गए परंतु पूर्णरूपेण भारत का संविधान 26 जनवरी 1950 को लागू किया गया। संविधान निर्मात्री समिति में प्रारूप समिति के अध्यक्ष डॉक्टर भीमराव अंबेडकर तथा उनके सहयोगी जो कि तत्कालीन परिस्थितियों से वाकिफ थे। उनकी दूरदर्शिता का अंदाजा इससे लगाया जा सकता है कि उनके द्वारा संविधान में जो प्रावधान किए गए उनके परिणाम भविष्य को दृष्टिगत रखते हुए ही किए गए थे। उनकी दूरदर्शिता का उदाहरण है कि पर्यावरण संरक्षण हेतु उनके द्वारा संविधान निर्माण के समय से ही प्रावधान रखे गए ताकि भविष्य में इस विभीषिका से किस प्रकार बचा जा सके। इस बाबत उन्होंने संविधान में विशेष प्रकार के प्रावधानों को निरूपित किया है। भारतीय संविधान हमारे देश के लिए एक आधारभूत विधि है इसके प्रावधानों को भारत का नागरिक, गैर नागरिक, राज्य, व राज्य की इकाइयां मानने के लिए बाध्य है। इस कारण से भी हम भारत के नागरिकों का एक प्रकार से संवैधानिक दायित्व होता है कि हम सब पर्यावरण संरक्षण से संबंधित संवैधानिक उपबंध को जानें, पहचानें व समझें तथा उन प्रावधानों का अक्षरशः पालन करें। इस हेतु न केवल भारतीय जनमानस बल्कि राज्य का भी संवैधानिक दायित्व बनता है, कि वह भी अपने सुलभ स्रोतों के माध्यम से पर्यावरण संरक्षण को ज्यादा से ज्यादा प्राथमिकता देकर जनमानस को परिस्थितिकी तंत्र को बिगड़ने से रोकने के लिए राज्य को कठोर से कठोर कदम ही क्यों ना उठाने पड़े उसे बिगड़ते पर्यावरण प्रदूषण को तो रोकना ही होगा अन्यथा आने वाली पीढ़ियां राज्य को कभी माफ नहीं करेंगी।

मेरा यह शोध पत्र भारतीय संविधान में पर्यावरण संरक्षण संबंधी मुख्य संवैधानिक उपबंध कौन-कौन से हैं, तथा न्यायपालिका किस प्रकार पर्यावरण संरक्षण में महत्वपूर्ण भूमिका निभाती है इन बिंदुओं पर आधारित होगा।

चौमूं तहसील के कृषि प्रारूप पर नगरीकरण का प्रभाव

शैतान मल जाट

सहायक प्राध्यापक - भूगोल

एससीआरएस राजकीय महाविद्यालय, सर्वाई माधोपुर (राज.)

चौमूं तहसील राजस्थान के जयपुर ग्रामीण जिले का एक उपखंड मुख्यालय है। जो जयपुर शहर से दक्षिण पश्चिम दिशा में 30 किलोमीटर की दूरी पर जयपुर बीकानेर राष्ट्रीय राजमार्ग पर स्थित है। चौमूं शहर जयपुर का उपग्रह नगर है। चौमूं जयपुर को ताजा फल - सब्जी एवं दुग्ध आपूर्ति हेतु प्रसिद्ध रहा है। लेकिन वर्तमान में तीव्र गति से बढ़ते नगरीकरण के कारण चौमूं तहसील के कृषि प्रारूप में बदलाव देखने को मिला है। यहां के कृषि भूमि क्षेत्र पर एक तरफ जयपुर शहर के बढ़ते नगरीकरण एवं जयपुर के चारों ओर रिंग रोड परियोजनाओं के क्रियान्वयन से, तो दूसरी ओर चौमूं के बढ़ते जनसंख्या आकर एवं नगरीकरण के कारण यहां की कृषि भूमि पर लगातार आवासीय कालोनियां एवं औद्योगिक क्षेत्र के विस्तार हो रहा है। साथ ही कृषि भूमि की कीमतों में तेजी से वृद्धि होने से यहां के भूमि उपयोग प्रतिरूप में कृषि भूमि का हिस्सा कम होने लगा है। तथा कृषि प्रारूप पर नगरीकरण का प्रभाव स्पष्ट परिलक्षित हो रहा है।

की वर्ड :

कृषि भूमि ,नगरीकरण, फल सब्जी एवं दुग्ध आपूर्ति ,जनसंख्या आकर, आवासीय कालोनियां ,भूमि उपयोग , उच्च कीमत , परिलक्षित

जलवायु परिवर्तन के सामाजिक आयाम

डॉ. प्रियंका जैन

सहायक आचार्य, समाजशास्त्र

राजकीय महाविद्यालय, देवली (टोंक)

प्रत्येक जीव अपने पर्यावरण की उपज है। पर्यावरण में वे सभी भौतिक एवं अभौतिक, प्राकृतिक एवं मानव निर्मित वस्तुएं एवं शक्तियां सम्मिलित हैं जो मनुष्य को प्रभावित करती हैं। जलवायु परिवर्तन वैश्विक स्तर पर मौजूदा प्रमुख सामाजिक मुद्दों में से एक है जिसने व्यापक रूप से मानव समाज को प्रभावित किया है। इस शोध विषय का उद्देश्य जलवायु परिवर्तन का समाज पर प्रभाव को उजागर करना है। जलवायु परिवर्तन जिसमें अत्यधिक वर्षा, अकाल, भूकंप, भूस्खलन, ग्लेशियर का पिघलना, तापमान में बढ़ोतरी आदि सम्मिलित हैं, के कारण समाज में संघर्ष, कुपोषण गरीबी, भुखमरी, असमानता, प्रवासन जैसे परिणाम उत्पन्न हुए हैं। तापमान में वृद्धि, अत्यधिक वर्षा एवं अकाल जैसी स्थिति ने बेरोजगारी, प्रदूषण की स्थिति जैसी समस्याओं का खतरा भी समाज में बढ़ा दिया है जिसका प्रभाव मानव के शारीरिक एवं मानसिक स्वास्थ्य पर अत्यंत हानिकारक है। जलवायु संबंधित घटनाओं ने मनुष्य के आवास, आय, भोजन, स्वास्थ्य पर प्रतिकूल प्रभाव डालकर गरीबी की स्थिति को उत्पन्न किया है। विशेष सामाजिक समूह जैसे बच्चे, वृद्ध, दिव्यांग, महिलाएं, श्रमिक एवं निम्न समूह जलवायु संकट के प्रति अत्यधिक संवेदनशील हैं। जलवायु बदलाव ने समाज में गरीब-अमीर जैसी असमानता को जन्म दिया है। समाजशास्त्रियों को जलवायु परिवर्तन एवं उसमें बढ़ती सामाजिक असमानता से संबंधित मुद्दों की प्रभावी कार्यकारी योजना बनाई जानी चाहिए।

मुख्य शब्द :- जलवायु परिवर्तन, सामाजिक असमानता, प्रवासन।

पर्यावरणमूलक प्राचीन भारतीय कृषि विज्ञान
(कृषिपराशर के विशेष संदर्भ में)

डॉ. समय सिंह मीना
सह आचार्य, संस्कृत
राजकीय कला महाविद्यालय, कोटा (राज.)
मो. नं. 9468624700

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संकेताक्षर : कृषिपराशर, बीजवपन, कृषिपुराण, ईषा, जुवा, हलस्थाणु, वृष्टिज्ञान, गोपर्व, अलक्तक ।



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