National Seminar

On

"Emerging Trends and Recent Advances in Research in Plant Sciences"

ETRARPS 2026

January 7-8, 2026

Souvenir

ETRARPS 2026

Sponsored By :

MP Higher Education Department, Bhopal

Organized by :

Department of Botany

PMCOE, Sanjay Gandhi Smriti Govt. Autonomous PG. College

SIDHI, Distt.-Sidhi (M.P.) INDIA

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ABSTRACT

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SIDHI, Distt.-Sidhi (M.P.) INDIA

Affiliated to :

Awadhesh Pratap Singh University

Rewa (M.P.) INDIA

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SIDHI, Distt.-Sidhi (M.P.) INDIA

Edited by :
Dr. Rakesh Singh Chauhan
Convener
Asst. Professor, Botany
PMCOE, Sanjay Gandhi Smriti Govt. Autonomous PG. College
SIDHI, Distt.-Sidhi (M.P.) INDIA

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डॉ. मोहन यादव
मुख्यमंत्री

म.प्र. शासन
भोपाल

संदेश

प्रसन्नता का विषय है कि प्रधानमंत्री कॉलेज ऑफ़ एक्सीलेंस संजय गांधी स्मृति शासकीय स्वशासी स्नातकोत्तर महाविद्यालय सीधी के वनस्पति विज्ञान विभाग में "Emerging Trends and Recent Advances in Research in Plant Sciences" विषय पर 07-08 जनवरी 2026 को राष्ट्रीय सेमिनार का आयोजन किया जा रहा है।

विश्व के परिदृश्य में पर्यावरण, बायोटेक्नोलॉजी, माइक्रोबायोलॉजी, बायोडायवर्सिटी, क्लाइमेट चेंज, पेलियो बॉटनी, इकोनामिक बॉटनी, इथेनो बॉटनी इत्यादि विषयों के विभिन्न पहलुओं पर देश के प्रख्यात वैज्ञानिक एवं एकैडमिशियन द्वारा सेमिनार में विचार विमर्श किया जाएगा। ग्लोबल वार्मिंग और प्राकृतिक आपदा की समस्या लगभग पूरे विश्व में है विश्वास है कि इन सभी बिंदुओं पर भी विषय विशेषज्ञ अपने सुझाव रखेंगे

आशा है कि इस अवसर पर प्रकाशित हो रही स्मारिका शोध संदर्भ के लिए महत्वपूर्ण सिद्ध होगी|

कार्यक्रम के सफल आयोजन की हार्दिक शुभकामनाएं....

डॉ. मोहन यादव
मुख्यमंत्री, म.प्र.

इन्दर सिंह परमार
उच्च शिक्षा मंत्री

म.प्र. शासन
भोपाल

संदेश

मुझे यह जानकर अत्यंत प्रसन्नता हुई कि प्रधानमंत्री कॉलेज आफ एक्सीलेंस संजय गांधी स्मृति शासकीय स्वशासी स्नातकोत्तर महाविद्यालय सीधी के वनस्पति विज्ञान विभाग द्वारा "emerging trends and recent advances in research in plant Sciences" विषय पर 7 से 8 जनवरी 2026 तक एक राष्ट्रीय सेमिनार आयोजित किया जा रहा है

हमारा देश अपनी प्राकृतिक संपदाओं और वनस्पतियों के लिए पूरे विश्व में जाना जाता है। यह पादप जैव विविधता से परिपूर्ण है पर्यावरण संरक्षण आज की महती आवश्यकता है। क्लाइमेट चेंज के प्रभाव सभी जगह दिखाई पड़ रहे हैं। जैव प्रौद्योगिकीसूक्ष्म जीव बायोइनफॉर्मेटिक्स इत्यादि पादप विज्ञान की नई शाखाएं हैं। इसके अलावा आर्थिक वनस्पति विज्ञान इथेनो बॉटनी तथा पेलियो बॉटनी इसकी अन्य शाखाएं हैं। इस सेमिनार के द्वारा उपरोक्त विषयों पर हो रहे वर्तमान शोध एवं उनमें उपयोग में आ रही तकनीकी के बारे में उपयोगी जानकारी प्राप्त होगी।

इस राष्ट्रीय सेमिनार में उपरोक्त विषयों पर गंभीर चर्चाएं होंगी तथा जो भी निष्कर्ष निकलेंगे उसमें न सिर्फ भारत अपितु विश्व के अन्य देशों को भी लाभ होगा। सेमिनार की सफलता के लिए मेरी शुभकामनाएं।

(इंदर सिंह परमार)

डॉ. राजेश मिश्र
संसद सदस्य
(लोक सभा)
सीधी, मध्य प्रदेश

सदस्य :
- संसदीय स्थायी समिति - स्वास्थ्य एवं परिवार कल्याण
- परामर्शदात्री समिति - कोयला एवं खान मंत्रालय

शुभकामनाएँ

शुभकामना संदेश

मुझे हार्दिक प्रसन्नता है कि प्रधानमंत्री कॉलेज ऑफ़ एक्सीलेंस संजय गांधी स्मृति शासकीय स्वशासी स्नातकोत्तर महाविद्यालय सीधी के वनस्पति विज्ञान विभाग में "Emerging Trends and Recent Advances in Research in Plant Sciences" विषय पर दो दिवसीय राष्ट्रीय सेमिनार का आयोजन किया जा रहा है ।

सेमिनार का विषय अत्यंत प्रासंगिक है । औद्योगिक विकास के साथ-साथ प्राकृतिक संसाधनों के संक्षिप्त दोहन एवं पर्यावरण के संरक्षण में समन्वय स्थापित करना मानव जीवन के लिए अपरिहार्य है ।

सेमिनार के सफल आयोजन एवं स्मरिका के प्रकाशन की सफलता के प्रतिकृत संकल्पित हूं तथा स्मरिका के सफल प्रकाशन एवं कार्यक्रम के आयोजकों को शुभकामनाएं ।

03.1.26

(डॉ. राजेश मिश्र)

दिल्ली पता : 101, काकेरी अपार्टमेंट, बी. डी. मार्ग, नई दिल्ली - 110001, दूरभाष : 011-23352101
संसदीय क्षेत्र सीधी कार्यालय : जोगीपुर, पैरामेडी गार्डन, सीधी सिंगरौली रोड, (म. प्र.)- 486 661, दूरभाष : 07622299101
सिंगरौली कार्यालय : ट्रैफिक चौराहा, (म. प्र.)- 486 886, मोबाईल : 9425177888, ईमेल : drrajeshmishramnh@gmail.com

रीती पाठक
विधायक
मध्यप्रदेश विधानसभा क्षेत्र-77 सीधी

एफ-48, वन विभाग के सामने
कोतवाली रोड, सीधी (म.प्र.)
फोन- (07822) 250254 (नि.) 250255 (आ.)
मोबाइल : 09755653375

क्र.– 1192

दिनांक– 05/01/2026

संदेश

यह अत्यंत हर्ष का विषय है कि प्रधानमंत्री कॉलेज ऑफ एक्सीलेंस संजय गांधी स्मृति शासकीय स्वशासी स्नातकोत्तर महाविद्यालय सीधी के वनस्पति विज्ञान विभाग में **"Emerging Trends and Recent Advances in Research in Plant Sciences"** विषय पर दो दिवसीय दिनांक 7 एवं 8 जनवरी 2026 को राष्ट्रीय सेमिनार का आयोजन किया जा रहा है।

प्राकृतिक संसाधनों का समुचित दोहन एवं सतत विकास आधुनिक विश्व का सर्वाधिक प्रासंगिक विषय है। पौधों का संरक्षण एवं पर्यावरण संरक्षण जैसे विषय मानव के लिए सर्वाधिक चुनौती पूर्ण है। आशा करती हूं कि इन सभी बिंदुओं पर सेमिनार में वैज्ञानिकों द्वारा परिचर्चा होगी जिसका लाभ मानव के कल्याण हेतु होगा। उक्त अवसर पर सोविनियर का प्रकाशन किया जा रहा है। मेरी ओर से कार्यक्रम के सफल आयोजन एवं स्मरिका के प्रकाशन हेतु शुभकामनाएं।

(रीती पाठक)

Dr. Rajendra Kumar Kuraria
M.Sc., Ph.D., PGDCA, M.Sc.(IT), MBA (HR & IT)
Vice-Chancellor
डॉ. राजेन्द्र कुमार कुड़रिया
कुलगुरु

Awadhesh Pratap Singh University
Rewa - 486 003 (M.P.), Bharat
अवधेश प्रताप सिंह विश्वविद्यालय
रीवा - 486 003 (म.प्र.), भारत
vcapsu@gmail.com

Ref. No.

Date .....

दिनांक 3 जनवरी 2026
विक्रम संवत– 2082

संदेश

यह जानकर अत्यन्त प्रसन्नता हुई कि संजय गांधी शासकीय स्नातकोत्तर महाविद्यालय, सीधी द्वारा दिनांक 7 एवं 8 जनवरी 2026 का **"Emerging Trends and Recent Advances in Research in Plant Science (ETRARPS 2026)"** विषय पर राष्ट्रीय सेमीनार का आयोजन किया जा रहा है ।

राष्ट्रीय सेमीनार का विषय अत्यन्त समयोचित एवं प्रासंगिक है । पादप विज्ञान के क्षेत्र में हो रहे नवीन अनुसंधान, उभरती प्रवृत्तियां तथा आधुनिक तकनीकी प्रगतियां न केवल अकादमिक जगत को समृध्द करती हैं, बल्कि सतत विकास, जैव–विविधता संरक्षण, कृषि नवाचार एवं पर्यावरणीय संतुलन की दिशा में भी महत्वपूर्ण योगदान देती है ।

यह सेमीनार देशभर के वैज्ञानिकों, शिक्षकों, शोधार्थियों एवं विद्यार्थियों को ज्ञान–विनिमय, अंतर्विषयक संवाद तथा सहयोगात्मक अनुसंधान के लिये एक सशक्त मंच प्रदान करेगा । मुझे विश्वास है कि इस आयोजन से पादप विज्ञान के नवीन आयामों पर सार्थक विमर्श होगा और भावी अनुसंधान की दिशा को नई ऊर्जा एवं दृष्टि प्राप्त होगी ।

मैं सेमीनार की पूर्ण सफलता की कामना करता हूं तथा विश्वास करता हूं कि सभी प्रतिभागियों के लिये यह आयोजन ज्ञानवर्धक, प्रेरणादायी एवं उपयोगी सिध्द होगा ।

(डॉ. राजेन्द्र कुमार कुड़रिया)
कुलगुरु

प्राचार्य
संजय गांधी स्मृति शासकीय स्वशासी स्ना. महाविद्यालय
सीधी, म0प्र0

Dr. Rajendra Prasad Singh
Additional Director
HIGHER EDUCATION
REWA DIVISION REWA (M.P.)

Message

I am glad to know that the Department of Botany, PMCOE Sanjay Gandhi Smriti Government Autonomous PG College, Sidhi, is going to organize a National Seminar on "Emerging Trends and Recent Advances in Research in Plant Sciences", to be held on 7th and 8th January 2026.

The topic of the seminar chosen by the convener is highly significant in the present context. I am sure that the seminar will provide an excellent platform for scientists, planners, and industrialists to exchange their ideas and share their experiences on related topics.

I wish the National Seminar a grand success.

5/1/2026

(Dr. Rajendra Prasad Singh)

To,

Convener National Seminar

Department of Botany

PMCOE, Sanjay Gandhi Smriti Government Autonomous PG College

Sidhi MP India

Dr. Prabhakar Singh
Principal

PMCOE, Sanjay Gandhi Smriti Govt. Autonomous PG. College SIDHI, Distt.-Sidhi (M.P.) INDIA

Message of Principal

I feel pleasure that the department of botany is going to organize National Seminar on **"Emerging and Recent Advances in Research in Plant Science**" to be held on 7th and 8th January 2026.

The topic of this seminar is very appropriate with reference to climate change environment and health in global scenario.

I wish a grand success of the National seminar and for best publication of the papers complied and edited by the convener. I hope that this seminar will establish new horizon and provide better platform to the scientist to discuss on various issues related to the topic.

5/1/2026

(Dr. Prabhakar Singh)

Dr. I. P. Prajapati
Professor
Department of Botany

PMCOE, Sanjay Gandhi Smriti Govt. Autonomous PG. College SIDHI, Distt.-Sidhi (M.P.) INDIA

Message

It gives me immense pleasure to extend a warm welcome to all of you at this seminar on "Emerging Trends and Recent Advances in Research in Plant Sciences". In an era of rapid technological and social transformation, academic discourse remains the cornerstone of progress.

It is a matter of great pride that our Department of Botany is organizing this event, which spans the vast and vital spectrum of plant sciencesfrom the fundamental principles of biodiversity and ecology to the cutting-edge frontiers of biotechnology and molecular biology. This seminar serves as a comprehensive platform for intellectual exchange, bridging traditional economic botany with modern genetics and plant breeding.

Our carefully curated sub-themes reflect the urgent need for an integrated approach to pressing global challenges. By delving into climate change, carbon sequestration, and resilient agriculture, we confront the imperatives for planetary survival. At the same time, through explorations of ethnobotany, plants in literature, and cultural connections, we honor the profound, deep-rooted bond between humanity and the botanical world.

Our department has always nurtured intellectual curiosity and innovation, and this gathering exemplifies that commitment by uniting bright minds to pioneer solutions in plant biotechnology and climate-resilient crops. I am confident that these deliberations will spark fresh ideas, foster collaborations, and yield innovative strategies for the sustainable management of plant resources.

I extend my best wishes to the organizing committee, researchers, scientists, and students for a highly productive and enriching experience.

Thank you…

Dr. Rakesh Singh Chauhan
Asst. Professor
Department of Botany

PMCOE, Sanjay Gandhi Smriti Govt. Autonomous PG. College SIDHI, Distt.-Sidhi (M.P.) INDIA

Preface

The seminar is being organized to provide an academic platform for students, researchers, and faculty to engage with emerging trends and current advances in research in plant sciences. Rapid developments in areas such as plant biotechnology, conservation, climate resilience, and sustainable agriculture demand updated scientific understanding. This two-day seminar aims to strengthen conceptual knowledge, encourage scientific dialogue and promote collaborative learning. By inviting experts from reputed national organizations, the program supports exposure to emerging research methodologies and motivation for young learners to pursue plant science research with greater clarity and scientific rigor.

The seminar aims to create a platform for researchers around the globe to exchange knowledge and share their findings in the areas mentioned. The discussions are expected to help consolidate global expertise and knowledge, which will be an opportunity for eminent scholars to extend their scientific collaborations in the future. The amalgamation of conventional and modern avenues will attract people to work together in diverse fields. The main objective of the seminar is to bring together plant biologists across the country to deliver inspiring talks and share their latest research experiences. Given the vast abundance of talent in our south kaimore Son-Gopad-Banas River valley region, we believe the seminar will be a means of participation of young students and scientists of the country with the aspiring researchers of this region. This seminar will provide an ideal platform to inspire the youth of this region towards science and would be a means to foster research collaborations.

The sub themes of seminar are in strict adherence to the topic of seminar. Biodiversity, Ecology, Conservation, Phytogeography; Physiology and Biochemistry; Biotechnology, Molecular Biology, Microbiology; Agriculture, Horticulture, Forestry, Genetics & Plant Breeding; Environmental Science, Climate Change, Carbon Sequestration, Pollution; Fossils; Management of Plant Resources; Ethnobotany, Medicinal Plants, Economic Botany; Plants and Literature, Plants and Administration, Plants and Culture; and other topics related with research in Plant Sciences.

We have got overwhelming responses from scientist, academicians, doctors, research Scholars, students from various part of the country we received more than 150 abstracts of research papers of very good quality covering themes of the seminar.

I am very much sure that the deliberations made during the seminar will contribute significantly to spread the knowledge about the emerging Trends and recent advances in research in plant Sciences. I hope that the deliberations suggestions and recommendations of the seminar will be used full to academicians, research scholars, industrialists, policy makers, and stakeholders as well as for the Welfare of the mankind.

Finally, I extend my sincere thanks to principal, colleagues, botanists, guest faculties, research scholars, students, office staff, Well wishes for their untiring effort Putin for making seminar successful. I am extremely thankful to MP higher education department Bhopal for providing financial assistance.

Dr. Rakesh Singh Chauhan
Convener

Dr. Rakesh Singh Chauhan
Asst. Professor
Department of Botany

PMCOE, Sanjay Gandhi Smriti Govt. Autonomous PG. College SIDHI, Distt.-Sidhi (M.P.) INDIA

Acknowledgement

My dear delegates and friends,

I feel pleasure to welcome you all in National seminar on "emerging Trends and recent advances in research in plant Sciences" (ETRARPS 2026) on behalf of organising committee in the original Land of White Tigers India.

I am thankful to Madhya Pradesh Higher Education Department Bhopal for providing financial assistance to conduct National seminar.

I express my deep sense of gratitude to Former Professor Dr Rahasya Mani Mishra, Ex VC APSU; Dr Dashrath KishanjiKapgate, Former professor J K M College Nagpur University; Professor Mohammed Latif Khan,Department of Botany DHSGSU Sagar; Dr Naveen Kango, Professor and Head department of microbiology DHSGSU Sagar;Professor Pratyoosh Shukla School of Biotechnology BHU Varanasi;Professor Dr Sanat Kumar Tripathi, Dean College of Agriculture Rewa;Professor Skand Kumar Mishra, Govt. Model Science College Rewa;Professor Brahmanand Tripathi,Government MKBArt and Commerce College Jabalpur; Dr Atul Tiwari Associate Professor and Head Department of Environmental Biology, APS University Rewa; Dr Mrigendra Kumar Dwivedi,PRSSU Raipur;Dr Pratap Shrivtastav Department of Botany University of Allahabad;Dr Mithilesh Yadav VBSPU Jaunpur for their encouragements and valuable suggestions.

It is a pleasure for me to register our deep communication and gratitude to scientist, professor, doctors, research scholars, students from the different parts of the country who came SIDHI to participate and present their paper in the seminar. I am extremely thankful to all respected dignitaries those who sent messages and good wishes for the seminar.

I am grateful to principal dr Prabhakar Singh sir, professors, assistant professors, guest faculties, research scholars, non-teaching staff of our college whose inspiration and hard work have motivated me to organise the National seminar.

Sincere thanks to members of all print and electronic media who have provided broader coverage in their newspapers I also want to express my heartiest Thanks to all delegates.

I am especially thankful to our head of the department dr I P Prajapati, PMCOE Sanjay Gandhi Smriti government autonomous PG college Sidhi for his vision and dedication to organize the conference in the department.

I am also thankful to my family members for their encouragement and support lastly, I want to thank again all those persons who are directly or indirectly concerns with the seminar.

Dr. Rakesh Singh Chauhan
Convener and Assistant Professor of Botany
PMCOE Sanjay Gandhi Smriti government autonomous
PG College, Sidhi, MP India

CONTENTS

Biodiversity During Jurassic and Cretaceous Periods of Madhya Pradesh, Central India

Dashrath Kapgate
Former Head, Botany Department, J.M. Patel College,
Nagpur UniversityBhandara,M.S.
Email: dkapgate@gmail.com

Abstract

The Kota Formation is primarily composed of sandstones, limestones, clays, and mudstones, and is considered to have been deposited in a lacustrine environment. The faunal assemblages of this region are reported to contain a rich assemblage of fossil fishes, sauropod dinosaurs, Pterosaur (Flying reptiles), Scutes of Crocodiles and Mammals, in addition to fossil Ostacords, Branchiopods and Insects. The floral assemblage constitutes mostly Pteridophytes Gymnospermous leaves and woods, dominating by Dadoxylon, Araucarioxylon and Cupressinoxylon woods. Most of them found in situ near Sironcha, at Waddham locality up to 40 - 60 feet long and 8 -10 feet in diameter. The overall faunal as well as floral assemblage are in favors of deposition under fresh-water conditions during Lower Jurassic period. However, presence of exclusively marine genera of fishes and Pterosaur, compared with thick limestone beds of large aerial extent, indicates existence of marine conditions towards the end of deposition of Kota formation. Floristic and other evidences suggest middle Jurassic or slightly younger age to the Kota Formation. The Deccan Intertrappean beds of Central India, have attracted considerable interest since the pioneering work of Birbal Sahni beginning in the 1940s because of the diversity of well-preserved silicified plant remains, which provide important clues to the flora that existed in this volcanically active region shortly before and after the Cretaceous-Cenozoic boundary. Despite excellent preservation down to the cellular level, the fossils preserved in opaque chert provide challenges to investigation. Diversity of this region mainly consists 5 Algal genera, woods & leaves infected by fungus. 1 thallus, 3 sporogonium of Bryophyes, 5 genera of Pteridophyta, 3 woods 3 female and 1 male cones of. Gymnosperms, 8 genera including 27 species of Palm woods & 4 sps. of palm fruits & Fruits of other genera of Monocots, 26 Taxa belonging to 19 families consisting woods and fruits of dicots. Regarding Abundance, Vidharbha – Chhindwara assemblage shows, all plants groups including dominant Angiosperms whereas, Mandla assemblage shows, only Angiosperms, Dominated by Dicot & Palm woods.

Keywords: Maastrichtian, Megaflora, Intertrappean beds, Diversity, Central India.

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Exploring Microbial Diversity for Industrial and Therapeutic Enzymes

Naveen Kango
Department of Applied Microbiology
Dr. Hari Singh Gour Vishwavidyalaya (A Central University)
Sagar (M.P.) 470003; 9425635736, nkango@gmail.com

Abstract

A great wealth of microbial flora remains unexplored and awaits judicious utilization. Microorganisms are bestowed with inherent abilities of elaborating biocatalysts and present themselves as a unique bioresource for generating industrial and therapeutic bioactive molecules.

In our laboratory various groups of microorganisms such as thermophilic fungi, alkalophilic fungi, actinomycetes, alkalophilic bacteria etc. are being isolated and evaluated for their enzymatic potential. Mainly, diverse microorganisms are examined for production of microbial hydrolases such as glycosidases (cellulase, xylanase, inulinase), proteases and L-asparaginases. Among major findings, *Thermomyceslanuginosus* MTCC 9331 has been found to be hyperproducer of thermostable xylanase (3420 nkat/ml). *Aspergillus terreus*FBCC 1369 has been found to produce significant levels of endoglucanse (17 nkat/ml), xylanase (171 nkat/ml), b-glucosidase (22 nkat/ml), a-galactosidase (8.5 nkat/ml) and endo-b-mannanase(130 nkat/ml). Thermostability profile of hemicellulases from interesting thermophilic molds has been ascertained and some of them have been evaluated for hydrolysis of wheat straw and generation of glucose.

Alkaline proteases have been studied from alkalophilic molds and bacteria and were found to be very effective in dehairing of animal hides. Inulin hydrolyzing enzymes have been characterized from various fungi and yeasts including *Aspergillus niger*, *Penicillium* sp., *Kluyveromycesmarxianus* etc. for generation of fructose and inulo-oligosaccharides. Also, many such isolates have been found to produce fructoslyltranferase useful generation of fructo-oligosaccharides (FOS) from sucrose. L-asparaginases have been studied from two diverse groups, actinomycetes and mesophilic molds. *Streptomyces phaeochromogenes* and *A. terreus*have been found to elaborate significant levels of extracellular L-asparginase showing anti-leukemic activity. The presentation will cover various aspects of production and application of important microbial hydrolases.

Keywords: Enzumes, Proteases, alkaline, Fungi, Hydrolase

●●●

Recent Trendsand Future Prospects of Agriculturein India for Sustainable Developement

S.K. Tripathi*, Radha Singh, Pradeep Mishra, and Aditya Bhooshan Srivastava
Jawaharlal Nehru Krishi Vishwavidyalaya, College of Agriculture, Rewa, Madhya Pradesh
*Corresponding author:deanagcrewa@rediffmail.com

Abstract

Indian agriculture occupies a strategic position in the national economy, providing livelihoods to a substantial share of the population while contributing significantly to Gross Value Added. Notwithstanding its importance, the sector is confronted with persistent structural and environmental

constraints, including climate variability, water stress, declining soil health, fragmented landholdings, low factor productivity, and high post-harvest losses. This paper examines recent trends and emerging trajectories of Indian agriculture in the context of sustainable development. Emphasis is placed on the transition towards Agriculture 4.0, characterized by the integration of artificial intelligence, Internet of Things, drones, robotics, big data analytics, and biotechnology for recision farming, efficient resource management, and climate-risk mitigation. The study also analyses diversification towards high-value horticulture, regenerative and conservation-based practices, and controlled environment agriculture as pathways for enhancing farm income and ecological resilience. These developments are critically assessed in relation to their contribution to the Sustainable Development Goals, particularly food security, poverty alleviation, climate action, and ecosystem sustainability. Despite technological progress, challenges related to affordability, digital infrastructure, institutional support, and inclusiveness of small and marginal farmers remain significant. The paper highlights prospects centred on policy reforms, data-driven governance, capacity building, and youth participation to facilitate scalable adoption of sustainable technologies. Strengthening these dimensions is essential for fostering long-term productivity, resilience, and sustainability in Indian agriculture.

Keywords: Agriculture 4.0, Sustainable agriculture, Green Revolution, Precision farming, SDGs, Climate resilience, Digital transformation, prospects.

●●●

Plant biodiversity of forests of bandhvgarh of Vindhya Region of India

Prof. Skand Kumar Mishra
Govt. MS Golwalkar College (APS University) Rewa (M.P) India
Mob- +91-9981602646, Email- skandbt@gmail.com

Abstract

Bandhvgarh surrounded by thirty-two small Vindhya hills. It is one of such natural gifts which is endowed with precious natural resources. The forests of this reason are mixed tropical moist deciduous climate type with Shorea robusta and Dendrocalamusstrictus trees. This forest comes under Sal zone of North-East of the Country. In year 1993 this Park is declared as the Bandhvgarh Tiger Reserve a core area of 694 sq. kms. and Panpatha Sanctuary along with a buffer area of 437 sq. kms. Based on composition the forests are divisible into four categories namely: hill peak, hill slope, hill bottom forest groups and river, rivulet and water catchment forests. The rare variety of trees are Ficus tomentosa Roxb., a tree with one feet long pod, feathered seeded. In addition, Casearia tomentosa, Casearia graveolens, Ficus semicordata, Limonissvifiddims. Multiple medicinal plants are conserved in Bandhvgarh which are used as Aurvedic medicines, through no action plan has been desired to protect and maintain them. The major medicinal plants prevalent in this area include: Andrographis paniculata, Asteracantha longifolia, Asparagus racemosus, Abrus precatorius, *Curcuma angustifolia, Chorophytum tuberosum, Curculigoorchioides, Centella asiatica,Cyamposis psoraloides* etc. The fruit trees are Emblica officinalis, Buchananialanzan, Cordia dichotoma, Aegle marmelos, Feronia limonia, Diospyros

melanoxylon, Syzygiumheyneanum etc. whose fruits form the consumables for tribes and wild animals. Tectonically the species of trees of Bandhvgarh are classified as under: dense group trees (high and medium pillar-shaped, high and medium shadowed), dense bushes, trees with persistent leaves, ex. forest trees. The birds and animals avail these forests for shelter according to their own convenience. The grass lands of Bandhvgarh are categories as under hill top, hill bottom, marshy, rivulet side, extensive grazing,dense forest, hill slope grass lands which provides grasses for feeding of wild herbivorus animals of the park. Present paper deals the plant biodiversity of forests of Bandhvgarh in detail.

Keywords: Bandhavgarh, Panpatha sanctuary, Sanjay Dubari Tiger Reserve.

●●●

Biodiversity as an Indicator of Environmental Conditions

Dr. Atul Kumar Tiwari,
Associate Professor & Head
Department of Environmental Biology,
Awadhesh Pratap Singh University, Rewa (M.P.) 486003.

Abstract

From an evolutionary perspective,biodiversity reflects long-term interactions between organisms and their environments. Natural selection acts on genetic variation within populations, favoring traits that enhance survival and reproduction under specific environmental conditions. Biodiversity constitutes a fundamental component of the Earth's environmental system and plays a decisive role in maintaining ecological stability, ecosystem functioning, and evolutionary resilience. Environmental fluctuations over geological time scales have driven speciation, adaptive radiation, and extinction, shaping present-day biodiversity patterns. However, the unprecedented speed and scale of current environmental changes challenge the adaptive capacity of many species. The diversity of life, encompassing genetic, species, and ecosystem-level variation, is intricately linked to environmental conditions such as climate, habitat structure, resource availability, and biogeochemical cycles. Organisms interact dynamically with their surroundings thereby shaping ecosystem structure and productivity. The environment, in turn, influences their distribution, behavior, physiology, and evolutionary adaptation. Understanding the interrelationship between biodiversity and the environment is therefore essential for addressing contemporary challenges related to habitat degradation, climate change, and biodiversity loss. Conservation of biodiversity therefore requires not only the protection of species but also the preservation of the environmental conditions and ecological processes that sustain evolutionary potential. Environmental heterogeneity is one of the primary drivers of biodiversity, as diverse habitats provide a wide range of ecological niches that support varied life forms. Forests, grasslands, wetlands, deserts, freshwater bodies, and marine ecosystems harbor distinct communities adapted to specific environmental conditions. Biodiversity is also a critical regulator of ecosystem processes and environmental health. Diverse communities enhance ecosystem stability by increasing functional

redundancy, ensuring that key ecological functions persist even when individual species decline. The loss of many species often disrupts these ecological interactions, leading to cascading effects such as vegetation shifts, soil degradation, altered hydrological cycles, and reduced ecosystem resilience to environmental stressors. The relationship between biodiversity and the environment has been profoundly altered by anthropogenic activities. Habitat destruction, fragmentation, pollution, overexploitation of wildlife, invasive species introduction, and climate change have accelerated species extinction rates far beyond natural background levels. Environmental modifications caused by deforestation, mining, urbanization, and agricultural intensification have led to the simplification of habitats and the decline of sensitive species. Climate change further exacerbates biodiversity loss by altering temperature regimes, precipitation patterns, and seasonal cycles, forcing species to shift their geographic ranges or adapt rapidly to new environmental conditions. Many organisms, particularly those with narrow ecological tolerances or limited dispersal capacity, are unable to cope with such rapid changes, resulting in population declines and local extinctions.

Keywords: human, survival, habitat restoration, wildlife, urbanization.

●●●

Hidden Foundations of Sustainability: Rhizosphere Ecology and Soil Carbon Dynamics

Dr Pratap Shrivastav
Department of Botany, University of Allahabad
E-mail: Prataps103@gmail.com

Abstract

Sustainability in agroecosystems is fundamentally a belowground phenomenon, governed by complex interactions among soil carbon (C) and nitrogen (N) cycling, microbial communities, and rhizospheric processes. This presentation explores how targeted manipulation of belowground ecological processes can enhance soil health, plant performance, and climate resilience. Emphasis is placed on soil carbon dynamics as a central regulator of ecosystem function, mediated through microbial activity, soil aggregation, and C–N coupling under varying management and environmental conditions. Drawing from experimental and conceptual frameworks, it has been identified that nature-based interventions such as plant growth–promoting rhizobacteria (PGPR), phytochemical applications, root exudate modulation, and arbuscular mycorrhizal fungi (AMF) need to be witfully exploited in an integrated manner, keeping ecological perspective in mind as tools for engineering the rhizosphere. These approaches need to be discussed in the context of sustainable agriculture, sodic soil restoration, and climate-smart land management. By integrating microbial ecology, nutrient cycling, and soil structural dynamics, it must be identified that how eco-mimicry and process-based management can drive long-term soil carbon stabilization, improved nutrient-use efficiency, and ecosystem resilience. The broader relevance of these insights will be helpful to meet sustainable development goals, regenerative agriculture, and climate mitigation strategies efficiently.

Keywords: Rhizosphere,sustainable agriculture,PGPR, AMF.

●●●

Advancing Sustainable Material Science through Plant Biochemistry: Fabrication and Characterization of Cellulose Nanocrystal-Based Bio-nanocomposites

Mithilesh Yadav *

* Department of Chemistry, Prof. Rajendra Singh (Rajju Bhaiya) Institute of Physical Sciencesfor Study and Research, Veer Bahadur Singh Purvanchal University Jaunpur, U.P. India,222003
Email: mithileshvbspu2019@gmail.com

Abstract

The field of plant biochemistry is increasingly focused on the transition from petrochemical- based plastics to sustainable biopolymers derived from plant biomass to mitigate environmental waste. While natural biopolymers such as cellulose, chitosan, and alginate offer excellent biodegradability and edibility, their practical application in packaging is often hindered by poor mechanical strength and high sensitivity to moisture. To overcome these biochemical limitations, Cellulose Nanocrystals (CNCs)—highly crystalline particles extracted from plant cell walls—serve as a critical reinforcing agent. By leveraging the unique surface chemistry and high aspect ratio of CNCs, these nanocrystals are integrated into biopolymer matrices using solution casting blend techniques to create high-performance bio-nanocomposites. This research focuses on the fabrication and characterization of these films, utilizing analytical tools such as FTIR, SEM, and TGA to evaluate their structural and thermal stability. The resulting CNC-reinforced films demonstrate significantly improved tensile strength and enhanced barrier properties against water vapor and UV radiation, proving that plant-derived nanomaterials are essential for developing green, sustainable, and effective alternatives for food preservation and industrial packaging.

Keywords: Plant Biochemistry, Plastic, Biopolymer, Cellulose.

●●●

Wash performance of crude alkaline proteases from *Bacillus halodurans* RSCVS-PF21 and *Fermentibacillus* sp. RSCVS-HS3 for detergent industry

Rakesh Singh Chauhan[1*], Rahasya Mani Mishra[1,2]

[1]Centre for Biotechnology Studies, Awadhesh Pratap Singh University, Rewa, 486003, Madhya Pradesh, India.

[2]Department of Environmental Biology, Awadhesh Pratap Singh University, Rewa, 486003, Madhya Pradesh, India.

[*]Corresponding author E-mail address: rakesh.s.chauhan1@gmail.com

Abstract

The study's goal was to check wash performance potential of crude alkaline protease filtrates from *Bacillus halodurans* RSCVS-PF21 and *Fermentibacillus* sp. RSCVS-HS3 both isolated from alkaline soil from vindhya region (Rewa division) of Madhya Pradesh of Central India. It was found that when mixed with detergents these alkaline protease crude filtrates enhanced the washing efficacy of detergents. Thus, both are potential candidates to be used in detergent industry.

Keywords:*Bacillus halodurans* RSCVS-PF21, *Fermentibacillus* sp. RSCVS-HS3, alkaline proteases, Bacteria.

●●●

Millet studies of ancient food crop

Dr. I. P. Prajapati, Dr. Kanhaiya Lal Kumhar, Dr Raj Lal Patel
Department of Botany, PMCOE Sidhi

Abstract

Millet is an important ancient cereal crop noun for its nutritional value is has served as a staple food for various cultures for thousand of years offering a rich source carbohydrates, proteins, vitamins and minerals. Ministry of agriculture and farmers welfare in March 2023 calls millet the backbone of Indian agriculture as they are hardly resilient and climate adaptable craft that can grow easily in degraded soil and survive in temperatures up to 50 degree Celsius. Millet in general are climate resident. They can even with stand draught like conditions and survive in minimum moisture. Millet consumption is witnessing a gradual rise in popularity among urban Indians the tribal communities for whom the grain was ones a staple diet preferred to eat rice accessible freely through the public distribution system (PDS) being low in iron and amino acid. In an attempt to revive that traditional of millet consumption the year 2023 Was declared as the international year Of Millet by the united Nation following a request by the government of India.

Key words- Millet ancient cereal crop, tribes.

●●●

Study of losses in productivity of aquatic plants

1 Dr. Diwakar Singh, 2 Dr. Vivek Kumar Yadav, 3 Dr. Amrita Singh,
1. PMCOE, S.G.S. Govt. Auto. P. G. College, Sidhi (M.P.)
2. Govt. T.R.S. College Rewa (M.P.)
3. PMCOE, Govt. PG College, Satna (M.P.)

Abstract

Productivity in aquatic ecosystems constitutes a cornerstone of global carbon cycling and food web stability, yet aquatic plants from microscopic phytoplankton to large macrophytes routinely suffer substantial declines driven by abiotic, biotic, and anthropogenic stressors. Abiotic factors, including light attenuation from turbidity, nutrient imbalances (e.g., eutrophication induced algal blooms that out shade submerged macrophytes), and physiological disruptions from thermal stress amid escalating global water temperatures, profoundly impair primary production. Concurrently, biotic pressures such as intensified herbivory and invasive species proliferation displace native flora, further destabilizing productivity dynamics. This study elucidates these primary mechanisms underlying aquatic plant productivity losses. This research integrates meta-analysis of biomass data with site-specific photosynthetic efficiency (Pn) assessments, revealing key drivers of productivity loss in aquatic

systems. Sedimentation and turbidity dominate losses in lotic environments, while climate-driven metabolic shifts yield net declines in carbon sequestration despite early growth. Herbicides and heavy metals chronically impair chlorophyll synthesis. By quantifying these impacts, the study establishes thresholds for irreversible loss, informing targeted restoration to safeguard biodiversity and ecosystem services like water filtration and coastal protection.

Keywords: Aquatic Macrophytes, Anthropogenic stressors, Carbon cycling, Eutrophication,Phytoplankton.

●●●

Biological Management of Prominent Weed *Parthenium hysterophorus* in the Rewa Division of Madhya Pradesh

Neetu Singh, Dr.Manoj singh
PM college of excellence Govt. P. G. College, Satna.

Abstract

Parthenium hysterophorus is one of the most invasive and problematic weeds affecting agricultural productivity, biodiversity, and human health across India. Conventional control methods, including chemical herbicides and mechanical removal, have shown limited long-term success and raise concerns regarding environmental safety. The present study evaluates the mycoherbicidal potential of indigenous fungal pathogens isolated from naturally infected Parthenium hysterophorus plants in the Rewa Division of Madhya Pradesh. Fungal isolates were collected, identified, and screened under laboratory and controlled conditions to assess their pathogenicity, disease severity, and impact on weed growth parameters. Selected fungal strains exhibited significant reductions in germination, biomass, and chlorophyll content of Parthenium, indicating strong host-specific pathogenic activity. Environmental factors influencing fungal efficacy were also examined to determine their suitability under local agro-climatic conditions. The findings highlight the potential of native fungal pathogens as eco-friendly and sustainable bio-control agents for managing Parthenium hysterophorus. This study supports the integration of mycoherbicides into weed management strategies as an alternative to chemical control, contributing to sustainable agriculture and environmental conservation in the Rewa region. A total no of, 17 fungal pathogens were isolated.Maximum frequency was observed _curvularia_ lunata followed by *Alteraryalterneta, fugerium* species and minimum frequency was observed gycodermaviridae.Curvularia_ lunata was select as biocontrol agent for further investigation.

Keywords:*Curvularialunata, Parthenium hysterophorus* fungi.

●●●

Various Strategies for Resource Utilization in Singrauli District Madhya Pradesh

Nilesh Singh Chauhah, Dr Rajendra Prasad Singh
Department of Geography, PMCOE S. G. S. Govt. Aut. P.G. College Sidhi M. P.
E-mail: nilesh_singh0@yahoo.com

Abstract

Several studies highlight the need for micro-level planning and people- centred development to address development disparities among regions. The Baghelkhand region in Madhya Pradesh is one such underdeveloped area that requires focused attention and concerted development efforts. A report by NITI Aayog on the Aspirational District Programme (2018) identified eight districts in Madhya Pradesh as backward, with Singrauli district being recognized as one of the most underdeveloped districts among them. This emphasizes the urgent need to prioritize development initiatives and allocate resources to uplift the region and improve the well-being of its residents.

Keywords: Microlevel planning, resource utilization, NITI Aayog.

●●●

Analysisof Fossil Megaflora&Palaeoclimate of Madhya Pradesh, India, During Upper Cretaceous (45 - 65 million Years) Period

Kapale
Department of Botany, Govt. PV P.G. College, Parasia, Dist. Chhindwara, M.P.
Email: kapale_r@rediffmail.com

Abstract

The Deccan Intertrappean fossil Flora of Madhya Pradesh, central India occupies a unique position in the palaeovegetational history of India. It consists of well-preserved fossil woods, leaves, fruits, flowers representing all the major groups of the Plant Kingdom (from Algae to Angiosperms). Deccan Intertrappean beds of Central India are well exposed in Vidarbha of Maharashtra and nearby areas of Madhya Pradesh. In Chhindwara (Mohgaonkalan, Sauncer, Singhpur); Baitul (Rambakhdi, Amabagoli, Jaulkheda); Mandla (Sahpura, Samnapur) and Dindori (Ghuguva, Parapani) districts of Madhya Pradesh. **Palaeovegetation or Megaflora** of Madhya Pradeshof Central India during upper Cretaceous-lower Palaeocene Period, consists of well-preserved fossil woods, leaves, fruits, flowers representing all the major groups of the Plant Kingdom (from Algae to Angiosperms) such as **Algae-** 6 Freshwater & 3 Marine genera. **Fungi-** Most of Angisperms infected by fungus. **Bryophyta:**-2 thallus & 6 sporogonium**.Pteridophyta- 16** genera including 3 water ferns.**Gymnosperms-**woods of 3 families, 1 male & 5 female cones & few isolated ovules.**Angiosperms**– **Monocots**- 12 genera including 27 species of Palm woods & 9 sps. of palm fruits. **Dicots - 82** Taxa belonging to 35 families consisting woods, lvs, flowers & fruits. Regarding **Habitats &Climate :- (i) Marine-** ? Marine algae- *Distichoplax, Paysonnelia, Solenopora* **(ii) Fresh water-** Fresh water algae**-** *Spirogyrites, Oedogonites, Chara;*Water ferns- Selaginella, *Marsilea, Azolla, Salvina ,A*quatic angiosperms- *Eichhornia, Nymphaeocaulon*, *Aerorhizos,***iii) Mangrove, coastal or estuarine, and saline habitat-**

*Barringtonioxylon, Nipadites, Nypa, Palmoxylon (Cocos), Palmocorpon, Palmostroboxylon, Arecoidocarpon, Sonneratiorhizos, Dicotylirhizos, Sonneratioxylon, Viracarpon.***(iv) Marshy Habitat-(a)** Fungusgrew luxuriantly indicates a warm and humid climate. (b) Growth of Bryophytes& Pteridophytes;©,*Enigmocarpon* fruits shows arenchymatous tissue, *Barringtonia, Syzygium***,***Cyperaceoxylon, Bridelioxylon.* **(v) Terrestrial and upland**- indicated by Gymnosperms and other arborescent angiosperms.**(a)The wet Evergreen to Semi-evergreen forests**: - *Araucaria, Podocarpus, Musa, Cocos, Elaeocarpus, Ailanthus malabarica, Leena sp. Tetrameles sp.* **(b) Dry deciduous forest –** *Phoenix (Palmoxylonsps.), Grewia, Boswellia* . The Vidharbha-Chhindwara region constituted by taxa representing all major groups of plant kingdom belonging to different habitats like (i) **marine**- (3 genera of doubtful marine alga) (ii) **estuarine**- (27 species of palms, *Nypa* and *Viracorpon*like Pandanaceous fruits, *Sonneratia*, *Cocos* like plants) (iii) **fresh water-** (6 genera of fresh water algae, water ferns, *Eichhornia*, *Nymphea*like hydrophytic angiosperms) (iv) **marshy**- (5 genera of bryophytes, water ferns, *Selaginella* and *Equisetum* like pteridophytes and many angiospermic plants showing aerenchymatous tissue and few parts infected by fungal spores) and (v) **terrestrial**– (2 families of gymnosperms and 15 families of arborescent angiosperms).

Keywords: Megaflora, Intertrappean beds, Diversity, Paleoclimate, Central India.

●●●

Studyof Ethnobotanical Medical Plants Usedby Indigenous Communitiesof Dindori District MP

Dr. Kumud Sandya, Dr. G. S. Sandya

Assistant professor Dept. Of Botany, Govt. Indira Gandhi Home Science Girls P.G. College, Shahdol, (M.P.) Assistant professor Dept. Of Botany, Pandit Shambhu Nath Shukla University Shahdol, (M.P.)

Abstract

The present study documents the ethnobotanical medicinal plants used by indigenous communities of Dindori district, Madhya Pradesh, with emphasis on their geographical distribution, species richness, and family composition. Dindori district, located in the Maikal hill range of central India, is characterized by tropical dry deciduous forests, undulating terrain, and a high concentration of tribal populations such as Gond, Baiga, and Kol. The study aims to document traditional ethnomedicinal knowledge and evaluate the cultural significance of plant-based remedies in tribal healthcare systems. Field surveys were conducted across selected villages using semi-structured interviews, focus group discussions, and guided field walks involving traditional healers, elderly informants, and local practitioners. A total of **95** medicinal plant species belonging to **82** genera and **46** families were recorded. Angiosperms dominated the medicinal flora, with **Fabaceae, Euphorbiaceae, Lamiaceae, Apocynaceae,** and **Asteraceae** emerging as the most represented families. These medicinal plants are used to treat ailments such as fever, cough and cold, digestive disorders, skin diseases, wounds, malaria, arthritis, and urinary problems. Frequently cited species such as ***Withaniasomnifera*****,** ***Azadirachta indica*****,** ***Tinospora cordifolia*****,** ***Ocimum sanctum*****,** and ***Adhatodavasica***reflect their high

cultural importance. Quantitative indices including Use Value (UV), Frequency of Citation (FC), and Informant Consensus Factor (ICF) were employed to assess species significance and informant agreement. The study highlights the rich traditional knowledge of indigenous communities and emphasizes the need for its conservation, documentation, and scientific validation.

Keywords: Ethnobotany, Medicinal plants, Indigenous knowledge, Dindori district, Traditional healers.

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Fossil Angiosperm Fruitsand Flowers of Madhya Pradesh, India

Nikhil Kumar Kanungo
Department of Botany**,** Govt. autonomous P.G. College- Chhindwara, M.P.
Email: - nika.cwa2011@gmail.com

Abstract

In acentral India late Cretaceous or Tertiary system (45-60 MY) of volcanic rock formation is known as Deccan Traps and flora embedded in between two traps known as Intertrappean flora. The Deccan intertrappean flora in Chhindwara district it is recovered from Mohgaonkalan and adjoing area like Keria, Jheria, Paladaun, Udadaun and other exposures like Sauncer, Singhpur and Jamsaoli. Chhindwara district is represented by almost all parts of all the major groups of plant kingdom. The flora includes nearly 167 species of megafossils and a number of microfossils. Especially noteworthy among them are the 8 members of fresh water and 3 members of marine algae. Many fungal forms are found in infected parts of angiosperms. A thallus of Riccia, and 5 sporogonium of other bryophytes, water ferns representing Azolla, Salvinia and Marsilea like petridphytes suggests marshy habitat. Only Coniferales group represent gymnosperms. Angiosperms are dominant including Roots, Stems, leaves and fruits., Amongst monocots the dominant elements are palm stems and fruits which are represented by 27 species of Palmoxylon and 8 species of Palmocarponalongwith few petioles and leaf impressions. Other noteworthy monocots were Musa, Nypa, Cyclanthodendron. Leaving aside the doubtful and unidentifiable forms there were 56 dicotyledonous taxa belonging to 25 families of dicots. A few isolated roots, many leaves either compressed or in petrified forms are also reported. Six petrified flowers and several capsular, buccate and drupaceous fruits represent the reproductive parts of plants. There are also a few records of winged fruits and fruitswith wing and arilated seeds. Dominant monocots fruitslike,Graminocarpon , Hyphaeneocarpon, Musa,Palmocarpon,Arecoidocarpo CoconutLikeFruitCocos,Elettariocarpon,Nypa,Sparganium,Pantocarpon,Callistemonites,Tricoccites, Viracarpon and Shuklanthus, Sahnipushpam like flower, and a variety of Dicot angiospermsfruits includingBaccatocarpon,Centrospermocarpon,Daberocarpon,Deccanocarpon,Duabangocarpon, Enigmocarpon, Euphorbiocarpon,Harrisocarpon,Indocarpa, Krempocarpon,Lytherocarpon, Mohgaocarpon,Phyllanthocarpon(Phylanthaceae), Sahniocarpon,Surangea(capsularfruit), Triloculocarpon, Unonasperumum (Annonaceae)and WingospermocarponBoehmeria , Hibiscus , Chitaleocarpon, Kapgateocarpon and dicot flowers like Sahnianthus, Chenopodioanthus, Chitaleypushpum, Raoanthus , Tetraplasandranthus , and Kapgateanthus. An analysis of the floral assemblage with respect to the forest type reveals that the flora was dominated by evergreen forest followed by moist deciduous forest. A few taxa among them still occur in Central India presently. Most of the equivalent's modern species of Deccan Intertrappean flora of Mohgaonkalan and other adjoing area are

distributed in the tropical evergreen to moist deciduous forest of western Ghats, Andaman Islands, and north-east region.

Keywords: Maastrichtian, Megaflora, Deccan, Intertrappean beds, Central India.

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Fossil Angiosperm Flora of Chhindwara & Seoni District of Madhya Pradesh

Sanjay Pawar*
Department of Botany, PMCoE, Govt. autonomous P.G. College, Chhindwara, M.P.
Email: - spawar.bot@gmail.com
Krishna Kumar Barmaiya
Department of Botany, PMCoE, Govt. P.G. College-Seoni, M.P.
Email: - barmaiyaku@rediffmail.com

Abstract

In the central India late Cretaceous or Tertiary system (45-60 MY) of volcanic rock formation is known as Deccan Traps and flora embedded in between two traps known as Intertrappean flora. All plant groups including Angiosperms are preserved in this region.The angiosperm remains are preserved as permineralization, impressions, compressions and casts of vegetative organs. Among them, however, fossils of reproductive organs such as inflorescence, flower, fruit and seed are meager as compared to the vegetative organs such as roots, stems, leaves etc. Palm inflorescence Mahurzariostrobus and Dicot Sahnipushpum inflorescence, Sahnianthus, Raoanthus, Chitaleypushpum are reported. Fruits like Enigmocarpon, Sahniocarpon, Daberocarpon, Euphorbiocarpon, Oleaceocarpon, Nautiyalocarpon, Arecoidocarpon, Nypadites, Palmocarpon, Cocos nucifera (Palmae), Tricoccites, Viracarponhexaspermum (Pandanaceae) and Unonaspermum (Annonaceae), and Sausarospermum seeds are described from these beds. Fossil dicot woods showing affinities with modern genera are Ailanthoxylon (Simaroubaceae); Anacardioxylon (Anacardiaceae); Aeschynomene (Leguminosae); Perrottetioxylon (Fabaceae); Amooroxylon (Meliaceae); Ardisioxylon (Myrsinaceae); Aristolochioxylon (Aristolochiaceae); Barringtonioxylon (Lecythidaceae); Calophylloxylon (Guttiferae); Canarioxylon (Burseraceae); Dryoxylon (Bombaceae); Ebenoxylon (Ebenaceae); Elaeocarpoxylon (Elaeocarpaceae); Eunymusoxylon (Celastraceae); Grewioxylon, Heliocarpoxylon (Tiliaceae); Gmelina, Gmelinoxylon (Verbenaceae); Guaiacum (Zygophyllaceae); Havetiopsioxylon (Clusiaceae); Heterophragmoxylon (Bignoniaceae); Hibiscoxylon (Malvaceae); Leoxylon (Ampelidaceae); Oetomelioxylon (Disticaceae); Paraphyllanthoxylon (Euphorbiaceae); Parafernioxylon, Rutaceoxylon (Rutaceae); Pandanaceoxylon (Pandanaceae); Shoreoxylon (Dipterocarpaceae); Sapindoxylon (Sapindaceae); Sonnertioxylon (Sonnertiaceae); Sterculioxylon (Sterculiaceae) and Sapindoxylonpandharakwadense, S. caeseolarioides (Sapindaceae); Sonnertioxylonnawargaoensis (Sonnertiaceae); Sterculioxylonbaradense (Sterculiaceae) and Many species of wood, leaf and petioles of Palm are also reported from these beds. An analysis of the floral assemblage with respect to the forest type reveals that the flora was dominated by evergreen forest followed by moist deciduous forest. A few taxa among them still occur in Central India presently. Most of the equivalent's modern species of Deccan Intertrappean flora of Chhindwara and other

adjoining area are distributed in the tropical evergreen to moist deciduous forest of western Ghats, Andaman Islands and North-East region.

Keywords: Maastrichtian, Megaflora, Deccan, Intertrappean beds, Central India.

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Medicinal Properties of *Withaniacoagulans* and Its Conservation

Sarla Singh
Assistant Professor, Department of Botany.
Govt Sanjay Gandhi Smriti College, Sidhi

Abstract

Withaniacoagulans (Dunal) is a valuable medicinal plant widely recognized in the Indian Ayurvedicsystem for its diverse therapeutic applications. Traditionally, it has been used to manage hyperglycaemia, inflammation, hepatic disorders, cardiovascular diseases, metabolic ailments, insomnia, and abnormal cell growth. The plant is a rich natural source of withanolides, steroidal lactones responsible for its pharmacological properties, including antidiabetic, anti-inflammatory, antioxidant, hepatoprotective, cardioprotective, anticancer, diuretic, antibacterial, antifungal, and antimutagenic activities. Other bioactive constituents such as flavonoids, tannins, and β-sterols further contribute to its therapeutic potential. The increasing pharmaceutical demand for W. coagulans has led to excessive exploitation of natural populations, while poor seed germination, low natural regeneration, habitat destruction, and uncontrolled harvesting have made it a critically endangered species in several regions. In vitro culture techniques provide an effective strategy for rapid mass propagation, germplasm conservation, and enhanced production of valuable secondary metabolites, offering a sustainable approach to harness its medicinal potential.

Keywords: Withaniacoagulans; steroidal lactones; withanolides; Ayurvedic medicine; pharmacologicalproperties; in vitro propagation; conservation

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Ethnomedicinal Importance of *Tridax procumbens L.* (Asteraceae) in Tribal Communities of Singrauli District, Madhya Pradesh, India

Ram Gopal singh[1], Prem Kumar Nai[1], Ravendra Kumar Yadav[2]
[1]Government College Deosar, District Singrauli, Madhya Pradesh, India
[2]Thakur Ranmat Singh Government Auto. College Rewa, Madhya Pradesh, India

Abstract

Ethnomedicinal plants play a vital role in the primary healthcare system of tribal communities. *Tridax procumbens* L. (Asteraceae), commonly known as coat buttons, is a widely distributed medicinal herb used in traditional medicine across the India. The present study aims to document the ethnomedicinal importance of *Tridax procumbens* among tribal communities of the Singrauli district, Madhya Pradesh,

India. Ethnobotanical data were collected through field surveys conducted in selected tribal villages using structured questionnaires, personal interviews, and group discussions with traditional healers, elders, and local inhabitants. The study revealed that various parts of the plant, especially leaves, are used in the treatment of wounds, cuts, skin diseases, fever, inflammation, digestive disorders, and hair problems. Preparations include fresh leaf paste, decoctions, and infusions, administered either topically or orally. The findings highlight the rich traditional knowledge associated with *T. procumbens* and its significance in indigenous healthcare practices. Documentation of such ethnomedicinal knowledge is essential for the conservation of plant resources and may provide a basis for future pharmacological and phytochemical studies.

Keywords:*Tridax procumbens*; Ethnomedicine; Tribal communities; Singrauli district; Medicinal plants; Traditional knowledge

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Study of Traditional Knowledge of Medicinal Plants and its role in Primary HealthCare of Tribals in Shahdol District MP

Dr. G. S. Sandya, Dr. Kumud Sandya

Assistant professor Dept. Of Botany, Pandit Shambhu Nath Shukla University Shahdol, (M.P.) Assistant professor Dept. Of Botany, Govt. Indira Gandhi Home Science Girls P.G. College, Shahdol, (M.P.)

Abstract

Shahdol district of Madhya Pradesh is predominantly inhabited by tribal communities such as Gond, Baiga, and Kol, who possess rich traditional knowledge of medicinal plants used in primary health care. This research paper examines the role of indigenous medicinal plant knowledge in meeting the health care needs of tribal populations and explores possibilities for its integration with the formal primary healthcare system. The study is based on ethnobotanical field surveys, interviews with traditional healers, elderly community members, and direct observation of local health practices. The findings document a wide variety of medicinal plants used for treating common ailments such as fever, respiratory infections, gastrointestinal disorders, skin diseases, wounds, and joint pain. Traditional health care practices continue to play a vital role due to their accessibility, affordability, cultural acceptance, and perceived effectiveness among tribal communities. However, challenges such as the gradual erosion of indigenous knowledge, lack of scientific validation, overexploitation of medicinal flora, and limited policy support hinder effective integration. The study highlights the importance of systematic documentation, conservation of medicinal plant resources, and scientific evaluation of traditional remedies. It further emphasizes the need for collaborative frameworks involving traditional healers, local communities, and public health institutions. Integrating validated traditional medicinal knowledge into primary health care can improve health outcomes, promote sustainable resource use, and ensure culturally appropriate healthcare delivery in tribal regions of Shahdol district.

Keywords: ethnobotany, Tribals, Health, Sustainable resources.

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Physico-chemical properties of water influencing macrophyte diversity in Kapsa Pond, Semariya Tehsil, Rewa (M.P.)

Sushma Kushwaha[1] and Rajshree Pandey[3]
1.Research scholar, Department of Botany Govt. Girls P.G. College, Rewa (M.P.) India
2.Prof. & Head, Department of Botany, Govt. Girls P.G. College, Rewa (M.P.) India

Abstract

This study aimed to analyze the effects of water's physico-chemical properties on macrophyte diversity, focusing on Kapsa Pond. A total of 16 macrophyte species from 10 families were identified during the research, with 4 dominant species observed across 4 pond sites. Poor water quality and invasive species were noted at all sites except site II, which was characterized by submerged vegetation, higher dissolved oxygen (DO), and lower total dissolved solids (TDS). Harmful practices by residents have not only led to a decline in the diversity, distribution, density, and productivity of macrophytes but also negatively impacted the overall health of the pond ecosystem.

Key words: DO, Quadrate method, Kapsa Pond, Water chemistry.

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Advances in Medicinal Plant Research and Innovations

Dr Brij Bhan Yadav
Assistant Professor Deportment of Botany
Govt S.V. College Teonthar Rewa M.P

Abstract

Medicinal plant research has shifted from traditional ethnobotany to a multi-omics and synthetic biology-driven field. This paper examines the role of high-precision technologies, including CRISPR-Cas9 gene editing, nanophyto-medicine, and AI-driven metabolic engineering, in overcoming historical limitations such as low bioavailability and inconsistent metabolite yields. Results demonstrate that integrating these technologies can enhance the production of bioactive compounds (e.g., artemisinin, tanshinone) and provide sustainable alternatives to wild harvesting. We conclude that "plant bio factories" represent the future of pharmaceutical manufacturing Medicinal plants have historically provided the foundation for pharmaceuticals, yet their therapeutic potential is often hindered by slow growth cycles and environmental constraints. By 2026, a "renaissance" in plant science has emerged, fueled by a global market for synthetic biology and plant-derived products projected to reach $37 billion. The current research objective is to move from simple extraction to "translational genomics," where plants are engineered for precision medicine and industrial-scale production.

Keywords: medical, Plant Research, Translational-Genomics.

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Study on Weed Control and Management and Its Impact on Crop Growth and Yield

Nilofer Bano and Rajshree Pandey
1.Research scholar, Department of Botany Govt. Girls P.G. College, Rewa (M.P.) India
2.Prof. & Head, Department of Botany, Govt. Girls P.G. College, Rewa (M.P.) India

Abstract

Weed control involves minimizing weed infestations to enable profitable crop production and ensure efficiency in human activities. Weed management combines methods to keep weeds at a minimum for successful crop growth. Weeds are more damaging to crops than pests like insects, fungi, or rodents, as they compete for resources such as nutrients, water, space, and light throughout their lifecycle. The goal of weed control is not to eliminate weeds but to limit their growth in ways that benefit desired plants while suppressing unwanted species. The degree of control depends on the costs involved and the expected benefits. This study reviews various practices for managing or eradicating weeds effectively.

Key words: Weed control, management, growth, and yield.

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"Evaluation of Bio-Control Agents for Sustainable Weed Management in Soybean Agro-Ecosystems"

Dr. Suraj Singh Chauhan
(Govt. Girls College, Sidhi (M.P.)

Abstract

Agriculture plays a vital role in the economy of many developing countries, with legume crops forming the second most important group of food plants and serving as a major protein source for the predominantly vegetarian population of India. Among legumes, soybean is one of the most economical and widely cultivated crops worldwide. Madhya Pradesh is the leading producer of soybean in India, contributing approximately 64% of the country's total production. During periodic surveys of soybean-growing regions, several diseases such as leaf spot, leaf blight, die-back, and root and petiole infections were observed on leguminous crops and their associated weeds. Diseased plant parts were collected, and fungal pathogens were isolated and cultured on potato dextrose agar (PDA). The cultures were incubated in a BOD incubator at an optimum temperature of 28 ± 2 °C for 7, 14, and 21 days. A total of twelve fungal isolates were obtained from various infected weed parts. These isolates were screened using plate bioassay, shoot cut bioassay, and whole plant bioassay techniques to evaluate their phytotoxic potential. Among the isolates tested, Alternaria alternata exhibited the highest efficacy, demonstrating strong phytotoxic activity against weed species associated with soybean fields.

The findings suggest that Alternaria alternata has significant potential as a biological control agent for phytotoxin production and could be utilized for the eco-friendly management of weeds in soybean cultivation.

Keywords: soybean, developing countries, legumes.

●●●

Medicinal Plants Utilized by the Tribes of Jaisingh Nagar Forest Shahdol District

Deepak Kumar Verma and I.P. Kumhar

1.Research scholar, Department of Botany S.G.S. Govt. P.G. College, Sidhi (M.P.) India

2.Prof. & Head, Department of Botany, S.G.S. Govt. P.G. College, Sidhi (M.P.) India

Abstract

India's rich heritage includes extensive traditional medicinal practices. An ethnobotanical study in Jaisinghnagar forests explored traditional medicines, their uses, and dosages through a standardized questionnaire and online resources. Remedies for 18 ailments, including diabetes, syphilis, and insect bites, were documented, covering around 32 plant families. Leaves were the most used plant part, with their juice often taken orally or applied externally on the skin or eyes. The study underscores the diverse traditional medicine practices of Jaisinghnagar's tribal communities in treating health issues.

Keywords: Medicinal plants, Ailments, Jaisinghnagar forest, Traditional.

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Study of Floristic Diversity and Vegetations Structure of Pushparajgarh Forest of Anuppur District MP

Maneesh Kumar, Dr. Kumud Sandya

Research Scholar Botany, Govt. Indira Gandhi Home Science Girls P.G. College, Shahdol (M.P.) Assistant professor Dept. Of Botany, Govt. Indira Gandhi Home Science Girls P.G. College, Shahdol, (M.P.)

Abstract

This study investigates the floristic diversity and vegetation structure of the Pushprajgarh Forest, Anuppur district, Madhya Pradesh, India. The research aims to document plant species composition, analyze vegetation patterns, and assess ecological parameters influencing forest dynamics in the region. Systematic field surveys were conducted across representative plots using standard quadrat and transect methods to record tree, shrub, and herbaceous species. Data on species abundance, density, frequency, basal area, and diversity indices such as Shannon– Wiener and Simpson's index were calculated. A total of 132 species belonging to 110 genera and 52 familieswere recorded, indicating high floristic richness with dominance of tropical dry deciduous plant communities. Key species observed include Tectona grandis, Anogeissus latifolia, Boswellia serrata, and Terminalia tomentosa, reflecting the characteristic vegetation of central Indian forests. The vegetation structure exhibited

multi-layered stratification, with substantial regenerating saplings and diverse understory flora, suggesting a relatively stable forest ecosystem. However, anthropogenic pressures such as grazing, fuelwood extraction, and seasonal fires were identified as potential threats to vegetation integrity. The study underscores the importance of conservation strategies to maintain biodiversity and ecological balance in Pushprajgarh Forest. Findings provide baseline data for sustainable forest management and biodiversity conservationin Anuppur district.

Keywords: Floristic diversity, Vegetation structure, Pushprajgarh Forest, Anuppur district.

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Study of EthanoMedicinal Practices Among the Tribal Communities of Tikamgarh District Madhya Pradesh

Nandram Ahirwar[1] and P.L. Prajapati[2]

1.Research Scholar Botany, Maharaja Chhatrasal Bundelkhand University, Chhatarpur (M.P.)

2.Prof., Department of Botany, Maharaja Chhatrasal Bundelkhand University, Chhatarpur

Abstract

This research explores the ethnomedicinal traditions of indigenous communities in the Tikamgarh district of Madhya Pradesh, India, where modern healthcare services are still largely inaccessible. Conducted from July 2024 to January 2025, the study incorporates both primary and secondary sources to document traditional plant-based remedies used in preventing and treating various health conditions. Fieldwork was performed across 20 villages, with insights gathered through interviews involving 40 participants, including traditional healers (Kol, Gond & Mawasi**)** and knowledgeable community members. Data collection utilized structured and semi-structured questionnaires, complemented by direct observation and guided field visits. A total of 71 plant species were identified for their medicinal uses—comprising 35 tree species, 16 shrubs, and 20 herbs. The study provides detailed descriptions of preparation methods, modes of application, and supplementary ingredients such as milk, sugar, and water. Plant identification was carefully verified using standard botanical references, with photographic records enhancing the credibility of the results. A combination of qualitative and quantitative approaches was applied to analyze the findings. This research plays a significant role in conserving indigenous knowledge systems and underscores the importance of ethnomedicine in addressing healthcare needs in rural areas.

Keywords: Ethnomedicine, Tribal healthcare, Medicinal plants, Tikamgarh district.

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Ethno Botanical survey of Medicinal Plants Used by Local Tribal Community of Block A and B of Shahdol District Madhya Pradesh

Sapna Dwivedi, Dr. G. S. Sandya
Research Scholar Botany, Pandit Shambhu Nath Shukla University Shahdol (M.P.) Assistant Professor
Department of Botany, Pandit Shambhu Nath Shukla University Shahdol (M.P.)

Abstract

This study aims to document and evaluate the traditional medicinal practices and the use of ethnomedicinal plants by the indigenous tribal communities, including Gond, Baiga, Maria, and Kol, in Shahdol district, Madhya Pradesh. The research specifically focuses on Blocks 'A' and 'B', which are among the least studied areas in the region. A total of 70 plant species, spanning across 62 genera and 32 families, were recorded. These medicinal plants are used to treat 28 different ailments, with coughing being the most addressed condition using8 plant species. The Fabaceae family was found to have the highest representation, encompassing 12 species. Among the recorded plants, leaves from 25 species are particularly utilized for therapeutic purposes. This information holds significant value for pharmacologists, foresters, environmentalists, researchers, and anyone with an interest in herbal medicine.

Keywords: Ethnobotanical survey, Medicinal plants, Local tribal, Shahdol district.

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Medicinal Characters of *Cleome viscose* (L.)

Vishvajeet Singh, Dr. G. S. Sandya
Research Scholar Botany, Pandit Shambhu Nath Shukla University Shahdol (M.P.) Assistant Professor
Department of Botany, Pandit Shambhu Nath Shukla University Shahdol (M.P.)

Abstract

Cleome viscose (L.) of the Capparidaceae family is an annual, sticky herb commonly found as a weed across the plains of Shadhol district and throughout tropical regions. The entire plant, including its leaves, seeds, bark, and roots, has been extensively utilized in traditional and folkloric medicine systems. It is traditionally recognized for its therapeutic properties, including its use as an anthelmintic, antiseptic, carminative, antiscorbutic, and febrifuge agent. Pharmacological research indicates that Cleome viscose exhibits various biological activities such as antidiarrheal, hepatoprotective, anthelmintic, antimicrobial, analgesic, anti- inflammatory, immunomodulatory, antipyretic, and psychopharmacological effects. This review aims to explore the medicinal value and potential benefits of C. viscose while providing insights for future studies and applications.

Keywords: *Cleome viscose*, antiscorbutic, anthelmintic, antimicrobial.

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Vegetational Study of Kusmi Forest Sidhi District MP

Deepu Prajapati, Dr. I. P. Kumhar, Dr. Prabha Prajapati, Pragya Prajapati
Department Botany SGS Govt PG College Sidhi

Abstract

Forest dose not comprise of tree alone. In any natural forest, shrubs, climbers, and grasses grow in different proportion along with tree, and are very important components of the forest ecosystem. In the past shrubs and bushes have been meeting the fuel-wood requirements of the local population both from the forests as well as those found growing on the village waste land and field boundries. But due to repeated cutting for fuel wood, fodder, and other purpose they are under great pressure. As a result we see that these shrubs have almost disappeared from the village wastelands and many forest areas adjoining habitation Forest is one of the most predominant geographic features of this planet in which we live and influence the lives of human beings in many ways.They moderate local climate, reduce soil erosion, regulate the stream flow, improve ground water conditions, improve condition of floods, increase precipitations, provide shelter to the wide variety of fauna and flora, supply food, fuel and shelter to the human population, support a number of industries and provide remarkable opportunities for recreation. The Kusumi forest lies in between 81°59'24" longitudes and 23°58'25" latitudes.

Keywords- Natural Forest,waste land,habitation,flora & fauna.

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Morphology Ecology of Certain Plants of Acanthaceae and their Phytochemical Analysis

Pragya Prajapati, Deepu Prajapati, Dr. I. P. Kumhar, Dr. Prabha Prajapati
department botany sgs govt p.g. college sidhi

Abstract

Ecological studies are directed towards determining the influence of environment on thelife of plants. The study of relations between plants and habitats make the concept of ecology. Ecological studies have been based on a habitat approach in which the environmental factors were emphasized or on a community approach in which the focus has been on the association of the plants. India is a paradise for medicinal plants. There exists a list of large number of plants which have used by Ayurved and Unani practitioners as medicines. The plant wealth of
the country has been playing a vital role in providing materials useful for the human body. Medicinal knowledge of plants is very ancient in India. From the records, medicobotanyof India might will be among the earliest in the world and all traditional systems of medicine had its roots in primitive botany. An organised study in medicinal plant is very recent. There has been an increasing interest in the recent years in medical fields mainly because of the renewed interest in traditional herbal medicine particularly the tribal medicine.

Keywords - Ecology, medicine plants, traditional system, acanthaceae

Uses of Technology in Modern Agriculture

Dr. Anita Dwivedi
Department of Botany
PMCOE, Govt. S.G.S. Auto. PG College Sidhi, MP, 486661, India

Abstract

Modern agriculture technology uses advanced tools like precision farming, AI, and robotics to boost crop yields and sustainability. These innovations address challenges such as population growth and climate change by optimizing resources and reducing waste. Key examples include drones for crop monitoring and IoT sensors for real-time data. Precision agriculture employs GPS, drones, and satellite imagery to apply inputs like fertilizers precisely, cutting waste by 40-60% and increasing yields by 20-30%. Drones capture multispectral data on plant health and soil moisture, enabling targeted interventions. Autonomous tractors and robotic weeders operate 24/7 with centimeter accuracy, reducing labor costs by 25% and addressing shortages. Swarm robotics and edge AI further enhance scalability for large fields. IoT soil sensors and automated systems adjust water delivery based on real-time conditions, saving 20-30% on usage. Indices like NDVI help monitor vegetation health remotely. Vertical farming and hydroponics enable year-round production with 95% less water in controlled environments. AI provides predictive analytics for pests and yields, forming data-driven ecosystems.
Keywords: resourcesvegetationagriculture.

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Study of Phytoplanktons and Macrophytes of Certain Ponds of Singrauli District MP

Prettika Dwivedi, Deepu Prajapati, Dr. I. P. Kumhar, Dr. Prabha Prajapati
Department of Botany, Govt. S.G.S. Auto. PG College Sidhi, MP, 486661, India

Abstract

Life originated from water, is an established school of thought. It is biological solvent in which biochemical processes take place (Dick, 1966). Protoplasm limit of life contains about 75% to 85% water. In aquatic ecosystem of the lake or dam constitute the lentic habitat on land and these are formed in a number of different ways both natural and artificial. With the passage of time they change in characters, ultimately silting up and becoming transformed to waste land or meadow. In India the lake and dams become an integral part of human life since time immemorial, being the major source of fresh water for human use. Aquatic communities usually consist of manyspecies' population, each with its specific physico-chemical and biotic needs.
Keywords- Phytoplankton, ecosystem, species population.

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Phenological Analysis of the Medicinal Plant *Leonotisnepetifolia* in Sidhi District, Madhya Pradesh, India

Gopriya Panika[1] and I.P. Kumhar[2]
1.Research scholar, Department of Botany S.G.S. Govt. P.G. College, Sidhi (M.P.) India
2.Prof. Department of Botany, S.G.S. Govt. P.G. College, Sidhi (M.P.) India

Abstract

Leonotisnepetifolia (L.) R.Br., a herbaceous plant from the Lamiaceae family, thrives across India, often found along roadsides or on barren lands. Medicinally valuable, its various parts are used for depurative, febrifuge, antihelminthic purposes, alleviating coughs, and treating skin issues. This study focused on examining the phenology of the plant under diverse conditions in Sidhi district, Madhya Pradesh, to understand changes in germination and flowering times under environmental stress. Three stressful conditions were analyzed and compared to controlled environments, revealing distinct variations in germination and dormancy across different locations.

Keywords: Leonotisnepetifolia, Phenological & Medicinal plant.

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Traditional Applications and Pharmacological Properties of *Anagallis arvensis*

Garima Mishra[1], Shobha Gupta[2] and Rajshree Pandey[3]
1.Research scholar, Department of Botany Govt. Girls P.G. College, Rewa (M.P.) India
2.Prof. & Head, Department of Botany, Govt. Girls P.G. College, Satna (M.P.) India
3.Prof. & Head, Department of Botany, Govt. Girls P.G. College, Rewa (M.P.) India

Abstract

Anagallis arvensis, from the Primulaceae family, is a globally distributed summer annual herb found abundantly in Egypt, Palestine, parts of South America, Taiwan, and India. The plant contains active compounds like glycosides, saponins, flavonoids, alkaloids, rutin, kaempferol, sterols, and various terpenes. It exhibits medicinal properties including anti-mycotic, antimicrobial, molluscicidal, antioxidant, anti-inflammatory, antiviral, cytotoxic, and spermatogenesis effects.

Key words: Traditional, Pharmacological, Anagallis arvensis.

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Phytochemistry analysis of *Leucas cephalotes* (Roth) Spreng.

Mona Majhi[1], Abha Khare[2] and Rajshree Pandey[3]
1.Research scholar, Department of Botany Govt. Girls P.G. College, Rewa (M.P.) India
2.Prof., Department of Botany, Govt. Girls P.G. College, Satna (M.P.) India
3.Prof. & Head, Department of Botany, Govt. Girls P.G. College, Rewa (M.P.) India

Abstract

The present study focused on conducting a comprehensive phytochemical analysis of the plant Leucas cephalotes, highlighting the detection of tannins and reducing sugars within its hydroethanolic extract.

These insights lay the groundwork for further scientific exploration into the medicinal properties of L. cephalotes, paving the way for its potential integration and utilization in traditional medicine systems.

Key words: Phytochemistry, Pharmacological, Traditional medicine, *Leucas cephalotes*.

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Biodiversity of Chitrangi Forest Range SingrauliDistrict Madhya Pradesh

Raj Kant Ratan[1] and I.P. Kumhar[2]
1.Research Scholar Botany, S.G.S. Govt. P.G. College, Sidhi (M.P.)
2. Prof. & Head of Botany, S.G.S. Govt. P.G. College, Sidhi (M.P.)

Abstract

This study emphasizes the exploration of plant biodiversity for potential future applications while highlighting the critical role of conservation efforts. A survey on plant biodiversity was conducted from August 2023 to February 2025. Throughout this time, medicinal plants encountered in the field were systematically documented based on criteria including their botanical names, family classifications, growth habits, and usage methods, all supported by prior research. The results identified 42 medicinal plant species spanning 28 families, showcasing the impressive floristic diversity within the surveyed regions.

Keywords: Biodiversity, Plants, Heterogenous Floristic Composition, Chitrangi Forest.

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Quantitative Ethnobotanical Study of Medicinal Plant Knowledge in Bilaspur District, Chhattisgarh, India

Roshan Kumar& Ramesh Kumar Ahirwar*
Department of Botany, Guru Ghasidas Vishwavidyalaya (A Central University) Bilaspur- 495009, Chhattisgarh, India
*Corresponding author: dr.rkahirwar@gmail.com ; ramesh.ahirwar@ggu.ac.in

Abstract

The present study documents and evaluates indigenous knowledge related to the use of medicinal plants in Bilaspur district, Chhattisgarh, India. Ethnobotanical surveys were conducted in selected rural and forest-fringe villages using semi-structured interviews and informal discussions with traditional healers and knowledgeable informants. A total of 41 medicinal plant species belonging to various families were recorded for the treatment of multiple human ailments, including gastrointestinal, skin, respiratory disorders, fever, wounds, joint pain, and diabetes. Leaves were the most frequently used plant part, followed by roots, bark, seeds, and whole plants. Remedies were mainly prepared as decoctions, pastes, and powders for oral or topical application. The study highlights the rich ethnomedicinal knowledge of local communities and underscores the need for conservation and further pharmacological validation.

Keywords: Chhattisgarh; Bilaspur; Ethnobotany; Tribal communities; Indigenous knowledge; Medicinal plants; Traditional medicine

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Ethnobotanical Documentation and Quantitative analysis of Medicinal Plant Knowledge in Bilaspur district, Chhattisgarh, India

Roshan Kumar& Ramesh Kumar Ahirwar*
Department of Botany, Guru Ghasidas Vishwavidyalaya (A Central University) Bilaspur- 495009, Chhattisgarh, India
*Corresponding author: dr.rkahirwar@gmail.com ; ramesh.ahirwar@ggu.ac.in

Abstract

The present investigation records and evaluates indigenous knowledge associated with the use of medicinal plants in the Bilaspur district of Chhattisgarh, India. Ethnobotanical fieldwork was carried out in selected rural and forest-adjacent villages through semi-structured interviews and informal interactions with traditional healers and experienced local informants. In total, 30 medicinal plant species representing diverse plant families were documented for their use in treating a wide range of human ailments. These plants were commonly employed to manage gastrointestinal disorders, dermatological conditions, respiratory ailments, fever, wounds, joint pain, and diabetes. Leaves emerged as the most frequently utilized plant part, followed by roots, bark, seeds, and whole plants. Remedies were primarily prepared in the form of decoctions, pastes, and powders, and were administered either orally or topically. This study emphasizes the wealth of ethnomedicinal knowledge retained by local communities and highlights the urgent need for conservation of both medicinal plant resources and associated traditional practices. The findings provide a valuable baseline for future pharmacological and phytochemical research.

Keywords: Bilaspur; Ethnobotany; Indigenous knowledge; Medicinal plants; Traditional medicine; Tribes.

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Synergistic Ameliorative Effects of *Murrayakoenigii* and *Ocimum sanctum* Against Cadmium ChlorideInduced Oxidative Stress and Organotoxicity in Wistar Rats.

Dr. Gaurav Yadav*
Department of Botany, Govt SGS College, Sidhi.
Email- gky1330@gmail.com

Abstract

Cadmium (Cd) is a highly toxic heavy metal environmental pollutant that induces severe oxidative damage in vital organs, primarily the liver and kidneys, through the generation of reactive oxygen species (ROS) and depletion of endogenous antioxidants. Traditional medicine plants, *Murrayakoenigii* (Curry leaf) and *Ocimum sanctum* (Tulsi) are renowned for their potentantioxidant and chelating

properties. This study aimed to evaluate the individual and synergisticprotective efficacy of aqueous extracts of *Murrayakoenigii* (MK) and *Ocimum sanctum* (OS)against cadmium chloride toxicity in a rat model. Methods: Adult male Wistar rats were randomly assigned to six groups: Control, MK-treated(200 mg/kg), OS-treated (200 mg/kg), and a combination group (MK+OS). Toxicity was inducedvia oral administration of CdCl2 for 28 days. Evaluation parameters included serum biomarkers(AST, ALT, ALP, Urea, and Creatinine), antioxidant enzyme profiles (SOD, CAT,), and lipidperoxidation (MDA) levels. Histopathological analysis of hepatic and renal tissues wasperformed to corroborate biochemical findings.

Results: Administration of CdCl2 caused significant elevation in serum hepatic enzymes and renal waste products, coupled with a marked increase in MDA levels, indicating extensive lipid peroxidation and membrane damage. Furthermore, cadmium exposuresignificantly depleted the activities of SOD, CAT, and reduced glutathione (GSH). Pre-treatmentand co-administration with MK and OS extracts significantly attenuated these toxic effects.Notably, the combination therapy (MK+OS) exhibited a superior synergistic effect compared toindividual treatments, restoring antioxidant enzyme activities to near-normal levels and significantly reducing histopathological lesions such as centrilobular necrosis and glomerularcongestion.

Conclusion: The findings suggest that *Murrayakoenigii* and *Ocimum sanctum* exert potentsynergistic protective effects against cadmium-induced organotoxicity. This protection ismediated through their combined ability to scavenge free radicals, chelate heavy metals, andbolster the cellular antioxidant defense system. These findings highlight the potential of these herbs as natural therapeutic agents for individuals exposed to environmental or occupational heavy metal toxicity.

Keywords: *Murrayakoenigii, Ocimum sanctum*, Cadmium Chloride, Oxidative Stress.\

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Photosynthetic Efficiency and Its Role in Carbon Sequestration: A Comprehensive Study

1. Shroti Gupta 2. Dr. Rakesh singh Chauhan
PMCOE sgs govt. Autonomous PG college sidhi(m.p.)
shrotigupta926@gmail.com

Abstract

The Comprehensive of the study was to investigate the fundamental mechanism of photosynthesis and its critical role in maintaining the global ecological balance. Photosynthesis is the primary bio-chemical process through which green plants convert solar energy into chemical energy (glucose) using water (H_2O) and carbon dioxide (CO_2) in the presence of chlorophyll. Accordingly, the research highlights the synergy between light-dependent reactions occurring in the thylakoid and the Calvin cycle (light-independentreactions) in the stroma. The study analyzes how light intensity and CO_2 concentrationdirectly influence the rate of biomass production. Furthermore, the potential of plants in carbonsequestration was evaluated as a natural solution to mitigate global warming. The

findings suggest that enhancing photosynthetic efficiency is vital for ensuring future food security and developing sustainable bio-energy resources. It was concluded that understanding these molecular pathways is essential for both agricultural advancement and environmental conservation.

Keywords: photosynthesis, Chlorophyll, Carbon Sequestration, Calvin Cycle, Bio-energy.

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The Role of Society in the Conservation of Biological Resources

1 Dr. Vivek Kumar Yadav, 2 Dr. Diwakar Singh

1. Govt. Thakur Ranmat Singh College, Rewa (M.P.)

2. PMCOE, S.G.S. Govt. Auto. P. G. College, Sidhi (M.P.)

Abstract

As global biodiversity faces unprecedented threats from habitat destruction, climate change, and overexploitation, traditional top-down conservation models are increasingly proving insufficient. Biological resources ranging from genetic diversity to entire ecosystems are essential for human survival, providing food, medicine, and climate regulation. However, their conservation depends heavily on the collective behavior, values, and participation of human society. This paper deals with how society functions as the primary agent of both environmental degradation and potential restoration. Indigenous and local communities possess centuries of empirical, localized knowledge on species behavior and ecosystem dynamics, providing adaptive insights that often surpass the specificity of modern scientific approaches. Participatory management frameworks integrate this expertise through active stakeholder involvement in decision-making, yielding conservation strategies that are culturally congruent, economically viable, and characterized by elevated compliance and long-term sustainability. Civil society amplifies these efforts via social movements and advocacy that drive environmental legislation, enforce corporate accountability, and cultivate a global conservation ethic, while aggregate individual behavioral changes such as sustainable consumption, waste reduction, and support for eco-friendly products collectively mitigate anthropogenic pressures on biological resources. The conservation of biological resources cannot succeed in isolation from social realities. Success requires a synergistic relationship between scientific management and social engagement. By empowering local communities, integrating traditional wisdom, and fostering public awareness, society can transition from being a threat to biodiversity to becoming its most effective steward.

Keywords: Biodiversity Conservation, Community Engagement, Sustainable Development, Social

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Role of Wildlife in the Maintenance and Conservation of Botanical Wealth

1 Dr. Anilesh Kumar Varma, 2 Dr. Yagya Pratap Sahu
1. Govt. Girls P.G. College Sidhi (M.P.)
2. PMCOE, S.G.S. Govt. Auto. P.G. College Sidhi (M.P.)

Abstract

Wildlife acts as a functional catalyst in preserving and expanding global botanical wealth by driving essential ecological processes such as pollination, zoochory (animal-mediated seed dispersal), nutrient cycling, and top-down herbivore regulation. Insects (e.g., bees, butterflies) facilitate plant reproduction and crop yields through pollen transfer; birds, bats, and mammals promote forest renewal and genetic diversity via seed dispersal; predators curb overgrazing to maintain vegetation structure; and decomposers recycle nutrients from organic matter into soil. These interactions underpin plant diversity, regeneration, and ecosystem resilience. Conservation requires an integrated Landscape Approach, combining wildlife corridors, protected areas, reforestation with native species, anti-poaching measures, and community programs informed by traditional knowledge. However, habitat loss disrupts these symbioses, accelerating floral decline particularly in biodiversity hotspots like Madhya Pradesh, where safeguarding birds and insects' counters deforestation pressures. This paper argues that long term botanical viability demands concurrent fauna protection to sustain reproductive success and ecosystem services.

Keywords: Genetic Diversity, Plant Diversity, Reforestation, Zoochory.

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Therapeutic Potential and Phytochemical Profile of *Cassia angustifolia* in the Management of Urinary Tract Disorders.

1 Chhaya Singh, 2 Dr. I.P. Prajapati
1. Research Scholar, Botany, A.P.S. University Rewa (M.P.)
2. Prof. of Botany, PMCOE, S.G.S. Govt. Auto. P.G. College Sidhi (M.P.)

Abstract

Cassia angustifolia (Fabaceae), a drought-tolerant shrub, serves as a cornerstone in traditional medicine systems like Ayurveda, Unani, and Siddha, earning FDA approval as a laxative while drawing attention for secondary roles in addressing urinary tract infections (UTIs) and renal conditions amid multidrug-resistant (MDR) uropathogens. Its therapeutic potential stems from bioactive anthraquinone glycosides, notably sennosides A, B, C, and D, alongside rhein and aloe-emodin, which underpin laxative effects and contribute to antimicrobial activity against UTI pathogens. Complementing these are flavonoids such as kaempferol and isorhamnetin, tannins, saponins, and essential oils, which broaden its pharmacological profile, including renoprotective benefits observed in diabetic nephropathy models. Cassia angustifolia exhibits promising medicinal properties against urinary diseases. Ethanolic and hexane extracts demonstrate significant antibacterial activity against

uropathogens like Escherichia coli, attributed to phytochemicals such as phenols, alkaloids, and saponins. Its phenolic and flavonoid content offers nephroprotective and anti-inflammatory effects, reducing oxidative stress in renal tissues and inhibiting alpha-glucosidase to potentially mitigate diabetic nephropathy. Traditionally used as a blood purifier with mild diuretic action to flush urinary wastes and alleviate dysuria, it features in polyherbal remedies for specific disorders like blennorrhagia. Cassia angustifolia, commonly known as Indian senna, acts as a multifaceted therapeutic agent primarily recognized for its laxative effects but with supporting roles in managing urinary related conditions through traditional uses. Its potent antimicrobial properties target antibiotic-resistant bacteria like E. coli and Staphylococcus aureus, aiding in infections such as urinary tract issues, while anti-inflammatory flavonoids and tannins reduce swelling and oxidative stress. Detoxifying effects stem from its blood-purifying and liver-stimulating actions via sennosides, validating folk applications, though its strong purgative nature demands regulated use to avoid electrolyte imbalances like low potassium.

Keywords: Antimicrobial properties, Cassia angustifolia, Detoxifying effects, polyherbaremedies.

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The Multifaceted Role of Flora: Intersections of Plants inLiterature, Administration, and Culture

1.Vibha Mishra 2. Rakesh Singh Chauhan,
Department of Botany
Sanjay Gandhi Smriti autonomous college, Sidhi, Madhya Pradesh

Abstract

The aim of this study is to explore the profound and multidimensional influence of botanical life on human civilization, specifically focusing on the domains of literature, administration, and cultural identity. Accordingly, an analysis of plants as literary symbols, their role in historical and modern administrative governance, and their function as pillars of cultural heritage was conducted. Through a comprehensive review, it was found that plants serve as active agents in cshaping societal structures. In literature, plants act as metaphors for the human condition and national identity. In administration, the "management of green space" and agricultural regulation are shown to be fundamental to economic stability and bureaucratic control. Culturally, plants are identified as essential components of ritual, traditional knowledge, and regional identity. This synthesis demonstrates that plants are not merely biological entities but are central to the administrative and creative frameworks of human society. The study concludes that recognizing this "vegetal nexus" is crucial for modern environmental policy and cultural preservation.

Keywords: - Ethnobotany, Plant Symbolism, Administrative Botany, Cultural Heritage,Madhya Pradesh.

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Ethnobotanical Significance and Traditional Uses of Madhuka indica (Mahua) among Tribal Communities of Singrauli District, Madhya Pradesh

Ram Gopal Singh 1, Awadh Raj Singh2, Ishwar Prasad Prajapati 2,
1 Government College Deosar, Singrauli, Madhya Pradesh, India.
2 P.M. College of Excellence S.G.S. Govt. Auto. P.G. College Sidhi, Madhya Pradesh, India.

Abstract

Madhuka indica (syn. Madhuca longifolia), commonly known as Mahua, is a multipurpose tree widely used by tribal communities of India. The present study documents the ethnobotanical importance of M. indica with respect to its medicinal, nutritional, cultural, and economic uses. Data were collected through interviews with local healers, fieldsurveys, and review of existing literature. Various plant parts such as flowers, fruits, seeds, bark, and leaves are traditionally used for treating ailments like diabetes, skin diseases, digestive disorders, and rheumatism. The study highlights the need for conservation and sustainable utilization of this valuable ethnobotanical resource.

Keywords: Ethnobotany, Madhuka indica, Mahua, Tribal medicine, Medicinal plant

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Studies of Aquatic Biodiversity of Sidhi District

Pratiksha Pandey 1*
Department Of Botany, PM College Of Excellence Sidhi, 486661, Madhya Pradesh, India
* pandeypratiksha574@gmail.com

Abstract

Aquatic biodiversity refers to the variety of plants, animals, and microorganisms living in freshwater ecosystems such as rivers, ponds, lakes, and wetlands. Sidhi District, located in the northeastern part of Madhya Pradesh, possesses rich aquatic biodiversity due to the presence of important rivers like the Son and Gopad, along with numerous ponds and seasonal water bodies. The aquatic ecosystems of Sidhi District support a wide range of flora and fauna. Aquatic plants such as Hydrilla, Vallisneria, lotus, and water hyacinth are commonly found. These plants play a vital role in oxygen production, nutrient cycling, and providing shelter for aquatic organisms. The fauna includes various species of fishes, amphibians, insects, mollusks, and plankton. Fish species like Rohu, Catla, Mrigal, and indigenous varieties are important for local fisheries and contribute to the livelihood of rural communities. Aquatic biodiversity maintains ecological balance by supporting food chains and improving water quality. However, human activities such as pollution, overfishing, deforestation, and climate change threaten these ecosystems. Scientific studies and conservation measures are essential to protect aquatic biodiversity in Sidhi District and ensure sustainable use of aquatic resources for future generations.

Keywords: -Aquatic Biodiversity, Freshwater Ecosystems, Rivers, Aquatic Flora, Aquatic Fauna, Conservation, Fisheries.

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Greenhouse Gas Emissions from Agricultural Activities in Sidhi

Kajal Singh, Rakesh Singh Chauhan
Department of Botany, PMCOE, Sanjay Gandhi Smriti Govt Autonomous College
Sidhi 486661, Madhya Pradesh, India. Email - singhkajal9109@gmail.com

Abstract

The aim of the study was to investigate the greenhouse gas (GHG) emissions from agricultural activities in Sidhi, Madhya Pradesh, India. Accordingly, isolation, quantification,and analysis of GHG emissions from paddy fields, waterlogged soils, forest soils, and compost practices in Sidhi region were submitted over analyzes which main sources of GHG emissions identified were methane (CH4), nitrous oxide (N2O), and carbon dioxide (CO2). The greenhouse gas emissions were quantified under different management practices including flooding, fertilization, and residue management. The emissions levels varied between different habitats and under varying agricultural practices. Furthermore, potential of mitigation strategies such as improved water management and efficient use of nitrogen fertilizers to reduce GHG emissions from agriculture and contribute to climate change mitigation efforts.

Keywords: -Nitrogen fixation, Greenhouse gases, Agriculture, Sidhi, Climate change.

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Study of Horticulture Technology

Suraj Verma
Department of botany PM collage Sanjay Gandhi smriti govt auto. P.G collage
sidhi M.P 486661 india
Email id- suraj1815h@gmail.com

Abstract

Innovations in horticulture for sustainable growth,Horticulture, encompassing the intensive cultivation of fruits, vegetables, flowers,and ornamental plant, plays a pivotal role in ensuring global nutritional security,enhancing agricultural economies, and providing significant employmentopportunities. Traditional horticulture practices are facing unprecedentedchallenges due to climate change, resource constraints, and increasing global

food demands. In response, the integration of advanced technologies theintegration of advanced technologies has become essential for sustainableproduction.This paper provides an overview of key technological innovations driving themodernization of the horticulture sector.it discusses the application of hi- techtechniques such as micro-irrigation systems protected cultivationnew technologies in horticulture such as AI, drones, lot, robotics, and verticalfarming are increasing efficiency, helping in precision agriculture, automatedmonitoring, pest management, and sustainable farming, thereby increasing yieldsand saving resources.

KEYWORDS:Vertical farming & Hydroponics, Drones, AI, Robotics.

Physico-chemical Properties of Water Influencing Macrophyte Diversity in kapsa pond Semariya Tahsil Rewa MP

Sushma Kushwaha 1 and Rajshree Pandey 2
1.Research scholar, Department of Botany Govt. Girls P.G. College, Rewa (M.P.) India
2.Prof. & Head, Department of Botany, Govt. Girls P.G. College, Rewa (M.P.) India

Abstract

This study aimed to analyzephysico-chemical properties of water influencing macrophyte diversity, focusing on Kapsa Pond. A total of 16 macrophyte species from 10families were identified during the research, with 4 dominant species observed across 4 pondsites. Poor water quality and invasive species were noted at all sites except site II, which wascharacterized by submerged vegetation, higher dissolved oxygen (DO), and lower totaldissolved solids (TDS). Harmful practices by residents have not only led to a decline inthe diversity, distribution, density, and productivity of macrophytes but also negativelyimpacted the overall health of the pond ecosystem.

Key words: DO, Quadrate method, Kapsa Pond, Water chemistry

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A study on environmental science, climate carbon sequestration pollution

Atul Kumar Mishra * Dr. Rakesh Singh Chauhan
DEPORTMENT OF BOTANY, PMCOE SGS AUTONOMOUS PG COLLEGE SIDHI MP 486661 INDIA
mishraatul64284@gmail.com

Abstract

The primary object of this study is to explore environmental science, climate and carbonsequestration in the context of pollution. This research specifically, focus on the ubiquitouspresence of microplastic in agriculture. sewage and irrigationare primary contributions to soil contamination The study emphasizes that effective carbonsequestration combined with pollution control strategies is essential for environmentalsustainability and long-term climate resilience. It examines the role of natural carbon sinkssuch as forests, soil, and wetlands, along with technological methods, in reducingatmospheric carbon dioxide levels. The research also highlights how air, water, and soilpollution weaken carbon sequestration capacity and intensify climate change impactsKey Finding includeSoil Health- MPS _ significantly alter water retention and nutrient cyclingbiological impacts- Adverse effects were notes on microbial communities, plantsphysiology (growth and photosynthesis) and soil fauna like earthworms

Keyword: Microplastic carbon sequestration, soil health organic mulches sustainable agriculture plantPhysiologyBiodiversity Ecology Conservation

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Biotechnology Bolecular Biologymicrobiology: Fundamental Principles and Applications

Ashish Kumar Mishra*
1 Education for science, Sanjay Gandhi Smriti Govt. Auto. PG College, Sidhi, 486661, Madhya Pradesh, India.
2 Department of Botany, Sanjay Gandhi Smriti Govt. Auto. PG College, Sidhi, 486661, Madhya Pradesh, India.
*ashishmishraji8205@gmail.com

Abstract

Biotechnology, molecular biology, and microbiology are closely interconnected disciplines thatplay a vital role in understanding biological systems and developing innovative solutions foragriculture, medicine, and environmental sustainability. This research paper focuses on thefundamental principles and applications of these fields, emphasizing microbial diversity,molecular mechanisms of gene expression, and biotechnological tools used for geneticimprovement and disease control. The study highlights modern techniques such asrecombinant DNA technology, polymerase, and microbial fermentation, which have significantlyadvanced research and industrial applications. Furthermore, the role of beneficialmicroorganisms in agriculture, bioremediation, and pharmaceutical production is discussed.The findings demonstrate that the integration of molecular and microbial approaches enhancesproductivity, improves disease resistance, and supports sustainable development. This researchunderscores the importance of interdisciplinary strategies for addressing global challengesrelated to food security, health, and environmental protection.

Keywords: -Biotechnology; Molecular Biology; Microbiology; Recombinant DNA Technology; Microorganisms;

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Biodiversity Conservation and Phytogeography of Sidhi District.

Ruchika Namdeo
Department Of Environmental Biology, PM College Of Excellence, Sidhi, 486661, MadhyaPradesh India
ruhisaini321@gmail.com

Abstract

Biodiversity, ecology, conservation, and phytogeography are key disciplines for understanding ecosystem structure and sustainable natural resource management. Sidhi District, located in the north-eastern part of Madhya Pradesh, India, represents a unique ecological region due to its transitional geographical position between the Vindhyan plateau and the Chhota Nagpur plateau. The district is characterized by varied topography, fertile alluvial plains, forested hills, rivers such as the Son and Gopad, and a tropical monsoon climate, all of which contribute to high biological diversity. The biodiversity of Sidhi District includes a wide range of plant and animal species, with dominant forest

types such as tropical dry deciduous forests comprising species like Shorearobusta (Sal), Tectona grandis (Teak), Terminalia spp., and Boswellia serrata. These forests provide habitat for diverse fauna, including herbivores, carnivores, avifauna, and reptiles, and support the livelihoods of indigenous and rural communities through forest-based resources and medicinal plants. Ecologically, the district plays a vital role in maintaining regional environmental stability by supporting watershed systems, soil conservation, and climate regulation. Conservation efforts in Sidhi District emphasize sustainable forest management, biodiversity protection, community participation, and awareness programs to ensure long-term ecological balance. From a phytogeographical perspective, Sidhi District forms part of the Central Indian floristic region, with vegetation patterns influenced by altitude, rainfall, soil characteristics, and human activity. The distribution of plant species reflects both Vindhyan and Chhota Nagpur hytogeographical elements, highlighting the district's importance as a transitional zone.

Keywords: -Biodiversity, Ecology, Conservation, Phytogeography, Sidhi District, Forest Ecosystem, Tropical Dry Deciduous Forests, Flora and Fauna, Central Indian Floristic Region, Sustainable Development, Environmental Managemet.

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Ecological Study of Sidhi Flora

Shrejal Mishra
Department Of Botany, Pm College Of Excellence
Sidhi, 486661, Madhya Pradesh, India
shrejalm61@gmail.com

Abstract

Sidhi district, in the Vindhya region of Madhya Pradesh, is rich in diverse and ecologically important plant species. Vegetation in forests, riverine areas, agricultural lands, and urban habitats plays a key role in maintaining biodiversity and ecological balance. It contributes to soil and water conservation, nutrient cycling, and climate regulation. Forests and riverine plants provide habitat, food, and breeding grounds for wildlife. Many species also have medicinal and traditional uses for local and tribal communities, highlighting their socio-economic importance. However, human activities such as deforestation, urbanization, and agricultural expansion are threatening natural vegetation. These pressures lead to biodiversity loss and ecosystem degradation. Sustainable management, conservation efforts, community participation, and environmental awareness are essential to protect sidhi flora. Conserving this vegetation ensures ecological stability, supports livelihoods, and preserves resources for future generations.

Keywords: Sidhi flora, Biodiversity, Ecological value, Medicinal plants, Forest ecosystem, Conservation Physiology and Biochemistry

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Studies on fresh water algae: A Case Study from Sidhi District

Sakshi singh[1]*
[1]Department of Environmental Biology, PM College of Excellence, SGS Government CollegeSidhi, 486661, Madhya Pradesh, India
pranavkumars707@gmail.com

Abstract

Studies on freshwater algae deal with microscopic, photosynthetic organisms found in rivers, lakes,ponds, and other freshwater bodies, which play a vital role as primary producers, oxygen suppliers, andthe base of the aquatic food chain, while also serving as reliable indicators of water quality. In thesestudies, water samples are collected from different sites and seasons and algae are identified under amicroscope and classified into major groups such as Chlorophyceae (green algae), Cyanophyceae (bluegreen algae), and Bacillariophyceae (diatoms). Green algae are usually the most diverse and abundantand are associated with relatively clean water, diatoms are sensitive to changes in water chemistry andreflect environmental conditions, and blue green algae often dominate nutrient rich or polluted waters.The composition and abundance of freshwater algae vary with seasonal changes, temperature, light,and physico chemical parameters like pH, dissolved oxygen, and nutrient levels. Overall, freshwater algalstudies help in understanding the ecological status of water bodies, assessing pollution levels, andsupporting the management and conservation of freshwater ecosystems.

Keywords:Studies on fresh water algae in Sidhi District, Madhya Pradesh, focus on identifying algal diversity

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Chemical Fertilizers vs Organic Fertilizers: A Case Study from Sidhi District

Sahiba Mansoori[1]*
[1]Department of Environmental Biology, PM College of Excellence, SGS Government CollegeSidhi, 486661, Madhya Pradesh, India
sahibamansoori1004@gmail.com

Abstract

A case study from the Sidhi district of Madhya Pradesh highlights the comparative effects of chemicaland organic fertilizers on soil fertility and crop productivity. The study shows that the continuous use ofchemical fertilizers, particularly the recommended doses of nitrogen, phosphorus, and potassium (NPK),significantly increases the crop yields of major crops such as wheat, rice, and soybean in the short term.However, long-term, and imbalanced use of chemical fertilizers leads to the depletion of certainnutrients, such as sulfur and potassium, and does not improve soil organic matter, which is essential formaintaining soil health. In contrast, organic fertilizers contribute to improved soil structure, increasedorganic matter content, enhanced microbial activity, and better water-holding capacity. However, theirnutrient release is slower, and crop yields may initially be lower.

Keywords: -Chemical Fertilizers; Organic Fertilizers; Sustainable Agriculture; Soil Health; Crop Yield; EnvironmentalImpact; Sidhi District; Integrated Nutrient Management.

Ethnobotany Medicinal Plants and Economic Botany

Sapna Gautam
Department of botany, PMCOE S.G.S.govt P.G. college sidhi,486661, Madhya Pradesh, India
Gautamsapna2804@gmail.com

Abstract

Ethnobotany is the study of interrelations between humans and plants, including plantsused as food, medicines, and for other economic applications. One of the aims ofethnobotanists is to explore the importance of plants that are used as food, clothing,shelter, fodder, fuel, furniture, and medicinal use. Therefore, ethnobotanical studies areuseful in identifying, disseminating studies are useful in identifying disseminating, anddocumenting indigenous knowledge and the application of plant diversity for human andlivestock ailments. Traditional medicine has been defined as health practices,approaches, knowledge and beliefs in plant, animal, and minaral-based medicines,spiritual therapies, manual techniques and exercises to treat, diagnose and preventillness or maintain wellbeing.

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Botanical Survey of Plants of Sidhi District

Supriya Mishra
Department Of Environmental Botany, PM College Of Excellence
Sidhi, 486661, Madhya Pradesh, INDIA
SUPRIYAMISHRAA689@gmail.com

Abstract

In the Vindhya region Botanical surveys in Sidhi District, Madhya Pradesh, revealrich dry deciduous flora, focusing on areas like Sanjay-Dubri Tiger Reserve,showing dominant species like Sal (Shorea robusta), Mahua (Madhuca indica),Tendu (Diospyros melanoxylon), and Bamboo, with significant medicinal plant useby local tribes. Studies highlight families like Fabaceae, Poaceae, and Asteraceae,document wall flora diversity, and identify plants like Ageratum conyzoides andMimosa pudica as common, with ongoing research documenting both commonand rare species for conservation.Biodiversity Hotspots: Sanjay-Dubri Tiger Reserve and Kusmi Forest show highspecies richness, with studies recording over 142 species in the reserve and over135 in Kusmi Forest.Medicinal Plants: Extensive ethnobotanical research documents local tribalknowledge, with plants like Mimosa pudica, Ageratum conyzoides, and variousTerminalia species used for ailments.

Keywords: Sanjay-Dubri Tiger Reserve and Kusmi Forest are key study areas, revealing high plant diversity. Dominant Plant Families:Forests: Fabaceae, Poaceae, Caesalpiniaceae, Mimosaceae are prominent.Wall Flora (Urban): Asteraceae and Poaceae dominate, colonizing walls seasonally, withAmaranthaceae in summe

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Ethnomedicinal plants of sidhi district

Roshani singh
PM College Of Excellence, Sidhi, 486661,
Madhya Pradesh, India
* roshaniu576@gmail.com

Abstract

Ethnobotany is the study of traditional plant used by indigenous people. Knowledge of ethnobotany isvery ancient. It provides details on the traditional uses of plant resources that can be practiced tointegrated tribal development. Stephen Powers in 1873 first coined the word "Aboriginal Botany" andexplained in the form of simple definition as the "study of vegetation used by aboriginals for theirvarious commodities such as food, shelter, medicine, textiles, ornaments, etc". Based on this concept,the term was first used in 1895 by John William Harshberger, a botanist at the Universityof Pennsylvania, to refer to the use of plants by indigenous people. Since then, it has been defined as thetraditional knowledge of indigenous communities, about surrounding plant diversity and how variousindividuals make use of indigenous plants located in their localities. Ethnobotany is the scientific study of cultural practices and traditional knowledge in relation to religious,medicinal, and other uses of plants. Through years of consistent practice, one gains knowledge aboutusing plants as medicine. The tribal people are the main repositories of traditional knowledge regardingthe various applications of plants. The locals and traditional healers verbally transmitted their knowledgeand beliefs about plants to generation after generation. The terms ethnobotany and traditional medicineare not similar. Ayurveda, Siddha, andUnani are the three traditional medical systems that are acknowledged in India. The study of foods,fibres, dyes, tans, other beneficial and harmful plants, application is increasing day by day.

Keywords:- ethnomedicine, ethnopharmacology, herbal medicine, natural products, traditional knowledge, plant uses,bioprospecting, conservation, and sustainable use.

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"Resorce Economical Study of Plants of Sidhi District"

Akanksha Gupta
PM College Of Excellence, Sidhi, 486661,Madhya Pradesh, India
guptaakanksha6268@gmail.com

Abstract

Ethnobotany is a branch of botany that deals with the study of the relationship between plantsand human beings, particularly focusing on how indigenous and local communities utilize plantresources for food, medicine, shelter, clothing, rituals, and economic purposes. The knowledgeof ethnobotany is very ancient and has been developed through long-term interaction betweenhumans and their surrounding environment. The term ethnobotany was first used by JohnWilliam Harshberger in 1895 to

describe the study of plants used by indigenous people. Sincethen, ethnobotany has emerged as an important interdisciplinary field linking botany,anthropology, medicine, and ecology.Medicinal plants play a vital role in traditional healthcare systems, especially in rural and tribalareas of India. The tribal communities of Sidhi district, Madhya Pradesh, possess rich traditionalknowledge regardingthe use of local plants for curing various ailments such as fever, cough,skin diseases, digestive disorders, and wounds. This knowledge is usually passed orally from onegeneration to another and is an important source for the development of modern herbalmedicines and drugs.Economic botany deals with the study of plants that are economically important to humans.These include plants used as food crops, fodder, timber, fuel, fibers, oils, dyes, gums, resins,and medicinal products. In Sidhi district, forest and agricultural plants contribute significantlytothe local economy by providing livelihood opportunities to tribal and rural populations. Thesustainable use and conservation of ethnobotanically important and economically valuableplants are essential for biodiversity conservation and rural development.The present study highlights the importance of ethnobotany, medicinal plants, and economicbotany in Sidhi district, emphasizing the need to document traditional knowledge and promotesustainable utilization of plant resources.

Keywords: -Ethnobotany, Medicinal Plants, Economic Botany, Traditional Knowledge, Ethnomedicine, TribalCommunities, Herbal Medicine, Biodiversity Conservation, Sustainable Use.

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Ethnobotanical Study of Plants Used by Local Communities

Prachi Tiwari
Department of botany, PMCOE, SGS Govt. Autonomous PG college sidhi, Madhya Pradesh,486661,india
Email ID - pt6858945@gmail.com

Abstract

Ethnobotany is the study of the relationship between human beings and plants. Itmainly focuses on how local and tribal communities use plants for food, medicine,shelter, and other daily needs. Medicinal plants play an important role in traditionalhealthcare systems such as Ayurveda, Unani, and folk medicine. These plants areused to treat various diseases like fever, cough, skin problems, digestive disorders,and infections. The knowledge of medicinal plants is usually passed from onegeneration to another orally. Therefore, documenting ethnobotanical knowledge isvery important for conservation and future scientific research.The ethnobotanicalstudy was carried out in selected rural areas. Iwere identified using standard florasand botanical books. Details regarding local names, plant parts used, and medicinaluses were recorded carefully.Ethnobotany, Medicinal plants, Traditionalknowledge, Herbal medicine, Indigenous people.Traditional plants- based medicines are easily available, cost-effective, and havefewer side effects. however, this valuable knowledge is gradually disappearing due tomodernization. Therefore, proper documentation and conservation of medicinal plantsand traditional knowledge are essential. Further scientific studies can help indeveloping new drugs from these

medicinal plants. The study revealed that severalmedicinal plants are commonly used by local people for treating different ailments.Various plant parts such as leaves, roots, bark, seeds and flowers are used in thepreparation of med. Leaves were found to be the most frequently used plant part.

Keywords:Ethnobotany, Medicinal plants, Traditional knowledge, Herbal medicine, Indigenouspeople.

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Uses of Machine Learning in Plant Science Research

***Dr. Arvind Kumar Tripathi, *Dr. Pramod Kumar Dwivedi, Dr. Sanjay Dwivedi**

*Dept. of Computer Science, PMCOE, S.G.S. Govt. Auto. P.G. College Sidhi

Abstract

Machine learning (ML) has become an increasingly important tool in plant science research due to its ability to analyze large and complex biological datasets. Advances in high throughput technologies have generated vast amounts of data in genomics, phenomics, remote sensing, and environmental monitoring, which cannot be efficiently processed using traditional analytical methods. Machine learning techniques enable accurate prediction, classification, and pattern recognition, thereby improving decision-making and accelerating research outcomes. In plant science, ML is applied in diverse areas including crop improvement, plant disease detection, phenotyping, precision agriculture, stress tolerance analysis, and omics data interpretation. These applications contribute to enhanced crop productivity, efficient resource utilization, and sustainable agricultural practices. Despite its potential, challenges such as data quality, model interpretability, and computational requirements remain. This paper reviews the major applications of machine learning in plant science research, discusses commonly used ML techniques, highlights existing challenges, and outlines prospects for integrating artificial intelligence into plant biology.

Keywords: Machine Learning; Plant Science; Crop Improvement; Plant Disease Detection; Precision Agriculture; Plant Phenotyping; Remote Sensing; Omics Data Analysis; Artificial Intelligence; Sustainable Agriculture**.**

●●●

Studies on Epiphytic plants of Sidhi District.

Nazaneen Bano

PM college of excellenceSidhi 486661 Madhya Pradesh

Abstract

The present study focuses on the diversity, distribution, andecological significance of epiphytic plants in Sidhi District,Madhya Pradesh, India. Epiphytes are non-parasitic plantsthat grow upon other plants, deriving moisture and nutrientsfrom the air, rain, and debris. This investigation was carrieout across

various habitats including tropical dry deciduousforests, riverine belts, and anthropogenically influencedareas to document species composition and abundance. Atotal of (insert number) epiphytic species belonging to (insertnumber) families were recorded, with orchids, ferns,bryophytes, and lichens being predominant. Speciesrichness was observed to be higher in areas with greatercanopy cover and humidity. The study highlights theinfluence of microclimatic factors, host tree characteristics,and disturbance gradients on epiphyte distribution. Resultsindicate that epiphytic communities contribute significantlyto forest biodiversity and play important roles in nutrientcycling and habitat provision for invertebrates and otherflora.

Keywords: -Epiphytic plants, Biodiversity, sidhidistrict, speciescomposition, Distribution patterns, Tropical Dry deciduousforest, ecological assessment, Conservation.

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"Studies on Ecological Vallue of Sidhi Flora"

Shivani Singh
PM College of Excellence,Sidhi, 486661, Madhya Pradesh, India.
*baghelshivanisingh23@gmail.com

Abstract

This study evaluates the ecological value of the flora in Sidhi district,Madhya Pradesh, India, by assessing plant diversity, community structure,and ecosystem significance across multiple habitats. Field investigations inriparian zones along rivers and wetlands documented species diversity andwater-body vegetation, showing key ecological indicators such as diversity andrichness that reflect the health and functioning of these ecosystems. Separatestudies on aquatic vegetation in local ponds identified 36 aquatic weedspecies that persist year-round and contribute to nutrient cycling, habitatcomplexity, and primary productivity in freshwater systems. Phytosociologicalanalyses in the SonGhariyal wetland revealed over 100 plant species andhighlighted dominant taxa through calculations of frequency, density, andImportance Value Index (IVI), underscoring their roles in wetland stability andbiotic support. Vegetation structure research in Kusmi Forest furtherdemonstrated stratified plant communities, with trees, shrubs, and herbsshowing varied diversity patterns and responses to anthropogenic disturbance,indicating priorities for conservation management. These integrated findingsemphasize the ecological value of Sidhi flora in maintaining biodiversity,supporting ecosystem processes, and providing essential services within thedistrict's diverse landscapes.

Keywords:-Sidhi flora, ecological value, plant diversity, aquatic weeds, riparian vegetation,wetland phytosociology, Importance Value Index, ecosystem services, MadhyaPrade

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Medicinal Plants and their Economic Importance

Shweta Tiwari
PMCOE Sanjay Gandhi Smriti Government Autonomous PG College,Sidhi,486661,MP, India
shwetatiwari16555@gmail.com

Abstract

Ethnobotany deals with the study of traditional knowledge of plants used by indigenous and localcommunities. Medicinal plants are an important part of ethnobotanical studies, as they have beenused since ancient times for the treatment of various diseases. Economic botany focuses on plantthat has commercial value in medicine, agriculture, and industry. Documentation of traditionalplant knowledge is essential for biodiversity conservation and sustainabledevelopment. Information was collected through field surveys, interviews with local inhabitantsand traditional healers, and a review of ethnobotanical literature. Data on plant species, part used,medicinal applications and economic significance were compiled and analyzed. Several Indianmedicinal plants were documented, including Azadiracta indica (Neem), Ocimum sanctum(Tulsi), Withaniasomnifera (Ashwagandha), Curcuma longa (Turmeric), and Aloe vera. Leaveswere most frequently used, followed by roots and bark. Many plants are economically importantfor herbal medicines, cosmetics, food products, and small-scale industries, contributing to ruralincome. The study emphasizes the importance of preserving traditional knowledge and highlightsplants with potential for pharmaceutical and economic development. Ethnobotanical knowledgeof medicinal plants is valuable for healthcare and rural economic development. Properdocumentation and conservation can ensure sustainable use of plant resources and support theherbal industry.

Keywords: Ethnobotany, Medicinal Plants, Economic Botany, Traditional knowledge, Field Survey.

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Deforestation and Individualization : A Case Study of SidhiDistrict

Harshita Singh
Department of Botany, PMCOE, Sanjay Gandhi Smriti Government Autonomous PG College, Sidhi, MP,486661, India
harshitabaghel1117@gmail.com

Abstract

Deforestation has become a critical environmental issue in India, especially in regions undergoing rapid socio-economic transformation. Sidhi District of Madhya Pradesh represents a significant case where natural forest cover has declined due to increasing human and developmental pressures. Historically, forests in Sidhi were managed collectively by local and tribal communities who followed traditional practices that ensured sustainable use of resources. These community-based systems played an important role in preserving biodiversity and maintaining ecological balance. However, in recent decades, the process of individualization has altered land-use patterns in the district. The shift from

collective ownership to individual land claims, combined with industrial expansion, coal mining projects, agricultural extension, and infrastructure development, has intensified deforestation. Individual landholders often prioritize short-term economic benefits, resulting in excessive tree cutting and encroachment into forest areas. This has weakened traditional forest management institutions and reduced community accountability. The environmental consequences of deforestation in Sidhi District are severe. Loss of forest cover has led to soil erosion, declining groundwater levels, disruption of local climate patterns, and loss of wildlife habitats. Forest-dependent communities face livelihood insecurity, displacement, and reduced access to essential resources. This study highlights the urgent need for integrated development policies that promote sustainable land use, strengthen community participation, and balance economic growth with environmental conservation to ensure long-term ecological stability in Sidhi District.

Keywords: Deforestationecological balancelivelihood.

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Ethnobotanical Documentation and Economic Evaluation of Medicinal Plants of the Vindhya Region, Madhya Pradesh

Tanishka Shukla, Rakesh Singh Chauhan
Department of Botany, SANJAY GANDHI SMRITI GOVT. AUTONOMOUS COLLAGE, SIDHI486661, MADHYA PARDESH, India.
*tanishkashukla200409@gmail.com

Abstract

The aim of the study was to investigate and document indigenous medicinal plant speciesfrom the forest habitats of the Vindhya region of Madhya Pradesh, India. Accordingly, the identification of promising medicinal plants and an assessment of their economic potential for traditional and industrial use was done. Data collection was based on field surveys and ethnobotanical interviews with traditional healers and local communities. 2. Many significant medicinal plants were identified from the tribal areas and forest fringes. Out of several documented species, Tinospora cordifolia (Giloy) and Withaniasomnifera (Ashwagandha) were identified as highly potent based on their traditional use values and phytochemical stability. The crude extracts showed significant potential for use in the pharmaceutical and nutraceutical sectors. This research emphasizes the importance of documenting traditional knowledge to support the sustainable development of the local herbal economy and ensure the conservation of rare botanical species.

Keywords :- Ethnobotany, Medicinal Plants, Vindhya Region, Economic Botany, Traditional Knowledge, Conservation.

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Studies On Ethnomedicinal Plants of S.G.S. College CampusIn Sidhi District.

Prachi Jayaswal
PM College Of Excellenc.Sidhi,486661, Madhya Pradesh, India.
jayaswalprachi5678@gmail.com

Abstract

Reserch On Ethnomedicinal Plants In the Sidhi District, Including Work by Faculty and Scholars from S.G.S. Government Autonomus P.G College Sidhi, HasDacumentedthe Rich TreditonalPlant Knowledge of the region's rural and tribal communites. Field surveys and ethnobotanical inventories carried out in various parts of Sidhi have recorded numerous medicinal plant species used by indigenous groups such as the gond, Kol, Baiga And other local tribes to treat a wide range of aliments. One comprehensive study listed. 90 species belonging to 45 famlies, nothing local names, plant parts used, and their applications against human diseasas, highlitingthe dependency of communities on herbal remedies and the urgent need to document this knowledge before it disappears.Additional research by the college's botanists emphasized ethnomedicinal practices for specific health issuses in the district, demonstrating the diverse traditional uses of plants for condution such gastrointestinal disorders, skin problems and othecommen elements.

Keywords:-Studies on ethnomedicinal plants often focus on documenting traditional knowledge, identifying promising species for pharmacological research, and addressing conservation needs

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Ethnobotanical medicinal plants

Aditi Shukla
PMCOE, S.G.S. Govt. Auto.P.G. college sidhi,486661, Madhya Pradesh, India.
Vikasshukla80858@gmail.com

Abstract

The research aims to document indigenous knowledge of flora involves systematically recording traditional uses of plants (medicinal, food, rituals) by local communities. thestudy was focused on identifying medicinal plants, disease treated, part of plant used, methods of preparation, route of administration, ingredients added etc. Document plants by different areas used for curing ailments like, Aeglemarmelos (Beal), Azadirachta indica (neem), ocimum sanctum (Tulsi), Asparagusracemosus (Shatavari), Withniasomnifera (Ashwagandha), etc. Identifying dominant families like, (Asteraceae, Malvaceae, Asparagaceae,). Exploration of the uses of plants and their contribution to economic development which focus on, food (cereals, millets, pulses, oil),medicine (withania, ocimum), beverages (tea, coffee), fibers (cotton, coir), timber, textile, fuel, and other industrial uses of plants.

Keyword: -Ethnobotany medicinal plants economic botany, the multifaceted role of indigenous plants as: medicinal, nutritional, bioenergy, shelter, and industrial applications.

Climate Change & Carbon Sequestration

Abhay Kumar Gupta, Dr. Chauhan Rakesh Singh
Department of Botany, PMCOE, Sanjay Gandhi Smrirti Government Autonomous PG college Sidhi, MP, 486661, India
ag496661@gmail.com

Abstract

The anthropological activities increase concentration of greenhouse gases in atmosphere causing increase in overall temperature of planet and this elevation of temperature in earth is majorly responsible for climate change. According to intergovernmental panel on climate change (IPPC) the earth temperature increase1.1degree Celsius compared to pre-industrial period (1850-1900) and global warming could reach 2-3°C by 2100 and the second major concerning report form national oceanic and atmospheric administration (NOAA) showing the increase atmospheric carbon di oxide to 420ppm highest in 8 lakh years.

The impact of climate change is vast which include all sphere from environment to humanity. Some major impacts are extreme weather events, rising sea level, health impacts, agriculture impacts and impact on entire species and ecosystem. The developing countries is at higher risk like India which is in their crucial stage of development and having many vulnerable populations. The climate vulnerability index report (CVI) suggests more than 80% of India population lives in districts vulnerable to climate risks.

There is need to find a way which is cost-effective and impactful and the carbon sequestration have such potential. The carbon sequestration is natural and artificial process by which the carbon di oxide removes from atmosphere. In this the combination of traditional practices and modern technological method of carbon sequestration can be solution.

Keywords: Atmosphere, Temperature, Carbon sequestration, Population.

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Studies on Some Lesser-Known Plants of S.G.S College Campus

Khushi Pandey
PM College of Excellence Sidhi – 486661, Madhya Pradesh, India
Email: anujpandey9168@gmail.com

Abstract

Sidhi district of Madhya Pradesh is rich in floral diversity and supports a wide range of lesser-known plant species that play a significant role in maintaining ecological balance. The present study focuses on the lesser-known plants found in the S.G.S. College campus and nearby areas, highlighting their ecological and medicinal importance. Many of these plants contribute to soil conservation, nutrient cycling, micro-climate regulation, and provide habitat and food for insects, birds, and small animals. Several species are traditionally used by local communities for medicinal purposes, yet remain scientifically under-documented. Field surveys and observations reveal that these plants are well

adapted to local environmental conditions and are essential for sustaining biodiversity. However, urbanization, habitat destruction, and lack of awareness pose serious threats to their survival. Conservation of such flora is crucial not only for ecological stability but also for preserving traditional knowledge. This study emphasizes the need for documentation, awareness, and conservation strategies to protect the lesser-known flora of Sidhi.

Keywords:-Sidhi flora, Biodiversity, Ecological value, Medicinal plants, Forest ecosystem.

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Studies On Ethnomedicinal Trees of S.G.S College in Sidhi District

Anshika singh Chauhan

PM College of Excellence. Sidhi,486661, MadhyaPradesh,india

Singhanshika4660@gmail.com

Abstract

Ethnomedicinal trees play an important role in traditional healthcare systems, especially in rural and tribal areas. The present study, conducted under S.G.S. College, focuses on documenting the medicinal uses of tree species based on traditional knowledge of local communities. Due to modernization and deforestation, such knowledge is gradually disappearing, making its documentation necessary.The study was carried out through field visits and interaction with local people and traditional healers. Information related to plant parts used, methods of preparation, and diseases treated was collected. Various tree species were found to be used for treating common ailments such as fever, cough, skin diseases, digestive disorders, and wounds. Bark, leaves, roots, fruits, and seeds were commonly used in different medicinal preparations. The study highlights the importance of ethnomedicinal trees as a source of low-cost primary healthcare. Proper conservation and scientific validation of these medicinal trees are essential for preserving traditional knowledge and biodiversity.

Keywords: Ethnomedicinal Trees, Medicinal Plants, Traditional Knowledge, Indigenous Healthcare Practices, Rural and Tribal Medicine, Plant-Based Remedies, Biodiversity Conservation, Sustainable Use of Medicinal Plant.

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Environmental Science, Climate Change, Carbon Sequestration, Pollution.

Gupta Priya*
Department of Botany, PMCOE S.G.S. Govt. Autonomous P.G. College Sidhi, 486661, Madhya Pradesh, India
priyasidhi13@gmail.com

Abstract

The aim of the present study is to highlight the significance of carbon sequestration as an effective approach to mitigate climate change and reduce environmental pollution. Rapid industrialization, urbanization, and deforestation have resulted in increased emission of greenhouse gases, particularly carbon dioxide, leading to global warming and climate instability. Carbon sequestration involves the capture and long-term storage of atmospheric carbon dioxide in natural and engineered reservoirs. The study discusses major carbon sequestration pathways including biological, geological, and oceanic sequestration, with special emphasis on plant-based and soil carbon storage mechanisms. Through photosynthesis, plants absorb atmospheric carbon dioxide and convert it into organic carbon, which is stored in plant biomass and soil organic matter. This natural process not only reduces atmospheric carbon levels but also improves soil fertility and ecosystem productivity. The role of forests, grasslands, wetlands, and agricultural soils as major carbon sinks is emphasized. Additionally, the contribution of carbon sequestration in minimizing air pollution and enhancing environmental sustainability is examined. The findings suggest that afforestation, reforestation, and sustainable land-use practices significantly enhance carbon sequestration potential. The study concludes that integrating carbon sequestration strategies into environmental management and climate policies can serve as a long-term, eco-friendly, and cost-effective solution to combat climate change and environmental degradation.

Keywords: Carbon sequestration, climate change, environmental pollution, greenhouse gases, ecosystem sustainability.

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Study on Medicinal Plants and Their Therapeutic Importance

Ayush Kumar Mishra
PMCOE Sanjay Gandhi Smriti Govt. Autonomous PG College, Sidhi, 486661, Madhya Pradesh, India
Email ID: - ayushmishram0@gmail.com

Abstract

The primary objective of this study is to explore medicinal plants and their therapeutic value.Medicinal plants are found in various parts of India and have proven useful in the treatment of avariety of ailments. Detailed descriptions of medicinal plants are also found in the Vedas, whichdescribe various useful medicinal plants. Many great sages, such as Sushruta and Parashara, haveshaped the field of medicine. They have conducted extensive research on medicinal plants andtheir therapeutic

value.Medicinal plants have been an important part of traditional medicine since ancient times. Eventoday, they hold special importance in the field of medicine. Medicinal plants possess a varietyof properties, such as alkaloids, flavonoids, glycosides, and tannins. Various new medicines arebeing discovered using medicinal plants. Medicinal plants have played a significant role inhealthcare. The key point of this study is that it is essential to discover medicinal plants that cantreat a variety of diseases, while also focusing on their major side effects. This study will make asignificant contribution to the development of medicinal plants and healthcare in the future.

Keywords: -Medicinal plants, Vedas, Sushrut and Parashar, Healthcare, Traditional Medicine

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Sustainable Management of Plant Resources: A Pathway to Environmental Conservation and Economic Development

Jagriti Singh
PM College of excellenceSidhi 486661 mpindia
jagritisinghbaghel@gmail.com

Abstract

Plant resources are the backbone of ecosystems and economies worldwide, providing essentialgoods and services such as food, medicine, shelter, and ecosystem stability. However, theincreasing demand and unsustainable exploitation of these resources pose significant threats tobiodiversity, ecosystem health, and human well-being. Effective management of plantresources is crucial to ensure their conservation and sustainable use for future generations. Thispaper explores the importance of plant resources, the challenges they face, and strategies fortheir sustainable management. It highlights the role of conservation practices, biotechnology,policy frameworks, and community participation in preserving plant biodiversity and promotingsustainable utilization. By adopting a holistic and interdisciplinary approach to plant resourcemanagement, we can balance economic development with environmental conservation,ensuring a sustainable future for all.

Keywords:Plant resources, sustainable management, biodiversity conservation, ecosystem services,biotechnology, policy frameworks, community participation.

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Economically important plants of Sidhi District

Varsha Singh *
Department of Botany PMCOE S.G.S Govt. Auto. PG. Collage Sidhi M.P.

Abstract

Ethnobotany is the scientific study of the traditional knowledge and practices of indigenousand local communities regarding the use of plants for food, medicine, shelter, rituals, andother cultural purposes. It highlights the close relationship between humans and plants andplays a crucial role in preserving traditional wisdom and biodiversity. Medicinal plants form avital component of ethnobotanical studies, as they are widely used in traditional healthcaresystems such as Ayurveda, Unani, Siddha, and folk medicine. These plants contain bioactivecompounds that are used in the prevention and treatment of various diseases and havesignificantly contributed to the development of modern pharmaceuticals.Medicinal plants have served as humanity's primary source of therapeutic agents sinceantiquity, providing diverse phytochemicals like alkaloids, flavonoids, and tannins thatunderpin their pharmacological activities. Modern research confirms their potential fordeveloping new drugs against cancer, diabetes, inflammation, and infectious diseases,aligning with traditional practices from systems like Ayurveda and Chinese Medicine. Whiledemand for herbal remedies grows, scientific validation through rigorous clinical trials andstandardization remains crucial to ensure safety and efficacy, bridging traditional knowledgewith modern pharmaceutical science for futureEconomic botany focuses on the study of plants that have economic importance to humans. Itincludes plants used for food, fiber, timber, medicines, oils, spices, beverages, dyes, andindustrial raw materials. Economic botany emphasizes the sustainable utilization,conservation, cultivation, and commercialization of plant resources to support agriculture,industry, and the economy. Together, ethnobotany, medicinal plants, and economic botanyprovide valuable insights into sustainable development, conservation of plant diversity,improvement of healthcare, and enhancement of socio-economic conditionsof human society.
Keywords: -Ethnobotany, Medicinal plants; Economic botany, Traditional knowledge.

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Medicinal plantsof sidhi district and their importances

Shriya Singh*
Department of Botany PMCOE S.G.S Govt. Auto. P.G. Collage Sidhi M.P.
*Ssc395395@gmail.com

Abstract

The main aim of ethnobotany is to study the complex relationships between people and plants, to document traditional knowledge, and to apply this knowledge to modern fields such as medicine, agriculture, and conservation. The study of ethnobotany provides an important tool for understanding the inseparable connection between nature and culture and for preserving this relationship for future

generations. Ethnobotany helps reveal the deep links between human societies and plant resources, including their use in traditional medicine, food systems, rituals, and cultural practices. Furthermore, it contributes to the discovery of new medicinal compounds and promotes the sustainable management of natural resources. Thus, ethnobotany plays a vital role in conserving both biological diversity and cultural heritage. Madhya Pradesh is one of the leading states in India in the production of medicinal plants such as Ashwagandha, Safed Musli, Gilroy, Tulsi, Shatavari, Coleus, Aloe vera, and Palash. The state is home to more than 4,000 plant species, many of which are highly significant in Ayurvedic and tribal medicinal systems. These medicinal plants not only form the foundation of traditional healthcare practices but also contribute substantially to rural employment generation, livelihood enhancement, and economic development. Particularly in the Satpuraand Vindhya regions, the abundance of these plant resources strengthens the state's rich biodiversity, economy, and cultural heritage. Ethnobotany and economic botany both study the interactions between plants and humans; however, ethnobotany focuses on understanding how and why plants are used within different cultural and traditional contexts, whereas economic botany emphasizes what plants are used for in terms of commercial value and economic utilization.

Keywords:-Ethnobotany, Medical plants, Biodiversity, Madhya Pradesh, cultural heritage.

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An Overview of Biotechnology Molecular Biology andMicrobiology

Ruchi Gupta
Department of Botany, PMCOE SGS Govt. Autonomous PG College Sidhi (MP) India
guptaruchi1245@gmail.com

Abstract

Biotechnology is a rapidly advancing field that combines molecular biology and microbiology to develop technologies for the improvement of human life and the environment. Molecular biology focuses on the study of DNA, RNA, and proteins, providing insights into gene structure, regulation, and expression. Microbiology deals with the study of microorganisms, their physiology, metabolism, and ecological roles. The integration of these disciplines has led to significant advancements in areas such as genetic engineering, recombinant DNA technology, vaccine development, antibiotic production, and agricultural biotechnology. Modern biotechnological applications utilize microbial systems and molecular tools to enhance crop productivity, develop disease resistant varieties, and create sustainable industrial processes. This abstract emphasizes the interdependent relationship between biotechnology, molecular biology, and microbiology, highlighting their importance in scientific research, medical advancements, and environmental conservation.

Keywords: -Biotechnology, Molecular biology, Microbiology, Genetic engineering, Recombinant DNA Technology.

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Study of Endemic Plants of Sidhi District and theirConservation

Vikash Tripathi*
PMCOE, Sanjay Gandhi Smriti Government Autonomous P.G. College,
Sidhi, 486661, Madhya Pradesh, India.
E-mail id - vikashtripathi9887@gmail.comMobile no. - 7987143170

Abstract

The aim of the study is to analyze distribution of endemic plant species which can uncover key ecological patterns and provide important insight for conservationefforts. This study provides an updated knowledge which is come from a deep analysis and evaluation of species diversity and conservation status and also taking help of some research paper which are related to this topic. Finding reveals that endemic plant of sidhi district is predominately represented by tree species. Endemic tree isoccurred in greater abundance while shurbs and herbs are poorly represented and recorded in comparatively smaller number and difference in this number because sidhi is surrounded by tropical dry deciduous forest. There are some places like Kusmi forest area,Sanjay Dubri national park and near son river where endemic plant is found in a large number. Anthropogenic activity like deforestation, mining activity and agricultural expansion will lead to a major threat for endemic plants. This study provides a proper documentation for endemic plant in sidhi district. The finding provides very important and baseline data for future floristic research, ecological and conservation-oriented research and emphasize the role of endemic plants as a indicator of ecological uniqueness of an area and environmental health of the region.

Keywords: -Endemic Plants, Conservation, Ecological Uniqueness, Environmental Health

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Effects of Deforestation on Biodiversity

Shailesh Tiwari*
PMCOE Sanjay Gandhi Smriti Govt Autonomus P.G
College, sidhi ,486661, Madhya Pradesh, India
Email id – shaileshtiwarimadila@gmail**.com**

Abstract

Deforestation is one of the major environmental issues affecting global biodiversity. It involves the large-scale removal of forests for agriculture, urban development, logging, and other human activities. Forests are home to a vast majority of the world's terrestrial species, and their destruction leads to habitat loss, fragmentation, and degradation. As a result, many plant and animal species face population decline, forced migration, or extinction. Deforestation also disrupts ecological balance by affecting food chains, reducing genetic diversity, and altering ecosystem services such as pollination, soil fertility, and climate regulation. The loss of biodiversity weakens ecosystem resilience, making it harder for natural systems to adapt to environmental changes. Additionally, deforestation contributes to

climate change, which further intensifies threats to biodiversity. These abstract highlights the significant negative impacts of deforestation on biodiversity and emphasizes the urgent need for sustainable forest management, conservation efforts, and awareness to protect ecosystems and maintain biological diversity for future generations.

Keywords:-Habitat Loss, Species Extinction, Ecosystem Imbalance, Biodiversity Decline, Environmental Degradation

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Study of Phytoplanktons and Microfites of Certain ponds of singrauli district MP

Preetika Dwivedi, Dr. I. P. Kumhar, Dr.. Prabha Prajapati

Abstract

Life originated from water, is an established school of thought. It is biological solvent in which biochemical processes take place (Dick, 1966). Protoplasm limit of life contains about 75% to 85% water. In aquatic ecosystem of the lake or dam constitute the lentic habitat on land and these are formed in a number of different ways both natural and artificial. With the passage of time they change in characters, ultimately silting up and becoming transformed to waste land or meadow. In India the lake and dams become an integral part of human life since time immemorial, being the major source of fresh water for human use. Aquatic communities usually consist of manyspecies'population, each with its specific physico-chemical and biotic needs.

Keywords- Phytoplankton, ecosystem, species population.

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Microbial Diversity in Soil and Water: Structure, Function and Ecological Significance

Priya Gupta
priyagupta927783@gmail.com

Abstract

Microbiology is the branch of biological science that focus on the study of microorganisms such as bacteria, Fungi, viruses, algae and protoczoa. These microorganisms play crucial role in natural ecosysten, human health, agriculture, and industries. Although microorganism is invisible to the nacked eye they significantly influence life on earth through their metabolic activity interaction and adaptability. this line highlighted in the fundamental aspect of microbiology including microbial diversity and their benificial as well as harmful effect. Microorganism are essential for decomposition of organic matter and maintenance of ecological balance.Benificial microbes are used in food production, fermentation, biotechnology, and pharmaceuticals but somemicroorganisms are pathogens they are responsible for various infectious diseasea in humans, animals, and plants, making their study

important for diseases prevention and controle. Microbiology is a rapidly advancing field with wide - ranging applications that contribute to scientific development. Understanding microorganisms is essential for improving health, enhancing agricultural productivity and biotechnological solution.
Keywords:-microbiome, microscopy.

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Emerging Trends in Ethano Botanical Study and Their Role in Biodiversity Conservation in Shahdol District MP

Nisha Soni, Dr. G. S. Sandya
Research Scholar Botany, Pandit Shambhu Nath Shukla University Shahdol (M.P.)
Assistant Professor Department of Botany, Pandit Shambhu Nath Shukla University Shahdol (M.P.)

Abstract

Ethnobotany plays a critical role in understanding the relationship between local communities and plant resources, particularly in tribal-dominated regions like Shahdol district, Madhya Pradesh. This study explores emerging trends in ethnobotanical research, including documentation of medicinal plants, agrobiodiversity, and traditional ecological knowledge, and evaluates their direct contributions to biodiversity conservation. Field surveys, semi-structured interviews with traditional healers, focus group discussions, and participatory observation were conducted across selected tribal villages to collect data on plant use, management practices, and conservation strategies. The study highlights the increasing use of quantitative ethnobotanical indices, participatory mapping, and community-based monitoring to assess species diversity and implement conservation measures. Traditional knowledge systems were found to complement scientific approaches by promoting sustainable harvesting, protection of endangered species, and maintenance of locally adapted plant varieties, thereby enhancing biodiversity conservation. Over 120 plant species from 102 genera and 50 families were recorded for their ethnobotanical significance, particularly in medicine, food, and ritual practices. Emerging trends such as integration of digital databases, GIS mapping, and bio-prospecting have further strengthened the role of ethnobotanical studies in planning effective biodiversity conservation strategies. The study underscores the need to bridge traditional knowledge with modern conservation approaches to preserve both cultural heritage and plant diversity in Shahdol district.
Keywords: Ethnobotany, Biodiversity conservation, Traditional knowledge, Medicinal plants, Shahdol district.

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Quantitative Ethnobotanical Study of Medicinal Plant Knowledge in Bilaspur District, Chhattisgarh, India

Ramesh Kumar Ahirwar*
Department of Botany, Guru Ghasidas Vishwavidyalaya (A Central University)
Bilaspur- 495009, Chhattisgarh, India
*Corresponding author: dr.rkahirwar@gmail.com

Abstract

The present study documents and evaluates indigenous knowledge related to the use of medicinal plants in Bilaspur district, Chhattisgarh, India. Ethnobotanical surveys were conducted in selected rural and forest-fringe villages using semi-structured interviews and informal discussions with traditional healers and knowledgeable informants. A total of 41 medicinal plant species belonging to various families were recorded for the treatment of multiple human ailments, including gastrointestinal, skin, respiratory disorders, fever, wounds, joint pain, and diabetes. Leaves were the most frequently used plant part, followed by roots, bark, seeds, and whole plants. Remedies were mainly prepared as decoctions, pastes, and powders for oral or topical application. The study highlights the rich ethnomedicinal knowledge of local ommunities and underscores the need for conservation and further pharmacological validation.

Keywords: Chhattisgarh; Bilaspur; Ethnobotany; Tribal communities; Indigenous knowledge; Medicinal plants; Traditional medicine

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Management of plant Resources of Sidhi District

Raj Singh Chauhan
PM College Of Excellence, Sidhi, 486661,Madhya Pradesh, India
*singhchauhanraj82 @gamil.com

Abstract

Sidhi district, Madhya Pradesh, boasts rich plant biodiversity, featuring dry deciduous forests, wall flora, and diverse species used by local gonds for food (Mahua, Chironji, Tendu) and medicine (Bael, Neem, Shatavari) for ailments like skin issues gastrointestinal problems and more, with studies documenting over 135 species in areas like kusmi forest and the Sanjay- Dubri Tiger Reserve, highlighting both valuable resources and threats from habitat loss, demanding conservation efforts for endangered species. Numerous species (e.g. bael, Neem, Shatavari, Gymnemasylvestre) are used by tribal communities for treating various diseases, including skin problem, diabetes, and stomach aches, often passed down ethnobotanically. Gond tribes utilize plants like mahua (flowers, fruits, leaves, bark) Chironji, and Tendu for sustenance. Studies document diverse flora in areas like kusmi forest (dry

deciduous) and the sanjay -dubri tiger reserve (sal forest) with significant contributions from families like caesalpiniaceae, mimosaceae, and other. A unique study identified 28 species thriving on walls, showing plant adaptation and importance for landscape planning though some can be structural threats.
Keywords:-Management of plant Resources, Plant Biodiversity, Flora, FloristicComposition Sidhi District

●●●

Ethnobotanical Study of Medicinal Plants Used by Local Communities

Prachi Tiwari
Department of botany, PMCOE, SGS Govt. Autonomous PG college sidhi, Madhya pradesh,486661, india
Email ID -pt6858945@gmail.com

Abstract

Ethnobotany is the study of the relationship between human beings and plants. It mainly focuses on how local and tribal communities use plants for food, medicine, shelter, and other daily needs. Medicinal plants play an important role in traditional healthcare systems such as Ayurveda, Unani, and folk medicine. These plants are used to treat various diseases like fever, cough, skin problems, digestive disorders,and infections. The knowledge of medicinal plants is usually passed from one generation to another orally. Therefore, documenting ethnobotanical knowledge is very important for conservation and future scientific research. The ethnobotanical study was carried out in selected rural areas. Iwere identified using standard floras and botanical books. Details regarding local names, plant parts used, and medicinal uses were recorded carefully.Ethnobotany, Medicinal plants, Traditional knowledge, Herbal medicine, Indigenous people. Traditional plants- based medicines are easily available, cost-effective, and have fewer side effects. however, this valuable knowledge is gradually disappearing due to modernization. Therefore, proper documentation and conservation of medicinal plants and traditional knowledge are essential. Further scientific studies can help in developing new drugs from these medicinal plants. The study revealed that several medicinal plants are commonly used by local people for treating different ailments. Various plant parts such as leaves, roots, bark, seeds and flowers are used in the preparation of med. Leaves were found to be the most frequently used plant part.
Keywords: Ethnobotany, Medicinal plants, Traditional knowledge, Herbal medicine, Indigenous people.

●●●

Effect of Gibberellic Acid (GA) on Seed Germination and Early Seedling Growth in *Vigna radiata*

Mishra Yashi, Chauhan Rakesh Singh
Department of botany, PMCOE Sanjay Gandhi Smriti Government Autonomous PG college sidhi 486661 madhya Pradesh, India
yashi30080@gmail.com

Abstract

The present study was undertaken to investigate the effect of gibberellic acid (GA) on seed germination and early seedling growth of Vigna radiata (L.) Wilczek. Gibberellins are key plant growth regulators that stimulate enzyme activity, reserve mobilization, and cell elongation during germination. In this experiment, surface-sterilized seeds were treated with GA, solutions at 0 (control), 25, 50, 100, and 150 ppm under controlled laboratory conditions. Germination percentage, mean germination time (MGT), root and shoot length, fresh and dry biomass, and seedling vigor index were recorded. Accordingly, the research highlights that GA, significantly enhanced germination compared to the control. Maximum stimulation was observed at 50-100 ppm, where seeds germinated earlier and seedlings exhibited greater elongation and vigor. However, higher concentration (150 ppm) caused a slight decline in growth, indicating inhibitory effects at elevated levels. The study concludes that optimum GA, concentration improves metabolic activity and seedling establishment in Vigna radiata, and may be useful for seed priming and improved crop performance. Further field evaluation is recommended to validate laboratory findings.

Keywords :- Vigna radiata, gibberellic acid (GA), germination, seedling vigor, plant growth regulator

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Impact of pollution on the flora of sidhi District

Asmita Mishra
PM College of Excellence,Sidhi, 486661, Madhya Pradesh, India.
*asmita7117mishra@gmail.com

Abstract

The present study examines the impact of environmental pollution on the flora of Sidhi District, located in the north-eastern region of Madhya Pradesh, India. The district possesses rich forest resources, agricultural land, and diverse plant species that contribute to ecological balance and local livelihoods. However, increasing anthropogenic activities such as rapid population growth, unplanned urbanization, industrial development, mining, and expanding transportation networks have significantly increased pollution levels in the region. Air, water, and soil pollution caused by vehicular emissions, industrial effluents, solid waste disposal, and excessive use of agro-chemicals have adversely affected plant growth, species composition, and overall vegetation health. These impacts

have resulted in degradation of vegetation cover and a decline in local biodiversity. The study emphasizes the need for sustainable environmental management practices to conserve floral diversity and maintain ecological stability in Sidhi District.

Keywords:-Floral Diversity, Vegetation Structure, Plant Ecology, Environmental Pollution, Biodiversity Decline, Sidhi District.

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Water Bodies of Vindhya Region- Status, Importance, Conservation and Management

Prof. Skand Kumar Mishra and Prof. RK Tiwari
Govt. MS Golwalkar College (APS University) Rewa Madhya Pradesh, India
Email skandbt@gmail.com;Mob. 9981602646

Abstract

The highland of Vindhya Mountains designated as 'Vindhya Bhumi' is situated in the north-east of Madhya Pradesh. The mountainous and slanty nature of the entire terrain of Vindhya region since ancient times has led to water conservation by construction of ponds, lakes and step wells. The survey studies have specified a total of 6269 water bodies in the Vindhya region to include 6072 ponds, 08 tanks, 07 lakes, 27 reservoirs, 115 check dams, which cover water spread area of more than 01 to 200 hectares. The depth of 1422 water bodies is more than 05 to 25 meters. The storage capacity of 2438 water bodies is more than 10,000 cubic meters. These water bodies are extremely essential and useful for the region, and are being presently utilized as 1771 for domestic drinking water, 105 for industrial purpose, 421 for piscicide, 22 for recreation, 185 for religious purpose, 1045 for water recharge, 5681 for irrigation purpose.The most important water bodies of Vindhya region are Raghuraj Sagar Govindgarh, Rani Talab Rewa, Dharm Sagar Maihar, Jagat Dev Talab Satna, Dharm Sagar and Kamla Bai Talab Panna, Pratap Sagar & Gwal Magra Talab Chhatarpur, Shiv Sagar Talab Khajuraho, Mahendra Sagar Tikamgarh, Nirbhay Sagar Khargapur etc. These are extremely important from theperspective of history, religion, water conservation, and irrigation. Vindhya region has various step wells, which since ages are being utilized for the storage of drinking water. The seven-storey admissive step well (baoli) of 19 th Century constructed by Maratha King Vinayak Rao Peshwa at Ganesh Bagh, Chitrakoot is the live and the most beautiful example of the architecture, aesthetic and history. The Vindhya region also has numerous waterfalls, viz., Purwa, Keoti, Chachai, Bahuti, Pandav and Raneh.The recent studies have specified the water bodies of Vindhya region are losing their significance. The ponds and lakes have been occupied with scum, mud, weeds, common water hyacinth, waste material etc., and therefore, the depth cum water holding capacity of these water bodies has got reduced considerably. The water is also getting contaminated because of the sewage and waste material carrying nallahs getting connected to the water bodies, which also has put adverse impact on the aquatic fauna and natural vegetation. The drain from embankments and soil erosion have also backed to the reduced water storage capacity. The encroachment nearby pond surfaces and illegal

demining operations do not allow sufficient water storage. The present statistical figures reveal that 25 to 75 per cent area of 498 water bodies of the Vindhya region are already encroached. The Ministry of Environment, Forest & Climate Change, Government of India has included 19 water bodies of the Vindhya region under the 'Wetland Rejuvenation Programme'. There is an inescapable need to free these water bodies from the accumulated scum, mud, weeds, common water hyacinth, waste material etc. apart from increasing their depth, repair of embankments, fencing cum plantation in the catchment areas, proper sewage treatmentand proper inlet & outlet. Further, exclusion of encroachments, proper treatment of water, public awareness and strict adherence to the guidelines and advisories of NLCP, CPHEEO for conservation and management of water is of utmost importance. This goal can only be achieved by the collective contribution of State Government, NGO's, Local Bodies and general populace. In the present Article, there will be a deliberate discussion on the status, importance, conservation, and management of water bodies of Vindhya region.

Key Words: Vindhya, Water Bodies, Status, Conservation, Management.

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Medicinal characters of *Cleome viscose (L.)*

Vishvajeet Singh, Dr. G. S. Sandya
Research Scholar Botany, Pandit Shambhu Nath Shukla University Shahdol (M.P.)
Assistant Professor Department of Botany, Pandit Shambhu Nath Shukla University Shahdol

Abstract

Cleome viscose (L.) of the Capparidaceae family is an annual, sticky herb commonly found as a weed across the plains of Shadhol district and throughout tropical regions. The entire plant, including its leaves, seeds, bark, and roots, has been extensively utilized in traditional and folkloric medicine systems. It is traditionally recognized for its therapeutic properties, including its use as an anthelmintic, antiseptic, carminative, antiscorbutic, and febrifuge agent. Pharmacological research indicates that Cleome viscose exhibits various biological activities such as antidiarrheal, hepatoprotective, anthelmintic, antimicrobial, analgesic, anti- inflammatory, immunomodulatory, antipyretic, and psychopharmacological effects. This review aims to explore the medicinal value and potential benefits of C. viscose while providing insights for future studies and applications.

Keywords: Cleome viscose, antiscorbutic, anthelmintic, antimicrobial.

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Traditional Applications and Pharmacological Properties of*Anagallis arvensis*

Garima Mishra[1], Shobha Gupta[2] and Rajshree Pandey[3]
1.Research scholar, Department of Botany Govt. Girls P.G. College, Rewa (M.P.) India
2.Prof. & Head, Department of Botany, Govt. Girls P.G. College, Satna (M.P.) India
3.Prof. & Head, Department of Botany, Govt. Girls P.G. College, Rewa (M.P.) India

Abstract

Anagallis arvensis, from the Primulaceae family, is a globally distributed summer annual herb found abundantly in Egypt, Palestine, parts of South America, Taiwan, and India. The plant contains active compounds like glycosides, saponins, flavonoids, alkaloids, rutin, kaempferol, sterols, and various terpenes. It exhibits medicinal properties including anti-mycotic, antimicrobial, molluscicidal, antioxidant, anti-inflammatory, antiviral, cytotoxic, and spermatogenesis effects.

Key words: Traditional, Pharmacological, *Anagallis arvensis*

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Fermentation-Driven Improvement in Sensory Properties of Soy Milk to Soy Curd

Suryendra Kumar Mishra* and Anita Raisagar
*Guest Faculty, Department of Agriculture, PMCOE, Sanjay Gandhi Smriti Government Autonomous PG College, Sidhi
Email: suryendra1989@gmail.com

Abstract

Millions of people rely on soybeans (Glycine max) for their vegetable protein, and they are also a possible source of health-promoting bioactive peptides including isoflavones, saponins, and phytosterols. Soybeans are the most significant bean in the world commercially. Because soybeans contain roughly 40% protein, they are a great source of inexpensive protein. The FDA claims that consuming 25 grams of soy protein daily may lower the risk of heart disease. Improved bone health and a lower incidence of cardiovascular disease, prostate, breast, and colon cancers have been linked to soybeans and their constituents. According to this health claim, soy foods fall into a specific category of "functional foods" that have special nutritional
and therapeutic benefits. In the present study, soybeans are utilized to make soy milk, which is then used to make soy curd. For development of soy milk, soaking of soybean followed by
blanching, dehulling, milling, filtration and boiling was performed. However, for development of soy curd, starter culture Lactobacillus acidophilus was inoculated in boiled soymilk, after incubation soy curd was developed. The resulting soy milk has light aroma, faint beany flavor, and smooth-creamy texture. The developed soy curd has a clean, slightly nutty flavor, a firm, smooth texture, and earthy beany aroma. Soy milk received a score of 6 (like slightly) and soy curd a score of 7 (like moderately)

on a 9-point hedonic scale. The sensory score development is because of process of fermentation that lessens the beany flavor of soy milk in soy curd.

Keywords: Soybean (Glycine max); Soy milk; Soy curd; Functional foods; Sensory evaluation

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Sustainable Utilization of Orange Peel Waste for Value Addition

Anita Raisagar* and Suryendra Kumar Mishra
*Email: anitaraisagar@gmail.com

Abstract

Orange peel, which is treated as organic waste in fruit juice industry, is a great source of bioactive and antioxidants compounds. Thus, today's food technologist pay attention towards the waste peel to utilize it as edible product. The major hindrance of the utilization of orange peel is its intolerable bitterness. The present study focuses on removal or reduction of bitterness of orange peel by hot water blanching. The aim of the study to optimize the blanching condition for reduction of bitterness upto tolerable level. For this purpose four combination of temperature and time is designed for blanching of orange peels and evaluation is done by sensory evaluation of blanched peels. The optimized condition is found with blanching at 90°C temperature for 10 minutes and 5 times as this conditions scores maximum sensory score i.e., 4.5 in 5 point hedonic scale. The blanched peels are further used for development of candied orange peel. For the process of candying, three different sweeteners namely, refined sugar, honey and jaggery is used. With all the sweeteners the TSS maintained at 70ºBrix. The acceptance of developed candies are sensory evaluated on 9 point hedonic sensory scale. The highest acceptance of the developed candy is recorded with honey candied orange peel followed by jaggery candied peel and least acceptance is recorded with sugar candied orange peel. The study opens as new sight for utilization of peel which is treated as waste.

Keywords: Bitterness, Candied, Orange peel, Sensory evaluation.

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Energy-Efficient Solar Drying of Moringa oleifera Leaves Using a Phase Change Material Assisted Turbulator-Integrated Solar Air Heater

Prerak Patel 1*,Yogeshkumar D. Khimsuriya2,VivekPatel3,LavKumar Kaushik 4
Gujarat Technological University - Institute of Technology and Research (GTU - ITR), Gujarat, India

Abstract

Sustainable post-harvest processing of plant resources is crucial for preserving nutritionalquality and promoting climate-resilient agriculture, especially in rural and decentralizedsettings. Moringa oleifera, a plant with substantial nutritional and medicinal potential, mustbe thoroughly dried to maintain its

biochemical integrity and storage stability. This articlepresentsan experimental estimation of a turbulator-integrated solar air heater (SAH) fordrying Moringaleaves and compares system performance with and without Phase ChangeMaterial (PCM). The PCM unit serves as a latent heat storage medium to maintain dryingtemperatures under varying solar circumstances, and the SAH uses revolving spiral bafflesinside the air heating chamber to improve convective heat transfer. Experimental observations demonstrated that without PCM, the dryer achieved a safe final moisture content of 6.5% in approximately 7.5–8 hours of effective sunshine, with noticeable temperature variations during late afternoon periods. In contrast, PCM-assisted operation reduced the total drying time by nearly 18–22%, achieving comparable moisture reduction within 6–6.5 hours due to the sustained release of thermal energy. With PCM integration, the SAH's average thermal efficiency increased by about 12–15%. The biochemical and nutritional examination of the dried Moringa powder revealed high retention of important plant components, including protein (21.64%), fat (6.16%), ash (11.82%), crude fiber (11.28%), carbs (42.6%), and an energy value of 334.0 kcal/100 g. In keeping with recent advancements in sustainable agriculture and plant resource management, the results demonstrate that PCM-assisted solar drying offers a sustainable and energy-efficient method of preparing nutrient-dense and therapeutic plant materials.

Keywords: Moringa oleifera; Solar drying; Phase change material; post-harvest processing; Nutritional quality; Sustainable agriculture.

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Paleobotanical Record of the Fossil Fruit Graminocarpon from the Deccan Intertrappean Beds of Maraipatan, Chandrapur District, Maharashtra, India, with Notes on Associated Fruit Taxa

Kohapare Aakash*, Patil Sanjay and Dahegaonkar Rajesh
Department of Botany, Dr. Ambedkar College, Chandrapur, Maharashtra, 442401 India
Kohapareaakash1234@gmail.com*

Abstract

The Deccan Intertrappean Beds of peninsular India are well known for preserving a rich and diverse assemblage of Late Cretaceous fossil angiosperms, particularly fruits and seeds. The present study documents the occurrence of the fossil fruit genus Graminocarpon from Maraipatan, Chandrapur District, Maharashtra, India (19°32′24.3″ N; 79°08′01.3″ E). The fossil fruit was recovered from chert horizons exposed within the Deccan Intertrappean sequence of the area.

Earlier palaeobotanical investigations from the same locality have reported fossil fruits such as Achenocarponpatanii and Baccatocarponpatanii, indicating a diverse angiosperm fruit assemblage at Maraipatan. The present specimen of Graminocarpon is oval to half-moon shaped, ridged, and translucent in appearance, with a scaly exocarp and a fleshy mesocarp. Anatomical features include the presence of abundant endosperm and a marginally positioned embryo. These diagnostic characters suggest its affinity with the monocotyledonous group of plants and indicate close resemblance to members of the Poaceae family.

Detailed morphological comparison reveals close similarities with previously described Graminocarpon fruits reported from Mohagaon Kalan, particularly in overall shape, surface features, and internal structural organization. However, the present record represents a new locality for this genus from Maharashtra, thereby extending its known geographical distribution within the Deccan Intertrappean Basin. The occurrence of Graminocarpon at Maraipatan adds valuable data to the palaeobotanical record of the region and contributes to a better understanding of angiosperm diversity, systematic affinity, and distribution during the latest Cretaceous. The study further emphasizes the significance of the Deccan Intertrappean Beds in reconstructing palaeofloral composition and palaeoenvironmental conditions prevailing during the terminal phase of Deccan volcanism.

Keywords: Fossil, Palaeobotany, Deccan Flower.

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Sustainable Utilization and Economic Impact of Local Forest Products: A Case Study of the Vindhya Region

1. Dr.I.P. Prajapati, 2. Dr Ravendra Kumar Yadav 3. Pragya Prajapati 4Rajkumar Bais
Government Sanjay Gandhi PG College Sidhi

Abstract

The Vindhya region of central India is rich in forest resources that play a crucial role in the livelihood security and socio-economic development of local communities.This study examines the sustainable utilization of local forest products and their economic impact on rural and tribal populations of the Vindhya region. Major forest products such as timber, fuelwood, medicinal plants, tendu leaves, mahua flowers, honey, gums, and other non-timber forest products (NTFPs) were assessed for their availability, traditional uses, and market potential. The research highlights how sustainable harvesting practices, indigenous knowledge, and community-based forest management contribute to income generation, employment opportunities, and poverty alleviation while ensuring forest conservation. The study also analyzes challenges such as overexploitation, lack of value addition, limited market access, and policy constraints. Findings suggest that promoting sustainable management, strengthening local institutions, and encouraging value-added processing of forest products can significantly enhance rural economies without degrading forest ecosystems. The study emphasizes the need for integrated strategies that balance ecological conservation with economic development in the Vindhya region.

Keywords:Vindhyan Region, Sustainable Development, Ruler Development.

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New Potential Flavanone Glycoside from leavess of *Crotalaria medicaginea* Lam.

Umesh Kumar Vishwakarma* and Umakant Sahu
Natural Products Laboratory
Department of Chemistry
PMCOE Govt S G S PG College Sidhi (M.P.) 486661, India.
umesh.chemistry@gmail.com

Abstract

A new potential flavanone glycoside has been isolated from methanolic extract of the leaves of Crotalaria medicaginea Lam. The structure of new flavanone glycoside was characterized as 3, 5,7,3′,4′-pentahydroxy-6-methoxyflavanone-3-O-α-L-rhamnopyranosyl-7-O-β-D-glucopyranosyl-(1→4)-O-β-D-xylopyranoside by various colour reactions, spectral analysis, and chemical degradations.

Keywords: glycoside*Crotalaria medicaginea.*

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Biodiversity of Sanjay Dubri Tiger Reserve

Dr Mayuri Singh Chauhan
Botany Department, Govt. College Churhat

Abstract

Sanjay Dubri Tiger Reserve is widlife Paradise Located in Sidhi district of Madhya Pradesh. The national park was established in 1975.The world-famous white tiger 'MOHAN' was found and rescued from the forest of this landscape by maharaja of rewa in 1951. He was later reared in an enclosure in Govindgarh and bred to tigeress RADHA.There are plenty of reasons that make the Sanjay national Park one of the was' beautiful wildlife spotting destinations in central india. Its diversity of flora and fauna is adored by nature and biodiversity.The green region features sharp cliffs, water bodies, valleys, hills, and deep canyons. The Guru Ghasidas National Park, which is situated in chhattisgarh, shares its jungle with Sanjay National Park. Sanjay Dubri tiger Reserve which is known for its rare and exquisite species of Flora and fauna, is covered with Sal Forest and is home to 34 species of fresh water fish, 152 species of birds, 32 species of mammals, 11 species of reptiles and 3 species of amphibians. The Banas River, Which Joins the son river forms the western boundary of the park. It has been identified as one of the landscapes that have potential for tiger meta population existence but is currently in need of conservation inputs.Sanjay National Park which is a part of Sanjay Dubri Tiger reserve is the most popular place to visit. The Tiger reserve comprises Sanjay national Park and the Dubri wildlife sanctuary, both of which cover more than 831 sq km forests, bamboo vegetations and vast grasslands along with some perennial stream offers on excellent habitat for the solitary predator. Now these beautiful sal forests are not only home for tigers and hundreds of other species of wild animals but they also form wildlife corridor, connecting Bandhavgarh and palmau Tiger reserve. Occasionally the wild

elephants form neighboringchhattisgarh area venture into the forest of tiger reserve for temporary shelter.

Keywords: Tiger Reserve, Forest, Son, Sidhi.

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Phytosociological study of tree species of Kusmi Forest Sidhi, Madhya Pradesh

Shiv Nandan Patel

Department of Botany, PMCOE Govt. Tilak College, Katni

Abstract

Tropical forests represent a critical hub of global biodiversity, offering a plethora of ecosystem services essential to human welfare. Recent years have witnessed a significant decline in biodiversity attributable to anthropogenic activities, thereby underscoring the imperative for research aimed at fostering ecosystem conservation. This investigation was conducted to assess and elucidate the phytosociology of arboreal species within the Kusmi Forest, located in Sidhi, Madhya Pradesh. A range of phytosociological and diversity indices have been employed to ascertain the compositional characteristics of the tree species present in the forest. Quantitative methodologies, including quadrat sampling, were utilized to assess the structural composition of plant communities. This approach involved calculating species richness, density, frequency, dominance, and the Importance Value Index (IVI) to elucidate the roles of different species and their interrelationships within the communities, based on their floristic composition. The Shannon-Wiener index and Margalef index were used to investigate species diversity in a particular community and species richness at the given site. The present study furnishes foundational insights into the phytosociological diversity of arboreal species, thereby assisting forest managers and policymakers in the formulation of conservation strategies, as well as promoting the sustainable utilization of indigenous species. Furthermore, this research contributes to the fields of conservation, spatial mapping, and management practices, frequently uncovering successional patterns or the repercussions of climatic variations and anthropogenic influences.

Keywords: Tropical forest, Species diversity, Phytosociology, Biodiversity conservation

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Diversity and economic importance of plant resources in Sidhi district MP.

Pushpraj Rawat

Department of botany,pmcoesgs govt.pg college Sidhi, MP

Abstract

The present study focuses on the economic botany of Sidhi district, Madhya Pradesh, a region rich in floral diversity and traditional ethnobotanical knowledge. The investigation was carried out to

document economically important plant species used by local communities for food, medicine, fodder, fuel, timber, and other house purpose. Field survey was conducted in different forest and rural areas of Sidhi district through direct observation, plant collection, and interaction with local inhabitants and traditional healers. A total of several plant species belonging to different families were recorded, including both wild and cultivated taxa. The study reveals that medicinal plant constitutes the major share of economically important species followed owed by edible, timber, and fuel plant. Indigenous knowledge related to plant use in mainly transferred orally and is it risk of erosion due to modernization and habitat loss. The findings highlight the significance of conserving plant resources and traditional knowledge system.
Keywords: - Economic botany, Sidhi Madhya Pradesh, ethonobotany, medicinal plant, biodiversity.

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Plant Bio Resources of Sidhi District

Purnima Jayswal[1*]
Department Of Botany, PM College Of Excellence, Sidhi, 486661, Madhya Pradesh, India
*purnimajayswal9516@gamil.com

Abstract

Sidhi district, Madhya Pradesh, boasts rich plant biodiversity, featuring dry deciduous forests, wall flora, and diverse species used by local gonds for food (Mahua, Chironji, Tendu) and medicine (Bael, Neem, Shatavari) for ailments like skin issues , gastrointestinal problems and more, with studies documenting over 135 species in areas like kusmi forest and the Sanjay-Dubri Tiger Reserve, highlighting both valuable resources and threats from habitat loss, demanding conservation efforts for endangered species.Numerous species (e.g. bael, Neem, Shatavari, Gymnemasylvestre) are used by tribal communities for treating various diseases, including skin problem, diabetes, and stomach aches, often passed down ethnobotanically. Gond tribes utilize plants like mahua (flowers, fruits, leaves, bark) Chironji, and Tendu for sustenance. Studies document diverse flora in areas like kusmi forest (dry deciduous) and the sanjay - dubri tiger reserve (sal forest) with significant contributions from families like caesalpiniaceae, mimosaceae, and other. A unique study identified 28 species thriving on walls, showing plant adaptation and importance for landscape planning though some can be structural threats.
Keywords : Ethnobotany, Medicinal Plants, Edible Plants, Plant Biodiversity, Flora, Floristic Composition Sidhi District

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The Cosmic-ray Spectra at Spherical Termination Shocks and Plants

Dr. Brijesh Singh Chauhan
Department of Physics Govt. SGS PG College Sidhi (M.P.) 486661
s.brijesh3@gmail.com

Abstract

We discuss the nature of the steady-state spectra of particles accelerated at the stationary spherical shocks Such as the solar wind termination shock. In addition to the two well-known spectral regions characterized by a power-law momentum dependence and a high-energy cut off This consists of an enhancement of the cosmic-ray intensity just below the cut off similar features have been seen previously in multidimensional models and cosmic-ray modified shocks, where they were explained by acceleration and drift in the latitudinal direction along the shock face and decreasing effective shock compression ratio respectively we show that a similar bump may be obtained in a purely spherically symmetric geometry with no drifts and that this effect may also have contributed to the previous results we attribute this effect to increased shock acceleration efficiency at certain energies. We also demonstrate that a one-dimensional planar shock with a reflecting wall upstream can give a similar effect. We conclude that care is necessary in interpreting observed bumps in any given situation.

Keywords: Plant, Bumps, Solar

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Role of plant hormones in seed germination and growth

Priyanka Gupta
Department of Botany,PM College Of Excellence, Sidhi
pg0947810@gmail.com

Abstract

The aim of the study was to understand the role of plant hormones in seed germination and growth. This comprehensive review exposes the functions of key plant hormones in regulating seed germination and promoting plant growth including of auxins gibberelinsabscissic acid and ethylene. The study discusses how these hormones influence seed dormancy break root and suit longest nutrient mobilization and stress responses and highlights the mechanism of action of these hormones in promoting seed germination and early plant development. The interaction between different plant hormones and their Sinnar district and antagonistic effects on seed germination and plant growth under various environmental factors where also investigated. The role of plant hormone in responding to environmental factor such as light temperature and water availability during seed gernation was examined in detail. The study highlights the complex regulatory networks involving plant hormones and how they co-ordinate seed germination root and sui development and overall plant growth.

Keywords: plant hormone seed germination growth regulation.

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Nitrogen Metabolism of Nitrogen Fixing Bacteria Isolated from Different Habitats of Sidhi Region

Kavita Tiwari, Rakesh Singh Chauhan
Department of Botany,pmcoe Sidhi
kavitatiwari 7791@gmail.com

Abstract

The aim of the study was to investigate the nitrogen metabolism of nitrogen fixing bacteria isolated from nitrogen rich habitats of Sidhi region of Madhya Pradesh India.Selection and identification of promising isolades,enzyme activity essays and partial characterization of crude nitrogenous filtrate was done.Numerous nitrogens fixing bacterial isolate were isolated from various reasons like paddy fields, waterlogged soils, forest soils, and composts.Out of several diazotrophic isolates, most promsing new bacterial strain was identified based on phenotypic biochemical and molecular characterization.Crude nitrogenous filterate was stable and effective under various environmental conditions like at different pH levels and in presence of oxygen, making it usable in sustainable agriculture practices
Keywords: nitrogen fixing bacteria nitrogen metabolism Sidhi enjoying activity assays agriculture

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Medicinal Plants Used by Tribal Communities

Shruti Pandey
Department of botany, PMCOE, SGS Govt. Autonomous PG college sidhi, Madhya pradesh,486661, India
Email ID –shrutipandey3475@gmail.com

Abstract

Ethnobotany is the study of the relationship between human beings and plants. It mainly focuses on how local and tribal communities use plants for food, medicine, shelter, and other daily needs. Medicinal plants play an important role in traditional healthcare systems such as Ayurveda, Unani, and folk medicine. These plants are used to treat various diseases like fever, cough, skin problems, digestive disorders, and infections. The knowledge of medicinal plants is usually passed from one generation to another orally. Therefore, documenting ethnobotanical knowledge is very important for conservation and future scientific research. The ethnobotanical study was carried out in selected rural areas. Iwere identified using standard floras and botanical books. Details regarding local names, plant parts used, and medicinal uses were recorded carefully.Ethnobotany, Medicinal plants, Traditional knowledge, Herbal medicine, Indigenous people.Traditional plants- based medicines are easily available, cost-effective, and have fewer side effects. however, this valuable knowledge is gradually disappearing due to modernization. Therefore, proper documentation and conservation of medicinal plants and traditional knowledge are essential. Further scientific studies can help in developing new drugs from these medicinal plants. The study revealed that several medicinal plants are commonly used by local people for treating different ailments. Various plant parts such as leaves, roots, bark, seeds,

and flowers are used in the preparation of med. Leaves were found to be the most frequently used plant part.

Keywords: Ethnobotany, Medicinal plants, Traditional knowledge, Herbal medicine, Indigenous people.

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Study on Biodiversity and Conservation of Sidhi

Pranshi gupta
Department of botany, PMCOE SGS Govt.Autonomous Pg college sidhi,
Madhya Pradesh,486661, india
Email id –guptapranshi801@gmail.com

Abstract

Biodiversity- Biodiversity refer to the variety of life on earth, including different species of plant, animals and microganisms it is essential for maintain the balance of ecosystem andsupporting hummn life. Levels of biodiversity 1.Genetic Diversity 2.species diversity 3.Ecosystem diversity Ecology- Ecology is the scientific study of the relationship between living organisms and their environment .in simple terms ,ecology s about understanding how plnt,animals,bacteria,humansintract with each other and with their physical surroundings like air,water ,soil,andsunlight.importance of ecology: Ecology is crucial for human well-being and prosperity because it help us understand the interdependence between people and naure it provides the essential basic for food production .maintaining clean air and water. Conservation of biodiversity: conserving biodiversity is critical for sustaining our plantsnatural beauty, healthyecosystem, and access to resources. The word biological diversity refers to the diversity of all living things on earth from microscopic organism that are undetectable to the hummn eye to the biggest beasts that wander the globe the preservation of biodiversity is essential for the plants and humanitys health and walfare. Phytogeography –phytogeography, the study of the distribution of plant species across the globes, stand as a central field within ecological and biological science .it examines in depth the complex patterns that shape where plant grow, thrive or struggle to survive on our plant. Phytogeography –the study of plant distribution its causes (climate, soil, geology, human impact) and pattern across the globe.

Keywords: Biodiversity, ecosystem, phytogeography, conservation, ecology, essential biodiversity conservation.

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Conservation of Biodiversity and Promotion of Eco-tourism: A Case Study of Sanjay National Park, Kusmi, District Sidhi

Dr. Pramod Kumar Singh[1] and Dr. Rakesh Singh Chauhan[2]

1. Faculty, Department of Tourism and Travel Management, PMCOE, S.G.S. Govt. Autonomous P.G. College, Sidhi (M.P.), A. P. S. University, Rewa (M. P.)
2. Assistant Professor, Department of Botany, PMCOE, S.G.S. Govt. Autonomous P.G. College, Sidhi (M.P.), A. P. S. University, Rewa (M. P.)

Abstract

Biodiversity conservation has emerged as a critical global concern due to accelerating environmental degradation, habitat fragmentation, climate change, and increasing anthropogenic pressures on natural ecosystems. Protected areas such as national parks play a pivotal role in conserving biological diversity while maintaining ecological balance. In recent years, ecotourism has been increasingly recognized as a sustainable approach that integrates conservation objectives with socio-economic development. The present study explores the interrelationship between biodiversity conservation and the promotion of ecotourism in Sanjay National Park, located in Kusmi, Sidhi district of Madhya Pradesh. The park represents an ecologically significant region of the Deograh-Bhartpur plateau landscape, characterized by rich floral and faunal diversity. The study aims to assess existing biodiversity conservation measures, analyze the potential and present status of ecotourism, examine community participation, and identify key challenges in sustainable management. The research is based on both primary and secondary data, employing a descriptive and analytical approach. The findings reveal that ecotourism, when strategically planned and scientifically managed, can serve as an effective tool for biodiversity conservation, environmental education, and livelihood generation for local communities. The study emphasizes the need for integrated planning, community participation, and policy support to ensure sustainable ecotourism development while safeguarding ecological integrity.

Keywords: Biodiversity Conservation, Ecotourism, Protected areas, Sustainable development, Sanjay National Park

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Study of Endangered and Threatened food species of family Poaceae Coal Region District Umaria (M.P.)

1 Dr. Kanhaiya Lal Kumhar 2 Dr. Anilesh Verma

Klprajapati.82@gmail.com, dr.klprajapati.82@gmail.com

Abstract

Coal region is in south eastern part of Madhya Pradesh covering five districts namely West katni, East Shahdol, North Sidhi and Rewa South Sihora. Plant survey was in the Coal region from the critically endangered, and 8 are near threatened. Main reasons responsible for shrinking of the population are over grazing, plugging old grassland, clearing of forest for agriculture, megaprojects, and eruption of plants for fire wood, felling of trees for leaf.

Key words: -Coal region, Biodiversity, Threatened plants, Conservation.

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The role of Climate Change on Ecological Balance

Triratnesh Gajbhiye 1, Sudhir Kumar Pandey 2*, Rashmi Dubey 3, Ankesh Tiwari 4 and Amitabh Aharwar 5

1. Govt. Shankar Sao Patel College Waraseoni, Dist. Balaghat M.P.
2. Department of Botany, Guru Ghasidas Vishwavidyalaya (a central university), Koni, Bilaspur, Chhattisgarh,
3. L.B.S. College Baloda, Janjgir-Champa (C.G.).
4. Space and Atmospheric Science Division, Physical Research Laboratory, Navrangpura, Ahmedabad, Gujrat, India
5. Govt. College Harrai, Dist. Chhindwara M.P.

*Corresponding author: Dr. Sudhir Kumar Pandey

Abstract

Climate change has emerged as a significant trigger for ecological disturbance incontemporary times, altering natural systems worldwide. Climate change, significantlyexacerbated by human activities like fossil fuel use, land-use alterations, industrial growth, andunsustainable agricultural practices, affects temperature trends, rainfall variability, sea-level rise,and the frequency of extreme weather events. These modifications disrupt the intricateequilibrium between living species and their physical surroundings, impacting ecosystemstructure, biodiversity, and vital ecological processes. This chapter investigates the fundamentalcauses of climate change and analyzes its effects on terrestrial and aquatic ecosystems, speciesinteractions, ecosystem services, and human welfare. It further underscores the significance ofindigenous and traditional ecological knowledge in fostering resilience and sustainable resourceutilization. Mitigation, adaptation, and conservation measures are emphasized as essentialmethods for restoring natural equilibrium in a changing climate.

Key words: Ecosystem resilience; Natural climate variability; Sustainable development;Environmental degradation; Conservation strategies

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Correlation Between Nature and Literature

Aniruddh Prajapati

Assistant Professor in English.

S.G.S. P.G. Autonomous College, Sidhi (M.P.).

Abstract

The topic of nature has always been at the center of English Literature, since the first Anglo-Saxon poems to the most recent ecological books. Literature has an indicator of how man and nature have altered their relationship. The English writers always did not consider nature as a decorative background, it is an alive being that affects people emotions, moral values, imagination, and philosophy. Jonathan Bate rightly observes, *"Literature is one of the strongest instruments for awakening man's consciousness about his relation with nature"* .Thiswork is going to analyze the changing connection between nature and literature in English literary tradition and demonstrate how literature helps create ecological awareness.

Keywords: Ecocriticism, Human-Nature Relationship, Imagination, Nature, English Literature, Romanticism.

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देशज वनस्पतियों के वितरण पर आक्रामक विदेशी प्रजातियों का प्रभाव–संजय–धुबरीराष्ट्रीय उद्यान के विशेष संदर्भ में

1. प्रो. कैलाश सिंह नेताम, प्राध्यापक–भूगोल, संजय गांधी स्मृति शासकीय स्नातकोत्तर महाविद्यालय सीधी,(म.प्र.)
2. वरुण कुमार सिंह, सह. प्राध्यापक भूगोल,संजय गांधी स्मृति शासकीय स्नातकोत्तर महाविद्यालय सीधी, (म.प्र.)

सारांश

आक्रामक विदेशी प्रजातियों के प्रसार के कारण वनस्पतियों का वैश्विक स्तर पर एक समान होना जैव विविधता के नुक़सान एवं पर्यावास विखंडन का एक प्राथमिक कारक बन गया है। आक्रामक पौधे ऐतिहासिक रूप से विकसित पारिस्थितिक संतुलन को बाधित करते हैं,जिससे पादप–भौगोलिक परिदृश्य में महत्वपूर्ण बदलाव आतेहैं।

कुंजी शब्द: पादप भूगोल, आक्रामक विदेशी प्रजातियाँ, देशज वनस्पतियाँ ,जैवविविधता की हानि, ऐलीलोपैथी, GIS मैपिंग।

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पर्णपाती वन एवं लघुवनोपज का विश्लेषणात्मक अध्ययन : सीधी ज़िले के कुसमी विकासखंड के संदर्भ में

1. ममता देवी प्रजापति, शोधार्थी संजय गांधी स्मृति शासकीय महाविद्यालय सीधी
2. राकेश कुमार प्रजापति, शोधार्थी संजय गांधीस्मृति शासकीय महाविद्यालय सीधी

सारांश

भारत के मध्यवर्ती भाग में स्थित पर्णपाती वन न केवल पारिस्थितिक संतुलन बनाए रखने में सहायक हैं, बल्कि ग्रामीण एवं आदिवासी समुदायों की आजीविका का भी प्रमुख आधार हैं।मध्य प्रदेश का सीधी जिला, विशेष रूप से कुसमी विकासखंड, उष्णकटिबंधीय शुष्कपर्णपाती वनों एवं लघुवनोपज की प्रचुरता के लिए जाना जाता है। प्रस्तुत शोधपत्र में कुसमी विकासखंड के पर्णपाती वनों की संरचना, वितरण तथा उनसे प्राप्त लघु वनोपजों का विश्लेषणात्मक अध्ययन किया गया है। अध्ययन का मुख्य उद्देश्य यह स्पष्ट करना है कि पर्णपातीवन एवं लघु वनोपज स्थानीय अर्थव्यवस्था, रोजगार तथा सामाजिक स्थायित्व में किस प्रकार योगदान देते हैं।प्राथमिक एवं द्वितीयक आँकड़ों के आधार पर यह निष्कर्ष निकाला गया है कि यदि वनोपज संसाधनों का सतत एवं वैज्ञानिक प्रबंधन किया जाए तो यह क्षेत्रीय विकास का सशक्त माध्यम बन सकता है।

कुंजी शब्द : पर्णपातीवन, लघुवनोपज, ग्रामीण आजीविका, कुसमी विकासखंड, वनसंसाधन।

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जनसंख्या उत्प्रवास को रोकने में प्राकृतिक वनस्पति एवं लघुवनोपज की भूमिका का भौगोलिक अध्ययन : सीधी ज़िले के कुसमी विकासखंड के विशेष संदर्भ में

1. राकेश कुमार प्रजापति, शोधार्थी संजय गांधीस्मृति शासकीय महाविद्यालय सीधी
2. ममता देवी प्रजापति, शोधार्थी संजय गांधीस्मृति शासकीय महाविद्यालय सीधी

सारांश

भारत के वनप्रधान एवं जनजातीय बहुल क्षेत्रों में जनसंख्या उत्प्रवास एक गंभीर सामाजिक–आर्थिक समस्या के रूप में उभरकर सामने आया है। आजीविका के सीमित अवसर, कृषि पर अत्यधिक निर्भरता, रोजगार की कमी तथा संसाधनों का असमान उपयोग ग्रामीण क्षेत्रों से नगरीय क्षेत्रों की ओर जनसंख्या के निरंतर प्रवाह को बढ़ावा देता है। मध्य प्रदेश का सीधी जिला, विशेष रूप से कुसमी विकासखंड, प्राकृतिक वनस्पति एवं लघुवनोपज की प्रचुरता के लिए जाना जाता है, किंतु इसके बावजूद यहाँ से मौसमी एवं स्थायी उत्प्रवास की प्रवृत्ति देखने को मिलती है। प्रस्तुत शोधपत्र का उद्देश्य प्राकृतिक वनस्पति एवं लघुवनोपज की आर्थिक, सामाजिक तथा भौगोलिक भूमिका का विश्लेषण करना है तथा यह समझना है कि ये संसाधन किस प्रकार स्थानीय स्तर पर रोजगार सृजन कर जनसंख्या उत्प्रवास को नियंत्रित कर सकते हैं। अध्ययन में प्राथमिक एवं द्वितीयक आँकड़ों का उपयोग करते हुए यह स्पष्ट किया गया है कि यदि वनसंसाधनों का सतत एवं वैज्ञानिक प्रबंधन किया जाए तो यह क्षेत्रीय विकास एवं ग्रामीण स्थायित्व का सशक्त माध्यम बन सकता है।

कुंजी शब्द: जनसंख्या उत्प्रवास, प्राकृतिक वनस्पति, लघुवनोपज, ग्रामीण आजीविका, कुसमी विकासखंड

परिवर्तनशील पर्यावरण में पादप प्रजातियों की पारिस्थितिकी, जैव–विविधता संरक्षण एवं भौगोलिक वितरण

डॉ शशि कला पटेल
भूगोल विभाग
प्रधानमंत्री कॉलेज ऑफ एक्सीलेंस सीधी

सारांश

यह अध्ययन परिवर्तनशील पर्यावरण के संदर्भ में रीवा जिला (मध्यप्रदेश) की पादप प्रजातियों की पारिस्थितिकी, जैव–विविधता संरक्षण एवं भौगोलिक वितरण का विश्लेषण प्रस्तुत करता है। अध्ययन का उद्देश्य विभिन्न आवासों में पादप विविधता के प्रतिरूपों की पहचान करना तथा पर्यावरणीय कारकों के प्रभाव का मूल्यांकन करना था। इसके लिए मैदानी सर्वेक्षण, द्वितीयक आँकड़ों एवं सांख्यिकीय आधारित विश्लेषण तकनीकों का उपयोग किया गया। परिणामों से ज्ञात हुआ कि वन एवं नदी तटीय क्षेत्रों में प्रजातीय समृद्धि एवं विविधता सूचकांक उच्च पाए गए, जबकि कृषि एवं मानव–प्रभावित क्षेत्रों में जैव–विविधता में उल्लेखनीय कमी दर्ज की गई। तापमान वृद्धि का पादप विविधता पर नकारात्मक प्रभाव तथा वर्षा और मिट्टी की नमी का सकारात्मक सह संबंध स्पष्ट रूप से परिलक्षित हुआ। कुछ आक्रामक प्रजातियों का प्रभुत्व स्थानीय पारिस्थितिक संतुलन के लिए चुनौती के रूप में उभरा है। अध्ययन निष्कर्ष यह संकेत देते हैं कि यदि संरक्षणात्मक एवं सतत प्रबंधन उपाय नहीं अपनाए गए, तो क्षेत्रीय जैव–विविधता पर प्रतिकूल प्रभाव और अधिक गहरा हो सकता है। यह शोध स्थानीय स्तर पर संरक्षण नीतियों और भविष्य के पारिस्थितिक अनुसंधान के लिए वैज्ञानिक आधार प्रदान करता है।

कुंजी शब्द : पादप पारिस्थितिकी, जैव–विविधता संरक्षण, पर्यावरणीय परिवर्तन, भौगोलिक वितरण, रीवा जिला, मध्यप्रदेश

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सीधी जिले के उद्यमिता के विकास में लघु वन उत्पाद प्रसंस्करण इकाइयों का आर्थिक योगदान

रमाकांत पांडे
अतिथि विद्वान उद्यमिता विकास प्रधानमंत्री कॉलेज ऑफ एक्सीलेंस सीधी

सारांश

मध्य प्रदेश के वनाच्छादित जिलों में लघु वन उत्पाद आजीविका और उद्यमिता विकास का महत्वपूर्ण आधार है। सीधी जिला वनों से समृद्ध है जहाँ महुआ तेंदूपत्ता साल चिरौंजी औषधीय वनस्पतियां प्रचुरमात्रा में उपलब्ध हैं। इन लघु वन उत्पाद के उत्पादन के स्थानीय स्तर पर प्रसंस्करण से रोजगार सृजन तथा अर्थव्यवस्था को सुदृढ़ करने में सहायता मिलती है। प्रस्तुत शोध पत्र का उद्देश्य सीधी जिले में संचालित लघु वन उत्पादन प्रसंस्करण इकाइयों के माध्यम से उद्यमिता विकास में उनकी आर्थिक योगदान का विश्लेषण करना है। अध्ययन से स्पष्ट होता है कि यह इकाइयाँ विशेष रूप से आदिवासी और ग्रामीण समुदायों के आर्थिक सशक्ति करण में महत्वपूर्ण भूमिका निभा रही हैं।

कुंजी शब्द: लघु वन उत्पाद, उद्यमिता विकास, ग्रामीण अर्थव्यवस्था, वन आधारित उद्योग, सीधी जिला

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ABOUT SIDHI

World-famous white tiger- **"MOHAN"** was found on soil of Sidhi in 1951. **Sidhi is Original Land of White Tiger**.All the White Tigers founds across the world presently are relatives of Mohan.

Sanjay Tiger Reserve is a nature's paradise, which is located in Sidhi district of Madhya Pradesh

The 11,000-year-old **Baghor Stone** in Sidhi, Madhya Pradesh, is a triangular, naturally occurring stone object that is considered the earliest known evidence of a Mother Goddess (Shakti or Kali) shrine and continuous worship in India.

The **Chandreh Shiva Temple** in Sidhi, Madhya Pradesh, is a significant10th-century Shaivite temple and monastery built by the Mattamayūra sect of the Chedi Dynasty around 972 AD.

The Son River is a major river in central India, flowing through Madhya Pradesh's Sidhi district, Tourist spots in Sidhi linked to it include the Son Crocodile Sanctuary and waterfalls, offering views of crocodiles and rich biodiversity.

Son Ghariyal Sanctuary established in Sidhi in 1981, protects critically endangered gharials and riverine biodiversity along the Son, Banas, and Gopad rivers.

The Ghoghra Devi Temple (also called Chandi Ghoghra Devi Temple) in Sidhi, Madhya Pradesh, is a significant religious site, connection to Birbal's birth place

Banabhatta was born in Chandreh, located in the Sidhi district of Madhya Pradesh, 7th-century Sanskrit poet and writer, renowned for works like Harshacharita and Kadambari and his connection to Sidhi highlights the region's cultural legacy.

How to Reach Sidhi

Sidhi is situated 145 KM apart from Prayagraj (U.P.) and 71 KM apart from Rewa (M.P.) via road. Sidhi is also well connected withroad route. Nearest airport and railway station is Rewa. Rewa is connected by airways and rail with Allahabad, Jabalpur, Khajuraho, Bilaspur and New Delhi. Routine buses are available from Bhopal, Allahabad, Satna, Banaras. Weather of Sidhi in January is usually being mildly warm and pleasant with temperature approximately 20 -25^{0}C.

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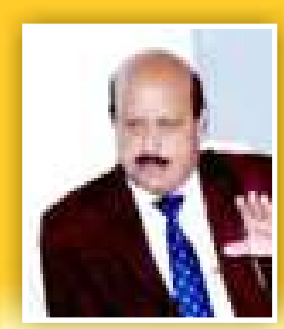

Dr. Rahasya Mani Mishra
Ex VC APSU Rewa, Former
Professor and Head, Department of
Environmental Biology,Rewa

Dr. D. K. Kapgate
Former Professor and Head,
Department of Botany,
J. M. Patel College (Nagpur University)
Bhandara (M.S.) INDIA

Prof. Mohammed Latif Khan
Prof. of Botany
Department of Botany
DHSGSU Sagar
MP India

Prof. Naveen Kango
Prof. & Head
Department of Microbiology
DHSGSU Sagar MP India

PROF. PRATYOSH SHUKLA
Professor
School of Biotechnology,
Varanasi, BHU, India

Dr Sanat Kumar Tripathi
Dean
Govt. Agriculture College (JNKVV)
Rewa, MP, India

Prof. Skand Kumar Mishra
Prof. of Botany
Department of Botany
Govt. New Science College Rewa MP

Prof. B N Tripathi
Prof. of Geography
Department of Geography
Govt MKB Arts and Commerce
College Jabalpur MP India

Dr. Atul Kumar Tiwari
Associate Professor & Head
Environmental Biology
APSU Rewa India

Dr. MRIGENDRA KUMAR
DWIVEDI
Associate Professor, Biochemistry
Govt. Nagarjuna Science College
Raipur Chhattisgarh India

Dr. Pratap Srivastava
Assistant Professor Department of
BotanyUniversity of Allahabad
Prayagraj UP India.

Dr. Mithilesh Yadav
Assistant Professor
VBSU Jaunpur
UP India