Azadi Ka Amrit Mahotsav

HYBRID MODE (BOTH PHYSICAL AND ONLINE)

G20 भारत 2023 INDIA
वसुधैव कुटुम्बकम्
ONE EARTH • ONE FAMILY • ONE FUTURE

1st International Conference on

Nature and Natural Sciences (ICNS 2023)

Theme: New vistas in Green Technology and Socio-economic Sustainability

5th & 6th May 2023

Abstracts and Souvenir

Organized and hosted by

Rani Durgavati Vishwavidyalaya (RDVV), Jabalpur (M.P.), India
http://www.rdunijbpin.org/

In Association with

ASIAN BIOLOGICAL RESEARCH FOUNDATION
ABRF PRAYAGRAJ
www.abrf.org.in

Asian Biological Research Foundation (ABRF), Prayagraj, India
http://www.abrf.org.in/

Tropical Forest Research Institute (TFRI), Jabalpur
Ministry of Environment, Forest and Climate Change, Govt. of India
https://tfri.icfre.gov.in

The American University
USA
https://augpusa.education/

Institute of Learning & Development
Hong Kong
https://www.ildedu.com/

Arunodaya University,
Itanagar (Arunachal Pradesh)
https://arunodayauniversity.ac.in/

Mahakaushal University (MKU),
Jabalpur (M.P.)
https://mku.ac.in/

Govt. M. H. College of Home Science &
Science for Women, Jabalpur (M.P.)
http://www.gmhcollege.org.in/

Shri Guru Teg Bahadur Khalsa College
Jabalpur (M.P.)
https://sgtbkhalsajbp.org/

Glocal Environment &
Social Association (GESA), New Delhi
http://gesa.org.in/

22 May 2023

International Day for Biological Diversity:
From Agreement to Action: Build Back Biodiversity

it's not too late to

#BUILDBACKBIODIVERSITY

UN environment programme

Convention on Biological Diversity

https://www.cbd.int/article/idb2023

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Mahakaushal University (MKU),
Jabalpur (M.P.)
https://mku.ac.in/

Govt. M. H. College of Home Science &
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Glocal Environment &
Social Association (GESA), New Delhi
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रानी दुर्गावती विश्वविद्यालय
RANI DURGAVATI VISHWAVIDYALAYA
(Formerly, University of Jabalpur)
(NAAC Accredited Grade "B" University)

सरस्वती विहार, पचपेढ़ी, जबलपुर–482001 (म.प्र.)
SARASWATI VIHAR, PACHPEDI, JABALPUR-482001 (M.P.) INDIA
फोन (Phones) : 0761-4008437 (O), 4077086 (R)
ईमेल (email) : vcrdvv@gmail.com
वेबसाइट (Website) : www.rdunijbpin.nic.in

प्रो. कपिल देव मिश्र
कुलपति

Prof. Kapil Deo Mishra
Vice-Chancellor

Date: 30.04.2023

Message

It is indeed a matter of great pride for me in organizing 1st International conference on **Nature and Natural Sciences (ICNS 2023)** as a host. It is being organized in association with Asian Biological Research Foundation (ABRF) Prayagraj, India, ICFRE-Tropical Forest Research Institute (TFRI), Jabalpur, The American University, USA, Institute of Learning & Development, Hong Kong, Arunodaya University, Itanagar (A.P.), Mahakaushal University (MKU), Jabalpur, Govt. M.H. College of Home Science & Science for Women, Jabalpur, Shri Guru Teg Bahadur Khalsa College, Jabalpur and GESA, New Delhi. The theme of the conference **'New vistas in Green Technology and Socio-economic Sustainability'** is quite pertinent in the present global scenario. Its main emphasis is on Green Technology and Socio-economic Sustainability.

I hope that this conference will serve to bring experts, scientists and pioneer academicians and research scholars from different disciplines together and young enthusiastic minds bubbling with academic queries and passions on a common platform. It will also help to create general awareness to conserve and protect the biodiversity, environment and humanity.

As a Chief Patron of this international conference, I congratulate the entire organizing team led by Prof. Surendra Singh and Dr. A. K. Verma in organizing such a wonderful event and wish for a grand success. I welcome all the guests, delegates, young scientists and other participants at RDVV, Jabalpur (M.P.).

(Prof. Kapil Deo Mishra)
Chief Patron, ICES 2023

प्रो. अखिलेश कुमार पाण्डेय
कुलपति
Prof. Akhilesh Kumar Pandey
Vice Chancellor

विक्रम विश्वविद्यालय
नैक द्वारा 'ए' ग्रेड प्रदत्त
उज्जैन (म.प्र.) 456010 भारत
दूरभाष : 0734-2514270 (कार्यालय)
: 0734-2511071 (निवास)
फेक्स : 0734-2514276

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: 0734-2511071 (Res.)
Fax : 0734-2514276
E-mail : vcvikramujn@gmail.com
Website : www.vikramuniv.ac.in

Date: 28.04.2023

Message

I am feeling glad to know that Rani Durgavati Vishwavidyalaya, Jabalpur (M.P.) is organizing the 1st International Conference on "Nature and Nature Sciences (ICNS 2023)" in association with Asian Biological Research Foundation (ABRF) Prayagraj, ICFRE-TFRI, Jabalpur, The American University and other organizations.

The theme of this ICNS 2023 'New vista in green technology and socio-economic sustainability' is very relevant in current world context India in particular. The present is the time for introspection, understanding and prediction of the way through which we can achieve the goal of socio-economic sustainability with the help of green technology. The need of hour is awareness, an effort which the current is making. I hope that the ICNS will be a tent platform for exchanging the ideas among the eminent scientists, experts and researchers.

I congratulate the entire organizing team led under the able guidance of Prof. Kapil Deo Mishra Vice Chancellor of RDVV, Jabalpur in organizing such a meaningful and innovative event and hope that the ICNS 2023 will achieve a grand success.

28/4/23

(Prof. Akhilesh Kumar Pandey)

Dr. R.C.Mishra
Vice Chancellor
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E-mail: vc@mku.ac.in

Mahakaushal University
Aithakheda, Chargawan Mukunwara Road, PO. Tilwara,
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website:-www.mku.ac.in

MKU
MAHAKAUSHAL UNIVERSITY
JABALPUR | MADHYA PRADESH | INDIA

Date: 30.04.2023

Message

I feel glad and highly privileged that the 1st International Conference on "Nature and Nature Sciences (ICNS 2023)" is being organized and hosted by Rani Durgavati Vishwavidyalaya, Jabalpur (M.P.) with our *Mahakaushal University (MKU), Jabalpur*, in association Asian Biological Research Foundation (ABRF) Prayagraj, ICFRE-TFRI, Jabalpur, The American University, USA, Institute of Learning & Development, Hong Kong, *Arunodaya University*, Itanagar (A.P.), Govt. *M.H. College of Home Science* & Science for Women, Jabalpur, Shri Guru Teg Bahadur Khalsa College, Jabalpur and GESA, New Delhi.

The theme of the conference 'New vista in green technology and socio-economic sustainability' is very relevant in current context. The ICNS foresees several delegates including keynote speaker, oral presentations and poster presentations by scientists, faculties and scholars. The topics of the conference truly reflect the current trends, recent advances and new approaches in the field of green technology and socio-economic sustainability. The conference offers unique opportunity for young scientists starting their research activity in the field related to the ICNS. It will be also a platform for gathering the eminent Scientists which are cordially welcomed to participate in this prestigious event.

I am sure this conference will provide a significant forum for exchange of ideas and experience in the areas of relevant field.

I wish the conference a grand success.

Rcm

Prof. R.C. Mishra
Vice Chancellor

AUGP USA

The American University USA

www.augpusa.education Email- augp.usa777@gmail.com & chairman@augpglobal.education

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Affiliated To The UNITED NATION UNIVERSITY FOR GLOBAL PEACE USA , http://augpglobal.education/ with Federal Government Of USA Registration Number 6816639 8100 SR# 20184990447 , Secretary Of State Authentication No. 202828725

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Ref: No : 777/11 Date: 29th April'2023

Message

It is a matter of immense pleasure that 1st International conference on **"Nature and Nature Sciences (ICNS 2023)"** with the theme **'New vista in green technology and socio-economic sustainability',** is being organized and hosted by Rani Durgavati University, Jabalpur (M.P.) in association with Asian Biological Research Foundation (ABRF) Prayagraj, ICFRE-TFRI, Jabalpur, The American University, USA, Institute of Learning & Development, Hong Kong, *Arunodaya University,* Itanagar, *MKU*, *Jabalpur*, Govt. *M.H. of Home Science College*, Jabalpur, SGTB Khalsa College, Jabalpur and GESA, New Delhi.

The theme of the conference is quite pertinent in contemporary scenario of the global. In this context, the relevance of green technology becomes very relevant to achieve the goal of socio-economic sustainability.

We congratulate the entire organizing team under the leadership of Prof. Kapil Deo Mishra and Dr. A.K. Verma for such a wonderful international conference. I hope that this conference will provide a platform for the researchers of relevant fields to exchange their views.

Our Board of Governors from all our branches of 120 Countries have expressed their Heartiest Congratulation to Prof. Kapil Deo Mishra Jii and Dr. A.K. Verma **Jii** & their entire Team for Promoting the Sustainable Development through Educational Seminars, Conventions, Conclaves Workshops, etc to build up a Global Family Of Global Peace, together to bring **"UnityAmong Diversity ,** & to propagate the message of **HARMONY, LOVE & PEACE CULTURE ,** & Ulti mately to build up aTransformed Civilization Of , **"PEACE LOVING –PEACE LIVING-PEACE PRACTICING"**

On behalf of the Chairman Cum Chief Rector of our "The American University USA Inc." & "United Nation University For Global Peace Inc." **, His Eminence Prof. Dr. Madhu Krishan ,** This message is being forwarded by the undersigned.

With Warm Regards,

Authenticated Signature Of Prof. Dr. Richard J,
Admin Head,

भा.वा.अ.शि.प.–उष्ण कटिबंधीय वन अनुसंधान संस्थान
(भारतीय वानिकी अनुसंधान एवं शिक्षा परिषद)
(पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय, भारत सरकार की एक स्वायत्त परिषद)
डाकघर – आर०एफ०आर०सी०, मण्डला रोड, जबलपुर – 482 021
ICFRE-TROPICAL FOREST RESEARCH INSTITUTE
(Indian Council of Forestry Research & Education)
(An Autonomous Council under the Ministry of Environment, Forests & Climate Change Govt. of India)
P.O. – R.F.R.C, Mandla Road, JABALPUR – 482 021 (M.P)

Date: 15.04.2023

Dr. Nitin Kulkarni, Director
ICFRE-TFRI

Message

I am glad to note that the *1st International conference on Nature and Natural Sciences* is being held at Rani Durgavati Vishwavidyalay, Jabalpur, Madhya Pradesh from May 05-06, 2023.

In nature, diversity is the greatest measures on earth which should be preserved at all costs for ecological stability of our planet, livelihood security for the poor and cultural integrity. India has long advocated policies for the sustainable use of our natural resources to ensure that we meet the need of both present and future generations. Living in harmony with nature is way of life engrained in Indian tradition and culture which has reverence for all life.

The theme *"New Vistas in Green Technology and Socio-economic Sustainability"* is very appropriate in the expeditious climate change conditions prevailing in the world. The proposed international conference will lead some direction towards the sustainable utilization of nature and its resources, with the implications of green technology. In addition, we should also ensure that the recommendations of this conference reach the common people and the philosophy of scientific temper as introduced by scientific fraternity is spread in the masses. I congratulate the Rani Durgavati Vishwavidyalay, Jabalpur, Madhya Pradesh for having taken responsibility in the organisation of this International conference.

As an associate partner of this conference, I extended a very cordial welcome to all the delegates participating in this conference and hope that their stay in the Sansakardhani, Jabalpur will be comfortable and their scientific deliberations will be meaningful.

I wish great success of this conference.

(Dr. Nitin Kulkarni)
Director
ICFRE-TFRI, Jabalpur

OFFICE OF THE PRINCIPAL
Govt M.H. Home Science and Science College for Women, Jabalpur

Ph.0761-2407326

Email-principal@gmhcollege.nic.in

Date: 15.04.2023

Message

It is indeed delectable that the Zenith of our city Jabalpur (Madhya Pradesh) is organising First International Conference on nature and Natural Science ICNS (2023). The theme of the topic will create awareness, sensitivity analyatical skills, critical thinking and understanding the environment and nature which will explore to its maximum effectivity. It is an opportunity for a large number of distinguished participaints to share their views and experiences which will be commendoble.

My Best wishes and Greetings to all.

Sarkar

Dr Nandita Sarkar
Principal
Govt M.H College of Home Science
& Science For Women Jabalpur

ਸ੍ਰੀ ਗੁਰੂ ਤੇਗ ਬਹਾਦਰ ਖਾਲਸਾ
SRI GURU TEGH BAHADUR KHALSA COLLEGE
(An ISO:9001:2015 Certified Minority Institution)
Mahanadda , Nagpur Road, JABALPUR 482001
(Affiliated To Rani Durgawati Vishwavidyalaya Jabalpur and
Recongnized by M.P.Government, BCI, and NCTE, New Delhi)

Date:11-04-23

Message

It is a matter of great happiness that Rani Durgawati Vishwavidyalaya, Jabalpur in association with Asian Biological Research Foundation (ABRF), Pryagraj, TFRI (Jabalpur), The American University, (USA), ILD (Hong Kong), Arunodaya University (Arunachal Pradesh), Mahakaushal University (Jabalpur), Govt. M.H. College (Jabalpur), SGTB Khalsa College (Jabalpur), GESA (New Delhi) is organizing 1st International Conference on Nature and Natural Sciences from 5th to 6th May 2023. The theme of the conference is **"New Vistas in Green Technology and Socio-Economic Sustainability."**

This conference is a good initiative to spread information regarding the potential of natural resources and their significance in developing different products for the society among the students and researchers. The conference will enable the participants and speakers to interact with each other from around the world and share their knowledge. Through this conference the participants will be motivated to take up research in the field of green technology which will be beneficial for the environment as well as economy of the world.
I wish the conference a grand success.

Dr. R. S. Chandok
Principal

Telephones : 2427251,4004369 (College), 9425604024 **Website**-www.sgtbkhalsajbp.org
E-mail id-sgtbkhalsacollegeoffice@gmail.com.

Date: 20.04.2023

Message

It is a matter of immense pleasure that 1st International conference on "Nature and Nature Sciences (ICNS 2023)" with the theme "New vista in green technology and socio-economic sustainability", is being organized and hosted by Rani Durgavati Vishwavidyalaya (RDVV), Jabalpur (M.P.) in association with Asian Biological Research Foundation (ABRF) Prayagraj, ICFRE-TFRI, Jabalpur, The American University, USA, Institute of Learning & Development, Hong Kong, Arunodaya University, Itanagar (A.P.), Mahakaushal University, Jabalpur, Govt. M.H. College of Home Science & Science for Women, Jabalpur, Shri Guru Teg Bahadur Khalsa College, Jabalpur and Glocal Environment & Social Association (GESA), New Delhi.
As we know that technology is the main source of operation behind almost all economic activities in the world. However excessive usage of technology without keeping the concerns of sustainable development in mind there has been humongous resource depletion despite exponential economic growth and industrialization. In this context the relevance of green technology becomes very relevant because it balances both the economic interest as well as the concerns of environmental protection.

The main goal of organizing this conference is impart knowledge regarding short-term and long-term impact of sustainable technology or green technology or Green Tech in environment. This conference is a good opportunity for those who have a thirst in knowing the present green technology contribution in safeguarding the environment by controlling global warming and reducing the greenhouse effect; protect the natural environment, reduce our dependence on non-renewable natural resources like fossil fuel, and heal the damage done to the environment. It serves as a source to provide a common platform for scientists associated with biological sciences to interact with one another for mutual benefit and to enhance the innovative knowledge on the subjects and also to encourage, facilitate and perform the activities related to conservation of water, nature and biodiversity.

The RDVV has always been at the cusp of endeavoring to bring social change by means of various extension activities. This international event is one such endeavor and I am proud to say that it is yet another feather in the cap of the university. I, as the Convener of this international conference, welcome all the delegates across the globe and hope it will be ahistoric event.

(Prof. Surendra Singh)
Convener, ICNS 2023

Date: 16.04.2023

Message

It gives me immense pleasure to be a part of this hosting team of "1st International Conference on Nature and Natural Sciences (ICNS 2023)". The conference intends to bring together scientists, professors, scholars and students from different disciplines to discuss concerns related to various new vistas in Green Technology and Socio-economic Sustainability.

I hope that the conference serves as a locus for interdisciplinary, a space for discourse and collaboration. I would like to express my appreciation to the whole organizing committee for their dedicated efforts to materialize the conference. I hope all the participants will have a fruitful and beneficial experience.

(Prof. Sadhana Kesharwani)
Convener, ICNS 2023

Dr. Harshita Shukla
Head, Department of Biotechnology
Sri Guru Tegh Bahadur Khalsa College
Jabalpur, M.P.

Date: 12.04.2023

Message

It is a matter of immense pleasure that Rani Durgavati Vishwavidyalaya, Jabalpur is organizing 1st International Conference on Nature and Natural Sciences (ICNS 2023) in association with Asian Biological Research Foundation (ABRF), Prayagraj, TFRI, Jabalpur, The American University (USA), ILD (Hong Kong), Arunodaya University (Arunachal Pradesh), Mahakaushal University (Jabalpur), Govt. M.H. College (Jabalpur), SGTB Khalsa College (Jabalpur) and GESA (New Delhi) from 5th to 6th May 2023.

The theme of the conference "New Vistas in Green Technology and Socio-economic Sustainability" will make the participants aware that green technology is all about the generation of various types of products by using biological agent's viz., plants, animals and microorganisms. Such products are not only eco-friendly but also play a pivotal role in social and economic welfare of the world. The different competitions organized during this conference will provide a platform to the young budding researchers to express their innovative ideas and research works through poster and oral presentations. The eminent speakers invited from around the world will enlighten the participants about the recent researches carried out in the field of Green Technology and their social and economic sustainability. This will indeed motivate the students to pursue their research works in the field of Green technology.

My best wishes to the organizers and participants. I wish the Conference a grand success.

(Dr. Harshita Shukla)
Organizing Secretary, ICNS 2023

ASIAN BIOLOGICAL RESEARCH FOUNDATION

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Tagore Town Prayagraj 211002 (India)

Date: 30.04.2024

Message

It is a matter of great pleasure that 1st International conference on **Nature and Natural Sciences (ICNS 2023)** is being organized and hosted by Rani Durgavati Vishwavidyalaya (RDVV), Jabalpur (M.P.) in association with Asian Biological Research Foundation (ABRF) Prayagraj, India, ICFRE-Tropical Forest Research Institute (TFRI), Jabalpur, The American University, USA, Institute of Learning & Development, Hong Kong, Arunodaya University, Itanagar (A.P.), Mahakaushal University (MKU), Jabalpur, Govt. M.H. College of Home Science & Science for Women, Jabalpur, Shri Guru Teg Bahadur Khalsa College, Jabalpur and Glocal Environment & Social Association (GESA), New Delhi.

The theme of the conference '**New vistas in Green Technology and Socio-economic Sustainability**' is quite pertinent in contemporary global scenario. Indiscriminate anthropogenic activities, climate change, global warming, biodiversity conservation and sustainable development, all are big challenges before us. In such a situation, green technologies are significant in order to reduce the environmental pollution and achieve the goal of socio-economic sustainability.

I congratulate the entire organizing team for taking up this challenging but momentous initiative. I hope that this conference will provide a platform for the researchers of relevant fields to contemplate and present their research papers along with the opportunity to interact with fellow researchers and veterans of their areas of research. I am confident that outcomes of this international conference on various issues on the subject will generate a new concept in order to achieve the socio-economic sustainability with the help of green technologies.

I on behalf of entire core team, impart ecofriendly best wishes to the organisers for organising the ICNS 2023 and welcome all the participants across the country and abroad as well.

(Dr. A.K.Verma)
Overall Coordinator & Conf. Director, ICNS 2023

ABOUT THE ORGANIZERS

Rani Durgavati Vishwavidyalaya (RDVV), Jabalpur (M.P.)

Rani Durgavati Vishwavidyalaya was established under Jabalpur University Act on the 12th of June 1956. Since then the University has chartered an illustrious history of academic achievements and intellectual leadership. It was envisaged by the decision makers that the spread of education especially higher education would lead to deeper socio-economic development. The achievements of the University has been recognized and documented by the National Assessment and Accreditation Council in 2014, when it awarded a high rating of "B". We are striving for an even better rating in next accreditation.

The University covers a vast arena of disciplines and encompasses various faculties such as Science, Arts, Social Science, Commerce, Law, Management and Education. The various departments are continuously involved in teaching and research activities that are recognized both nationally and internationally. Apart from 24 well established teaching and research departments, the University also runs several sponsored centers like Academic Staff College, Community College, Women's Study Center, Design Innovation Center, Career Guidance Counseling Training and Placement Cell, Remedial Coaching for SC/ST/OBC, Gandhi Shodh Peeth, Guru Nanak Devji Shodh Peeth, Bharatiya Gyan Shodh Peeth, Dr. Ambedkar Studies Center, Skill Development Center, Distance Education, and host of students' and employees' supporting facilities. The University has been identified as the only state University in Madhya Pradesh and one of the nine Universities nationally for implementation of the prestigious NUSSD programme.

www.abrf.org.in

Asian Biological Research Foundation (ABRF), Prayagraj, India

The ABRF Prayagraj, India is a self-supporting, academic and research associated body. It is basically non-profit and Non-Government Organization: (1) to provide a common platform for scientists associated with biological sciences to interact with one another for mutual benefit and to enhance the innovative knowledge on the subjects (2) to provide an opportunity among the Biologists to share the Academic, Research, and other related vistas and experiences (3) to encourage, facilitate and perform the activities related to conservation of water, nature and biodiversity (4) to promote the new scientific knowledge that has emerged from recent advances and to felicitate the persons and organizations internationally for their outstanding services rendered in basic, applied and modern biological sciences including all branches of Botany, Zoology, Agriculture, Veterinary Science, Environmental Science, Molecular Biology, Biotechnology, Biochemistry, Bioinformatics, Microbiology, and so on, (5) to promote and motivate the cleanliness, good health, nutrition, human values to achieve the inclusive and

sustainable development of rural and urban societies (6) to organize seminars, symposia, workshops, brainstorming sessions, lectures, and summer/winter schools to aware and educate the people on blazing environmental and social issues in the larger interest of human and humanities (7) to collaborate with National and International Institutions, Government and Non Government Organizations, Schools, Colleges, Institutions, Universities, Private and Public sector Industries to achieve the objectives of the ABRF.

Tropical Forest Research Institute (TFRI), Jabalpur
(ICFRE- An Autonomous Body of Ministry of Environment, Forest and Climate Change, Govt. of India)

The Tropical Forest Research Institute, Jabalpur is one of the nine regional institutes under the Indian Council of Forestry Research and Education (ICFRE), Dehradun (UK). The Institute came into existence in April 1988, although its origin goes back to 1973 when a Regional Centre of FRI, Dehradun was established at Jabalpur to provide research support to the problems of forest management in central India. The institute has not only steadily advanced in terms of infrastructure but also specialized itself as a major nucleus for research on forestry and ecology related problems of tropical forests of the central region comprising of the states of Madhya Pradesh, Chhattisgarh and Maharashtra. The institute is headed by Director and has a staff strength of 113 including 22 scientists and 38 officers.

The campus of the Institute is fully developed with facilities like office cum laboratory building, library and information building, bio-technology lab, residential complex, bank, post-office, dispensary, shopping complex, central school, community hall, canteen, motor vehicle workshop, scholars' transit hostel, scientists' hostel, sports ground and rest house.

The American University, USA

This is a non-political, non-racial, non-sectarian, interdenominational, Inter-Cultural IGO registered as a 501 (c) 3 organization in USA. WE SUPPORT the UNIVERSALLY ACCEPTED 10 PRINCIPLES OF UNITED NATIONS Global Compact, UNITED NATIONS Academic Impact, UNITED NATIONS HUMAN RIGHTS & ALL CHARTERS OF UNITED NATIONS & EUROPEAN UNION. The American University in USA has a primary focus of helping scholars carry out research into Theology, Peace and Conflict studies, and to build competencies of peace activists worldwide.

Institute of Learning & Development, Hong Kong

Institute of Learning & Development (ILD) is a leading training and content provider. It was

established in the year 2000 with over 20 million students to date. The ILD offer world-class extended learning courses as well as training and development opportunities that serve as skills and knowledge fillers to help students and working adults progress around the globe.

Arunodaya University, Itanagar (Arunachal Pradesh)

Arunodaya Univeristy has been established in the year 2014, by an Act The Arunodaya University Arunachal Pradesh Act, 2014, Act No. -13 of 2014, of the Arunachal Pradesh State Legislature and is approved under section 2(f) of UGC Act 1956 vested with the authority to award Degrees, Diplomas and Certificates. The University has been established to cater to the growing needs of higher education in the country.

Arunodaya University believes in imparting education to the students in a comprehensive format while not compromising on the traditional ways of pedagogy which our country has nourished since it's inception. It has therefore embarked on a novel concept clubbing the class room lectures and the industrial element together. This approach lighten up the interest of the students in their respective scope of subjects and that gives an holistic get up to the whole perception of education.

Mahakaushal University (MKU), Jabalpur (M.P.)

Mahakaushal University, Jabalpur has been established by the MP Govt. Ordinance Number 11 dated 13th January 2021. Ordinance has been passed by MP state legislative assembly dated 25th February 2021. University has been included in the list of Universities established as per section 2(f) of UGC Act 1956.

Mahakaushal University offers an advanced Education system to the students in the fields of Engineering Technology, Agriculture, Humanities, Yoga, Paramedical, fire safety Science, Nursing, Education, skill-based program and Future demanding courses. Students will be made ready for multitasking activities to bring Nation at fore- front globally. Our education system is ready to fulfill requirements from Public and private sectors for future needs.

Govt. M. H. College of Home Science & Science for Women, Jabalpur (M.P.)

The idea of establishing an Educational Institute for women was conceived by Mr. Parmanand Bhai Patel, a renowned industrialist of Jabalpur. The proposal was welcomed by

Pandit Ravi Shankar Shukla, the then Hon. Chief Minister of Madhya Pradesh. On July 15, 1954 Govt. M H College of Home Science and Science For Women came into existence with only Home Science classes. Mr. Parmanand Bhai Patel's, firm Mohanlal Hargovinddas donated Rs. One Lakh for the establishment of the college. On April 27, 1956 the foundation stone was laid down on 11 acres of land, situated in the heart of Jabalpur city, by the chief minister of MP. The college building is a beautiful piece of architectural work. Facilities such as Hostel, Sports complex, Canteen etc. are available in the college premises. The hostel accommodates about 650 girls. This is the biggest girls hostel of MP.

In 1955 Mankuwar Bai College of Arts was merged with this institute. Looking at the progress of the Home Science Faculty, the Government of Madhya Pradesh granted permission to conduct Science classes as well. In 1986 Mankuwar Bai College became independent institute of Arts and Commerce. Hence the parent college became the college for Home Science and Science.

The college is affiliated to RDVV, Jabalpur which awards degrees to the students. The MH College is one of the pioneering institutions of MP that adopted the autonomous system in the Higher Education in 1988-89. On the recommendation of UGC peer team the Autonomous status of the college has been extended up to the year 2012-2013. NAAC accredited the college with A grade in 2012. The college was selected in the UGC scheme " Colleges with Potential for Excellence" in 2004. That time MH College of H Sc & Science for Women was the only Women College of the MP to be selected with 73 other colleges from all over the country.

Shri Guru Teg Bahadur Khalsa College, Jabalpur (M.P.)

Sri Guru Tegh Bahadur Khalsa College was established in the year 1979 to serve the ever growing educational needs of the students. The college is affiliated to RDVV, Jabalpur and approved by M.P. Higher Education Bhopal, NCTE, New Delhi and BCI, New Delhi. The college is ISO certified 9001:2015, registered under 2(f) and 12b. It is a minority institution with 44years of educational excellence. Here students belonging to all casts and religions are motivated to become good learners.

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Sri Guru Tegh Bahadur Khalsa College is dedicated for youth to excel in academics along with development of scientific approach with new innovations for effective methods of education and to create milestones. We aim at providing foundation of healthy domain of surroundings for all round development of our students.

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Abstracts

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Abstract No. 1

A New Vista in Green Technology and Socio-economic sustainability through Bio-waste Management in Nature

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ABSTRACT

Green technology is the umbrella term for management and technology innovation focused on environmental protection. Green technology is connected to clean tech, which refers to services that increase operational effectiveness while lowering costs, energy consumption, waste, or negative environmental effects. The purpose of green technology is to safeguard the environment, restore past environmental damage, and conserve the Earth's natural resources. Greenhouse gas emissions and the associated acceleration of global warming are among the most pressing issues of the twenty-first century. Biowaste is the most well-known source of greenhouse gas emissions, and it considerably contributes to environmental and natural deterioration. Biowaste is an important component, and its production is expected to grow dramatically year after year, with the world creating 100 billion metric tons of bio waste each year. Biowaste is a major polluter of the environment as well as a massive biomass resource pool containing bio available organic chemicals. Biowaste is waste that is biodegradable and transformable and is mostly created by industrial and agricultural activities, municipal engineering, and daily life. Agricultural waste, sewage sludge, and food waste made up the majority of these. Biowaste has a complex composition, a high concentration of organic stuff, and can be degraded by bacteria. As a result, full biowaste utilization is crucial. The black soldier fly (BSF) is a multi-beneficial insect that reproduces in organic waste and is arguably the best-known member of the Stratiomyidae family in the Diptera order, which is found around the planet in the tropics and temperate zones.The fly's larvae consume a quantity of the waste and can also be used as an alternative for animal feed. Remaining residual waste can later be used as organic fertilizer. This initiative promotes a circular economy in that waste is being reduced and reprocessed by natural means into an economically valuable product. Black Soldier Fly biowaste treatment is a low-cost solution to waste management in low and middle-income countries. The study shows that BSF facility is 47 times lower than the emission from composting. Based on the several studies, the larva of fly contains 42% crude protein and 29% fat, even higher in saturated fats than most insects but still, there is limited research. So, the focus of this review will be on how insect larvae (BSFL) could be used as an alternative source of protein and fat in animal feed for the socio-economic sustainability through bio-waste management in nature.

Keywords: Green technology, biowaste, environment pollution, black soldier fly, animal protein.

Abstract No. 2

Status of Wetland Biodiversity on Fisheries in Bangladesh

Binay Kumar Chakraborty

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Department of Fisheries, Bangladesh & Bangladesh Agricultural University

ABSTRACT

A wetland ecosystem is very remarkable for biodiversity. About 40% of all species live or breed in wetlands. They act as life support systems of human beings, providing water, food, protection from floods, droughts and storms and livelihoods for people. Wetlands have three characteristics. These are the land supports predominantly hydrophytes periodically; the substrate is predominantly undrained hydric soil; and the substrate is saturated with water or covered by shallow water during the growing season of each ear. Wetlands are very rich with about 300 plant species, 400 vertebrate species, and 260 freshwater fish species on the wetland of Bangladesh. Biological resources and biological diversity form the basis of both the ecology and economy of Bangladesh. Agriculture, fisheries, and livestock, along with a number of other sectors are heavily depended, directly or indirectly, on biological resources. There is a great potential in the country for biodiversity-based sustainable development. A remarkable percentage of wild fauna and flora are threatened in the country. Climate change also affects the biodiversity status of the 260 fresh water fish species. The present status of the recorded fresh water fish species are also ranked as different status. About three commercially important fish species such as nandina, *Labeo nandina*; mohasseer, *Tot tor* and Ghora Muikkha, *Labeo, pangusia* (01%) are extinct and another fifty four commercially important fish species (21%) are facing as extremely higher risk of extinction (Critically endangered, CR) day-by-day. Forty nine (19%) major commercially important fish species was facing as very high risk of extinction (Endangered, EN), thirty seven (15%) species was facing as high risk of extinction (Vulnerable status, VU), forty two (17%) species were identified as lower risk (LR), fifty four species (21%) are least concern (LC) position and only twenty one species (6.0%) are data deficient (DD) position, respectively. So, a sustainable management plans need to prevent over-exploitation of fish and fisheries. It will improve the access to reservoir fisheries for local people, particularly through creation of fisheries groups/organizations to empower local people (including women) to manage fishing, stocking, harvesting and marketing. The impact of human activities on ecosystem services, conservative management policies should be applied in order to minimize the effects of these activities on the remaining biodiversity.

Keywords: Floodplain, Climate Change, Fisheries, Extinct, Endangered, Biodiversity.

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Abstract No. 3

Concept of E-Flows associated with fish diversity and small-scale fisheries in Nepal

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[2]Department of Zoology, Tribhuvan University, Kathmandu, Nepal

ABSTRACT

Environmental flows (e-flows) in rivers has direct association with fish diversity, ecosystem, fisheries, and livelihood. The concept of e-flows is related with quality, quantity and seasonality of river water flow for maintaining resilience to aquatic ecosystems for livelihood. E-flows may not be a stagnant value, but comprised of a series of standards that emit natural flow according to the seasons. However, the E-flow is not the natural flow of river instead the term reveal a balance between benefiting ecology and humans. To find out the possible interrelationships between the e-flows, fish biodiversity, water quality, livelihood, we reviewed published literatures. The result showed that there is increasing threat on fish diversity in Nepal due to several problems of river fragmentation and anthropogenic activities for hydropower generation, infrastructure development in remote areas, population growth and climate change etc. E-flows might be associated with dissolved oxygen, macrophytes, nutrients, dominance of fish species diversity. As different fish species has its own social, ecological and economical values. Thus, certainly viability of small-scale fisheries and livelihood are tied up. We argue that for sustainable small scale fisheries 'presumptive flow standard' of e-flows should be applied for ensuring sustainable fisheries and livelihood.

Keywords: Ecosystem services, hydropower, small-scale inland fisheries, aquatic habitats.

Abstract No. 4

Training needs for Improved Fish Production Management among Fish farmers in Rupandehi, Nepal

Om Prakash Singh and Bipul Gautam

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ABSTRACT

This study conducted to assess the training needs of fish farmers in Siyari and Suddhodhan Rural Municipality on improved fish production management practices and explore the intensity of use of these practices. A questionnaire was used to gather data from 120 fish farmers, and the study utilized various statistical methods to analyze the data. The findings indicated that farmers required maximum training on disease prevention, water quality maintenance, feed formulation, pest and predator control, and fry care. The study also revealed that market-related constraints were the major obstacle to fish production Additionally, the study found that years of schooling, pond area, contact with extension providers, and fish insurance had significant and positive effects on the adoption of improved fish production management practices, while sex and major income source had significant and negative effects on adoption. The study suggests that extension service providers should offer frequent capacity-building training to fish farmers to help them adopt improved fish production management practices and overcome market-related constraints. Overall, the study highlights the importance of proper training and support in promoting sustainable fish production practices.

Keywords: Fish farming, improved technologies, constraints, adoption.

Abstract No. 5

Phytochemical screening and antibacterial activity of *Vernonia amygdalina* (bitter leaf) on some selected bacterial isolates

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Department of Biology
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ABSTRACT

Plants that have medicinal value contain phytochemicals, which have antibacterial properties. Using the agar well diffusion process, the study determined the antibacterial activity of *Vernonia amygdalina* against bacterial isolates. In addition, the extracts' phytochemicals were determined. The phytochemical analysis showed the presence of saponins, steroids, terpenoids, tannins, alkaloids, and flavonoids. The result of *Vernonia amygdalina* showed that the average zones of inhibitions observed against these bacterial ranges from 6-22mm. The highest zone is also exhibited against E. coli with average diameter of zone of inhibition of 22mm. At 100mg/ml concentration for *Salmonella* spp, the zone of inhibition was recorded to be 21mm while at 12.5mg/ml there was no inhibition. At 25mg/ml and 12.5mg/ml, against *Pseudomona*s spp there was no inhibition. In other to further confirm the activity of these plant extracts, the MIC and MBC was determined and the result showed that the extract exerted good antibacterial activity on all the test organisms at different concentration. The result of MIC ranges from 10 to 12.5mg/ml and that of MBC ranges from 5 to 20mg/ml. It is worthy to note that MBC values are greater than that of MIC. The study provides insight into the antibacterial activities of the plant extracts and its use in the treatment of bacterial infections.

Keywords: Phytochemical, *Vernonia amygdalina*, Extract, *Pseudomonas* spp, Antibacterial activity.

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Abstract No. 6

Improved hydrogen storage characteristics of Magnesium Hydride using dual auto catalysts (MgF2+CsH)

Rashmi Kesarwania[1], Vivek Shuklab[2], M. Sterlin Leo Hudsona[1] and Mohammad Abu Shaz[1]

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Banaras Hindu University, Varanasi, India
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ABSTRACT

This study discusses the improvement in the hydrogen sorption properties of MgH2 with dual auto-catalysts, MgF2 and CsH. Two auto-catalysts are produced by ball milling MgH2 with CsF as an additive. MgF2 and CsH were found to increase not just MgH2's hydrogen sorption properties, but also its positive thermodynamic tuning. The on-set desorption temperature of MgH2 catalyzed by MgF2+CsH is 249 °C which is 106 °C lower than that of ball-milled MgH2 without any additives under identical measurement conditions. The de-hydrogenation kinetics of MgH2 catalyzed by MgF2+CsH at 300 °C is 4.73 wt. % H2 in 15 min. However, its re-hydrogenation kinetics after dehydrogenation is 4.62 wt. % H2 in 5 min at 300 °C. The catalysed sample exhibits negligible degradation of 0.39 wt% H2 after 25 de/re-hydrogenation cycles. The activation energy of MgH2 catalysed by MgF2+CsH was estimated to be 98.10±0.58 kJmol-1. The enthalpy changes for de/re-hydrogenation were determined to be 66.64 ± 1.09 and 63.09 ± 21 kJmol-1, respectively. A feasible mechanism for the de/re-hydrogenation behavior of MgH2 with MgF2+CsH is proposed.

Keywords: Hydrogen storage, Metal hydride, MgH2, Fluorides, CsF.

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Abstract No. 7

Effect of Physico-Chemical Parameters on Zooplanktons of the Bagmati River, Kathmandu, Nepal

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ABSTRACT

The Bagmati River is the principal river of Bagmati Province, which runs through Kathmandu valley, and separates Kathmandu and Lalitpur districts. The present research analyses whether physico-chemical parameters significantly influence the occurrence of zooplanktons in Bagmati River. The study was carried out on 2019 from January to June in Bagmati River at three different sites (Sundarijal, Thapathali and Chovar) covering three seasons (winter, spring and summer). At the time of study altogether 21 genera of zooplanktons recorded, of which 17 genera were recorded in winter season, 18 genera in spring and 20 genera in summer season. The highest numbers (251) of zooplanktons were recorded in site I (Sundarijal), lowest (137) in site II (Thapathali) and 193 numbers in site III (Chovar). During the study period *Brachionus* was found dominant (10.67%), followed by *Filinia* (10.32%), *Neodiptomus* (9.12%) while *Siminocephalus* (1.72%) was found lowest. The diversity of zooplankton was found highest (2.89) during summer season, lowest (2.63) during winter season and in spring season (2.78). Evenness was high (0.965) during summer season than in spring season (0.962) and winter season (0.931). The maximum diversity (2.540) was found in site I while minimum (1.992) in site III. Evenness was higher (0.990) in site I and lowest (0.906) in site III. The physico-chemical parameters were interrelated with zooplanktons and showed positive correlation between DO, and zooplanktons in three seasons (0.58, 0.94, 0.96 in winter, spring and summer respectively). The negative correlation was found with temperature, turbidity, TDS and total ammonia in all three seasons while positive correlation was found between water velocity in spring (0.62) and summer season (0.71) but negative correlation in winter season (-0.99). The negative correlation was found between pH and zooplankton in two seasons in winter (-0.43) and spring (-0.98) while positive correlation was found in summer season (0.99). Thus, it can be concluded that physico-chemical parameters might significantly impact both individual species and entire zooplankton clusters.

Keywords: Physico-chemical parameters, zooplankton, Bagmati River, Nepal.

Abstract No. 8

Wetland - An Ecological Boon for the Environment

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ABSTRACT

A wetland is an ecological community that is inundated either year around or seasonally. Wetlands are found from the tundra to the tropics and on every continent except Antarctica. There are many kinds of wetlands and many ways to categorize them. Two general categories of wetlands are recognized namely coastal or tidal wetlands and inland or non-tidal wetlands. Wetlands are among the most productive ecosystems in the world, comparable to rain forests and coral reefs. An immense biodiversity of species of microbes, plants, insects, fish, amphibians, reptiles, birds and mammals can be part of a wetland ecosystem. Wetlands perform significant economic benefits to human society, including some ecosystem services that no other ecosystem can provide, including certain types of water quality improvement, flood protection, shoreline erosion control, and opportunities for recreation and aesthetic appreciation and natural products for our use at no cost. Protecting wetlands in turn can protect our safety and welfare. A primary intent of this article is to provide the reader with special interest in wetland delineation, wetland benefits, wetland mitigation and wetland biology. Wetlands are no more thought to be useless, disease ridden areas rather they are now considered to be an ecological boon for the environment!

Keywords: Wetland, Biodiversity, Ecosystem, Coral Reefs, Amphibians, Reptiles, Mammals.

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Abstract No. 9

Reproductive Biometry of Blue Swimming Crabs (Portunus pelagicus, Linnaeus, 1758) caught in Asid Gulf

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ABSTRACT

Reproductive biometry of the blue swimming crabs in Asid Gulf was conducted from January to December 2018. A total of 389 crabs collected by bottom-set gill net in the Gulf were investigated in terms of gonad maturity, gonado-somatic index (GSI), and fecundity (F) to assess their condition. Gonad maturity was analyzed based on gonad size and color, and GSI was based on gonad weight/total weight (100). The gravimetric method was used to estimate fecundity. Results showed that *Portunus pelagicus* is a continuous spawner with peak reproductive activity in February and June, when higher values of GSI, matured, and ovigerous females are observed. Ovigerous females were present year round, the highest occurring in March (28.35 %) and April (25.68%) Fecundity ranges from 148 625-481 560 eggs. The smallest matured female was 62 mm in carapace width (CW). Fecundity was significantly related to CW with an adjusted R^2 = 67.27%. Recommended options include the prohibition of the catch of gravid crabs, size regulation, and a close season during the peak of reproductive activity.

Keywords: Reproductive biometry, fecundity, GSI, gonad maturity, *P. pelagicus*, Asid Gulf.

Abstract No. 10

Wetland: An impact of Environmental Degradation and its Conservation

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ABSTRACT

Wetlands are valuable natural resource that can provide ecosystem benefits at both the local and regional levels. Wetlands are a distinct environment that exists between aquatic and terrestrial ecosystems, or between dry ground and an open body of water. The primary nutrient cycled in wetlands is carbon. The majority of nutrients, including sulphur, phosphorus, carbon, and nitrogen, are present in wetlands' soil. The cycling of nutrients such as carbon, hydrogen, oxygen, and nitrogen as well as the solubility of phosphorus are affected by anaerobic and aerobic respiration in the soil, which affects the soils and water's molecular composition. The saturated soils of wetlands are frequently anoxic because oxygen moves through water more slowly than it does through air. Despite being dispersed, they have an impact on the world's biogeochemical and hydrological cycles because of their distinctive features. Globally, both the quantity and quality of wetland areas continue to decrease. Depending on the area, between 30-90% of the world's wetlands has already been lost or significantly modified in many countries. The ecosystem benefits that wetland provide are not available to people as a result of wetland loss and degradation. Over the past few decades, there has been a significant change in people's perceptions of wetlands. The protection of remaining wetlands was once seen as a static resource for biodiversity, but more recently, the emphasis has shifted to the many, formerly unprotected wetlands.

Keywords: Wetland, Wetland Ecosystems, Biodiversity, Conservation.

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Abstract No. 11

Agroforestry for food security and Environmental Sustainability

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ABSTRACT

An agroforestry system can be conceptualized and designed for different conditions and needs; it can be done at the farm level or landscape level. At the farm level in the existing agricultural and, agroforestry can be promoted in the form of bund planting, boundary plantation, alley cropping, incorporation of nitrogen-fixing trees, etc. At the landscape level, agroforestry practices can be aligned towards the reclamation of degraded lands. Inevitably, any agroforestry system offers more than one output (comprising both tangible and intangible outputs). Thus, the term 'multifunctional agroforestry' seems to be neither dictum nor jargon. Henceforth, there is need for appropriate definition for new terminologies perse. It is stated that the term 'multifunctional' should be used as prefix to those agroforestry systems where it is able to provide more than one or several function apart from it intended primary function. In short, the multifunctional Agroforestry has been explained as 'a concept The concept of multifunctional agroforestry recognizes agroforestry as a multi-output activity producing not only commodities(food, wood/timber, fibres, flowers, agrofuels, medicinal products and ornamentals), but also non-commodity outputs such as environmental services (nutrient cycling, soil formation and retention, carbon sequestration, pollination, water quality and regulation), landscape amenities and cultural services (agroforestry tourism, walking, educational and scientific knowledge, spiritual value, meditation, etc.). Further, it is stated that the four major functions of an agroforestry system are a) provisional services; b) regulating services; c) cultural services and d) supporting services. There is an incongruity in explaining multifunctional agroforestry as a concept as stated earlier. Since, all agroforestry systems and agroforestry practices provide more than one output and it provides both commodities (tangible) as well as non-commodity (intangible) outputs. Overall, agroforestry caters to the futuristic requirements of climate resilient food production and also meeting industrial requirements perse.

Keywords: Agroforestry, Cropping, Retention, Pollination, Sequestration.

Abstract No. 12

Nanotechnology used in the field of Information Technology at Molecular scale

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ABSTRACT

Nanotechnology is the engineering of functional system at the molecular scale. This system covers both current and concepts works that are more advances. Nanotechnology refers to the projected ability to construct items from the bottom up which using techniques and tools develop today to make complete high performance products. The work being developed today that caries the name ' Nanotechnology' in its traditional serves means building. Things from the bottom up witch with atomic precision. It will have significant impact on almost all industries and areas of society. It will offer better built, longer lasting, cleaner, safer and smarter products from frame, communications, medicine, transportation, agriculture and industries in general. Imagines an medical device that travels through human body to seek out and destroy small clusters of cancerous cells before they can spread.

Keywords: Nanotechnology, molecular levels, medical devices.

Abstract No. 13

Wetlands and their Fish Diversity in Davipatan Division of U.P. (India)

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ABSTRACT

'Life is water; water is life' i.e. water is indispensably important for sustenance of life. Many significant human civilisations and cultures had made their beginning near the water, including wetlands.Wetlands serve as potential reservoirs of water which also harbour coveted bioresources, which sustain animal life. Fish is a potential bioresource for nutrition and offer work places for people. The tarai region of U.P. has large number of natural water bodies in the form of taals, ponds, diches, lakes, reservoirs, dam, rivers, streams, small mountain river 'nallaha' of Shavilak region of Nepaland perennial wetlands (locally called Taal), seasonal floodplain wetlands and river-formed oxbow wetlands. These waterbodies broadly classified into two standing water or the "lentic" water; andthe running water or the "lotic"water. It simply means that the water does not flow. In addition to playing a pivotal role in providing nutrition and work places to the people, wetlands also play a significant role in flood management, in regulating biogeochemical cycles, and above all, perhaps, in the rehabilitation of the innumerable fish stocks. Shrinkage of water spread area of the wetlands, of late, seems to be a common ailmentwith them, thus, providing less water availability for the aquatic biota as well as the humanpopulation. This matter seems to be a common phenomenon almost throughout the country.

Keywords: Wetlands, habitat, fish diversity, Eutrophication.

Abstract No. 14

Fate and removal of microplastics from Industrial Wastewater

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ABSTRACT

Microplastics (MPs) as a predominant pollutant have turn into a huge trouble that destroy the environment. MPs gets transformed into an immense challenge, with the ability to bioaccumulate and ultimately disturbing human health, biodiversity, aquatic animals etc. MPs comprising various toxic organic chemicals, antibiotics, and heavy metals has adverse consequences on environment. The microplastic present in industrial wastewater needs to be treated with different method depending on its characterstics features. Conventional treatment systems for refinery wastewater showed inefficiency in addition to high operating cost, low biodegradability and toxicity. Advanced methods involves phase-changing processes, such as coagulation flocculation, flotation, and membrane processes. Membrane technologies namely ultrafiltration (UF), nanofiltration (NF), microfiltration (MF), and dynamic membranes can be most effective techniques for the eradication of MPs. Moreoover, hybrid membrane techniques like advanced oxidation processes (AOPs), membrane fouling, electrochemical processes, and adsorption processes can be integrated for improving the removal efficiency. Some studies have also emphasized the use of chemical or biological digestion, and even engineered removal using biodegradation and wet oxidation. The chapter includes the reactor design, working of several membrane-based filters and bioreactors to develop empirical, feasible, and sustainable membrane technologies. The main aim of this work is to elucidate alarming scenario of microplastic pollution in the industrial wastewater and key approaches that can be used to deal with this.

Keywords: Industrial wastewater, Membrane processes, Advance methods, Membrane filteration.

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Abstract No. 15

Importance of Planning and Management for production of quality tropical Tasar silkworm seed

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ABSTRACT

To meet the demand of tropical tasar silk production in the country it is very much essential to produce quality silkworm seed, which is always a challenging task. Tropical tasar silkworm (Antheraea mylitta Drury) is a wild insect and has its own dictation during its various stages of life cycle. During rearing the insect completes its larval life in the natural condition but after cocoon formation, the harvested cocoons are kept inside the grainage house under artificial conditions for further processing to obtain disease free quality silkworm seed production. Around 51.00 lakh Dfls of tasar silkworm seed in the country annually to cater the needs of tribal farmers. During the process of tropical tasar seed production activities due to long term preservation (5-7 months) of seed cocoons during pupal diapauses a number of constrains viz., loss of live stock (25 to 50 %), unsynchronized emergence (10 to 20%), low matting aptitude in captivity (40-70%), longer oviposition period (6-7 days), low oviposition potency (100-150 eggs per moth), low egg recovery (50-65 %), low hatching percentage (40-60%), high disease level (>5.0%), etc., were faced by the seed production units and these were becoming the major hindrances for successful grainage performance. In the present paper the importance of planning and management during the production of quality tropical tasar silkworm seed production are discussed.

Keywords: Tasar, silkworm, seed, quality, planning, management.

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Abstract No. 16

Ecofriendly Management of Ants in Tasar silkworm rearing

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ABSTRACT

The rearing of tasar silkworm, Antheraea mylitta (Drury) (Lepidoptera: Saturniidae), is practiced in outdoor conditions by the tribal communities on the forest-grown trees Terminalia arjuna (Roxb.) Wight & Arn and T. tomentosa (Roxb.) Wight & Arn under natural conditions. The traditional rearing of A. mylitta under forest conditions for a longer period expose the larvae to various abiotic factors including temperature and humidity, heavy rains, storms, making these larvae vulnerable to pests, predators and diseases. Insect pests and birds are the major threats to healthy cocoon production in the wild rearing of A. mylitta. Among insects ants causes a considerable loss to the sericulture industry. It attacks silkworm larvae preferably on early instars (first, second and third instar) during resting and moulting on trees and cut them into pieces and carry them to their nests while the eggs, pupae and adult are primarily affected at grainage. Oecophylla smaragdina, Myrmicaria sp. and Monomorium sp. known to be extremely predacious to many lepidopteran larvae and numerous other species of insects. For the management of ants an innovative method used here we used burned engine oil only instead of the combination of grease and methyl parathion. In this method, the use of any insecticides is avoided due to its toxicity to A. mylitta larvae. This method is found effective to save the early instar larvae from the attack of ants up to 80-85 per cent.

Keywords: Tasar silkworm, eco-friendly, Ants, forest.

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Abstract No. 17

Contribution of basic seed multiplication and Training Center, Balaghat for Tasar seed sector in Madhya Pradesh

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ABSTRACT

Basic Seed Multiplication and Training Centre (BSMTC) established in the year 1983 under the aegis of Central Silk Board. The main objective of the center is to coordinate overall development in sericulture in the state of Madhya Pradesh and surroundings. The mandate of the unit includes- Production and supply of basic and nucleus seed (eggs of tasar silkworm) to farmers, state sericulture department and private entrepreneurs. Further, BSMTC Balaghat also plays a pivotal role in human resource development that includes imparting training to farmers, state officials and conducting various extension programs as well as facilitating transfer of technologies to grass root level. Since establishments the contribution of BSMTC Balaghat in overall development of sericulture has been propounding. To summarize the contribution, the overall seed production of BSMTC Balaghat has increased from 24 per cent to 60 per cent from 2001-02 to 2005-06 and 49 per cent from 2005-06 to 2015-16. Thereafter an increase of 9.8 percent has been observed from 2015-16 to 2021-22. During the odds of covid-19 pandemic in 2020-21, BSMTC Balaghat managed to survive the farmers and sustain the flow of tasar value chain in the state of MP and surroundings by producing and supplying the seeds. An overall steady progress in tasar sericulture has been ensured by BSMTC Balaghat by maintaining and supporting a continuous generation of revenue through sericulture activities, revenue generation from PC/dead cocoons, involving more farmers to uptake sericulture activities, supporting the concept of private grainuers by making the farmers skilled in Sericulture.

Keywords: Tasar silkworm, BSMTC, cocoons, eggs, DFLs.

Abstract No. 18

Theoretical Chemistry in designing of new compounds (A Greener approach)

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ABSTRACT

It is a demand in the modern era of chemical sciences to develop and design new and useful compounds for the service of mankind without using methods which are traditional one. Some recent trends, in this regard, have been emerged and developed in the field of designing of compounds. These may include microwave synthesis, computer aided designing etc.. Out of these methods this presentation will focus on computer aided designing: these computational methods are less time consuming, involve less chances of error, helpful in control of pollution and may prove to be helpful in designing compounds with desired properties. This presentation includes introduction to: such computational methods, a little theory behind these methods, their applications and use of software/ s particularly use of software/s of semi-empirical methods in different studies on the basis of work done by our research group in related field.

Keywords: Computational Chemistry, Greener approach, semi- empirical methods.

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Abstract No. 19

Macrophytes and their role in remediation of Metal ions from Aquatic bodies of Bundelkhand Region of Uttar Pradesh, India

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ABSTRACT

The many-fold increase of population, growth of industries, urbanization, energy intensive life style, loss of forest cover, lack of environmental awareness, implementation of environmental rules and regulations as well as environment improvement plans, untreated effluent discharge from industries and municipalities, use of non-biodegradable pesticides/fungicides/ herbicides/insecticides, use of chemical fertilizers instead of organic manures, etc are causing the degradation of our life support system i.e. water. Currently, for cleaning the water resources, various techniques such as flocculation, sedimentation, carbon-absorption exchange etc. are available. However, the chemical and energy cost associated with these advanced techniques has been a serious constraint in adapting them in a developing country like India. In this context, a phytoremediation system which utilizes naturally occurring aquatic plants in waste water to absorb toxic contaminants could provide an inexpensive mean to indicate and remove toxic metals from polluted water bodies. Present work suggests that, phytoremediation has become an effective and affordable technological solution used to extract or remove pollutants from contaminated water bodies. This technology is environmental friendly and potentially cost-effective. Hence, native species of macrophytes like *Eichhornia crassipes*, *Pistia stratiotes*, *Vallisneria spiralis*, *Lemna* spp., *Chara* spp., *Ipomoea aquatica*, *Hydrilla verticillata* etc. and many more have been found efficient and may be recommended as phytoremediator species.

Keywords : Bundelkhand region, heavy metals, macrophytes, phytoremediation.

Abstract No. 20

Effects and possible mechanisms of fish exposure to common Organophosphates and Triazines

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ABSTRACT

Toxic effects on animals and people may result from pesticides' ability to bio accumulate and induce disruptions in the food chain. This study attempts to explain the current level of knowledge about the geographical distribution, bioaccumulation, and mechanism of action of commonly used pesticides, with an emphasis on organophosphate and triazine pesticides. Methods of accumulation and bio concentration of pesticides and their active residues in fish are discussed, as are the toxic mechanisms at play, such as biological redox activity, immune toxicity, neuroendocrine disorders, and cytotoxicity, which is manifested in oxidative stress, lysosomal and mitochondrial damage, inflammation, and apoptosis/autophagy. We also discuss possible research approaches to fill up the gaps in our knowledge of the toxicity and environmental risk assessment of organophosphate and triazine pesticides.

Keywords: Pesticides, Bioaccumulation, Autophagy, Organophosphate.

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Abstract No. 21

Intellectual Property Rights and its importance for Indians

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ABSTRACT

Intellectual Property refers to intellectual creativity of a creator. In contrast to physical property, intellectual property is an intangible asset of a person. Intellectual Property Rights (IPR) are the exclusive rights given to the creators to their creations. Common types of Intellectual Property Rights are patents, copyrights, trademarks, industrial deigns, geographical indications, trade secrets, layout designs for integrated circuits and even ideas. Intellectual property rights provide an incentive to the creator to develop his creation and to share it with other people for the development of the society. The basic aim of the IPRs is to help in meeting the challenges in the development like reducing poverty, stimulating economic growth, improving the health status by providing medicines to the poor, improving access to education and contributing the overall sustainable development. Though IPRs provide incentive to the author or the creator and lead to a competition in the field of invention but it is also an intellectual protectionism or a form of a temporary monopoly enforced by the state. Intellectual property (IP) pertains to any original creation of the human intellect such as artistic, literary, technical, or scientific creation. Intellectual property rights (IPR) refers to the legal rights given to the inventor or creator to protect his invention or creation for a certain period of time. Thus IPR, in this way aids the economic development of a country by promoting healthy competition and encouraging industrial development and economic growth. Present review furnishes a brief overview of IPR with special emphasis on pharmaceuticals.

Keywords: Intellectual property, rights ideas, inventions, protections, creativity.

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Abstract No. 22

Panax ginseng - A miracle herb

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ABSTRACT

As soon as human civilization had been originated, the need of human being also increases day by day in the direction of food, shelter, clothing and daily needed things. In all the daily needed things medicine is also an important part of human life and in medicine herbal medicine is on top because of its cost, safety purposes and eco-friendly nature. In the direction of herbal medicine a lot of improvements have been done. Now a day's so many works is going on with Panax ginseng. Panax ginseng is an annual herb belongs to family Araliaceae, is widely used as traditional oriental medicine and finds mention in ancient Chinese medical texts dating back to 2000-3000 B.C. In general term it is known as ginseng. In whole world Panax ginseng is of three kind's viz. Asiatic, Chinese and Korean. The study revealed that it is hepatoprotective, renoprotective, biochemical protective, haemato-protective, histo-chemical protective, histopathological protective and phase-II reaction protectant against mercuric chloride. It has mitigate and antioxidant activity against heavy metal (mercuric chloride). Considering all these facts, it is a miracle herbal medicine in the modern era.

Keywords: Herbal, Eco-friendly, Panax ginseng, Mercuric Chloride.

Abstract No. 23

Environmental Monitoring Using Butterflies

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ABSTRACT

India being a developing country is growing at a fast pace but in this run we have completely forgot our ecosystem. Our forests are getting thinner resulting in loss of habitat and biodiversity. Decrease in our green belts is causing a rise in air pollution. It also leads to decreased precipitation and changes in seasonal cycles. In our headlong race to achieve success and technological advancements we have over burdened the natural resources and ecosystem around us to a limit where the coming generations would be adversely affected due to lack of healthy environment. To conserve and restore our environment first of all we need to assess the impact of our actions on environment. To achieve this the most effective and natural way is the use of Bioindicators. Bioindicators are organisms that help us to access the quality of the environment. Their presence indicates good health of the environment and their decline in an area represents its poor environmental quality. There are number of bioindicators known to us but lately butterflies are recognized as a potential bioindicators because of their quick and sensitive response to Habitat and climatic changes. Apart from being bioindicators butterflies play several important roles in ecosystem. They act as potential pollinators; being phytophagous they play important role in food web and help in transfer of energy fixed by plants to the next trophic level. Butterflies also migrate from one place to another carrying with them pollens from different plants while foraging on flowers for nectar. This results in genetic variations in plants. By conserving butterflies we can continuously monitor the quality of our ecosystem. Butterfly richness in an area indicates its good health. A healthy ecosystem shows that we are developing sustainably.

Keywords: Bioindicators, Butterfly, Conservation, Ecosystem, Environmental health, Phytophagous.

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Abstract No. 24

Butachlor Impact on Soil Enzymatic Activity

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ABSTRACT

The use of agrochemicals such as insecticides and herbicides appears indispensable for preventing crop yield losses caused by agricultural pests. Weeds compete with crops for nutrients, serve as hosts for insect pests, and, under certain situations, are more harmful to crops than insect pests and cause substantial output losses. Butachlor is applied to control grassy weeds, specific sedges, and even some macrophytes in aquatic systems. Butachlor is used extensively in rice cultivation not only in India, but throughout the entire Asian continent, that the farming community considers it a standard component of rice cultivation. But it dissipates into the field water, and even weeks after application, some amount of herbicide can be detected in drainage water, contaminating rivers and lakes. Soil enzymes are essential for maintaining soil functioning. Use of pesticides, especially at high concentrations, can substantially and permanently disrupt the biological activity of soil. Dehydrogenase activity was inhibited by the pesticide treatment in non-flooded circumstances and stimulated under flooded ones. While, butachlor concentrations promoted phosphatase activity under both circumstances. Butachlorcauses significant modifications in activity of soil enzymes, which raises concerns about the effects it will have on the environment of the soil.

Keywords: Butachlor, soil enzymes, dehydrogenase, phosphatase.

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Abstract No. 25

In silico gene sequence study and Phylogenetic analysis of Parasitic Helminthes in Piscean hosts

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ABSTRACT

The DNA barcoding helps to resolve ambiguities in morphological, taxometric, and histological identification of parasitic helminths (trematodes, cestodes, and nematodes) through this recent, rapid, and reliable (R3) technique even by non–specialists. The present investigation was designed to explore the biodiversity of parasitic helminths in the Piscean hosts from the Gangetic riverine ecosystem and Central West coast marine ecosystem, India through the modern methodology. During the investigation, the data was retrieved from the online available free resources including the NCBI (National Center for Biotechnology Information) nucleic acid database or Gene bank and DNA Data Bank of Japan (DDBJ). The retrieved gene sequences in FASTA format by data mining were blasted with available gene sequences of parasitic helminths of the present investigation through *in silico* approaches using advanced software MEGA (Molecular Evolutionary Genetic Analysis), BioEdit. The similarity in the compared sequences was analyzed through a computer-based program, BLAST (Basic Local Alignment Search Tool), and a phylogenetic tree or dendrogram was created through Clustal-W, ML-NJ (Maximum Likelihood Neighbor Joining), K2P (Kimura-2 Parameter). The significance of differences and similarity correlates were assessed on the basis of bootstrap values, clad distance, and branch length concerning the open root system. During the study, DNA barcoding of the conserved gene sequences of coi, 18S rDNA, ITS-1, and ITS-2 of parasitic helminths was found to be appropriate in resolving the ambiguities of morphological identifications by comparing through the freely available biological DNA databases. The genetic distance and divergence recorded in phylogenetic cladograms, neighbor-joining tree, bootstrap values, and GC contents depicted by the individual sequences of helminths with respect to closely related species or genera were appreciable and revealed more accurate interpretation for the placement of helminths fauna at appropriate taxonomic status.

Keywords: Parasitic helminthes, Gene sequence, Molecular phylogeny, DNA barcoding, Piscean hosts.

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Abstract No. 26

Recent Green Technological Advances for Environmental Safety and A Sustainable Future

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ABSTRACT

The widespread issues with ecological deterioration have compelled the community to reconsider its methods of growth but also to establish the idea of sustainable development. Moreover, achieving sustainable growth depends on innovative ecologically friendly technology. The environmental aspect of sustainable development emphasizes a thoughtful approach to the biosphere, the employment of "green" technology as the foundation for inventive expansion, and the defense of future generations' rights to a healthy environment. The majority of wealthy nations are already putting a lot of effort into developing "green" technologies including geothermal, hydroelectric, wind, and solar energy. The evolution of innovation, green technology efforts, and their influence on various industries have all been covered in the current research. Environmental technology supports the use of renewable energy sources, biodegradable materials, recycling, and sustainable building practices. Green technology includes a wide range of devices that enable individuals to be more environmentally conscious in their everyday lives. The development of "green" energy could serve as a major driver of economic growth of the national economy without affecting the environment in light of the rising demands of countries for energy resources. As a result, this technology has always produced superior outcomes and has been applied in really effective manners in the future. This paper gives concise information on different aspects of environmental safety aiming at sustainable development.

Keywords: Green Technology, Sustainable Development, Energy Efficiency, Environment Protection, Green Product.

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Abstract No. 27

Feeding profile of Indian major carps (*Labeo rohita* and *Cirrhinus mrigala*) from Belan river in India

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ABSTRACT

The feeding profile of *Labeo rohita* and *Cirrhinus mrigala* in Belan River in India was studied to understand their feeding habits and dietary preferences. In order to the study of food and feeding habit of Indian Major Carp, *Labeo rohita* and *Cirrhinus mrigala* samples were collected from the commercial catches during 2021 December to February 2022 at two different sites of Belan River at Prayagraj, Uttar Pradesh. The analysis of gut content of the *Labeo rohita* revealed that phytoplankton formed main food item, next important food item is plant items and remaining of unidentified items. While the analysis of the gut content of *Cirrhinus mrigala* revealed that the decay matter formed the main food item, phytoplankton formed the second important food item, zooplankton formed the next important food item, then plant material and then insects. It was also seen that there were considerable variations in the percentage of different food items in the gut of both fishes. The results showed that both *Labeo rohita* and *Cirrhinus mrigala* are omnivorous and feed on a variety of food items including algae, detritus, insects, and small fish. However, *Labeo rohita* had a higher preference for plant- based food items, while *Cirrhinus mrigala* showed a greater inclination towards animal-based food items. The study also highlighted the importance of environmental factors such as water temperature and flow rate in determining the feeding habits of these fish.

Keywords: *Labeo rohita*, *Cirrhinus mrigala*, Food and feeding, omnivorous, Prayagraj.

Abstract No. 28

Mushroom As a Potential Diet Reduced the Risk of Pregnancy-Induced Hypertension

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ABSTRACT

Pregnancy-induced hypertension (PIH) is a disease characterized by high blood pressure detected after 20 weeks of pregnancy, affecting approximately 10% of pregnant women worldwide. Effective strategies are imperatively needed to prevent and treat PIH. Subjects were required to consume 100 g mushroom daily from pre-pregnancy to the 20th week of gestation. The gestational hypertension and related primary and secondary outcomes of the mushroom diet (MD) group and placebo group were investigated to compare the intervention of a MD on the PIH and preeclampsia-associated maternal and child health conditions. A total of 7 and 6 subjects belonging to the MD group and placebo group were included for the analysis, respectively. Compared to the placebo, the MD significantly reduced the incidence of gestational hypertension (P = 0.023), preeclampsia (P = 0.014), gestational weight gain (P = 0.017), excessive gestational weight gain (P = 0.032) and gestational diabetes (P = 0.047). Stratified analysis showed that the MD lowered the risk of PIH for overweighed women (P = 0.036), along with the percentage of macrosomia (P = 0.007). An MD could serve as a preventative strategy for lowering the risk of PIH and could control new-born birthweight while reducing comorbidities including gestational weight gain, diabetes etc. Mushroom diet could serve as a preventative strategy for lowering the risk of pregnancy-induced hypertension and may control new-born birth weight while reducing comorbidities including gestational weight gain, diabetes etc.

Keywords: Mushroom, Mushroom Died, Pregnancy Risk, PIH.

Abstract No. 29

Seasonal Influence of Physicochemical Parameters of Bhagda Taal, a Wetland of Balrampur, U.P.

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ABSTRACT

Wetlands are combination of aquatic and terrestrial conditions, which are very important and productive aquatic ecosystems in the world that receives water from various sources like rivers, streams, precipitation and land over flow, infiltration from surface and sub-surface, streams and also from underground water as well. Zooplanktonic analysis is very essential because they act as natural, food for variety of aquatic animals including fishes. Zooplankton community constitutes an important component in the faunal composition of the water body and also an efficient as well as sensitive bio-indicator of pollution. The influence of physicochemical parameters of Bhagda Taal, wetland, on its Zooplankton composition and abundance were investigated for two years between April, 2021 to March, 2023. During study period, total of 35 species of zooplankton were identified. At all the stations of the wetland Rotifera recorded the highest percentage followed by Cladocera, Protozoa, Copepoda and Ostracoda, respectively. In terms of density, total zooplanktonic density during first year was increased in the second year. During study period, Copepoda constituted the largest group of the zooplankton population density, this was followed by Cladocera and Rotifera group. The wetland is receiving domestic discharge leading to large amounts of nutrient inputs and high amount of phosphate and nitrate in the water body indicates that water is eutrophic in nature.

Keywords: Zooplankton, Bhagda taal, wetland.

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Abstract No. 30

Impact of Distillery Effluent on Biochemical Parameters of *Mystus vittatus*

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ABSTRACT

Industrial effluent affects biologically active molecules such as carbohydrates, proteins and lipids. Carbohydrate, protein and lipid metabolism of fishes are disturbed under the condition of toxic stress and are known to cause increase or decrease in the biochemical constituents of the tissues. In the present study, the biochemical effects caused to *Mystus vittatus* on exposure to distillery effluent. The per cent change recorded in the tissues of experimental fish was found to be in the order of liver > kidney > muscle > gill; muscle > gill > kidney > liver; liver > kidney > muscle > gill in carbohydrate, protein and lipid respectively. The depletion in the metabolites indicated the fact that the whole metabolic pool of the fish gets disturbed/ altered under the stress caused by distillery waste water. Further, the change in the biochemical profile indicates their rapid utilization to provide excess energy to cellular biochemical process in order to cope with the stressed condition.

Keywords: *Mystus vittatus*, biochemical parameters, carbohydrate, protein, lipid.

Abstract No. 31

Effect of Nickel sulphate on the morphology of RBC in *Clarias batrachus*

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ABSTRACT

Nickel is a ubiquitous trace metal in soil, water, air, and the biosphere. It is discharged in the environment from both natural and man-made sources. It is released during its mining by industries that convert scrap or new nickel into alloys or nickel compounds or by industries that use nickel and its compounds. Toxicological effect of nickel sulphate on the morphology of RBC of *Clarias batrachus* was investigated in the present study. The healthy test fish were exposed to sublethal concentrations (0.4 mg/L, 0.8 mg/L and1.2 mg/L) of the nickel sulphate in the laboratory condition for a period of 30 days. The treated fish were compared with the control group for the histological alterations in the morphology of RBC. The study revealed marked changes like anisocytosis, poikilocytosis, double nuclei and rouleaux formation in the RBC of nickel treated fish.

Keywords: *Clarias batrachus*, histopathology, Nickel, blood smear.

Abstract No. 32

Nutritional analysis of cultivable wild edible mushrooms mycoflora from holy Ayodhya (U.P.), India

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ABSTRACT

Ayodhya is situated at the bank of river Saryu and has vast diversity of macrofungi especially mushroom mycoflora. Some of which are excellently edible and cultivable. Characterization and nutritional composition of four selected cultivable naturally growing mushrooms viz. *Agaricus bisporus*, *Pleurotus ostriatus*, *Volvariella volvacea* and *Calocybe indica* from different site of study area (Ayodhya) were evaluated. Macroscopic and microscopic characteristics expressed with natural photographs. The proximate analysis of nutritional values was done by encountered complete mushroom sample were shade dried, powdered and processed. The macronutrients profiles revealed that the cultivable wild edible mushroom contains protein, carbohydrate, lipid, fiber and ash content ranged from 31.44 – 36.43%, 29.15% - 52.10%, 2.36 – 3.77%, 12.52 – 24.31% and 1.26 – 12.97% respectively on dry weight basis. Current study confirms that the selected cultivable wild edible mushrooms are healthy and good source of food and major alternative source of protein. It also exposed that the used of varieties of mushroom in their cultivational practice as well as diet to decrease malnutrition and increase socioeconomic values.

Keywords: Mushroom, Nutritional Analysis, *Agaricus bisporus*, *Pleurotus ostriatus*.

Abstract No. 33

Why Environmental Education is important in the present scenario

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ABSTRACT

Education is the most powerful and dominant influence to change the world, perhaps many other researchers around the world have argued, so we must educate ourselves about the importance of environmental education to change the world for the better. Before going deep into environmental education, we will understand the concept behind it all together. When we talk about education, it is very important to understand why environmental education is important? Let us remind ourselves that we are responsible for how we shape our environment, because only raising awareness of the harmful effects of environmental damage will help us create a safe future for our children. If we are educated about environmental issues, we must recognize our responsibility as global citizens and make positive changes on our planet earth that will help us use our resources more efficiently and without harming the environment. Environmental education helps the students understand how their decisions and actions affect the environment, gain the knowledge and skills needed to solve complex environmental problems and ways we can work to ensure that our environment is healthy and sustainable in the future.

Keywords: Environmental education, Environmental Health, Sustainable future.

Abstract No. 34

Effect of physico-chemical pollution of river Deorania on the metabolic activities of predatory fish, *Channa punctatus* at district Bareilly (U.P.), India

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ABSTRACT

The present study was aimed at assessing the value of different physico-chemical parameters of two sites (i.e. the site A is a clear and considered as control site while the site B is loaded with heavy pollution so it considered as experimental site) during December 2005-2006 and 2020-2021 in extreme months of different seasons. The analysis showed that the discharge of major part of domestic wastes of Bareilly city, city refuge, debris, animal and human excreta and industrial effluents, enhanced the pollution load at site B and thereby exhanced the abnormal metabolic activities of fish. Whereas at clear site A the metabolic activities of fish was normal. In the present study the following parameters i.e. temperature, colour, transparency, dissolved oxygen (DO), free CO2, biochemical oxygen demand (BOD), salinity, total dissolved solids (TDS), level of glycogen, reducing sugar level, total protein level, level of amino acids, activity of alkaline phosphatases and acid phosphatases enzymes were analysed.

Keywords : Pollution, industrial effluents, Deorania river, BOD, TSS, TDS.

Abstract No. 35

Examining Change in Citrus Fruits Production in Haryana

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ABSTRACT

Citrus fruits are rich in multiple nutrients such as Vitamin C, Fibre etc. and they also increase productivity and yields high net profits for the farmers. Kinnow, Orange, Lime etc. are some of the main Citrus Fruits. Cultivating fruits is also a great method of crop Diversification and a means of Sustainable livelihood for the farmers. A research analysis of the Change in the area and Production of Citrus fruits in Haryana in the present years and over the years is of importance to the farmers and the agricultural economy of the Haryana as Agriculture contributes to a major extent to the GDP of Haryana. The district wise total area in hectares under citrus fruits is taken for the years 2020-21 and from 1990 to 2021. Total production of Citrus Fruits in MT is also taken into account for the year 2020-21 for the analysis. The total area in hectares and the total production is taken from the Department of Horticulture, Haryana and the Statistical abstract of Haryana. The district wise map and graph showing both the area and Production of Citrus Fruits cultivation in Haryana helps us clearly understand these parameters. Even though the Change has happened but the Change is not consistent in all the districts of Haryana. Certain districts show less change in the cultivation of Citrus Fruits as compared to the others. Districts showing less growth need more incentives to promote the growth of Citrus fruits. The research can be used to promote crop diversification and the growth in the production of fruits and vegetables in Haryana. It can also be used by the government to formulate necessary policy measures related to Citrus Fruits in Haryana.

Keywords: Crop Diversification, Citrus Fruits, Area, Production.

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Abstract No. 36

Inhibitory effects of exogenous Glucose on the growth and heterocyst formation in *Nostoc calcicola* treated with systemic fungicide- 2-(methoxy carbonyl benzimidazole)

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ABSTRACT

Bengard (2-methoxy carbonyl benzimidazole) is one of the systemic fungicides preferably used in paddy field for controlling the fungal diseases at 100-300 g/ml doses. Remarkably reversion by exogenous glucose of its inhibitory effects on the growth and heterocyst formation ability in *Nastoc calcicola* was observed in N_2, NO_3-, NO_2^- and NH_4^+ medium similar to the effect of $HgCl_2$ and Emission – 6, as observed by earlier worker (Prasad, et. al., 1982; 1984). But in contrast to other Cyanobacteria the heterocyst formation was found to be observed in N_2 and NH_4^+ by supplementation of Bengard up to 200 g/ml concentration. Whereas identical to the control cultures no heterocyst was formed in NO_3 and or NO_2- medium whether or not supplementation with glucose. Active nitrate reductase (Nitrate metabolizing enzyme) and glutamine synthetase (NO_2^-& NH_4^+ metabolizing enzyme) are known to suppress the formation of heterocyst in N_2 earlier investigation apparently show that while nitrate and nitrite reductase are in fact enough to hand on the other suppress heterocyst formation. The primary NH_4+ assimilating functions are not strong and capable enough to suppress the formation of heterocyst in NH_4^+ medium. This may be ascribed to inhibitor of glutamine synthesize in the NH_4^+ medium as a result of fungicide action. That is only the nitrogen fixing apparatus, i.e. heterocysts come up in fungicide supplemented N_2 medium just like the control cultures, i.e. fungicide supplementation, but the nitrogenase enzyme is localized inside those heterocysts does not function up to the level due to the fungicide affected control system which is most probably glutamine synthetase and/ or its derivatives. This is one of the plausible explanations for the observed growth inhibition in N_2 and NH_4^+ media. In spite of this fungicide, one thing is clearer from the results that the toxicity is caused by the highest concentrations of the fungicide (150-200 g/ml), was of a higher magnitude in N_2 or NH_4^+ medium than in NO_3^- or NO_2^- medium. This strongly suggests that the fungicide primary site of action was glutamine synthetase or its some derivatives.

Keywords: *Nostoc calcicola*, Fungicides, Heterocyst, Bengard, Inhibitory effect.

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Abstract No. 37

Deltamethrin Induced changes in ultimobranchial and prolactin endocrine gland with ionic balance in *H. fossilis.*

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ABSTRACT

The impact of deltamethrin on the freshwater fish *Heteropneustes fossilis* exposed to two sub lethal concentrations (0.09 mg/L and 0.18 mg/L) for 30 days on the activities of endocrine glands viz. corpuscles of stannous, prolactin gland, and ultimobranchial gland. Changes in the structure of endocrine gland lead significant variation in inorganic ions concentration Na+, K+ ,Ca2+ and Mg2+ in brain, kidney, gills and intestine of H. *fossilis.* Ca2+/ Mg2+ ATPase activities significantly decreased in all vital tissues viz., brain, gills, intestine and kidney at both the exposure for 30 days in H. *fossilis.* The ultimobranchial gland exhibited mild histological changes at lower concentration of deltamethrin. At higher concentration decrease in staining response of the cytoplasm, decrease in nuclear volume and degeneration in the cells were noticed. In corpuscle of stannous sever changes observed with increase in granulation, vacuolation and degeneration of cell membrane noticed at higher concentration of deltamethrin. In prolactin cells sever changes observed at both the concentration for 30 days exposure. Significant changes observed in ionic balance in vital tissues brain > gill> intestine > kidney of the fish exposed to higher concentration of deltamethrin. Significant changes noticed in the vital organs viz. Ionic levels in brain, gills, kidney and intestine. During exposure of deltamethrin endocrine glands, brain and intestine found to be most affected tissues of the fish.

Keywords: Endocrine gland, deltamethrin, lethal concentration, fish.

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Abstract No. 38

Role of Gamma radiation in inducing cytomorphological variability in *Lepidium sativum* Linn.

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ABSTRACT

In plant breeding programs, one of the oldest methods is mutation breeding. Currently, mutation breeding has become popular among the breeders and scientists offered the possibilities of improving various qualitative and quantitative traits. Artificially induced mutations can be created by physical mutagens, such as X-rays, gamma rays, and neutrons, and chemical mutagens, such as ethyl methane sulfonate (EMS), in plant mutation breeding. The purpose of the study is to explore the mutagenic effects of ionizing radiation (Physical mutagen) on Garden cress (*Lepidium sativum* Linn.) to create a genetic variability with most influential mutagen that is gamma radiation. The seeds were irradiated at four different doses of gamma rays that is 150Gy, 300Gy, 450Gy and 600Gy respectively along with control ones to study the effect of mutagen on Lepidium sativum Linn. The remarkably effect can be seen on the parameters such as germination percentage, survival percentage and root length due to the exposure of seeds to the gamma radiation and found 600Gy as a LD 50 dose. The Total Abnormality percentage found to be increased with the increasing dose. The various cytological abnormalities were also observed in irradiated seed including stickiness, laggard formation, scattering, bridge formation, loop formation etc. and the frequency of stickiness was highly observable in meiotic slides.

Keywords: Cytological abnormalities, Radiation, Lepidium, Breeding.

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Abstract No. 39

Finger Millet Farming Systems in Tribal Communities of Koraput Contributes to Food Security of Odisha: A Case Studies of Koraput

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ABSTRACT

The challenge to food production posed by climate aberrations has been seeing increased attention to reviving millet-based farming systems in India. Millets are climate-resilient and nutritionally equivalent or superior to most other cereals, making them a favourable crop to address the prevalence of malnutrition. Finger millet (Eleusine coracana) as consider as one of the neglected underutilized food crop in India as well as in the world well known till today despite this finger millet is one of the major crops cultivated in the undulating terrains of Koraput district of Odisha, India. It is consumed as a staple food and drink by the local tribal communities. However, over the years there has been rapid decline both in area and in production of the crop leading to reduced grain availability for household consumption. With a view to increase the productivity, the study assessed the effects of possible combinations of crop varieties and agronomic practices that can be customized for finger millet production system in Koraput over 7 years (2015–2022) and again government of Odisha promote for next five years through millet mission programme to aiming to increase the production and consumption in various form. During my survey I found 33 varieties of local finger millets which is differenciated through grain size, colour, texture, data of maturation, panicle architecture etc. Beyond the traditional varieties some improved varieties like KMR 204, VL Mandua 352, Bhairabi, Chilika and GPU-67,68 showing 30 – 50% more yield with minimal improve package of praticies like application of fertilizer, foliar spray line transplanting, System of millet intensification. The present study focused on crop productivity, profitability and labour requirement along with consumption. On-farm trial with improved variety 'KMR 204' with line transplanting and recommended fertilizer management in 2020–2021 showed 62% higher grain yield and profit than that of farmers' practice average (2857.5 kg ha- 1 and `23,730 ha- 1, in Chilika respectively) and was counted as a recommended cultivation package. Both total and women's labour requirement per ha was lower under recommended practice. During the field experiment and data collection from the farming communities survey in 2022 February studies from Machara village of Koraput Block and Chendia Jhiliguda, Heruguda of Kundura Block of Koraput District revealed improved household income and consumption in both the lines.

Keywords: Finger millet, Line transplanting, Tribal communities, Food securities.

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Abstract No. 40

Study of the contribution of Green Revolution in the Development of Rural Areas of India

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ABSTRACT

The term Green Revolution refers to the increase in the production of food grains. The Green Revolution was one of the most influential revolutions on the Indian agricultural economy in the 1960s. This was related to the enormous increase in food production, especially wheat and rice. He term Green Revolution was first used by an American agronomist Norman Borlaug. The World knows Norman Borlaug as the father of the Green Revolution. In India, MS Swaminathan introduced the Green Revolution. Green Revolution refers to a situation where food production increased rapidly due to the use of advanced agricultural technology such as high- yielding varieties of seeds, advanced machinery, pesticides, etc. According to the data released by Word Bank, th percentage of rural population in the total population in India in 2021 is 64.61. Agriculture sector is the main source of income of the rural people. A large amount of rural population is earning money through agriculture. Therefore, the main part of the discussion of this paper is to explain the contribution of green revolution in the development of rural areas of India. The brief meaning of green revolution, impact of green revolution on production of food grains and condition of farmers and contribution of green revolution in rural economy etc. are some of the main topics of this research paper. In the present era, the focus of the global economy is on sustainable development. Therefore, it is also necessary to analyse the impact of green revolution on rural development and environmental sustainability. Therefore, the relationship between green revolution and sustainable development of rural areas will also be discussed in this paper.

Keywords : Green Revolution, Rural Development, Sustainable Development, Indian Economy.

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Abstract No. 41

Phytoremediation Property of *Artemisia annua* L.- A promising plant for Revegetation of Polluted Soil

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ABSTRACT

Toxic metal contamination of soil is a major environmental hazard. Chemical methods for heavy metal's (HMs) decontamination such as heat treatment, electroremediation, soil replacement, precipitation and chemical leaching are generally very costly and not be applicable to agricultural lands. However, many strategies are being used to restore polluted environments. Among these, phytoremediation is a promising method based on the use of hyper-accumulator plant species that can tolerate high amounts of toxic HMs present in the environment/soil. The plants of *A. annua* get exposed to the different concentration of As and Cd i.e. 50, 100 and 150 and 200 µmol/L. *A. annua* was found to survive well even at high As-concentration and have hyperaccumulating capacity. Many heavy metal stresses including both As and Cd have been reported to induce biosynthesis of artemisinin, As was accumulated in the roots of inoculated plants. Furthermore, flavonoids, artemisinin and overall biomass were significantly increased in inoculated-stressed plants. These stress condition increased superoxide dismutase and peroxidase activity. Due to the stress condition plants pollen mother cells showing different types of abnormalities like stickiness, multivalent, disturbed polarity and scattering etc.

Keywords : *Artemisia annua* L., Arsenic, Cadmium, Heavy Metal, Phytoremediation.

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Abstract No. 42

Rate of population expansion of a hematophagous pigeon louse, *Hohorstiella lata* (Insecta: Phthiraptera: Amblycera) under *in vivo* conditions

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ABSTRACT

Phthirapteran ectoparasites or lice cause considerable loss to the poultry industry by affecting the health and productivity of host birds. They cause intense irritation in the skin, stimulating rubbing, licking or itching leading to restlessness, reduced weight gain and production of their host birds. So, an attempt was made to record the rate of population expansion of a hematophagous amblyceran 'Pigeon Louse', *Hohorstiella lata* under in vivo conditions. The experiment was performed by releasing a known number of healthier-looking adult lice on 12 similar aged un-infested pigeons. Single pair of infested pigeons was subjected to delousing after every 15 days to count the population increase fortnightly up to 14 weeks. The louse load so obtained was separated stage-wise and sex-wise. It was found that initial inoculums of 05 lice could increase up to 40 lice per bird in summer months and 20 lice per bird in winter months, in a span of a total of 90 days. Thus, by applying the 'back-roll method' the doubling time of the population of *Hohorstiella lata* appears to be 30 days in summer and while 45 days in winter. The population index increased during summer while declining in winter suggesting that summer months were found to be more favorable for the population expansion of lice. However, in contrast to other species studied so far, *Hohorstiella lata* appears to be a slow breeder, which may be the reason for its low prevalence and intensity on Indian pigeons.

Keywords: Amblycera, *Hohorstiella lata*, Phthiraptera, Pigeon Louse, Population expansion.

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Abstract No. 43

Conservation, domestication and cultivation of *Flacourtia indica*: A valuable underutilized fruit species to ensure nutritional security and livelihood of forest dwellers

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ABSTRACT

Despite of substantial increasing of food production in the country over the past two decades, people are still poorly nourished. Many of them suffer from malnutrition and its related diseases. Widening food basket diversity is imperative to ensure food and nutritional security particularly for the rural poor. Tropical and subtropical regions of the world have a wide range of fruit that are neglected or underutilised seem to provide hope for improvement. Wild fruit also offer vital insurance against malnutrition or famine during the seasonal food shortage and/or emergencies such as drought, floods and wars. Underutilized or minor fruits are not as widely grown, and their consumption and trade tend to be more restricted, geographically and quantitatively, than those of the major fruits. Flacourtia indica is an indigenous wild fruit tree species used by tribal peoples in India for its edible fruits and medicinal significance. This fruit tree species is yet to be cultivated on farmland and all fruit harvest is still from the wild. There has been a wide diversity of Flacourtia indica tree species in the wild, but no or limited efforts for selection and conservation have been undertaken. Due to the indiscriminate felling of forest trees with conversion of forest land for agriculture, industries and housing, the species became one of the vulnerable species in the region. Under the circumstances, efforts are necessary for the preservation and propagation of the species for genetic conservation and fruit production. The information about the artificial regeneration of the species through seed germination or vegetative propagation is very scarce and therefore extensive research in this aspect is needed. Lack of knowledge, inadequate grasp of taxonomy, biology, and multiplication of these species are limiting their use and improvement. An All India Coordinated Research Project on Wild Fruit Species, funded by CAMPA (MoEFCC), is currently underway at the various ICFRE institutes, including ICFRE-Tropical Forest Research Institute in Jabalpur (Madhya Pradesh), with the goal of resolving these issues. The project aims to use and advance technology in the following areas: identification of seed sources, ethno botanical survey, identification of CPTs, seed and vegetative propagation, handling and storage of seeds, and value addition of selected wild edible tree species. Promoting and domesticating this wild fruit species not only will improve nutritional status and improve livelihood of the local communities but also protect them from losing from the wild. Besides nutritional; social security, hitherto untapped export potential, underutilized fruit crops have a vast potential for production of value-added products, with high therapeutic, medicinal values and antioxidant properties. Outcome of these on-going studies will undoubtedly aid in the proliferation of these vulnerable wild edible tree species in the future.

Keywords : Vulnerable, wild edible tree species, vegetative propagation.

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Abstract No. 44

Strategies for the removal of toxic heavy metal contaminants from water

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ABSTRACT

The heavy metals have been widely and continuously generated through various human activities over the past two decades. It is often categorized as a group of metals and semimetals (metalloids) that have been associated with potential toxicity or ecotoxicity to humans. The toxic metals accumulate slowly in our body and creates several metabolic disorders, memory loss and cancer. High exposure to heavy metals in human beings occurs through industrial activities in the last century. The most common heavy metals that cause human poisonings include chromium, Mercury, cadmium, arsenic, and lead. Removal of toxic metals and their prevention before their discharge into an open water body in wastewater treatment is a serious and difficult challenge. As a consequence, the method of adsorption is a convenient, cost-ineffective, rapid process. Adsorption is done by using various adsorbents like commercially available and bio adsorbents. However, bio adsorbent has more efficacy to remove the heavy metals from wastewater and it is the most effective and cheap option for waste water treatment than commercial adsorbent.

Keywords: Heavy metals, Toxic metals, Bioadsorbent, Commercial Adsorbent, Carcinogen.

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Abstract No. 45

Detection of nucleic acid of *Anaplasma marginale* in the tick vector

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ABSTRACT

Anaplasmosis is an economically important tick-borne disease in the bovine caused by the rickettsial agent, *Anaplasma marginale*. The detection of this pathogen in the vertebrate host is mainly by the microscopic investigation of the Giemsa's stained blood smear under oil immersion objective lens, and can also be done by the immunological and molecular assays. The only reliable method for the detection of these pathogens in the invertebarte host is nuclic acid amplificatin assays. In the current study, PCR based amplification assays were used to detect the major surface protein 5 (msp5) gene of *A. marginale* in the Rhipicephalus (Boophilus) microplus. For this, 5-10 engorged adult female ticks were collected from the body of infected bovine. Following morphological identification ticks were reared in the laboratory as per standard protocol in the BOD incubator for oviposition. The recovered egg mass was further incubated for hatching into the larvae. Ten days old starved/ oviposited ticks were bisected at the mid portion of the body into anterior and posterior half. The whole and bisected ticks' along with eggs and larvae were subjected for whole genomic DNA isolation, and 1:10 diluted DNA of 15 groups of R. (B.) microplustick was used in the PCR to amplify the 457 bp or 576 bp of msp5 DNA using species specific primers. The amplicon size of 457 bp or 576 bp was detected in the positive PCR reaction in the ethidium bromide stained 1% agarose gel. The PCR detected the rickettsia in the whole and bisected body (anterior and posterior half) of the starved adult and eggs of R. (B.) microplus, suggesting transovarian way of transmission, but not of trans- stadial transmission. Thus, the msp5 gene: primers combination is useful for the specific detection of *A. marginale* in the invertebrate host in the PCR.

Keywords: Anaplasmosis, blood smear, BOD incubator, msp5 gene.

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Abstract No. 46

Eco-friendly transformation of Agro-industrial waste into value added bioproducts: A sustainable Approach

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ABSTRACT

The agricultural sector generates a remarkable amount of waste, the majority of which is not productively used and is becoming a danger to health as well as environment. Utilization of such lignocellulosic agro-industrial waste has been of great concern during the last decade as a low-cost and sustainable substrate for fermentation processes. The types of products, yields, and promising applications depend mainly on the chemical composition of the agro- industrial waste. These materials conversion from laboratory scale to an industrial level is now a days a promising approach suggesting green technology. The present paper focuses on the transformation of one of the major agricultural waste of our region viz. is banana agrowaste for biosynthesis of protein rich biomass. The bioconversion of the agrowaste was accomplished by indigenous soil microflora from the waste generation area and protein rich biomass of Saccharomyces cerevisiae was produced from agricultural waste by employing submerged fermentation process in shake flask. Different cultural conditions like effect of glucose supplementation, pH of the growth medium, incubation temperature and inoculum size were optimized to improve the yield of protein rich biomass. Maximum biomass yield was obtained after 96 h of incubation at 30 o C with 5 % of inoculum size (v/v). Among various nitrogen sources used, peptone was selected a suitable nitrogen source for the optimum growth of Saccharomyces cerevisiae. The results obtained were very promising suggesting possible utilization and transformation of the agro-industrial waste into value added bioproduct.

Keywords: Agro-industrial waste, ecofriendly, value added products, green technology.

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Abstract No. 47

Ubiquity of Microplastics and Implications for Human Health

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ABSTRACT

Microplastics are the plastic particles less than 5mm in size including the nanosized particles of less than 1µm. Since their discovery in 2004 they have been found everywhere on earth, from depths of oceans to tops of mountains; in soil, water and air. Although their presence has been well documented in sea food, they have also been detected in everyday consumables like salt, bottled drinking water, soft drinks and within the flesh of fruits and vegetables. Considering this ubiquity of microplastics, human exposure is inevitable; they get into the human system through ingestion, inhalation and dermal contact. Toxicity of microplastics could be due to the particle effect, additives used during their production and the environmental pollutants adsorbed by them. The present study provides an overview of the effects and implications of these hazardous chemicals on human health. Another way by which they pose threat to human health is by acting as vectors of disease causing microbes. The research on microplastic toxicity is still limited. Most of the studies have been done to investigate the biological effects of microplastics on model organisms or in vitro studies and results are extrapolated to likely impacts on human health. This review summarizes the current knowledge of microplastic accumulation in different parts of human body and consequent pathologic conditions and also highlights the knowledge gaps.

Keywords: Microplastics, nanosized particles, pathologic conditions.

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Abstract No. 48

Explicating the Role of Mutation Breeding in Chia (*Salvia hispanica* L.) to foster food security

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ABSTRACT

UV-B radiation is an effective tool in plant treatment because it stimulates the production of secondary metabolites such as flavonoids, phenols, and carotenoids. These compounds play important roles in plant growth, development, and defense against environmental stressors. The current experimental work on studying aim to genetic variation in *Salvia hispanica* L. commonly known as the chia plant the effect of UV-B exposure on the seedling and meiotic observation for this different time duration 0 10, 20, 30, 40, and 50 with recovery periods of one hour at room temperature were planted in a triplicate manner. Morphological observation at a lower dose of UV-B at 20 minutes there is an increase in leaf area and internodal length of the stem, some color variants of leaf such as xantha, semmixantha, Albina, and semialbina were also observed. Exposure of UV-B exposure resulted in various chromosomal aberrations, precocious, etc. Chromosomal stickiness was a profound abnormality most encountered at 40 min to UV-B exposure. Biochemical observation found that at a high exposure to UV-B there decrease in photosynthetic pigments but at a lower dose there is an increase in chlorophyll was observed. Shorter exposure to UV-B certain beneficial traits in the chia plant observed viz., an increase in plant height trend, leaf area, enlargement in inflorescence axis, and seed size of the plant. The results of the study showed that UV-B exposure had a significant impact on the growth and development of *Salvia hispanica* seedlings.

Keywords: Biochemical observation, morphological observation, *Salvia hispanica.*

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Abstract No. 49

Smart Environment Monitoring Systems using Sensors: A review

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ABSTRACT

Environment monitoring is one of the applications of the wireless sensor network. Air quality, water pollution, and radiation pollution are major causes for the changes in the environment. Suitable monitoring is necessary so that the world can achieve sustainable growth, by maintaining a healthy society. In recent years, with the advances in the Internet of Things (IoT) and the development of modern sensors, environmental monitoring has been turned into a smart environment monitoring (SEM) system. The contributions and research studies on SEM, that involve monitoring of air quality, water quality, radiation pollution, and agriculture systems are discussed in this research.

Keywords: Smart environment monitoring (SEM), Sensors, Internet of Things (IoT).

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Abstract No. 50

Spiders and their ecological significance

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ABSTRACT

Spiders are arachnid arthropods (Arachnida: Araneae) and form a diverse group of invertebrate predators in tropical ecosystems and are known to be sensitive indicators of environmental changes. All spiders are carnivores and are amongst the most omnipresent and numerous in both agricultural and natural ecosystems. A hectare of tropical forest may have about 300 to 800 species of spiders, often occurring as many as over 50,000 individuals per acre in vegetated areas. Also, the spiders feed on insect pests and kill as much as 50 times the number of prey they actually consume. The global spider community, accounting for over 50 thousand species, is estimated to consume 400-800 million tons of prey (mostly insects) per year (about the total human mass on the earth) regulating insect populations that could otherwise wipe out our crops. The spider community comprise several different ecological guilds (a group of species utilizing the same resource in similar ways) such as they are either of orb web weavers (trap the prey in silken circular or hexagonal web), stalkers or jumping spiders (active hunters), ground runners (chase the prey on the ground), foliage runners (on the foliage of the crops), space builders (irregular web to trap preys), ambushers (grasp unsuspecting insects that come within contact), etc. Thus, the spider community has several tactics to capture prey depending upon the species, habitats and kind of food. Despite their beneficial role, unfortunately, spiders are also the most feared and maligned of nature's smaller animals due to the infamy of a few poisonous species such as the black widow spiders with more potent venom, than poisonous snakes. Spiders are an exceedingly interesting subject for study, for some of the most remarkable exhibitions of intensive powers presented by them. The most characteristic feature of the life of spiders is the use of its silk, the spider has hit upon the device of turning its food into silk and using it as a net to catch more food. The spiders operate within the balance of nature and their role in nature's plan is beneficial to the man who must live on what he grows. Spiders are found almost everywhere in enormous numbers, the natural enemies of insects, keep hard of agricultural pests as well as destructive and disease-carrying insects, under positive control on account of their vast numbers and they destroy a far greater number of insects than birds or other insectivores.

Keywords: Arachnida, Spider, Diversity, Insects, Ecological significance.

Abstract No. 51

Millets - Shree Ann Present Super Food

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ABSTRACT

Millets are a group of nutritionally rich, drought tolerant and mostly grown in the arid and semi-arid regions of the country .They are small seeded Climate resilient grasses of Poaceae family, constitute as important source of food and fodder for millions of resource poor farmers and play a vital role in ecological and economic security of India. Millets known as "Coarse – cereals" or "Cereals of the Poor" are referred as Shree Ann. Millets have been an integral part of our diet for the centuries, in addition to a plethora of health benefits; they are also good for the environment with low water and input requirements, most suitable for rainfed conditions. They are also called as Climate smart crop as it requires lesser amount of water with a wide range of climate conditions and minimum vulnerability to environmental stress. Millets being gluten free with low glycemic index and rich in protein , vitamins, minerals and fibres , makes them ideal for people with celiac disease or diabetes and are therefore considered superior over traditional wheat, rice and maize. With recent advancements in biological tools millets have been rapidly gaining importance as research materials. Millets are mere solution to several environmental , agricultural and financial problems . With the aim to create awareness and increase production and consumption of millets, United Nations at the behest of Government of India has declared the year 2023 as International year of Millets. The Krishi Vigyan Kendra's (KVK's) an innovative institution designed and managed by the ICAR are working for the past five decades, as a knowledge resource centre at district level and playing a vital role in transfer of technology through assessment and demonstration for its application and capacity development. Demonstration units at KVKs serve the purpose of disseminating the technologies, scientific cultivation of millets, imparting technical knowledge to the farmers of the district.

Keywords: Millets, Cereals, Super food, Wheat, Rice, Gluten, Environment.

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Abstract No. 52

Ethics related with Environment

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ABSTRACT

Moral principles define the responsibility of a particular person towards the environment. These principles, the environmental ethics establish the ethical relationship between human beings and the natural environment. The resources on earth are limited and belong to all the species that exist in nature. Though humans have right to draw their requirements from the environment but certainly not to the extent that degrades the environment and harms other species and living beings. Humans have apparently more responsibility to minimize their anthropogenic activities and to save the earth. Because human beings are deriving all the benefits from nature, they should take moral practical responsibility and proper care for the maintenance of ecological balance and preservation of biodiversity in all its forms. The existing environmental ethics seem imperfect and insufficient to meet the current situation hence humans have to rethink about effective environmental ethics.

Keywords: Environmental ethics, anthropogenic activities, healthy environment.

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Abstract No. 53

Coastal wetlands of India: Problems and strategies for management and conservation

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ABSTRACT

Wetlands are the assets of the country due to their productive ecosystem which is rich in diverse resources of economic importance. They are pollution filters helping to sequester carbon, control floods, prevent erosion, recharge water and are also site of variety of flora and fauna. India has seventy five wetlands of international importance covering an area of 13,26,677 ha and are considered to be Ramsar sites as per recent the data. Eleven wetlands have been added into the list in the seventy fifth year of India's Independence to enhance and focus on their conservation. There is constant threat to the sensitive ecosystem of wetlands due to natural disasters, climate change, anthropogenic activities, urbanisation, deforestation etc. The extremely important natural coastal wetlands of India accounts for 24.27% of the total wetlands which include mangroves, estuaries, lagoons, marshes etc. The largest and important lowlying coastal wetland of India and Asia is Sunderbans, which is a house of large stretch of mangroves and is facing extreme challenges for its conservation due to multiple factors. The long coastline of India is badly exploited as a result of its dense population and is prone to stress due to human interventions, economic activities, climate change, improper waste and sewage disposal, expanding tourism, encroachments, coastline erosion, land submergence etc. They damage its ecology and biodiversity, specially the corals, mangroves and its endemic species. The present paper focuses on the different types of problems faced by east and west coast wetlands of India and highlights the major steps and strategies essential for its management and conservation.

Keywords: Conservation, coastline erosion, expanding tourism.

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Abstract No. 54

Socio-economic impacts of solar energy technologies for sustainable green energy

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ABSTRACT

Solar energy technologies have the potential to bring about significant socio-economic impacts, contributing to sustainable green energy solutions. The solar energy sector has been a significant driver of job creation. As solar energy adoption increases, there is a growing demand for skilled workers in the manufacturing, installation, operation, and maintenance of solar panels and other related equipment. This can stimulate local economies by creating job opportunities, reducing unemployment rates, and enhancing the standard of living for communities. Solar energy can contribute to economic growth by diversifying energy sources and reducing dependence on fossil fuels. This can improve energy security, reduce energy costs, and stimulate economic development. Moreover, solar energy can enable access to electricity in remote and underserved areas, providing opportunities for economic activities such as small-scale enterprises, education, and healthcare services. Solar energy can provide access to electricity in areas with limited or no access to grid-based electricity. This can have significant socio-economic impacts, particularly in developing countries, by improving the quality of life, enhancing educational opportunities, enabling communication, and supporting economic activities. Solar energy can also provide reliable and affordable electricity for essential services such as healthcare facilities, schools, and community centres, improving their operational capabilities. Solar energy technologies can bring about significant socio-economic impacts by creating jobs, promoting economic growth, improving access to energy, protecting the environment, fostering innovation, empowering communities, and enhancing energy affordability. As the world seeks to transition to a sustainable green energy future, solar energy technologies can play a vital role in promoting socio-economic development while addressing pressing environmental challenges.

Keywords: Solar energy, Socio-economic, Sustainable, Renewable energy.

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Abstract No. 55

Potential role of exogenous H_2O_2 and NO in Cd stress toxicity alleviation in Cyanobacteria

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ABSTRACT

Nitric oxide (NO), a plant gasotransmitter, is a potentially active and key biological defense signaling molecule. Likewise, hydrogen peroxide (H_2O_2), a redox signaling molecule, is a strategic partner of NO. In the present study, it is proven that these signaling molecules can show defensive strategies in higher plants as well as in cyanobacteria. As N 2 fixing and economically important cyanobacteria are the most important components of paddy fields but cadmium (Cd) contamination is a serious issue for growing cyanobacteria. In this study, it is observed that at some specific concentrations, SNP (a donor of NO; 10µM) and H_2O_2 (1µM) can successfully reduce the Cd (6µM) toxicity from the cells of cyanobacteria. The defensive responses of these two signaling molecules against Cd stress are interdependent. The present study showed positive crosstalk between NO and H_2O_2 to acquire Cd stress tolerance in cyanobacteria. The reduced contents of exopolysaccharide, endogenous NO, and enzymatic antioxidants due to Cd toxicity were found to increase significantly after the exogenous application of SNP and H_2O_2, and thereafter cyanobacterial calls flourish much better after releasing the toxic level of Cd. However, inhibition of NO hindered the internal mechanism of H_2O_2, which reduced its potential against Cd stress. In conclusion, current findings demonstrated positive crosstalk between NO and H_2O_2 during metal toxicity alleviation in cyanobacteria.

Keywords: Cadmium, Cyanobacteria, Enzymatic antioxidants, Hydrogen peroxide, Nitric oxide.

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Abstract No. 56

Agrochemical toxicity and fish fauna

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ABSTRACT

Agrochemicals are a group of chemicals that control the population of agricultural pests. Pesticides, fungicides, herbicides, insecticides, weedicides fertilizers and soil conditioners are collectively called agrochemicals. When agriculture pests attach to the source of food plants, they damage plants and ultimately decrease crop yield. To protect the crop, the farmer can use pesticides. Still, these pesticides seep and go inside the groundwater and enter the food chain which leads to bioaccumulation and harms aquatic animals like fish and humans also. Effects of pesticides depend upon the amount, rate, application technology, power of solubility, area covered lethal and sub-lethal effects etc. Indiscriminate use of pesticides can lead to harmful effects on aquatic life. Fish serve as an important bio-indicator for aquatic contamination as they receive the full impact of habitat over a more extended period. Fish are rich sources of protein and lipids and are very important for humans. Therefore the protection of the aquatic environment is very necessary and it is possible with the judicial and rationalized application of pesticides. This study is focus on how pesticides affect the fish fauna.

Keywords: Agrochemical, Fish fauna, pesticides, weedicides.

Abstract No. 57

Impact of climate change on macroeconomic variables: An analysis of G20 countries

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ABSTRACT

The average global temperature has been increasing unprecedentedly in the last 50 years. Temperature and precipitation are the climatic variables that help in the observation of dynamic changes in the macroeconomic variables. This paper finds that rising temperature trends and peculiar precipitation have uneven effects on macroeconomic variables like labour productivity, inflation rate, real GDP per capita, income per capita, government debt, and government spending. Our study focuses on G20 countries, a set of developed and developing nations that have global impacts. The group of twenty (G20) represents around 85% of the worldwide GDP, over 75% of the international trade, and about two-thirds of the world population. Our statistical analysis used a panel data group of G20 countries from 1961 through 2018. We find that consistent increases in temperature and non-seasonal weather shocks and precipitation adversely affect the output growth per capita. Thus, our analysis suggests that a persistent rise in average global temperature, which will be more than Paris-agreement suggested limit of temperature increase, will reduce real GDP per capita by around 14 % by the end of 2100.

Keywords: Climate change, G20, Government expenditure, Inflation, Real GDP.

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Abstract No. 58

Nematode Problems in Agricultural Crops and Eco-friendly Management Strategies

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ABSTRACT

Plant-Parasitic Nematodes belonging to the Phylum Nematoda are unsegmented, bilaterally symmetrical roundworms and usually microscopic in size. They are obligate parasites which feed mainly on plant roots with common above ground symptoms of stunting, yellowing, wilting and yield losses and below ground root malformation due to direct feeding damage. In general, nematode bodies taper toward both head and tail, but females of some species may be pear, lemon or kidney-shaped. Large number of plant parasitic nematodes like Root-knot nematode (*Meloidogyne* spp.), Reniform nematode (*Rotylenchulus reniformis*), cyst nematode (*Heterodera* spp.), lesion (*Pratylenchus penetrans*), stunt (*Tylenchorhynchus* spp.), Lance (*Hoplolaimus* spp.) etc. are reported. They cause severe losses to economically important crops like vegetables, cereals, pulses, oilseeds, fruit crops, etc. Sasser and Freckman (1987) have indicated an annual crop loss due to phytonematodes on worldwide basis to the tune of $100 billion. The degree of damage caused by nematodes depends upon population density of nematodes, environmental conditions such as soil fertility, moisture and also presence of other microorganisms i.e., fungi, bacteria and viruses. However, Farmer's are not so aware of the damage caused by these nematodes in their crop in field. But, excessive use of pesticides in agriculture has played havoc in agro-ecosystem by polluting water, food chains and causing emergence of pesticide resistance both in target and non- target pests. Hence, various management practices i.e., physical, chemical, cultural, biological, regulatory and IPM are under taken to minimize crop losses caused by nematodes. A number of potential fungal bioagents namely *Aspergillus niger*, *Trichoderma viride*, *Sepedonium maheswarium*, *Paecilomyces lilacinus*, *Aspergillus terreus*, etc. effective in controlling root-knot nematode population. The combination of toxic and egg-parasitic fungus have been found more effective in controlling root-knot nematode population under microplot and field conditions in case of vegetables. Use of Chopped Toxic plants leaves along with judicious use of nematicide in integrated nematode management is an ecofriendly, efficient and affordable method of nematode control. Moreover, integrated nematode management approaches by the use of fungal bioagents, judicious use of nematicide and neem cake against M. incognita in case of pea, okra, tomato, brinjal, cucurbits, mungbean, chickpea, etc carried out in IARI; other Farmers field of India. Hence, integration of various suitable strategies is an eco-friendly, economically viable and practically feasible approach for managing plant-parasitic nematodes in different crops and increasing crop yield.

Keywords: Plant-parasitic nematodes, nematicide, wilting.

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Abstract No. 59

Using GIS and Remote Sensing Techniques for Soil Erosion Risk Mapping at Arpa River Basin, India

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ABSTRACT

Soil erosion is a matter of serious concern. Soil erosion affects the fertility of agricultural land, water quality and human health. The main objective of this study is to estimate actual soil erosion risk using Revised Universal Soil Loss Equation (RUSLE) integrated with remote sensing and Geographic Information System (GIS) in the Arpa River Basin located in the central part of India. A total of six factor parameter maps were used in this study to generate soil erosion risk maps, namely rainfall erosivity factor ®, soil erodibility factor (K), slope length factor (L), slope steepness factor (S), crop and management factor (C), and conservation supporting practices factor (P). The final soil erosion risk area of research was categorized into five categories as very high soil erosion as rainfall risk area, high soil erosion risk area, moderate soil erosion risk area, low soil erosion risk area, and very low soil erosion risk areas. The final soil erosion risk map has been derived by the raster calculator indicate that the major portion of the study area comes under low soil erosion zone and only a small portion comes under high and very high soil erosion risk zone. slope length and slope steepness factor, soil erodibility factor followed by rainfall erosivity factor were found to be the main factors of soil erosion. The spatial temporal changes of the indices might help in tracking soil changes over time.

Keywords: Soil Erosion, Remote sensingand GIS, RUSLE, Arpa River Basin, Risk Mapping.

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Abstract No. 60

Study of adverse effects of environmental factors affecting the health of sport persons such as temperature, humidity, wind speed etc.

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ABSTRACT

While measuring environmental conditions during conducting fitness tests in the field, we should be aware of the effects of environmental and surface conditions and their effects (going indoors, change surface or direction), record and control for conditions. Here are some common environmental conditions that can affect a player's health. Environmental factors, such as temperature, humidity and wind, can present many hazards to athletes. Planning can reduce the risk. However climate change can strip an athlete of their health protections. They are: temperature, humidity and wind, can cause many obstacle to athletes. Planning can reduce the risk, though a climate change can put an athlete off guard if they are participating in outdoor events. 1 Temperature exchange, 2 Climate conditions, 3 Temperature, 4 Humidity, 5 Wind, 6 Rain, 7 Altitude, 8 Pollution, and 9 Guidelines for fluid intake International Olympic Committee (IOC) has adopted 'Environment' as the third pillar of the Olympic Movement, the other two being 'Sport' and 'Culture'. For, researcher believes that sport transcends the prevailing North-South discourse concerning global climate change governance. Neither the Global North nor the Global South have room to blame each other on this issue. It involves millions of participants and stakeholders around the world and its environmental impact is universal. Solutions will be presented on these points in the research paper.

Keywords: Environmental impact, hazards to athletes, sport transcends.

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Abstract No. 61

Alteration in water quality of River Narmada due to anthropogenic activities

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ABSTRACT

Anthropogenic activities are a major issue for society due to no proper disposal of the waste, no good method for treatment of the various discharge of industrial waste, aquaculture activities, domestic garbage as well sewage effluents. Though agricultural activities, road and dam making construction also affected the water quality of river Narmada. To assess the alteration in the river Narmada atvarious study sites, has selected for the study purpose for investigating different humans' activities and aquatic, ecosystem balance. In the present findings, the maximum concentration of turbidity, BOD, hardness, TDS and COD found in the Narmada River is much higher than the standard permissible limit, due to this concentration water colour, transparency and pH level badly fluctuate. Narmada River showing a vast variety of living ecosystem which is badly affected by anthropogenic activities at six, seven & eight sites. From this study, the surface water quality of the Narmada River side rural, semi urban and urban areas of Dindori, Kosamghat & Mandala City, are a great threat to Aqua life and ecosystem though some parameters may not in the deteriorate level. Present finding reflecting that the surrounding villages animal and agriculture areas are affected due to the fluctuate water qualities that could be a direct or indirect result of the discharge industrial waste and continue flow of untreated waste water.

Keywords: Water, River, physiochemical Parameter, toxicity, Anthropogenic activity.

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Abstract No. 62

Use of Small Indigenous Fresh water Fish species as ethno medicine in North East Region of India

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ABSTRACT

Small Indigenous freshwater fish species (SIFFS) is an important fish group of India comprising of around 450 species. Maximum diversity of SIFFS has been recorded from North East Region of India followed by Western Ghats & Central India The North East region of India is blessed with vast and varied freshwater resources and is recognised as a global hotspot for freshwater fish diversity . Small indigenous freshwater fish species (SIFFS) that are abundantly found in the natural water resources of the region, plays a significant role in nutritional and livelihood security of the ethnic population. Generally consumed as whole fish (along with their head, bones and viscera), these fishes are preferred for their unique taste and are in high demand as an easily available cheap source for essential nutrition. Some of these fish species are in use as ethno medicine and therapeutics for curing and prevent commonly occurring ailments/ diseases. Using these locally available small fish species, a good number of fish products are traditionally prepared by the ethnic communities and are taken not only as a source of their daily nutrition but also as therapeutics and preventive for many diseases and weaknesses. This paper highlights the importance of SIFFS as ethno medicine *vis* a *vis* need for conservation and propagation of SIFFS biodiversity for sustaining nutrition and livelihood of the ethnic population of the NE region of India.

Keywords: North East region of India, Ethnic population, small indigenous freshwater fish species, ethno medicine, therapeutics, ailments, conservation.

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Abstract No. 63

Production of Biochar and its application for Sustainable Agriculture Approach

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ABSTRACT

A novel and practical solution are needed to keep producing enough food to feed the world's expanding population as worldwide desertification and drought rise due to climate change. Agricultural soils have long utilized synthetic fertilizers to increase production, but some of these fertilizers leak into the environment and release greenhouse gases. (GHG). The use of biochar as a biomass derivative has effectively decreased the amount of greenhouse gases released into the environment from the soil. Biochar is presented as a cheap, accessible, and long-lasting resource created through an anaerobic process. The different types of materials can be used for the formation of biochar such as organic solid waste as wood, paper and animal dung (cattle and chicken), and agricultural crop waste, paper mill sludge and bio solids. Use of biochar in agricultural systems is one practicable selection that can improve natural rates of carbon sequestration in the soil, trim down farm as well as other wastes and can help in improving the soil quality. Different crop leftovers, which may come from red or black soil, can be used to make biochar. Biochar has been shown to improve soil quality, shield microorganisms from adverse environmental circumstances, and influence the activity of both the soil and microbial communities. It appears that using biochar as a soil amendment boosts soil nutrient density, water holding capacity, lowers the need for fertilizer, improves soil microbiology, and boosts crop yields. Utilizing biochar has numerous environmental advantages, economic advantages, and a possible role in carbon credit systems. As a complex organic compound, biochar's properties depend on the feedstock utilized and the production environment.

Keywords: Biochar, Green house gases, microbial community, water holding capacity.

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Abstract No. 64

Effect of natural ventilation system on *in vitro* shoot cultures of *Eclipta alba* L. Hassk

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ABSTRACT

Plant tissue culture is a technique which has been highly helpful in propagation of important medicinal plant. It has several advantages as it helps to overcome factors like plant sterility, seasonal constraints of plant growth, providing high-quality disease-free plantlets etc. which also aids in conserving species. The present study focuses on the effect of gaseous exchange on the *in-vitro* shoot cultures of *Eclipta alba* L. Hassk a commercially important plant used in various hair care products. There are various parameters that affect *in-vitro* culture growth, such as, temperature, photoperiod, humidity, gaseous mixture inside the vessel, volume of culture vessel, medium compositions, chlorophyll content etc. In the present experiment the culture vessels were capped which were imperforated with hole/s, and these were sealed with a combination of two types of membranes used in different combination by overlapping them in layers. The first membrane type was Ultipor N66 Nylon 6, 6 membranes (M) of 0.45µm pore size and the other was a micro-porous surgical tape backed by thin highly permeable non-woven paper of 50 to 110µm pore size with adhesive on one side. Thus the pore size of surgical tape was larger than the membrane (M), thus increasing the ventilation inside the culture vessel. A total of 6 type of seal modifications were used: a) NM – no hole & membrane (control), b) 1H 2L (1 hole with 2 layer of Microporous tape), c) 1H 3L (1 hole with 3 layer of Microporous tape), d) 1H WM (1 hole with 1 layer of membrane and 2 layer of Microporous tape), e) 2H WM (2 hole with 1 layer of membrane and 2 layer of Microporous tape) and f) 3H WM (3 hole with 1 layer of membrane and 2 layer of Microporous tape). Pore size decreased with every subsequent layering thus allowing less ventilation inside the culture vessel. The different cultivation system affected the growth and development of *Eclipta alba in-vitro* shoot growth. The type of seal significantly influenced gas exchange between the inner and outer environment of the culture vessel and consequently affected the growth parameter such as number of shoots, biomass and chlorophyll content. The number of shoots was highest in the combination of 1H 2L (highest pore sizes) and the shoots were healthy compared to other natural ventilation system (NVS). The biomass was also highest in the combination of 1H 2L. The chlorophyll amount increased as the pore size increased. So, the natural ventilation system with 1 hole with 2 layer of surgical tape was found to be efficient for obtaining healthy plantlets of the plant studied.

Keywords: *In vitro* shoot culture, *Eclipta alba*, ventilation system, medicinal value.

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Abstract No. 65

Are the economic benefits of eucalyptus overshadowing the Ecological concerns in marginal lands of Pudukkottai District of Tamilnadu?

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ABSTRACT

A study was conducted to analyze the Socio economic impact of eucalyptus cultivation in Pudukkottai district of Tamil Nadu. Eucalyptus globus and Eucalyptus hybrid were the most commonly cultivated species in the district. Survey was conducted among 120 farmers cultivating eucalyptus in their land. The study was conducted in Nilayapatti, Pulvayal and Nachandhupatti villages of Pudukkottai district. The sample size includes 20 commercial cultivators and 100 conventional cultivators. Structured questionnaire was administered to collect information for analyzing the cost of cultivation and economic analysis of eucalyptus cultivation, people's knowledge about environmental impacts of eucalyptus etc. Analytical tools like Cost of Cultivation, Net Present Worth (NPW) and Benefit Cost Ratio (BCR), Ordinary Least Square (OLS) and Logit Regression analysis were employed. The study concluded that eucalyptus cultivation was much suitable for marginal and barren lands. Most of the people were aware that eucalyptus cause environmental impact as it was a natural bio drainage crop and cause allelopathy effect on neighboring field plants with the release of secondary compounds but, it does not affect the mindset of the farmers to adopt eucalyptus cultivation in larger extent. Around 70 per cent of the respondents were into eucalyptus cultivation despite knowing the impacts only because of higher income, less maintenance and fast growth of the plant. From the study we obtained profitable cultivation with BCR ranging 4 to 6.

Keywords: Allelopathy, eucalyptus cultivation, barren lands.

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Abstract No. 66

A study on biochemical changes in the fresh water Edible bivalve mollusks *Lamellidens marginalis* exposed to the heavy metal toxicant Cadmium Chloride

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ABSTRACT

Cadmium (Cd), one of the twenty three heavy metal toxicants, is widely used in Ni-Cd batteries manufacture, metal and mining industry, dentistry etc. because of its non-corrosive nature. Cd is released in considerable amounts through industrial effluents into soil, surface and ground water systems. These excess amounts in addition to naturally occurring levels gradually build up to toxic levels causing damage to the biota of the aquatic ecosystem. It shows biomagnification and has greater half-life periods. Cd was found to interfere with many protein and carbohydrate metabolisms by inhibiting the enzymes involved in the processes. The present study evaluates toxicity of Cd and its impact on biochemical constituents like glycogen, proteins, lipid, cholesterol and ascorbic acid in the fresh water edible bivalve mollusks *Lamellidens marginalis* as Cd bioaccumulation can affect humans through biomagnification. Short term tests of acute toxicity were performed over a period of 96 hours using cadmium chloride. Levels of the five biochemical constituents viz., glycogen, proteins, lipid, cholesterol and ascorbic acid were determined by standard biochemical procedures in the five tissues i.e., mantle, gills, hepatopancreas, gonad a d foot of unexposed (Control) healthy bivalve and the bivalve exposed to 96-hr LC50 (Lethal) of the lethal dose for 7 days of exposure) of cadmium chloride. Results showed significant fall in all the biochemical constituents in all the tissues except glucose prompting to suggest that the fish cultured in the aquatic systems closer to the industrial locations would not have the expected nutritive value. The elevated levels of glucose are apparently indicative of the organism's response to the toxicant stress. Also, such fish when consumed as food lead to the deposition of the heavy metal in the soft tissues of the human body leading to exposure health effects.

Keywords: Toxicity, Heavy metal, CdCl, Biomagnification, *Lamellidens marginalis*.

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Abstract No. 67

A Report on the Diversity of Benthos and Venomous Snakes in Narmada Valley Jabalpur Region for Environment and Human Welfare

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ABSTRACT

The Narmada River is the fifth-largest river in India and flows fiercely west. River contamination is currently quickly increasing. Benthic macro invertebrates, which are those that dwell on or in a water body's river bed, are utilized as pollution indicators. Recently, this area has seen rapid industrialization, township development, etc. As a result, these places are vulnerable to habitat loss, which has led to the discovery of several deadly and non-poisonous snake species in the residential areas. Snake bite is a serious health risk that farmers and farm labourers frequently encounter that can be fatal. These issues are minimized by this investigation. The entire Narmada valley in the Jabalpur region was chosen as the study site for the sample collection. The present study was carried out from January 2018 to December 2020. Sampling of snakes was done as per the requirement of local people. Four study sites had been selected for the investigation of benthos were Bar gi dam, Gwarighat, Tilwaraghat and Bhedaghat. In present study total 81 species of various fauna have been recorded viz., Odonata 37 species (7 Families), Lepidoptera 25 Species (5 Families), Mollusca 13 Species (2 Class), Reptiles 06 species (2 families). Benthos play a crucial part in the food chain for maintaining the natural balance and assisting in the evaluation of water quality. This study will also assist people in recognizing venomous snakes such as the Common Krait, Spectacled Cobra, Russell's viper, and Saw-scaled Viper, which account for more than 80% of fatalities on the Indian Subcontinent. The environment and human wellbeing are at the centre of every benthos and reptile investigation.

Keywords: Diversity, Benthos, Venomous Snakes, Narmada Valley, Environment and Human Welfare.

Abstract No. 68

Faunal diversity of Panna National Park (M.P.) : An Overview

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ABSTRACT

All human efforts to save wild animals from extinction are referred to as wildlife conservation. It entails the safeguarding and wise management of wild species and their environments. Some species have become extinct due to natural causes, but human activities pose the greatest threat to wildlife. As a result, we have created the need for wildlife conservation. Human progress has been beneficial to our species throughout history, but the wild has suffered as a result. The development of sophisticated weapons, industrialization, urbanization, and an ever-increasing human population have all contributed to the decline of our once-rich wildlife resource. Man's progress is measured by hunting, deforestation, swamp draining, and river damming for irrigation and industry. These activities have drastically reduced our wildlife's natural habitats, and many species are now endangered or nearly extinct.

Keywords: Wild species, Conservation, deforestation, Natural habitats.

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Abstract No. 69

Systematic Studies and Status of Butterfly Fauna (Lepidoptera : Rhopalocera) of Bargi Dam Catchment area, Jabalpur (M.P.)

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ABSTRACT

Biodiversity, also known as biological diversity, refers to the variety of life on Earth and the natural patterns it creates. Insects account for more than half of the world's biodiversity and play critical roles in ecosystem function, contributing to ecosystem productivity and stability. Insects have always fascinated humans due to their vibrant colours, diversity, and economic importance. Butterflies are the most studied and popular group of insects. Because butterflies have short life cycles, they respond quickly to environmental changes. Many butterfly species are sensitive to fine-scale changes due to their limited dispersal ability, larval food plant specialization, and reliance on weather and climate. They pollinate flowers, eat a lot of weedy plants that their caterpillar eats, and provide food for other animals. Butterflies (Lepidoptera) are commonly seen flying high in man-made gardens or disturbed forests. The current data was collected during a one-year study in the Bargidam catchment area of Jabalpur as part of a larger study of biodiversity. The diversity of the butterfly community includes 48 species divided into 5 families and categories based on abundance and flight period of different seasons. This research aims to contribute to the restoration of biodiversity in the studied region as well as the development of management strategies to ensure the survival of butterflies and the ecosystem services they provide.

Keywords: Butterfly Fauna, Bargi Dam, Status, families.

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Abstract No. 70

An overview of the treatment and Control of Common fish diseases

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ABSTRACT

Similar to other animals, fish can also suffer from different diseases. All fish carry pathogens and parasites. Disease is a prime agent affecting fish mortality, especially when fish are young. Pathogens which can cause fish diseases comprise: viral infections, bacterial infections, fungal infections, protozoan infections, water mould infection, etc. Fish are also exposed from dif ferent environmental pollutants, including drugs and chemicals. The most common fish diseases, particularly in freshwater aquaria, include columnaris, gill disease, ick (ich), dropsy, tail and fin-rot, fungal infections, white spot disease, pop-eye, cloudy eye, swim bladder disease, lice and nematode worms infestation, water quality induced diseases, constipation, anorexia, chilodonella, ergasilus, tuberculosis, glugea, henneguya, hexamita, hole-in-the-head disease, injuries, leeches in aquaria, lymphocystis, marine velvet, and neon-tetra disease, etc. Antibiotics are frequently used to control fish diseases caused by bacteria, but there is an increasing risk of developing antibiotic resistant strains of bacteria. The non-specific immune functions such as bacteriolytic activity and leukocyte function of fish have been improved by some herbs. Plants have been used as traditional medicine since time immemorial to control bacterial, viral, fungal and other diseases.

Keywords: Fish, diseases, Environmental pollutants, pathogens, Traditional medicine.

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Abstract No. 71

An overview of the Biological Activity and Medicinal Applications of *Carica papaya*

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ABSTRACT

Medicinal plants are a natural gift that can help you live a disease-free, healthy life because they play an important role in health protection. Plants contain numerous secondary compounds that have long been used as animal drugs. Natural medicine is widely understood in today's cultures. Traditional medicine is founded on beliefs and practices that predated the advancement of "modern medicine" or "scientific drug therapy," and these beliefs and practices are part of our country's cultural heritage. Plant derivatives with medicinal properties have a wide range of pharmacological significance. The properties of papaya (*Carica papaya*) fruit and other plant parts are well known in traditional medicine and for food and nutritional values all over the world. In recent decades, significant progress has been made in terms of the biological activity and medicinal use of papaya; it is also regarded as a profitable nutraceutical natural product plant. The medicinal properties of *C. papaya* are discussed in this current review.

Keywords: *Carica papaya*, pharmacological, Traditional medicine, nutritional values.

Abstract No. 72

Therapeutic Benefits of Sinigrin: An Overview

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ABSTRACT

Sinigrin (allyl-glucosinolate or 2-propenyl-glucosinolate) is a natural aliphatic glucosinolate found in plants of the Brassicaceae family, such as broccoli and Brussels sprouts, as well as the seeds of Brassica nigra (mustard seeds). Mustard has been used by humans since ancient times for its culinary and medicinal properties. It has been thoroughly described and evaluated in traditional Ayurvedic texts. It was the first glucosinolate discovered and was discovered in mustard seeds around 200 years ago. It is also found in cabbage, Brussels sprouts, and broccoli. Sinigrin is hydrolyzed to allyl isothiocyanate by plant myrosinase and a number of Gram-positive intestinal flora, including Lactobacillus agilis and Streptomyces, Bacillus, and Staphylococcus spp. Studies conducted on the pharmacological activities of sinigrin have revealed anti-cancer, antibacterial, antifungal, antioxidant, anti-inflammatory, wound healing properties and biofumigation. Sinigrin is known as the precursor of the myrosinase–mediated breakdown product allyl isothiocyanate, which exerts various biological effects and also has a vital role in the prevention of cancer and DNA damage caused by carcinogens. Sinigrin is a major component of cruciferous vegetables such as cabbage, Brussels sprout, mustard greens and broccoli.

Keywords: Sinigrin, Therapeutic, medicinal properties, DNA damage.

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Abstract No. 73

Indigenous Knowledge of Antidiabetic Medicinal Plants

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ABSTRACT

Diabetes is a serious metabolic disorder and plenty of medical plants are used in traditional medicines to treat diabetes. Medicinal plants used to treat hypoglycemic or hyperglycemic conditions are of considerable interest for ethno-botanical community as they are recognized to contain valuable medicinal properties in different parts of the plant and numbers of plants have shown varying degree of hypoglycemic and anti-hyperglycemic activity. Hyperglycemic patients increase year by year throughout the world and 2nd leading cause of death after heart disease and cancer in many developed countries. Diabetes mellitus is a clinical condition characterized by increased blood glucose level (hyperglycemia) due to insufficient or inefficient insulin. An important feature of diabetes is that the body cells are starved of glucose despite its very high concentration around i.e., scarcity in plenty. Diabetes is a major cause of blindness, renal failure, amputation, heart attacks and stroke. Many plants have been used for the treatment of diabetes mellitus in Indian system of medicine and in other ancient systems of the world. Out of these only a few have been evaluated as per modern system of medicine. Plants have been used both in the prevention and cure of various diseases of humans and their pets. Since the plant products have less side effects, they have the potential as good hypoglycemic drugs. They may also provide clues for the development of new and better oral drugs for diabetes. With the advent of human civilization, many systems of therapy have been developed primarily based on plants.

Keywords: Medicinal Plants, Diabetes mellitus, ethno-botanical community.

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Abstract No. 74

Application of Munga (*Moringa oleifera*)

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ABSTRACT

The perennial tree *Moringa oleifera* L., a member of the Moringaceae family, is widely grown throughout many tropical countries and can flourish even in challenging environments. *M. oleifera*, sometimes referred to as the miracle tree, has long been used in traditional medicine. Several portions of *M. oleifera* are used to cure a variety of illnesses, including malnutrition, diabetes, blindness, anaemia, hypertension, stress, depression, arthritis, and kidney stones, without any known negative side effects, at doses that can be ingested. This plant also demonstrated the ability to support blood glucose control, cardiovascular system health, and cancer prevention while also regulating urinary tract and lactation in nursing mothers. The seed and leaves powder has water purification properties through flocculation. It also supplements the food in the human diet and in the fortification of livestock feed, especially in developing countries. So, M. oleifera properties have also been applied to cosmetic and byproducts industries due to the high nutritive and protective properties of its seed oil. According to the holistic or traditional medicine, *M. oleifera* has very relevant therapeutic properties and applications depending on the constitution, somatic and psychological needs of patients. It is usually referred as a natural product that can treat different physical and psychological health aspects, offering an energetic action and structural rebuilder of the body and promoting emotions of highly positive attitudes towards life.

Keywords: Moringaceae family, traditional medicine, therapeutic properties.

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Abstract No. 75

Zygoptera and Anisoptera (Odonata : Insecta) Near Johilla River at Umaria District (M.P.) : A Report

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ABSTRACT

Odonates are potential biocontrol agents for many invertebrates, and biodiversity conservation and protection is a national and international agenda that is responsible for the long-term development of a region or country. The first report of Odonates from the Johilla River in Umaria District has been investigated. During the study 35 species of Odonata Belonging to 06 families of 02 Suborder were observed. Out of 35 species recorded, 17 species belonged to family Libellulidae (48%) making it the most specious and dominant family. Second most abundant family was Coenagrionidae (29%) which consisted of 10 species. This was followed by family Lestidae 03 Species (08%), Aeshnidae and Gomphidae both with 2 species (6%) each, Platycnemidiae with 1 species (3%). The Shannon's Index of odonata H=3.210710732 and Simpson C=0.049064332 was determined. For the first time, a comprehensive catalogue of odonates recorded from the Umaria district's Johila river area is presented. More research is needed to examine sources and a much wider geographic area.

Keywords: Odonata, biocontrol agents, first report, Johila river.

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Abstract No. 76

Dung Beetle Fauna's Diversity and Distribution in the Bhedaghat Region of Jabalpur (M.P)

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ABSTRACT

Dung beetles are affected by a number of abiotic and biotic factors, including temperature, moisture content, soil pH, average rainfall, local flora and fauna, and most significantly, the type and availability of excretory materials for diet. They act as the environment's "Nature's Scavengers," assist in the cycling of nutrients, are essential to the maintenance of the grassland ecosystem, distribute seeds, and act as Bioindicators for tracking biodiversity loss and environmental deterioration. The order Coleoptera includes the dung beetles (scarabaeoid). One of the most taxonomically diverse beetle families among the coleopteran families, the Scarabaeidae, has a large global representation. Faunistic surveys were undertaken during July 2017- October 2018 and a total of 824 beetles representing 16 species of 10 genera and 03 subfamilies from various localities in and around the Bhedaghat region. Whereby the Scarabaeinae subfamily has a greater population than the others.

Keywords: Scarabaeoid, Faunistic Surveys, Biodiversity, Environmental deterioration.

Abstract No. 77

Ethnomedicinal Uses of Revival Herb (*Selaginella bryopteris*)

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ABSTRACT

Selaginella bryopteris is a Mythical herb, This plant known as Sanjeevani is a lithophyte With remarkable resurrection capabilities and medical properties. This plant is nature's wonder with a unique water stress tolerant capacity. This study is a Mini review of revival or resurrecting plant Selaginella bryopteris, a pteridophyte with lithophyte habitat, its distribution, characteristics, constituents and its ethnomedicinal uses. Most of the characters except few find this species close to the mythological 'Sanjeevani booti'. Further, its scope in the field of genetic engineering, pharmacology and medicines are also analyzed. More research is required to identify various other similar plants species with a potentiality to prepare drug formulations to fight chronic diseases and to develop engineered plant with drought tolerance capacity.

Keywords: *Selaginella bryopteris*, Medical properties, Ethnomedicinal uses.

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Abstract No. 78

The use of *Rauwolfia serpentina* in Hypertensive Patients

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ABSTRACT

The root of Sarpgandha is a species of flowering plant in the family Apocynaceae has been traditionally used in Ayurveda for many years to treat a variety of diseases that at first thought appear to bear little similarity to one another. These include insanity, epilepsy, insomnia, hysteria, eclampsia and hypertension. On reflection, however, these various diseases could have a common denominator if they were all relieved symptomatically by a sedative or a 'relaxing' drug such as Rauwolfia. In the fifty decade, its root gained popularity for its effect on hypertension. The alkaloid found in its root is attributed to anti hypertensive pharmacological action. Thus, initially serpine was isolated with an objective of predictable and better efficacy in the management of hypertension. Ayurveda believes in use of whole herb because of apparent benefits over the extract. The whole herb has many components which can : (1) Help in biotransformation into pharmacoactive forms (2) Enhance bioavailability (3) Reduce the possible side effects (4) Help in smooth excretion and (5) Prevent development of possible drug resistance. These hypothesis is proved to be true in case of Sarpagandha as Reserpine has reported many ADRs and also human population have developed drug resistance resulting in discontinuation of Reserpine in hypertension management whereas Sarpagandha root is still in wide use.

Keywords: Family Apocynaceae, Sarpgandha, hypertension, relaxing drug.

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Abstract No. 79

Narmada River Pollution and its Impact on the Human Health

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ABSTRACT

River pollution has been one of the main topics in the environmental issue of Narmada river side villages and urban area of Dindori district, This study was conducted to find out the pollution situation of Narmada river and the health problem of the surrounding residents. The results clearly determine that the water quality of Narmada river may not be in a position to sustain the aquatic life and not suitable for using domestic purpose. This is indicated by the very low dissolved oxygen (DO) levels and other measured parameters in the river. The maximum concentration of turbidity, BOD, hardness, TDS, and COD found in the Narmada river is much higher than the standard permissible limit. The study also provides evidence that local communities are suffering from a variety of health problems including skin, diarrhea, dysentery, respiratory illnesses, anemia and complications in childbirth. Yellow fever, cholera, dengue, malaria and other epidemic diseases are also available in this area. Furthermore, the people are suffering by the odor pollution and respiratory problems.

Keywords: Narmada River, Pollution, Impact, Human Health.

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Abstract No. 80

Preliminary Study on Spider Fauna (Arachnida: Araneae) of Jabalpur Division (Madhya Pradesh): A Survey Report

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ABSTRACT

Understanding the abundance, diversity and composition of species within an ecosystem remains a fundamental element of ecological research. The patterns of spatial and temporal variation in diversity that intrigued early naturalists continue to drive the interests of ecologists today. Measurement of biological diversity within a system allows for the discovery of new species and their distributions, for which only 15% have been formally described. It is this basic understanding of the species present within a system that allows us to ask more complex ecological questions. The present paper is based on the Preliminary Report on the spider fauna of Jabalpur Division, Madhya Pradesh, India. Faunistic surveys were undertaken during 2019-2021 and a total of 97 individuals Arachnida (Araneae) belonging to recorded 18 Species, 15 Genera under 08 families from various localities in and around the Jabalpur division of which the members of family *Araneidae* is outnumbering the other spider families. Shannon-Weiner diversity index of the study site is -2.643032269 showing high diversity which is inversely proportional to Simpson Index value that is 0.084281008.

Keywords: Spider Fauna, abundance, Composition, ecology, Faunistic survey.

Abstract No. 81

Role of Women and Tribal in Social Sustainability

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ABSTRACT

In tribal women communities the role of women is substantial and crucial. They constitute about half the total population but in tribal society women are more important than in other social group, because they work harder and the family economy and management depends on them. The women's environmental conservation and sustainable development are firmly on the global agenda. Women provide substances to the family and community by their judicious use and management of natural resources. While tribal women have more say in family decisions than their non – tribal counterparts, they also share more responsibility. Preparing food and providing for drinking water is solely their responsibility so they operate closely with the forests from where they get water, fuel and minor products including edible fruits, tubers, flowers, vegetables and berries.

Keywords: Sustainable development, environmental conservation, natural resources.

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Abstract No. 82

Comparative Study of Probiotics and its Role in Growth and Development of Silkworm Larva

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ABSTRACT

We are focusing on the Nutritive Quality Assessment of the Silk Worm .There are many factors that influence the economic growth of the production of silk, in which most important is the probiotics uptake by the silkworm to improve the quality and quantity of silk. Secondary whatever food given to the silkworm should be properly digested. So, the digestibility of the silkworm is necessarily to be improved. The nutritional properties of mulberry leave greatly influence larval growth and development and subsequent cocooning. In addition, nutritional supplements contain vitamins, amino acids, proteins and probiotics when added to larval nutrition and increase the nutritional efficiency and economic characteristics of silkworms. From 2010 to 2021 (last ten years) several researchers founded the probiotics like bio fit bacteria lactobacillus Saccharomyces were found to be increased the growth of Bombyx Mori. It is important to find out the concentration of search probiotics increase enhance the growth of silk production.

Keywords: *Saccharomyces cerevisiae*, Bombyx mori larval stage, Mulberry leaves.

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Abstract No. 83

Poisonous Plants and their Medicinal Values

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ABSTRACT

Medicinal plants have been used for centuries, and numerous cultures still rely on indigenous medicinal plants for their primary health care needs. Poisonous medicinal plants are used for various ailments such as Antidiabetic, Anticancer, Antibacterial, Antifungal, and Cytogenetic effect. According to WHO, over 80% of World Population in developing countries, they rely on traditional medicine. Most prevalent are from plant sources like herbs which they use for their primary healthcare need. In India, the traditional medicine is widely used to manage chronic diseases especially in aged persons. India is known as epicentre of traditional medicine also known as indigenous system of medicine such as; Siddha, Ayurveda, Unani and Homeopathy. All these types of indigenous system of medicine uses plant sources as their treatment option. In evidence of above knowledge, information concerning healthy , lethal and toxic plants has been core factor in determination of herbal drugs. Crude drug analysis is vital in ascertaining herbal drugs. This drives one to mark the poisonous and nonpoisonous plant for a constructive approach towards plant sources of medicines. Pharmacognostic analysis of plants has led to ideal drug developments, especially plant source drugs.

Keywords: Poisonous Plant, Medicinal Values, Pharmacognostic analysis, ailments.

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Abstract No. 84

Constraints in Rangeeni lac production on *Butea monosperma*

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ABSTRACT

Lac insect secretes commercially important resin lac. As a natural sustainable product it is composed of natural ingredients. It provides an ecofriendly option to synthetic polymers. Indian lac insect (Kerria lacca), a hemipteran is a phytophagous infesting tender twigs of more than 400 plant species belonging to various genera and families. Two strains of Lac insect is recognized in India on the basis of host plant specificity: Kusumi and Rangeeni. Rangeeni strain is characterized by non preference of kusum as its host. It has unequal duration of Bivoltine life cycle having two crops katki (Rainy) and Baisakhi (Winter) crop. *Butea monospermous* is one of the best host for Rangeeni strain, contributes major share in India's total lac production. In recent years Summer and Rainy crops of Rangeeni strain suffers a lot due to abiotic and biotic factors that leads to mortality of lac insect and decrease in lac production. The present review of the work is help to gather information about Rangeeni lac host pants and constraints in Rangeeni lac production.

Keywords: Lac insect, production, host plant, abiotic and biotic factors.

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Abstract No. 85

Bio-pesticides: Present and future

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ABSTRACT

Bio-pesticides are a rapidly growing field in the agricultural industry, offering a natural and environmentally friendly alternative to traditional chemical pesticides. They consist of living organisms, such as bacteria, fungi, viruses, and plant extracts that are used to control pests and diseases in crops, livestock, and aquaculture. This abstract presents an overview of the present and future of biopesticides. Presently, biopesticides are widely used in organic farming and integrated pest management systems, providing effective and sustainable pest control solutions. They have several advantages over chemical pesticides, such as low toxicity, biodegradability, and minimal impact on non-target organisms. Biopesticides are also effective against a broad range of pests and diseases, including those that have developed resistance to chemical pesticides. The future of biopesticides is promising, as technological advancements in biotechnology and microbiology are leading to the discovery of new and more potent strains of biocontrol agents. Biostimulants and plant growth-promoting rhizobacteria are also emer ging as promising biopesticides that enhance plant growth and increase resistance to pests and diseases. Furthermore, advances in formulation technologies and delivery systems are improving the efficacy and shelf-life of biopesticides. However, there are still challenges to be addressed for the widespread adoption of biopesticides, including the high cost of production, limited availability of products, and regulatory barriers. Nevertheless, the increasing demand for sustainable and environmentally friendly agriculture is expected to drive the growth of the biopesticide market in the coming years.

Keywords: Biopesticides, environmental friendly agriculture, sustainable agriculture.

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Abstract No. 86

Dietary and hormonal manipulations in advancing maturation for quality seed production of Indian cultured fishes with impact of climate changes on gamete output

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ABSTRACT

With the steadily growing importance of culture fisheries, the fish culturists should improve the technique necessary for securing basic requirement, the production of young ones (fry and fingerlings) for stocking. Hence, the artificial propagation technique needs constant refinement for obtaining quality fish seed at the desired times of the year. Recent advances in fish endocrinology have led to a better understanding of the hormonal factors involved in the control of gamete production, mode of their action and regulation of their secretion during different stages of reproductive cycle. Environmental stimuli like photoperiod and temperature are perceived by the brain which releases gonadotropin-releasing hormone (GnRH) that binds specifically to receptors in the pituitary gonadotrops and stimulates secretion of gonadotropic hormone (GtH- I, II). The recent identification of three GnRH (GnRH 1, GnRH 2 and GnRH 3), kissproteins, two kiss genes (kiss-1, kiss-2) and two kiss receptors (GPR54)- kiss 1r and kiss 2r as well as cytochrome P450 aromatase gene (CYP19) in brain and gonads (ovary and testis) have given better insight into mechanism of hormonal interactions in fish reproduction. Role of pheromones are also gaining importance in advanced phases of reproduction involving the synchronization of maturity, attraction of prospective mates, triggering spawning behaviour and release of gametes. Role of nutrition in brood stock management for quality seed production in fishes has been appreciated during the recent years. Success of induced breeding depends on proper gonadal maturation because fishes reared without adequate food supply do not show full maturity. Also, the breeding of females and males do not synchronize under improper rearing conditions. Modern fish industry is highly specialized exploring more and more possibilities to manipulate reproduction. In spite all the recent advances in reproductive physiology, we are still far behind to understand the basic mechanism (s) involved in process of fish propagation in nature. Knowledge on nutrition and reproductive endocrinology periodically refines the technology of production of quality gametes for the expansion of aquaculture.Climate change is one of the most critical global challenge of today.It may impact agriculture and fisheries. endanger food security, trigger higher sea level rise, lead to sea ice melting and glacier retreat, aggravate natural disasters such as floods, cyclones and droughts, accelerate the erosion of coastal zones, quicken species extinction and the spread of vector-borne diseases cause coral bleaching and decline in biodiversity.How the climate change affected India? Can governments and communities adapt to it? Both research and actions on the subject are at nascent stage. But recent studies throw some light on the subject.Impact of climate changes on the reproductive physiology and gamete output of commercially important fishes for sustainable fisheries have also been discussed.

Keywords: Fish reproduction, Hormones, Dietary manipulations, Multiple breeding.

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Abstract No. 87

Potential of indigenous strain of *Alternaria alternata* WHFC#03 for the management of exotic invasive alien weed of *Eichhornia crassipes*

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ABSTRACT

Water hyacinth (*Eichhornia crassipes*) is a very harmful aquatic weed, which is seen floating, submerged and emergent and creating problems and has spread over thousands of water bodies in India and is resulting in the death of several species of aquatic flora and fauna. This obnoxious weed spread by vegetative reproduction as their spreading capacity is very fast. Therefore, it needs to be eradicated as it is responsible for the deterioration of the quality of water in various water bodies. Extensive surveys have been conducted to find the most potential pathogen for the biological management of Water hyacinth. In this research paper, we have discussed the isolation and identification of fungi from infected water hyacinth. During the survey of different water bodies in Mahakousal region. It was observed that water hyacinth is associated with a variety of fungal disease such as root rot, die back, leaf spot. 30 fungal isolates belonging to different genera were isolated. After primary screening 05 fungal pathogens were selected for whole plant bioassay after the bioassay maximum infection was observed by Alternaria alternate WHFC#03 so it would be the best fungal candidate for biological management of water hyacinth. Weed pathogens may be where the greatest chance of developing commercial herbicides because they are derived from weed.

Keywords: Water hyacinth, Alternaria alternate, fungal pathogen.

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Abstract No. 88

Management of water hyacinth (*Eichhornia crassipes*) by distinct formulation with pathogenic fungi in Jabalpur

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ABSTRACT

Eichharnia crassipes (Martius) Solms: Laubach; Pontederiaceae, commonly known as water hyacinth, is a free-floating aquatic macrophyte. It has been reported as a problem in many tropical and subtropical regions of the world. In India itself it has infested more than 200,000 ha of water surface (Anonymous, 1979). For isolation of pathogenic species, infected parts were collected from Jabalpur region. Fifteen fungal were isolated from diseased water hyacinth plants. *Alternaria alternate* (FCWH#46), incited severe leaf spot and blight leading to the death of the test plant. The pathogenicity of the fungal isolates was determined by Koch Postulates. The most virulent species is *Alternaria alternata* (FCWH#46) was selected to standardize the physical and chemical conditions which support the optimum growth of fungus. The water hyacinth plants of different growth stage seedling, preflowering and flowering were sprayed with 4 basic concentrations $1.5 \times 10\,6$, $2.5 \times 10\,6$, $3.5 \times 10\,6$, $4.5 \times 10\,6$ spores/ml. Amongst various formulations in *in vitro* tests, it was found that maximum spore germination (86.4%) Tween-80, Tween-20, Vegetable oil and Sorbitol was used as an adjuvant (Greaves et al., 1998; Bower, 1982). Significant compatibility in terms of growth, sporulation and seedling mortality were also observed with *Alternaria alternata* (FCWH#46), *Curvularia lunata* (FCWH#34) and Fusarium oxysporum (FCWH#2) combinations (Breeyen, 1998; Pandey 1998). Pathogen *Alternaria alternata* has tremendous potential for development as a mycoherbicide for the management of water hyacinth. It was found to be virulent, highly pathogenic, efficacious and specific to its weed host and eco-friendly method of its control.

Keywords: *Alternaria alternate*, *Eichharnia crassipes*, mycoherbicide.

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Abstract No. 89

Nature grown Baraf eco-race of *Antheraea mylitta* Drury needs conservation, multiplications and popularization and its rearing performance evaluation with future prospect

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ABSTRACT

Tasar silkworm, *Antheraea mylitta* Drury (Lepidoptera: Saturniidae) is polyphagus insects and its rearing is carried on block plantation as well as nature grown forest plantation belonging to genus viz. *Terminalia arjuna* Bedd., *T. tomentosa* W and A. Interestingly, 44 ecotypes or eco-races of Tasar silkworms are distributed all over India. Raily, Baraf, Modal, Laria, Sarihan, Bhandra local, Andhra local etc. produces cocoons of their own in nature by feeding on Sal, *Shorea robusta*/*Terminalia* species/*Lagerstromia* species and other secondary host plant leaves and the cocoons used to get collected by the tribal and poor people residing in the vicinity of forest. Tasar culture practiced in tropical India gives gainful employment and attractive additional source of income and livelihood to poor people of India. In forest, population of Sal/Asan/Senha/Dhaura tree in Chhattisgarh is very high (above 41.1%). It is interesting to note that earlier rearing of *Baraf ecorace* (native of Chhattisgarh) on Sal/Asan/Senha) was not practiced much due to failure of rearing caused by human hindrance or others constraints. Hence, attempt was made in last two years to conserve *Baraf ecorace* through adopted farmers. During this process technologies develop by Institute was implemented along with the focusing on behavior of this precious ecorace. During the year 2020, rearing performance of *Baraf ecorace* through adopted farmer yielded encouraging results i.e. Cocoons yield 8.0/laying with 19.39% shell ratio. Subsequently, during 2021and 2022, rearing by adopted farmers at Rampur, Dist. Korba, CG, on Sal/Senha tree yielded 10.00 cocoons/laying and it got further increased in second rearing crop, 21.00 cocoons/dfl and 19.00 cocoons/dfl, respectively places. During third crop rearing at both places, cocoons yield was further elevated to 23.00 & 22.00 per laying, respectively. It was also observed that larvae of *Baraf ecorace* prefer Sal, Asan, Senha and Dhaura mixed forest. Based on this finding it is inferred that *Baraf ecorace* rearing on Sal /senha tree may be possible and it can be also conserved with the help of trained adopted farmers. The popularization of this technique/model to among farmers will provide additional income to people residing in forest and hilly area.

Keywords: *Antheraea mylitta* , Baraf ecorace, Forest, Tasar silkworm, conservation.

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Abstract No. 90

Some sustainable ways to conserve biodiversity with respect to nature and natural resources.

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ABSTRACT

Biodiversity refers to the variation of flora and fauna species that we observe in our daily life. There is a large variety of these species which has been discovered while a lot of diversity is needed to be discovered. Nature has given all the resources for fulfilling the conditions which are necessary for living. But nowadays due to urbanisation and increased use of resources for human greed we are going towards depletion of our resources which causes a degradation in the quantity and imbalance in nature. So, there is a need arises to conserve these resources and to conserve the biodiversity . We need some sustainable methods to conserve it & our main focus should be on implementing these methods strictly. So in this review article different methods to conserve biodiversity are mentioned and we will discuss them one by one. Conserving biodiversity is also important for the continuation of the life forms and to save the resources for our future generation also. Here we can collaborate for a futuristic approach which is also a need of time.

Keywords: Biodiversity, futuristic approach, sustainable methods.

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Abstract No. 91

An analytical study on the abundance and conservation status of Indian Sarus Crane (*Grus antigone antigone*) in and around Alwara Lake District, Kaushambi (U.P.) India

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ABSTRACT

Indian Sarus Crane (*Grus antigone antigone*) is the only resident breeding crane in India which is very wide in occurrence including open habitat like marshy wetland, wetland, paddy field, grass land, irrigated area and riverbanks are few to enlist. In the present study, a survey work was carried out from June, 2021 to March 2023, in and around the Alwara Lake, to know the relative abundance of Sarus crane. This lake is a natural lake located at Kaushambi district of Uttar Pradesh. The present survey work exhibited very promising results with high degree of month wise variability in the number of Crane. During survey period total 615 individuals were observed including pair, single, juvenile. It was interesting to notice that highest number of individuals was seen in September and October month of each year of survey. Further, the lowest number was seen in May and June month. The number of individuals was variable in other months also. The current study showed the increasing trend in the number of individuals which is contrary to the Global report in which the population of Crane is decreasing. Furthermore, since the Alwara lake is a natural lake and important wetland area and it is surrounded by agricultural fields. Moreover it is connected to Yamuna River and Kishanpur lift canal; it harbors very rich flora and fauna. Hence this lake is a suitable habitat for many organisms. Crane has been categorized as a vulnerable species and there are proposals to shift this species from schedule IV to schedule I of wild life protection act. Hence special measures are being taken for its conservation through public awareness in native areas and at the policy making level.

Keywords: Alwara Lake, Wetland area, Sarus Crane, Flora and fauna.

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Abstract No. 92

Green Synthesis of *Solanum sisymbriifolium* extract coated silver Nanoparticles Compatible with Biomedical properties

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ABSTRACT

In the field of nanotechnology, the green synthesis of metallic nanoparticles (Ag NPs) employing extract of plants has been broadly heightened now a days due to its simple, cost-effective and environment benign nature over the chemical and physical methods. The present study was executed to evaluate the optimized parameters for synthesizing *Solanum sisymbriifolium* aqueous extract coated Ag NPs via green route. UV-Vis Spectroscopy analysis revealed that the reaction mixture containing plant extract and AgNO3 exhibited an absorption band in the visible region at λmax≈430 nm, confirming the formation of Ag NPs. The study resulted into spherical shaped Ag NPs which was further confirmed by various microscopic (FE-SEM, HR-TEM), spectroscopic (EDS, FTIR) and other (PSA, SAED) observations. The FTIR spectroscopy analysis assured that during the biosynthesis of Ag NPs, various functional groups were responsible as a stabilizing and reducing agent. Also, the X-ray diffraction analysis confirmed the characteristic crystalline nature of the synthesized Ag NPs. Consequently, the green synthesized Ag NPs were found to exhibit more auspicious antioxidantactivity and antibacterial activity against the tested pathogenic gram-negative bacteria *(Escherichia coli and Klebsiella pneumoniae*) in comparison to the crude aqueous extract. Hence, the present study concludes that the synthesized Ag NPs have potential applications as an antioxidant and antibacterial agent in the field of food, cosmetics and pharmaceutical industries.

Keywords: Antioxidant, antibacterial agent, nanotechnology, pharmaceutical industries.

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Abstract No. 93

Anaesthetic Effect of Benzocaine on Oxygen uptake of a major carp, *Labeo calbasu* (Hamilton)

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ABSTRACT

The metabolism performance of *Labeo calbasu* was evaluated using a cylindrical glass respirometer to determine the relationship between oxygen uptake and opercular movement with benzocaine at 45.0mg.l^{-1}. When compared to the control *Labeo calbasu*, fish anesthetized with benzocaine consumed less oxygen. The oxygen uptake of control fish increased from 2.242 to 3.799 $mlO_2.h^{-1}$ as body weight increased from 15.52 to 25.50 g, with a reduction ($p<0.001$) of 27.52 and 26.30% in 3 h and 39% in 24 h of benzocaine anaesthesia. Similarly, in 3 h and 24 h of anaesthesia, the opercular movement of control fish ranged between 76.0 and 70.0 min^{-1}, with a reduction ($p<0.001$) of 42.26 and 39.73%, respectively. It was concluded that oxygen consumption showed more or less a linear relationship with time. The information is useful in the calculation of the oxygen requirement of this species for their live transportation and other experimental purposes.

Keywords: Benzocaine, anaesthetic, oxygen uptake, opercular movement and *Labeo calbasu*.

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Abstract No. 94

Ethnomedicines of Underground Parts Tapped from Herbal Vendors in North Maharashtra

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ABSTRACT

Research relating human plant relationships is beings undertaken across a range of disciplines. There are some realms of research which have still largely remained ignored. One such area of research is the traditional medicolore of the herbal vendors in India. The present authors, therefore, extended investigation on this line in some northern districts of Maharashtra (India) to redeem the said situation for the welfare mankind. This communication particularly focuses underground plant parts sold by the vendors. As many as 37 plant species are documented pertaining to 32 genera and 25 families of angiosperms. Information regarding type of recipe, parts used method of administration, local plant names, names of disease, etc is documented. Data regarding status (wild or cultigen) is also presented. The data gathered, however, is desired to investigate active principles, biological activities and their efficacy or clinical trials on more scientific grounds for the welfare of mankind.

Keywords: Ethnomedicines, Herbal Vendors, North Maharashtra.

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Abstract No. 95

Nanoparticles and Microbiology

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ABSTRACT

Nowadays, number of inorganic nanoparticles has been synthesized by using different microorganisms, and their applications in many cutting-edge technological areas have been explored. Nanoparticles are biosynthesized when the microorganisms grab target ions from their environment and then turn the metal ions into the element metal through enzymes generated by the cell activities. It can be classified into intracellular and extracellular synthesis according to the location where nanoparticles are formed. The intracellular method consists of transporting ions into the microbial cell to form nanoparticles in the presence of enzymes. The extracellular synthesis of nanoparticles involves trapping the metal ions on the surface of the cells and reducing ions in the presence of enzymes. The biosynthesis of nanoparticles by microbes is thought to be clean, nontoxic, and environmentally acceptable "green chemistry" procedures. The use of microorganisms including bacteria, yeast, fungi, and actinomycetes can be classified into intracellular and extracellular synthesis according to the location where nanoparticles are formed. The applications of these biosynthesized nanoparticles in a wide spectrum of potential areas are presented including targeted drug delivery, cancer treatment, gene therapy and DNA analysis, antibacterial agents, biosensors, enhancing reaction rates, separation science, and magnetic resonance imaging.

Keywords: Biosensors, gene therapy, microorganisms, nanoparticles.

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Abstract No. 96

Fungal infection in freshwater fishes of Siddharthnagar (U.P.)

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ABSTRACT

Siddharthnagar is located close to the border with Nepal in the North Tai area of Uttar Pradesh. Due to the abundance of lentic freshwater bodies, there are excellent prospects for fish production. Fish are very important in terms of nutrition and are a crucial form of protein for people. From the beginning of fish cultivation, diseases have appeared as a serious problem in this branch of aquaculture. Fish culturing has brought up problems with regard to fish health, though, because of the close interplay between fish pathogens and the aquatic environment. In current century, by the intensifying of production, fish diseases have become even more significant and complex field. Bacteria are omnipresent in the aquatic environment and can cause significant mortality in both wild and farmed fish due to the varied diseases that they can cause. Fungi found in aquatic environments are essential to the growth and development of fish. Fungi are pathogens that enter the fish host's tissues and make them vulnerable to infection and other ailments. The physiochemical characteristics of water have a role in how fish become infected with fungus. Twelve different types of fungi, including those from the five genera *Achlyas* sp., *Branchiomyces* sp., *Ichthyophonus* sp., *Saprolegnia* sp., and *Aspergillus* sp., were found to be pathogenic to fish and responsible for the diseases Achlyases, Branchiomycoses, Ichthyphonoses, Saprolegniases, and Aspergileses.Therefore, it is equally essential to understand the relationship between the fungi, its host, and its environment in order to understand the different bacterial diseases of fish species.

Keywords: Aquatic environment, bacterial diseases, fish cultivation.

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Abstract No. 97

Wetland ecosystem services

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ABSTRACT

The world's most productive and valuable ecosystems are wetlands. They offer a wide range of advantages that have recently been categorised as ecosystem services, including economic, social, environmental, and cultural ones. Wetlands contribute 40% of all ecosystem services, although making up only 1.5% of the planet's surface. They are at the core of the relationship between water, food, and energy and play a crucial role in both local and global water cycles. This poses a problem for our civilization in terms of sustainable management. Wetlands contribute to the supplying, regulating, habitat, and cultural functions that people need and value all around the world. Improvements in water quality, flood mitigation, and carbon management are crucial regulatory services, while wetland biodiversity offers important habitat services. The condition of the surviving wetlands is deteriorating, and roughly half of the world's wetland areas have been lost. In many nations, the loss of considerable amounts of biodiversity and ecosystem services due to wetland degradation can have a detrimental long-term effect on economies, communities, and enterprises. Future sustainability of the globe depends on protecting and restoring wetlands, which act as safety nets for new problems including global climate change, food supply for a growing worldwide population, disturbance control, clean water, and the general well-being of civilization.

Keywords: Climate change, food supply, growing worldwide population.

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Abstract No. 98

Diabetes Mellitus and its remedies by Indian Herbal Medicines

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ABSTRACT

Diabetes mellitus (DM) is a metabolic disorder. It is a disease in which the pancreas does not produce enough insulin, as a result the glucose level in the blood increases (hyperglycaemia). Herbal medicines derived from plants are always a good source of drugs for human beings. It is a new approach for treatment of diseases, such as, Diabetes. A plant sources consists of different natural anti-oxidants, such as Tannins, Flavonoids, Alkaloids, Quercetin etc., all these have the ability to maintain β-cells which decreases glucose level in the blood and acts against defective cellular metabolism and regulates its functional properties.

Keywords: Diabetes mellitus, Herbal medicines, Glucose, β-cells.

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Abstract No. 99

Haematologial and Biochemical Anomalies in Catfish, *Heteropneustes fossilis* due to Haemoflagellate Endoparasite, *Trypanosoma*

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ABSTRACT

Trypanosomes are haemoflagellate endoparasites, having a single free flagellum at its anterior end of body and frequently encountered in the blood, lymph or cerebrospinal fluid of vertebrates. Trypanosomes are transmitted in fishes by leeches during their blood meal. The present study was carried out to investigate the haematological and biochemical parameters in healthy and *Trypanosoma* infected Catfish, *Heteropneustes fossilis*. The infected fishes showed significant reduction ($P<0.01$) in RBC, haemoglobin, haematocrit (PCV) and lymphocyte. The derived erythrocyte indices, namely, MCV, MCH and MCHC of infected fishes were also significantly decreased ($P < 0.05$) from those of normal fishes. Whereas, the total leucocyte count (TLC), neutrophils, eosiophils monocytes and ESR were significantly increased ($P<0.01$ and $P<0.05$) in infected fish. The biochemical analysis showed significant reduction ($P<0.01$) in bilirubin content, whereas the blood glucose, SGOT and SGPT were significantly increased ($P<0.01$) in *Trypansoma* infected catfish, *Heteropneustes fossilis*. Thus, the present investigation clearly demonstrated marked shift in the haematological and biochemical parameters of Trypanosomes infected *Heteropneustes fossilis*. These changes revealed deleterious impact of Trypanosomes on vital physiological functions and metabolism in fish body.

Keywords: Biochemical analysis, endoparasites, metabolism, Trypanosomes.

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Abstract No. 100

Impact of Paper mill effluent on Aquatic Ecosystem

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ABSTRACT

The paper mill wastewater is one of the most prominent issues in the world. These mills use raw materials for paper manufacturing processes such as wood digestion, pulping, and bleaching due to the release of various environmental pollutants. The objective of the present study was to evaluate the toxic impact of paper mill effluent on aquatic ecosystem and its toxic effect on freshwater catfish *Mystus vittatus*. For this investigation three sets of experiments were set in the Laboratory for upto 30 days: (1) Control group i.e. fish reared in pollution free water (2) fish reared in polluted river water (3) fish directly caught from river that receive paper mill effluent. The paper mill effluent discharged in the river caused significant alteration in water quality of river and also significantly changed the haematological and serum biochemical parameters of fishes reared in polluted river water as well as fish caught directly from water body in comparison to control group. The physico-chemical parameters viz., Temperature, pH, total solid, total suspended solid, BOD, COD of river water were also altered which were found much higher than the tolerance limit recommended by WHO.

Keywords: Haematological, BOD, COD, WHO.

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Abstract No. 101

Spatial Characterization of soil pH, EC and organic carbon in Jajmau industrial zone, Kanpur, through Interpolation models

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ABSTRACT

Heavy metal pollution and their toxic levels in soils are one of the major problems associated with the environment. A total of 50 soil samples were collected grid-wise at an interval of 500 m with the help of the Global Positioning System (GPS) from the plough layer(0-25 cm) soils in Jajmau industrial zone, Kanpur, India. Soil pH, EC and Organic Carbon are the essential parameters used as the primary health status of the soil and were measured using standard procedure. Using ArcGIS 10.8, the statistical values of the semivariogram of each property (pH, EC, and OC) were calculated. The three interpolation models, Spherical, Exponential, and Gaussian, are compared using root-mean-square error (RMSE), mean standardized error (MSE), root-mean-square standardized error (RMSSE), and average standard error (ASE). The best model is selected based on the following criteria: MS should be nearest to zero, RMSE should be lowest, ASE should be nearest to RMSE, and RMSSE should be nearest to one. The result of the study indicates the best interpolation model for organic carbon is Gaussian, and for pH and EC is Exponential respectively.

Keywords: Interpolation model, Heavy metals, Global Positioning System (GPS).

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Abstract No. 102

Impact of Integrated Pest Management (IPM) strategies for some commonly cultivated cereals in tribal dominated regions of Koraput district of Odisha

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ABSTRACT

Cereals are the most important staple foods since inception of human civilization. The crops are grown in tropical climates. Their consumption is crucial for maintaining good health and well being due to their diverse nutrient compositions including proteins, carbohydrates, dietary fibers, different micronutrients and vitamins. Furthermore, these crops show immense contribution towards employment generation, livelihood and socio-economic development in developing countries. The increased production due to introduction of improved varieties of the crops in the emergence of green revolutions is strongly challenged by biotic stresses including infestation by insect pests. Changing climatic conditions and aberrant weather aggravated the damage due to uncontrolled multiplication of these pests. A study was carried out in three blocks namely Boipariguda, Kundra and Jeypore blocks of Koraput district (Odisha) during Kharif season and Rabi season between March 2022 to March 2023 to find insect pests infestation in Rice, Maize and Finger millet and different control methods. Eighteen cereal cultivated fields were taken for observations. Tribal communities most commonly used the cultural methods like setting fire close to fields to attract and destroy insect pests, spraying cow dung and urine in solution form to repel insect pests. In some fields rotten snails were suspended to repel insect pests. Some indigenous varieties were found to be resistant to insect pests. Some improved and resistant varieties also newly introduced into the area. Region specific variation of different IPM is studied and statistical significance validated by frequency distribution studies and Chi square test by comparing the magnitude of crop production with response to different IPM methods. The result shows significant at the $p>0.05$. Farmers are suggested to adopt right kinds of IPM technique to curb insect population to enhance crop production.

Keywords: IPM, Strategies, cereals, tribal, Koraput, Odisha.

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Abstract No. 103

Ichthyo-diversity in Johila Reservoir, Amarkantak (M.P.)

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ABSTRACT

Johila Reservoir is pollution-free reservoir located in the Lalpur area, Amarkantak. The prevalence of the fishes in this reservoir is in decreasing order of the following order of fishes according to Berg Cypriniforms (Division-Ciprni & Siluri), Perciformes, Ophiocephaliformes, Clupeiformes, Mastacembaliformes, Mugiliformis, Synbranchiformes, and Beloniformes. The symbol fish of M.P. *Tor-tor* has been found in the lower stretch of the reservoir. For the study purpose of ichtyodiversity in Johila Reservoir, four stations, namely, A, B, C, and D, have been selected. An attempt has also been made to increase the diversity potential by designing a few sets of integrated fish forming, notably Fish cum culture, Fish cum pig culture, etc., in Johila reservoir.

Keywords: Cypriniforms, Johila Reservoir, Ophiocephaliformes, Clupeiformes.

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Abstract No. 104

Comparative Studies of Fluoride Concentration between groundwater and surface water sources of Hingoli, Maharashtra

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ABSTRACT

Water is vital component for life. As water is life, water parameters and quality of water is one of the challenges in today's scenario. Fluoride is one of the naturally occurring constituents of water. Fluoride is naturally occurring mineral which found in water. It often known as double edged weapon, as permissible limit is good for human's body but more than that are harmful for humans. Many health-related problems can be occurred due to high intake of fluoride dental fluorosis, skeletal fluorosis, osteoporosis, etc. Increasing concentration of fluoride levels in groundwater is one of major problem across the globe. According to national drinking water mission's data, 20 states and 230 districts among them with 66 million peoples are endemic areas for fluoride related problems. Fluoride is often known as double aged weapon, as more than 1.5 mg/litre of fluoride are harmful for human body. Groundwater and surface water are the sources of water. Generally, groundwater contains more amount of fluoride concentration as compared to surface water, but many anthropogenic activities as well as water pollution also causes increasing level of fluoride in surface water also. Increasing concentration of fluoride in water due to anthropogenic and geogenic reasons is one of the international problems. Due to this, the present-day comparative study among amount of fluoride between groundwater and surface water sources conducted in District of Hingoli, Maharashtra. Analysis and assessment of water samples for constituent of fluoride done as per the standard guidelines from world health organization (WHO) and American public health association (APHA). The results illustrate that some of water samples contains excess amount of fluoride than the permissible values. Present study reveals amount of fluoride from selected villages.

Keywords: APHA, skeletal fluorosis, osteoporosis, geogenic reasons.

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Abstract No. 105

Wetlands in Uttar Pradesh, India: A Review of their Ecological Importance, Growing Threats and Conservation Strategies

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ABSTRACT

Wetlands are distinct and the most biologically diverse ecosystems that are flooded or saturated by water, either permanently or seasonally. They are considered as the most significant natural water reservoirs on the earth and act as amphibious habitats between aquatic and terrestrial areas. Ramsar Sites are a list of wetlands of global importance around the world. In India, Uttar Pradesh has about 1.2 lakh wetlands of which 10 wetlands are of globally importance and categorized under Ramsar Sites, out of the total 93 Ramsar Sites in India. Wetlands has tremendous value for livelihoods of all forms of life as water is their basic need. They are the sites of hydromorphic soils and has a wealth of biodiversity. Previous studies have identified their economic, ecological and cultural values. The ecological roles of wetlands have been recognized as to maintenance of water quality as well as quantity, hydrology, flood control, carbon cycle, climate stability, water cycle, recharge of ground water etc. These values cannot be assess and quantify economically. In Uttar Pradesh, excessive grazing by domestic livestock, use of agricultural fertilizers and pesticides, soil digging by local people, expansion of neighboring agricultural lands, over fishing, excessive water-chestnut cultivation, pollution (from motor boats, domestic sewage and industrial effluents), introduction of alien invasive species, encroachment, eutrophication and infestation with aquatic weeds, diversion of water for other uses, poaching of water birds, cutting of trees and disturbances from recreational activity on tourism are some of the key anthropogenic activities which threaten wetlands today. The objective of this chapter is to review the status of wetlands in Uttar Pradesh, with special reference to their ecological importance, growing threats and various approaches for their conservation and management.

Keywords: Wetlands, Biodiversity, Ecosystem, Ramsar Sites, Threats, Conservation.

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Abstract No. 106

Diversity of Ants in District Lucknow, U.P., India

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ABSTRACT

Ants are important components of ecosystems not only because they constitute a great part of the animal, biomass but also because they act as ecosystem engineers. All the known species of ants are eusocial. All the Ants species fall into the single family Formicidae. This family includes in the super-family Vesipedae of the order Hymenoptera, which is placed in the class Insecta. The survey was carried out from January 2022 to May 2022. We used mainly pitfall trap, line transect and quadrate method to collect data. The study was done in four different habitats viz. agriculture, vegetative, dry land, and human habitats. A total of 20 ant species belonging to 19 genera of 3 tribes, and 4 subfamilies were recorded. The agriculture and arid land habitats tend to have fewer species compared with the vegetative and human habitats.

Keywords: Diversity, Ecosystem engineers, Eusocial, Formicidae.

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Abstract No. 107

Climate smart green supply chains for fresh fruits and vegetables

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ABSTRACT

Trade in agriculture and food products has changed over time. The food we eat is increasingly being delivered by global production and supply systems that cross many borders. The participation in agro-food value chains helps enhance overall growth of the sector by improving the returns to farmers and food makers which includes making use of inputs from other countries to produce agro-food products, and having access to foreign consumers through these chains. Climate change and variability af fects temperature and precipitation, as well as frequency and severity of extreme weather events. There is strong evidence that climate change will affect food quality (diversity, nutrient density, and safety) and food price. Almost one-quarter (24%) of food's emissions come from food that is lost in supply chains or wasted by consumers. Almost 15% of food emissions comes from losses in the supply chain which result from poor storage and handling techniques; lack of refrigeration; and spoilage in transport and processing. The other 9% comes from food thrown away by retailers and consumers. Green supply chain management (GSCM) is about making the entire supply chain more environmental sustainable. GSCM includes implementing and monitoring of the general environment management programmes to more creating or controlling practices implemented through various aspects of 'R's (i.e. Reduce, Re-use, Rework, Refurbish, Reclaim, Recycle, Remanufacture, Reverse logistics, etc.). The Green supply chain in fruits and vegetables would require use of low-cost, biodegradable and effective packaging technology to protect fruit and vegetable safety and quality, ICT based real time sensing of quality during transportation for enhanced supply-chain decision-making, shorter supply chains and eco-friendly refrigeration systems. Reduction in losses will lead to lesser greenhouse gas emissions and saving the carbon foot print.

Keywords: Green supply chain, carbon foot print, greenhouse gas emissions.

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Abstract No. 108

Green Synthesis of Nanoparticles and their Therapeutic Potential

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ABSTRACT

Synthesis of nanoparticles using microorganisms and plants via green synthesis technology is cost-effective, biologically safe, and eco-friendly. Plants and microorganisms have natural potential to consume and collect inorganic metal ions from their neighboring environment. The biological entities are capable to synthesize nanoparticles both extracellularly and intracellularly. The ability of a living organism to make use of its intrinsic biochemical processes in reducing inorganic metal ions into nanoparticles has lead to the emergence of an undiscovered area of natural sciences and green technology called Nanobiotechnology. It is an advanced field arising from the combination of Nanotechnology with biology. Living organisms including both prokaryotic and eukaryotic type are involved in nanoparticles synthesis such as algae, cyanobacteria, actinomycetes, bacteria, viruses, yeasts, fungi, and plants. Each biological system possesses different capabilities to synthesize metallic nanoparticles. However, not all living entities can synthesize nanoparticles. Their nanoparticle synthesis potential depends on their enzymatic activities and internal metabolic processes. Consequently, biological entities or their extracts are used for the green synthesis of metallic nanoparticles via bio-reduction of metallic ions into nano-sized particles called nanoparticles. The biosynthesized metallic nanoparticles are eco-friendly as their biosynthesis process does not involve the use of harmful chemicals unlike the physical and chemical methods of nanoparticles synthesis. Moreover these biosynthesized nanoparticles have a wide range of unlimited therapeutic applications including drug delivery, genes delivery, detection of diseases or proteins, and tissue engineering. The efficient delivery of drugs and tissue engineering by the use of nanobiotechnology has vital contributions in the field of translational research related to the pharmaceutical products and their applications. Collectively, this review focuses on the green synthesis of nanoparticles by using various biological organisms as well as their therapeutic applications.

Keywords: Nanobiotechnology, metallic nanoparticles, green synthesis, extracellular.

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Abstract No. 109

Role of Microorganisms in Bioremediation

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ABSTRACT

Microorganisms play a crucial role in bioremediation, which is the process of using living organisms to clean up polluted environments. There are various types of microorganisms, such as bacteria, fungi, and algae that can degrade or transform toxic pollutants into less harmful compounds. The primary mechanism by which microorganisms degrade pollutants is through their ability to break down complex organic molecules into simpler compounds. This process is called biodegradation, and it occurs through a series of enzymatic reactions within the microorganisms. Microorganisms also play an important role in bioremediation by enhancing the natural biodegradation process. For example, some bacteria can produce surfactants that help to solubilize hydrophobic pollutants, making them more accessible to other microorganisms that can degrade them. In addition, microorganisms can also help to remove heavy metals from contaminated soils and waters through a process called bioaccumulation. This process involves the microorganisms absorbing the heavy metals into their cells, which can then be harvested and removed from the environment. Overall, microorganisms are critical components of bioremediation, and their ability to degrade pollutants and enhance natural biodegradation processes makes them invaluable tools for cleaning up contaminated environments.

Keywords: Bioremediation, enzymes, environment, pollutants.

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Abstract No. 100

Green Nanotechnology Research in Phytoformulation Enhancement: Under Systematic Delivery Probes for Covid Samples

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ABSTRACT

The development of eco-friendly technologies in material synthesis is of considerable importance to expand their biological applications. Nowadays, a variety of green nanoparticles with well-defined chemical composition, size, and morphology have been synthesized by different methods and their applications in many cutting-edge technological areas have been explored. This review highlights the classification of nanoparticles giving special emphasis on biosynthesis of metal nanoparticle by viable organisms. It also focuses on the applications of these biosynthesized nanoparticles in a wide spectrum of potential areas of medical biology including catalysis, targeted drug delivery, cancer treatment, and antibacterial agents and as biosensors. Green nanotechnology, in phyto formulations, significantly contributes to environmental sustainability through the production of nanomaterials and nanoproducts, without causing harm to human health or the environment. The rationale behind the utilization of plants in nanoparticle formulations is that they are easily available and possess a broad variability of metabolites, such as vitamins, antioxidants, and nucleotides. For instance, gold (Au) nanoparticles have attracted substantial attention for their controllable size, shape, and surface properties. A variety of copper (Cu) and copper oxide (CuO) nanoparticles have also been synthesized from plant extracts. Titanium dioxide and zinc oxide nanoparticles are also important metal oxide nonmaterial's that have been synthesized from a number of plant extracts. Point-of-care biosensors that include paper and chip-based diagnostic systems are rapid, cost-effective, and user friendly. In this article nanotechnology-based potential biosensors for SARS-CoV-2 diagnosis are discussed with particular emphasis on a lateral flow assay, a surface-enhanced Raman scattering-based biosensor, a localized surface Plasmon resonance-based biosensor, Forster resonance energy transfer, an electrochemical biosensor, and artificial intelligence-based biosensors. Several biomolecules, such as nucleic acids, antibodies/enzymes, or aptamers, can serve as potential detection molecules on an appropriate platform, such as graphene oxide, nanoparticles, or quantum dots. An effective biosensor can be developed by using appropriate combinations of nonmaterial and technologies.

Keywords: Nanotechnology, Covid, Phytoformulation, biosensors.

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Abstract No. 111

To Study the Dye ability of Natural Dye for Sustainable Fabric (Cotton)

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ABSTRACT

National dye is found from natural source such as from plant animal and mineral. Natural dyed cloth is more eco-friendly product. It is giving non-toxic, chemical free product and this does not harmful environment nature. In this study dyeing of cotton fabric with natural dye from Haldi, Anar, Katha extract. To know the effect of natural and chemical modern fixation of dye cotton fabric and fastness to repeated washing. The study adopted an experimental method. 100% cotton fabric(bleached) were taken for sample. The process of mordanting is done for increasing colour fastness of natural dye. Each mordant give different shades and its fastness is also different. The fastness of a natural dye on cotton fabric can be increased by using alum or potassium dichloride and or vinegar during pre-mordanting and mordanting process. Dyeing through National dye avoid pollution in the atmosphere and it is also cheap. In view of this advantage use of natural dye should be promoted.

Keywords: Natural dye, Mordant, Shades, Fastness, Washing.

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Abstract No. 112

Study of Impact of Eco- conservation measures on Kolar Reservoir of Bhopal, M.P., India

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ABSTRACT

Environment conservation is the process of ensuring that the quality of the environment does not deteriorate and the environment which has been deteriorated to be restored to former condition. Eco-Conservation refers to the responsible management of the environment and its resources for present and future use. The present study is conducted at Kolar Reservoir. Kolar dam was constructed on river Kolar near Birpur, 32 km away from Bhopal, Madhya Pradesh. It is the main source of drinking water supply for the city of Bhopal, M.P. The present study is aimed at understanding the impact of the eco-conservation measures like water body specific management strategies on Kolar reservoir. For this purpose, a comparative assessment of the physico-chemical parameters of the water was conducted 10 years apart. The parameters studied include pH, Turbidity, B.O.D., D.O., Electrical Conductivity, Total Alkalinity, Total hardness, Nitrate and Phosphate. Except for Total Alkalinity and Electrical Conductivity all the other parameters showed a notable improvement. Thus, indicating a positive impact of eco-conservation measures on Kolar Reservoir.

Keywords: Conservation, Electrical Conductivity, Total Alkalinity, Environment.

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Abstract No. 113

Green Energy : Solar Energy, Green Architecture, Electric Vehicle ,Water Purification, generating Energy from Waves – The Need of The World

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ABSTRACT

Energy is the property of objects which can be converted in to different forms or can be transferred to other objects but cannot be created or destroyed. Green energy is the energy that is produced in such a way as to minimize its negative impact on the environment. It is a renewable source of energy. Green energy is any energy type that is generated from natural resources such as sunlight, wind or water. It often comes from renewable energy sources. Renewable energy is often called Sustainable energy Renewable energy sources are the opposite of fossil fuels like coal and gas, which are a finite energy source solar energy is directly converted in to electricity by using photovoltaic cells Solar Photovoltaic: Solar cells use light energy from the sun to generate electricity through the photoelectric effect. Solar Thermal : Solar thermal refers to the utilization of the heat energy from the sun. Firstly solar radiation can be absorbed in solar collectors to provide solar space or water heating at relatively low temperatures, which may be used either for direct heating purposes to generate electricity. Hydro energy is Considered renewable because the energy from the sun powers the global hydrologic cycle. It is a power derived from water Cycle a continuous process of falling and fast running water to generate electricity. It can play an indispensable role in cleaner , more sustainable power system. Geothermal technology can be used generating directly in space heating, water heating, green house heating, aquaculture, laundries and industrial processes. Wind energy which is generated by the flow of wind using wind turbines is called wind energy. Wind turbines are usually installed in large land farms. Green Energy is at the heart of all ecological strategies because it affects companies in three vital areas: environmental economic and Social. Conventional energy sources are based on oil, coal and natural gas have proven highly effective drivers of economic progress but at the same time damaging to the environment and human health. Sources of green energy such as solar, wind, geothermal and hydro energy are developed and promoted as alternative source that make little or no contribution to climate change. In this time the need of the world is to explore how green energy is useful for the future aspect of the world and current application of this emerging technology like generating electricity for various purposes heating and cooling of water etc.

Keywords : green energy, renewable, photovoltaic, geothermal, turbines.

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Abstract No. 114

Haematological Changes In Fresh Water Fish, *Channa striatus* suffering from Epizootic Ulcerative Syndrome (EUS)

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ABSTRACT

Fish farming in various parts of the world has increased many folds in the last decade. As a result, fish culture has now become commercially an important industry worldwide. The growth of fish culture has also raised issues of fish health. Epizoic Ulcerative Syndrome (EUS) in fish culture pond of Bahraich district of Uttar Pradesh. The mixed infection in fishes is a common feature and in this Pathogens like Bacteria, Fungi and Protozoan's are found together to cause ill health to the fishes known as Epizootic Ulcerative Syndrome (EUS). In this syndrome the low temperature and aquatic pollution aggravates the infection in fishes. In the present study the haematological parameters were estimated in control and infected fishes. Results reveal that in comparison with the control RBC, HB, PCV values in infected fish were decreased significantly. Infected fishes had shown an increase significantly in WBC and MCHC count. Studies also show that MCH and MCV values were also decreased in the infected fishes over the control.

Keywords: Haematological parameters, EUS, *Channa striata.*

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Abstract No. 115

Comparison of physicochemical properties of *Apis dorsata* and *Apis florea* honey

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ABSTRACT

The present study aimed to compare the physico-chemical composition of raw honey samples of Apis *dorsata* and *Apis florea*. The honey samples were collected from the Chalisgaon region, North Maharashtra. Different physico-chemical parameters as moisture content, pH, electrical conductivity, total reducing sugars, glucose, fructose, fructose-glucose ratio, sucrose, Hydroxymethylfurfural (HMF), proline and protein content were analyzed by *AOAC method.Honey* from *A. florea* contained less moisture and have higher acidity than A. *dorsata* honey. It was noted that the amount of sucrose was significantly lower in the honeys of *A. dorsata* than in A. *florea*. However, the amount of fructose was significantly higher in *A. dorsata* than in *A. florea* honeys. The variation in the results may depend upon species variation, floral variation and different location.

Keywords: Raw honey, *Apis dorsata* and Apis *florea*, physicochemical properties.

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Abstract No. 116

Impact of Aquatic Pollution on Fishes

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ABSTRACT

Organic wastes that can decompose due to bacterial action are referred to as biodegradable wastes. Urban sewage, agricultural waste, food processing waste, distillery waste, paper mill waste, organic chemical industrial discharges, and oil spills are examples of inputs that may fall under this category. Additionally, inputs such as leaves and grass clippings, as well as run-off from pastures and cattle feedlots, all contribute to this. The oxygen dissolved in water is consumed when natural bacteria and other microbes in the water break down organic molecules. When the level of dissolved oxygen falls too low, the majority of fishes and bottom-dwelling creatures cannot survive. When this happens frequently, it kills fish and other aquatic species in significant numbers, disrupting the food chain. If the outflow is at a lower level, the contaminants may build up in aquatic life. Immunosuppression, a decreased metabolism, and damage to the gills and epithelia are some of the last effects, which may manifest years after the pollutants have been released into the environment. Epidermal papilloma, fin/tail rot, gill illness, hyperplasia, liver damage, neoplasia, and ulceration are a few of the ailments that are allegedly caused by pollution. However, there is no concrete evidence connecting poor water quality with fish infections.

Keywords: Aquatic pollutants, Organic wastes, Fish.

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Abstract No. 117

Challenges in managing our water resources

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ABSTRACT

Water is a vital natural resource that sustains life on our planet. Despite 71% of the earth's surface being covered with water, a large population still lacks access to sufficient freshwater for their basic daily needs. This is because ocean water is unsuitable for most terrestrial life, and freshwater makes up only 3% of the world's water resources, with most of it being stored in ice caps and glaciers. Only 1% of freshwater is available for human consumption globally , and many people do not have access to safe drinking water. The uneven distribution of water on earth, rapid depletion of underground water, water pollution, and increasing demand for water in agriculture, industries, and domestic use are critical issues. The careless use of water is putting life at risk, and we must act to conserve every drop of water that falls on our planet. The quality of life, including the health and vitality of plants, animals, and humans, depends on the availability of clean freshwater. Human activities, both intentional and unintentional, are causing a decline in the quality of water in natural water resources such as rivers, ponds, canals, and lakes, as well as in underground water sources. Proper system to save runoff water during the rains is missing in our country. Further, storing and protecting water from being polluted is another major challenge. To address this issue, we are facing other challenges in convincing people to use water economically in their daily life and adopt recycling and water harvesting practices especially in water abundant areas. Creating awareness about this critical situation is crucial to minimizing water wastage and protecting it from pollution. Small efforts can make a significant difference in the future. It's not too late, but we must take action now to ensure the sustainability of our water resources.

Keywords: Fresh water, Quality of life, Pollution, Awareness and Conservation.

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Abstract No. 118

Fly ash (FA) an industrial left-over: Assessing the effect of FA on cytological, morphological and biochemical parameters of *Coriandrum sativum* L.

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ABSTRACT

For millions of years ago, coal a form of fossil fuel is widely used as a source of energy for both personal and commercial purposes. Combustion of coal leaves behind approximately 140 million tonnes of waste residues in form of ash every year. A question renders around the scientists as how to mitigate the environmental threats to clutch up with an opportunity. Nowadays utilization of industrial left over known as fly ash (FA) is trending in agricultural sector because of its considerable content of K, Ca, Mg, S and P. FA amendment generally increases plant growth and nutrient uptake. Hence, the judicious disposal or utilisation of such leftover product (FA) is the major debatable concern for ecological sustainability. Judicious energy consumption is an integral part of sustainable development without imposing the green issues. In the present study, FA has been amended with soil at different administered doses alongwith control to study its impact on cyto-morphological and biochemical constituents of Coriandrum sativum L. and to assess the tolerance capacity of this herb towards FA.The administered doses of FA were 12.5%, 25% and 50% (alongwith the untreated set considered as control) respectively were amended in garden soil. During the course of growth and development the morphological parameters were analysed. However , for cytological study young floral buds were fixed and slides were prepared adopting anther squash technique using 2% acetocarmine stain. For pollen fertility, test was also done to assess the effect of FA on viability of pollen grains. The morphological parameters such as plant height, umbel/plant, seed weight, were found to be increased at lowest dose i.e. 12.50 % in comparison to control plants. However, the pollen fertility rate was collinearly declined as the amendment rate increased. During the course of cytological study, it was found that stickiness was induced in higher proportions at metaphaseI/II while laggards followed by bridges were frequent at anaphase I/II. Various other chromosomal aberrations induced on account of FA amendment were multivalent associations, precocious movement of chromosomes, unorientations and scattering at metaphase I/II and disturbed polarity and asynchronous division at anaphase I/II. Hence from the above study , it is clearly envisaged that the FA has some essential macro and micro nutrients which will enhance the fertility of soil and thereby influence the genetic architecture of C. sativum L. when utilized in low concentrations. As a neglected part, sustainable utilization of FA can minimize the expensive disposal cost and conserving deterioration of soil profile protecting the ecosystem.

Keywords: *Coriandrum sativum* L., chromosomal aberrations, ecosystem, Fly Ash (FA) and pollen fertility.

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Abstract No. 119

Impact of green technology on economy and ecology

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ABSTRACT

Green technology produces and consumes things using eco-friendly materials, techniques, and procedures. In other terms, "green technology" (also known as "sustainable technology"). These technologies cover a wide range, from generating environmentally friendly products and services to using renewable energy. the macro-economic approach to economic growth that the green economy has produced aims to encourage investments, employment, and skill development. Multi-stakeholder partnerships are urged to support both consumption habits and production methods so they can be changed concurrently throughout time in order to achieve these goals. By moving away from conventional fossil fuels, which are recognised to be primary contributors to climate change reactions like floods and droughts, cohesive global communities that practice environmental responsibility. Utilizing biodegradable products, recycling, and reusing materials and fuels are all ways to safeguard the environment. Reduced environmental effect and green green house gas emission may follow from these actions. Impact of green technology on economy, reduces consumption of energy and clean energy, eliminates the need to buy raw materials for production, supports environmentally friendly agriculture, and increases productivity.

Keywords: Biodegradable, environment, economy, climate change.

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Abstract No. 120

Pharmacological study for aqueous extract of bark and leaf of *Bauhinia acuminata*

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ABSTRACT

Bauhinia acuminata commonly known as Kachnar, belongs to the family Fabaceae. It is an evergreen large shrub, mostly found in areas of Southeast Asia such as Indonesia, Malaysia and the Philippines. Many species are widely planted in the tropics as ornamental, particularly in northern India, Vietnam and southeastern China. It is valued for its flower and seed, traditionally used to treat acute and chronic pain, skin ailments, cancer, diabetes, throat infections and asthma. It also has anti-inflammatory, anti-oxidant, anti-anxiety, anti-depressant, wound healing and sun protective effect. These ordeals have shifted the focus towards the use of the alternative form of treatment such as the use of natural products. Phytochemicals form an important group of such naturally occurring products. The use of chemoprevention by edible phytochemicals has attracted the attention of scientists because of their diverse roles, multiple targets, inexpensiveness and accessible approach for the disease control and prevention. So the proposed work has been planed to analyse the phytochemicals present in leaves and bark of Kachnar. Phytochemical screening of aqueous extract of *Bauhinia acuminata* was done and we found that the Carbohydrates, cardiac glycosides, flavonoinds, saponins and quinones has been present in aqueous bark extract and along with these couramins are also present in aqueous leaf extract. And their presence confirm that this plant has pharmacological activity and holistic in nature. Thus, this study support the effort, there is scientific basis of their utilization in traditional medicine for many diseases without giving any side effects.

Keywords: *Bauhinia acuminata*, Phytochemicals , traditional medicine.

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Abstract No. 121

Alterations in Haematology of Fungal infected fish *Channa punctata*

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ABSTRACT

Fish are an important source of animal protein, and are a key unit in many natural food webs. Fungus, *Achlyas* is the most common pathogenic fungi in freshwater fishes and causes *Achlyases.* The present study was conducted to investigate physiological impairment in *Achlyas* sp. infected *Channa punctatus* under laboratory conditions. All haematological indices were altered in response to infection. A significant ($P < 0.05$) changes were observed in Haemoglobin %, RBC count, WBC counts, Packed cell volume (PCV%), mean corpuscular *haemoglobin* concentration (MCHC) and mean corpuscular *haemoglobin* (MCH). The study results show that *achlyases* caused anaemia and *immunosuppression*, followed by mortality in freshwater fishes. Mortality among the *Achlyas* infected fish also depended upon the initial site of infection, type of tissue destroyed, growth rate of the fungus, and ability of individual fish to withstand the stress. Haematological analyses provide valuable knowledge to monitor the health status of both wild and cultured fishes. Fungi induced stress leads to *haemostatic* imbalances in fish reflected in the biochemical profile and can thus be used as an indicator for *Achlyas* induced infection.

Keywords: *Haematological* parameters, Achlyases, *Channa punctata*, Achlyas.

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Abstract No. 122

Microalgae as a source of renewable energy: biodiesel, bioethanol and jet fuel

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ABSTRACT

Owing to the dwindling fuel-reserves (contributing nearly 67% of the global energy market) and continuous increase in the greenhouse gases, the fossil-fuel needs to be replaced by carbon neutral, renewable and sustainable clean-green energy sources such as biodiesel, bioethanol, biomethane and biohydrogen etc. Microalgae are believed to be the most suitable candidates for alternate bioenergy sources with high photosynthetic efficiency, low nutrient requirement, higher lipid accumulating tendencies under stress and minimal space requirement compared to the contemporary fuel crops (such as *Jatropha* and Soybean). So far, researches on national and international levels have not been able to produce microalgal biomass and lipid content to levels that will make biodiesel production from microalgae economical. Modern knowledge of gene sequences of genomes of microalgae compounded with bioinformatics, if employed in engineering of screened strains of microalgae such as *Dunaliella*, *Chlamydomonas* and Chlorella would certainly pave the way for such efforts towards sustainable renewable energy. Thus, in this context, we intended to improve the feasibility of biodiesel production by manipulating nutrient(s) for increased biomass production vis-à-vis optimization for hyper lipid production. We have succeeded in raising the neutral lipid up to 60% in *D. salina*. This lipid quality was comparable to biodiesel of international standards. The attempt to hydrogenate as well as decarboxylate the lipid to make jet fuel is in progress. As the economic feasibility of the microalgal biodiesel is questioned therefore, the lab is also involved in making bioethanol simultaneously from the residual biomass after lipid extraction using cellulose degrading bacteria. Therefore, the important constraints in industrialization i.e., designing of specific photobioreactor for more than 2g/L/day biomass production and technology for cheaper downstream processing of algal biomass are main thrust areas to tackle with.

Keywords: Microalgae, environment, renewable energy, economy, biodiesel, *Jatropha*.

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Abstract No. 123

Ethno medicinal plant Conservation practices in the Tribal Area

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ABSTRACT

Long-term development is required in today's environment. To begin with, we have considerably depleted the earth's resources or disrupted natural vegetation through mining, construction, deforestation, farming, and other commercial activities. Allopathy medicine is derived from the plant's secondary metabolites or primary metabolite product, which have rapid action on the disease but also have some negative effects on our body, so we must return to Ayurvedic medicine and conserve useful medicinal plants in this way to raise grassroots awareness of identification and conservation. Chemical processing generates many more negative side effects such as allergic responses, skin rashes, and disease, among other things, and reduces the use of conventional medication. This expertise, which healers have employed as ethnomedicinal herbs since ancient times, is now lost. To promote conservation practices in our area, villagers are encouraged to identify, cultivate, and produce these traditional ethnomedical plants. These herbs are still used in tribal ceremonies today. It will only be possible if ethno medicinal plants are documented and identified at the district level, as well as information on vegetation, endangered species, and unusual plants are provided. *Asparagus racemose* (satawar), *Datura metel Linn* (datura), *Argemone mexicana*, *Cuscuta reflexa* (amarbel), Oxalis corniculate (tinpaati), *Tinospora cordifolia* (giloy), *Boerhaavia difussa*, *Centella asiatica*, *Sida cordifolia* and *Mimosa pudica* (touch-me not/chuimui) are examples of ethno medicinal herbs. Others include *Cyperus esculents* Linn. and *Andrographis paniculate*. Traditionally, the only approach to fulfil conservation goals was to establish a botanical garden, seed bank, and germplasm bank in a particular region or hamlet.

Keywords: *Andrographis paniculate,* endangered species, germplasm bank.

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Abstract No. 124

Bone anabolic action and phytochemical characterization of *Ocimum gratissimum* L. leaves extract

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ABSTRACT

Osteoporosis is a silent disease as it doesn't show any clinical manifestations until there is a fracture and is characterized by a reduction in bone mineral density and mechanical strength that needs long-term therapy and management. Causes include age, endocrine disorders, certain types of drugs, underlying diseases, low calcium intake, vitamin D deficiency, immobilization, smoking, etc. Many therapeutic interventions have been approved for the management of osteoporosis are bisphosphonates, teriparatide, abaloparatide, humanized monoclonal antibodies (e.g., denosumab), and strontium ranelate are associated with side effects. A holistic approach to the management of osteoporosis is provided by herbal medications. *Ocimum gratissimum* L. commonly known as clove basil or Ban tulsi is native to South Asia and Africa. The leaves of *Ocimum gratissimum* are famously used to treat cough, cold, headache, diarrhoea, and flatulence. The objective of the study is to find out the osteogenic activity of *Ocimum gratissimum* L. leaves extract and the characterization and identification of phytochemicals responsible for it. To achieve the objective, MG-63, the osteoblast cell lines were cultured and maintained in DMEM media supplemented with 10% FBS and 1% antibiotic solution at 5% CO2 and 37°C in a humidified environment. Cell growth was analysed by morphological analysis, trypan blue exclusion assay, and MTT assay for cell proliferation. Characterization and identification of phytochemicals in Ocimum gratissimum L. leaves extract were performed by gas chromatography and mass spectrophotometry (GC-MS). To further confirm the osteogenic potential of the extract, molecular docking between selected phytochemicals and the key proteins involved in osteoblast proliferation and differentiation pathway was performed. *Ocimum gratissimum* L. leaves extract increased the proliferation of the osteoblasts like MG-63 cells in a dose-dependent manner. Morphological analysis using inverted phase contrast microscopy revealed the healthy and differentiated status of the cells. The concentration of the extract that leads to 90% of the maximum response (EC90) was 31.5µg. GC-MS analysis revealed 47 phytochemicals which included eugenol, methyl eugenol, caryophyllene, and caryophyllene oxide. Both eugenol and methyl eugenol can bind RUNX-2 and BMP-2 with binding energies -4.03 to -4.05 kcal/mol and -3.69 to -3.89 kcal/mol respectively, suggestive of their role as agonists in the osteogenesis.

Keywords: *Ocimum gratissimum*, osteogenesis, eugenol, caryophyllene, osteoporosis.

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Abstract No. 125

Cytomorphological outcome of phytohormone treatment in *Stevia rebaudiana Bert*

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ABSTRACT

Phytohormones (PHs) play crucial role in regulation of various physiological and biochemical processes that govern plant growth and yield under optimal and stress conditions Recently, various studies have highlighted the role of PHs such as abscisic acid, salicylic acid, ethylene, and jasmonates in the plant responses toward environmental stresses. The present study aims to analyze the ef fect of phytohormone Gibberellic acid (GA) on Stevia rebaudiana also called Sweet leaf, belongs to Asteraceae native to Paraguay. The seedlings were treated with GA foliar spray with the concentration of 0.1%, 0.2% and 0.3%. Foliar spray of GA acid has shown a major effect on plant growth that includes the parameters like Vegetative growth, Stem elongation, internodal length, stimulating early flowering. The plant height found to be increased at every dose of GA in comparison to control plant. The effect on proline content found to be increased to ameliorate the stress of GA. The cytological studies shows high number of total abnormality percentage (TAB) with the increasing doses of phytohormones. The highest abnormality % was found at 0.3% with the structurally abnormality such as Stickiness at metaphase and anaphase, laggard at anaphase and other abnormalities.

Keywords: Cytological study, Phytohormones, Stevia rebaudiana, Total Abnormality Percentage.

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Abstract No. 126

Biochemical Characterization and Applications of Cyanobacterial Sun-screening Pigment Scytonemin: A Circular Economy Approach

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ABSTRACT

Regular ultraviolet radiation (UVR) exposure has a variety of biological impacts on mammals, including the start of early aging, hyperpigmentation (dark spots), erythema, immune system suppression and DNA damage. In order to defend themselves from UVR, microalgae and cyanobacteria produce useful compounds that attract the attention of the beauty industry and make them prospective candidates for cosmetic or cosmeceutical products, particularly those that protect skin from UV damage. Scytonemin is a small hydrophobic alkaloid pigment molecule present in the extracellular sheath of several cyanobacteria as a protective mechanism against short wavelength solar UVR. It has great efficacy to minimize the production of reactive oxygen species and formation of DNA lesions. The biosynthesis of scytonemin is regulated by different physico-chemical stressors. In the present study, we have biochemically characterized scytonemin from *Scytonema geitleri* HKAR-12 inhabiting roof top of Department of Botany, BHU, Varanasi.Organism was exposed under simulated light conditions of photosynthetically active radiation (PAR), PAR+UV-A (PA) and PAR+UV-A+UV-B (PAB). Exposure to UVR caused a decline in growth and 60 % decrease in Chla while total carotene content increased under PA and PAB. Photosynthetic parameters were measured as in vivo Chlafluorescence. Maximum photochemical efficiency of photosystem (PS) II (Fv/Fm) and relative electron transport rate (rETR) decreased significantly in PA and PAB exposure. Higher non-photochemical quenching and lower photochemical quenching values were seen in UVR-exposed samples as compared to the controls. Levels of intracellular reactive oxygen species (ROS) increased significantly in PAB and PA. Fluorescence microscopic images showed an increase in green fluorescence, indicating the generation of ROS in UVR. High performance liquid chromatography (HPLC) analysis revealed the maximum induction of scytonemin in the PAB exposure. Scytonemin showed retention time (RT) at 2.9 min with absorbance maxima at 252, 278 and 386 nm. Characterization of the scytonemin was done by UV-Vis spectroscopy, high performance liquid chromatography (HPLC), electrospray ionization-mass spectrometry (ESI-MS), fourier transform infrared (FTIR) spectroscopy, Raman spectroscopy and nuclear magnetic resonance (NMR) spectroscopy. Scytonemin showed significant free-radical quenching capacity and showed potential for replacement of synthetic sun-screen. It is a multipurpose compound and is of immense ecological and biotechnological importance and could play important role in achieving sustainable development goals framed by United Nations. Therefore, further research should focus on the commercial production of this multipurpose pharmacophore from biofuel producing cyanobacterial strains and its applications as sunscreens and anti-cancer drug.

Keywords: Biofuel, cyanobacteria, pharmacophore, FTIR.

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Abstract No. 127

Impact of self-help groups (SHGs) on poverty eradication

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ABSTRACT

Microfinance has emerged as a medium of expanding financial services to the marginalized and unbanked people of the society. The recognition of Microfinance as a developing tool came into existence from the fact that the United Nations declared the year 2005 as the year of Micro Credit. For the development of microfinance Prof. Muhammad Yunus of Bangladesh was awarded the nobel Peace Prize in the year 2006.Over the past few decades, microfinance has developed in to various operating forms and achieved varying extent of success all over the India. One of the such forms of microfinance has become the development of self-help movement. In India, the self-help group movement has become the need based motivational program for marginalized and having same socio-economic condition of the people for promoting empowerment eradicating poverty and overall improvement of the status of the women in the society. National Bank of Agriculture and rural development started a self-help group bank linkage program (SBLP) in year1992 for most financially excluded and having same socio-economic condition of the society especially women. According to NABARD, there were around 74.30 lakh self-help groups covering over 9.7 crore clients with total saving of Rs. 9897 crore in their banks as on 31 /03/ 2014. In last three decades SBLP has achieved a tremendous growth in every state of India. SBLP now covers 14.0 crore families, 119 lakh self-help groups having cumulative saving of rupees 47240.48 crore as on 31st March 2022.In financial year 2021-22 34.00 lakh self-help group have been credit linked and loans amount Rs. 99729.23 crore disbursed. The credit outstanding as on 31st March 2022 is Rs. 151051.30 crore. As out of 119 lakh self-help groups, 87% of which are women, which shows the importance of women. Women experience hunger and poverty more intensively than men. A destitute woman willing to work harder to get out of property. So, upliftment of women through self-help groups became a powerful tool for poverty eradication.

Keywords: Microfinance, Poverty Eradication, Self-help groups.

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Abstract No. 128

In silico analysis of the algal metabolic models for enhanced biofuel production in *Chlorella vulgaris*

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ABSTRACT

Fossil fuels have been a great source of energy. However, the excess use of fossil fuels diminishes its availability across the globe. Additionally, the over-exploitation of fossil fuels has contributed to increasing global warming. The use of biofuels extracted from natural sources such as algae, bacteria, and fungi are having greater advantages over conventional biofuels such as greater renewability, reduced greenhouse-gas emission, higher energy security, and improve air quality. Algal biofuels can be an alternative to liquid fossil fuels. They can be used in the production of biodiesel, ethanol, or hydrocarbon gases. Chlorella vulgaris is being used as a potential feedstock for renewable and economically feasible biodiesel production. In the present study, it is intended to reconstruct the genome-scale metabolic network for Chlorella vulgaris based on iCZ843 model. The flux-balance analysis was done by Constraint Based Reconstruction and Analysis (COBRA) to identify the key targets that can be modified to enhance biomass production and yield. Our results would demonstrate the capabilities of this reconstructed metabolic network for Chlorella vulgaris to serve an essential role in systems biology to explore biofuel production and improve characteristics in the strain through metabolic engineering.

Keywords: Green energy, biofuels, algae, hydrocarbons, biodiesel, genome-scale metabolic models, flux-balance analysis.

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Abstract No. 129

Differential Response of Heavy Metal on Physiology and Biochemistry of *Spirodela polyrhiza*

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ABSTRACT

Aquatic plants have been identified as a potentially useful group for accumulating and bioconcentrating heavy metals. We investigated changes in the content of soluble protein, carbohydrate, MDA and photosynthetic pigments, as well as the activity of antioxidant enzymes, caused by cadmium chloride, in duckweed *(Spirodela polyrhiza*) during concentration-dependent exposure to metal salt (0 mg L-1 to 2 mg L-1). The results of present study exhibited that Cd2+ affected the physiological status of S. *polyrhiza.* Decrease in total chlorophyll, total soluble protein and carbohydrate contents were observed under Cd2+ exposure. Increase in malondialdehyde (MDA) content, catalase (CAT) activity, superoxide dismutase activity (SOD), ascorbate peroxidase (APX) activity were observed with increasing Cd2+ concentrations. A significant increase in Guaiacol peroxidase (POD) activity was observed above 1.5 mg L-1. The results of above findings showed that high-level metal stress resulted in a significant decrease in the content of soluble protein, carbohydrate, and photosynthetic pigments and increase in MDA content and antioxidant enzyme system. Furthermore, cadmium causes oxidative damage to S. polyrhiza and was found to be toxic to plants even at low concentration. This study's findings support Spirodela polyrhiza as a viable candidate for phytoremediation of low-level cadmium contaminated water bodies.

Keywords: *Spirodela polyrhiza;* Cadmium; Soluble protein; Photosynthetic pigment; MDA.

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Abstract No. 130

Impact of Human Activities on Soil Health and Vegetation Diversity along the Kali River Bank in Meerut Region

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ABSTRACT

The Kali River is an important water resource in the Meerut region of India, providing irrigation water for agriculture and supporting diverse aquatic and riparian ecosystems. However, human activities along the river bank, including agricultural practices and urbanization, have significantly impacted soil health and vegetation diversity. This research paper aims to investigate the impacts of human activities on soil health and vegetation diversity along the Kali River bank in the Meerut region. Soil and vegetation samples were collected from three sites along the river bank, representing different levels of human activity. The study results in show that human activities have led to significant changes in soil properties, including pH, organic matter, and nutrient levels, affecting vegetation diversity. The study also found that vegetation composition and species richness were lower in areas with high human activity compared to areas with low human activity. The findings of this study have implications for the management and conservation of the Kali River ecosystem.

Keywords: Kali river, urbanization, soil quality, industrialization.

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Abstract No. 131

The *in vivo* studies of Anti-microbial, Phytochemical and Silver nano-particle studies from *Ficus religiosa* Linn.

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ABSTRACT

Ficus religiosa L. (Peepal tree) is an important "multipurpose" tree species belonging to the Moraceae family. It is known to cure more than 50 diseases and around 60 pharmacological studies have been reported. Though traditional knowledge of Peepal has been known over the ages, its use in modern medicine is relatively new. It finds use in many applications such as treatment of microbial infection and cancer, environmental remediation and drug discovery. Hence, this study was undertaken to evaluate various aspects of this important tree species. It consists of seven broad areas of work. It has medicinal properties like anti-microbial, anti-cancer, anti-salmonella, anthelmintic, anti-ulcer, antacid, anti-ageing, anti-inflammatory, anti-oxidant and many others. Present study is aimed to assess phytochemicals present in different part of this plant including leaf, twig along with arial root. The idea is to evaluate the capability of the phytochemicals in different parts of plant and explore the opportunity to identify potential antimicrobial components. Anti-microbial activity has been tested on five different pathogenic species. Water and ethanol were used as solvents to extract the bioactive component. Agar well and disc diffusion method were used as methodology for the studies. The MIC value (minimum inhibitory concentration) of aqueous extracts was calculated for *E.coli* (5.0 mg/ml), *P.aeroginosa* (7.5 mg/ml) *S.aureus* (5.0 mg/ml) and *C.albicans* (5.0 mg/ml). Qualitative Phytochemical analysis of aqueous and ethanol extract reveal the presence of flavonoid and tannins, alkaloids, phenolic acid, terpenoids proteins and amino acid. Green synthesis of Silver nano-particles has been observed by the colour change; later characterization was done using UV-Visible spectrophotometer and SEM analysis. The characteristic peak of nano-particle was observed at 402nm. The present research work will provide the basis for future isolation and characterization of bioactive molecules in *Fics religiosa*. It also provides the base for further evaluation of this plant for treatment of newer diseases.

Keywords: *Ficus religiosa* L., *in-vivo* parts, Antimicrobial, Phytocheical, Nanoparticle and green synthesis.

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Abstract No. 132

A preliminary meta-analytical study on the fauna of Andman and Nicobar archipelago

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ABSTRACT

The Andman and Nicobar archipelago which extends over 800 km, and consists of 836 islands has been explored recently from the biodiversity point of view. It is covered with dense forests including Tropical wet evergreen, Tropical semi ever green, Tropical moist deciduous, littoral and swamp forests. According to State forest report -2019, the total geographical area under forest cover is 81.74%. Thus, this archipelago is enriched with diverse habitats and highly diverse flora and fauna. The finest preserved and least perturbed mangroves in India are found in this region. The coral reefs of Andman and Nicobar is the second richest found in the world. This Island is very rich in marine biodiversity which includes 6624 species and the terrestrial ecosystem harbours 3736 species. The highest level endemism here is estimated to be about 1123 species of these 871 species are from terrestrial ecosystem While 252 species are from marine counterpart. It is interesting to mention that more than 70% butterflies are endemic at subspecies level. In the marine ecosystem, 130 species of sponges are reported from here. In addition, 5 scyphozoan species, 424 species of Scleractinian corals belonging to 19 familes, 229 species of Octocorals, 47 species of Platyhelminthes, 897species of Crustacea179 species of Echinodermata ,57 species of ascidians , 1583 species of Pisces and 7 species of mammals are reported according to recent report of Zoological survey of India. Keeping in view the rich biodiversity of Andman and Nicobar Island, many conservation strategies are adopted at government level. 87% of the total areas are declared as protected area which includes 9 National parks and 96 Wildlife Sancturies. In addition, the Great Nicobar is declared as Biosphere reserve to protect the fauna. However the expanding anthropogenic activities and impact of climate change are still threat to this biodiversity enriched area which needs more effort at government and public level.

Keyword: Hotspot, endemic, archipelago, coral reef, protected area.

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Abstract No. 133

Bioremediation of lindane through novel yeast strain and its consortia with bacteria

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ABSTRACT

The wide spread contamination of lindane also known as γ-Hexachlorocyclohexane (γ-HCH) and its residues in soil and water cause long term eco-toxicological damage to the inhabitants. Factors like volatilization, surface run-off and degradation by soil microbes control the overall distribution and fate of HCH residues in environment. Thus, large scale application as insecticide and its residual effect requires for urgent remediation. However, the natural process of its degradation is very slow and varies according to site specific environmental conditions. Presence of oxygen, bioavailability, initial concentration, temperature, pH and biomass concentration affect the biodegradation of HCH contaminants. Thus, the design of a successful bioremediation protocol to achieve the maximum pollutant removal is required to be prioritized considering different biological strategies. The present work focuses on isolation and characterization of novel microbial strains responsible for degradation of HCH residues in soil. Screening of microbes have been performed based on detoxification mechanism.Both bacterial and yeast strains have been isolated and examined for its degradation potential along with its dechlorinase enzyme activity. The selected microbial strains have been put in combination to show better degradation potential. The utmost production of microbial biomass along with maximum lindane mineralization was noted till 1000 mg L-1 of γ-HCH concentration within 10 days. These isolates thus may serve as a potential agent for ex-situ bioremediation of high level lindane contaminated sites both individually and in combination.

Keywords: Hexachlorocyclohexane, Degradation, Bioremediation,Yeast, Bacteria.

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Abstract No. 134

Green synthesis of 4-thiazolidinone derivatives as peptidede for mylase inhibitors

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ABSTRACT

The global emergence of worsening antibiotic resistance has become a serious problem because of the emergence of multidrug resistance (MDR) strains. The emergence of MDR strains has forced the scientific community to search for new antibiotics. The conventional protocols for the synthesis of 4-thiazolidinedione have been associated with numerous short comings including the use of perilous solvents, expensive catalysts, long work up procedures, harsh reaction conditions, in-efficient atom economy, and generation of the by-products. Thus, there has been an urgent need to develop a benign, eco-friendly and inexpensive protocol for the synthesis of 4-thiazolidinone derivatives. A new series of highly functionalized 4-thiazolidinone derivatives have been designed based on Lipinski's Rule of Five and optimized with the Discovery studio 3.0 soft ware to investigate the interactions between the target compounds and the amino acid residues of *Escherichia coli* PDF Ni (PDB:ID 1G2A).The compounds showing promising in silico results as reflected by their significant scoring functions and close interatomic contacts through strong H-bonds with Ile 44, Gly 45, Gly 89, Cys 90,Glu95, Cys129 and Arg 97; pi-pi interaction with Arg 97 and His 132. The molecules proved as effective inhibitors of bacterial PDF, which has been corroborated by docking studies. The synthesis of compounds is under process via a novel solvent system using commercially available surfactant to catalyze the reaction at a minimal cost. Further, all compounds will be examined for the irantibacterial activities against Gram-positive and Gram-negative bacterial strains using the microdilution broth susceptibility test method.

Keywords: Green synthesis, *E.coli*, thiazolidinone derivatives, MDR.

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Abstract No. 135

Biodiversity and Conservation

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ABSTRACT

The term biodiversity refers to the variety of life on Earth at its all levels, from genes to ecosystems.Biodiversity is of three major types, Genetic Diversity, Species Diversity and Ecological Diversity. All these diversities help in maintaining the balance of nature. Gradually with passing the time, there has been a major loss in the biodiversity across the globe. The loss of biodiversity adversely affects our environment.With the loss of biodiversity natural food web get disturbs.Therefore, conservation of biodiversity has now become a matter of high priority. Nowadays everybody is paying attention to biodiversity conservation. Involvement of all of us is required to maintain all the three types of biodiversity. There are four types of biodiversity conservation-Environmental Conservation, Animal conservation, Marine Conservation and Human Conservation. In Biodiversity Conservation first is In-situ Conservation of habitats, species and ecosystems where they naturally occur. In Biodiversity Conservation second one is Ex-situ Conservation in which the conservation of elements of biodiversity out of the context of their natural habitats.

Keywords: Biodiversity conservation, Ex-situ Conservation,

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Abstract No. 136

Relationship between Obesity and Gestational Diabetes Mellitus, and its Impact on Neonatal Health

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ABSTRACT

Gestational diabetes mellitus (GDM) and obesity prevalence is increasing worldwide. Both gestational diabetes mellitus and obesity are interconnected metabolic disorder and also related with other disease like gestational hypertension, thyroid disorders, dyslipidemia and cardiovascular diseases. GDM is an impaired glucose tolerance during pregnancy, which further elevates the risk type-2 diabetes mellitus development in mother later in life. Maternal obesity play key role in the development of gestational diabetes mellitus by increasing insulin resistance, lowering the adiponectin levels and increasing triglycerides level. Different types of predisposing physiological changes such as hyperinsulinaemia and insulin resistance occurs during pregnancy, which makes women susceptible to the gestational diabetes mellitus. Due to physiological metabolic changes like increased maternal adipose deposition, secretion of diabetogenic hormone, increased calorie intake and reduced exercise, leads to the development of maternal obesity and GDM, which increases the risk of metabolic syndrome and pre-eclampsia (high blood pressure in pregnancy), potentially a dangerous condition for both mother and foetus. Elevated risk of obstetric morbidity and mortality was seen in the offspring of obese women. Furthermore, these metabolic disorders, maternal obesity and GDM also increases the risk of childhood obesity, metabolic dysfunction, macrosomia, birth trauma and shoulder dystocia in the child. Diet modification, physical activity and improvement in the quality of life (healthy lifestyle) could play a key role in the management of obesity and GDM. It will also minimize the risk of further progression of both metabolic disorders (maternal obesity and GDM) in the mother and his offspring.

Keywords: Gestational diabetes mellitus, Obesity, metabolic disorders, insulin resistance.

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Abstract No. 137

Vermicomposting: An Effective Management Strategy for Organic Wastes

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ABSTRACT

Rapid urbanization and industrialization have increased the amount of solid waste, and its management has become one of the most severe issues today. Many organic wastes are very infectious because they include a variety of dangerous microorganisms. When these organic wastes are sprayed directly into agricultural fields, they produce difficulties with the soil environment, including phytotoxicity. Sustainable solutions for the biological stabilization of solid wastes were utilized to treat organic wastes, transforming them into a safer and more stable substance that may be used as a source of nutrients and a soil conditioner in agricultural applications. Vermicomposting is one of the most effective methods for reducing and managing environmental issues. Vermicomposting is believed to be high in NPK, micronutrients, and beneficial soil bacteria, as well as a good crop plant growth booster. By generating an economically feasible animal feed protein in the form of earthworm biomass, vermicomposting organic waste could have a variety of beneficial implications. *Eisenia fetida*, *Eudrilus eugeniae*, *Lampito mauritii*, and other earthworm species are often used for vermicomposting. Earthworms act as a grinder, crusher, chemical degrader, and biological stimulator of waste material, as well as promoting the growth of "beneficial decomposer aerobic bacteria" in organic waste material. Animal wastes, green wastes, and municipal solid wastes are all treated via vermicomposting. Due to the combined action of enzymatic and microbiological activity, this procedure produces a higher-quality end product. As a result, organic farming with vermicompost might be used to replace chemical fertilizers, lowering costs while simultaneously reducing environmental issues.

Keywords: Earthworms, Environmental pollution, Organic wastes, Vermicomposting.

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Abstract No. 138

Phytochemical Production from in vitro established Shoot Cultures of Two Medicinal Herbs

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ABSTRACT

Higher plants are the major source of natural products with diverse application as pharmaceuticals, agrochemicals and food additives. Extensive use of plants for phytochemical production has created serious threat to existence of several plant species. Ability of plant cell, tissue, and organ cultures to produce and accumulate many of the same valuable chemical compounds as the parent plant in nature has been recognized almost since the establishment of *in vitro* tissue culture technology. In this study an efficient protocol for low cost *in vitro* shoot multiplication from nodal sections of *Eclipta alba* (L.) Hassk and *Rumex dentatus* L.for production of bioactive metabolites has been established. Multiple shoot induction from the nodal explants cultured on 0.7% (w/v) agar gelled modified Murashige and Skoog (MS) medium having table sugar, 6-benzyl aminopurine and prepared in tap water indicates that *in vitro* culture of *E. alba* and *R. dentatus* could be established at low production cost. The *in vitro* differentiated shoots were dried and used for bioactive metabolite extraction using methanol as solvent. The compounds extracted from dried shoots showed presence of phenolic, flavonoid and free radical scavenging activity. Thus, this study showed that the *in vitro* regenerated shoots of *E. alba* and *R. dentatusis* source of various bioactive compounds and could be exploited for production of therapeutic phytochemicals without disturbing nature.

Keywords: Bioactive metabolite, phytochemicals, *in vitro* tissue culture technology.

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Abstract No. 139

Epigenetic Changes Induced by Inorganic Contaminants

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ABSTRACT

Epigenetic changes refer to alterations in gene expression that are not caused by changes in the DNA sequence itself but rather modifications to the structure of DNA or the proteins associated with it. Inorganic contaminants such as heavy metals, metalloids, and other chemical pollutants have been shown to induce epigenetic changes in various organisms. One way in which inorganic contaminants can induce epigenetic changes is through DNA methylation, a process where a methyl group is added to cytosine bases in DNA. This modification can alter the accessibility of genes to transcriptional machinery, leading to changes in gene expression. For example, exposure to arsenic has been shown to induce DNA hypermethylation of tumor suppressor genes, leading to their decreased expression and increased risk of cancer. Another mechanism by which inorganic contaminants can induce epigenetic changes is through alterations in histone modifications. Histones are proteins that package DNA into a compact structure known as chromatin. Modifications to histones, such as acetylation or methylation, can alter the accessibility of DNA to transcriptional machinery, leading to changes in gene expression. For example, exposure to lead has been shown to alter histone acetylation and methylation patterns in neurons, leading to changes in gene expression and neurobehavioral deficits. In addition to DNA methylation and histone modifications, inorganic contaminants can also induce epigenetic changes through alterations in non-coding RNAs, such as microRNAs. MicroRNAs are small RNA molecules that can bind to messenger RNAs and inhibit their translation into proteins. Exposure to inorganic contaminants has been shown to alter the expression of specific microRNAs, leading to changes in gene expression and cellular processes. Overall, inorganic contaminants can induce epigenetic changes through various mechanisms, leading to alterations in gene expression and cellular processes that can have detrimental effects on the health of organisms.

Keywords: Gene expression, DNA methylation, histones, MicroRNAs.

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Abstract No. 140

Environmental sustainability and green technology

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ABSTRACT

The world commissin on the Environment and development also known as the Brundtland commission, in their report, "Our Common Future" introduced and defined the term sustainable development as the process in which the exploitation of natural resources, the allocation of investments, and the process of technological development and organizational change are in harmony with each other for both current and future generations. Sustainable technology or Green technology or Eco-technology deals with the short term and long term impact of things on the environment. Green technology uses environmentally-friendly materials, and processes in producing and consuming goods. In other words, green technology is the utilization of sustainable technologies and is also referred to as "Sustainable technology". Green technology takes the form of recycling, renewable resources, health and safety issues, energy efficiency, and more. It covers continuously evolving groups of methods, practices and materials from techniques for generating energy to non-toxic cleaning products. Green technology can also help substantially impact the economy . The green economy has been providing the macro-economic approach to economic growth with the goal of promoting investments, employment and skills.Now a time resources are becoming scarce day by day and the demand is increasing, calling for the need to find a balance and create a sustainable future. With Green technologies, the world will reach sustainability will be cleaner and safer for all. So it is obvious that the environmental protection, resource conservation and addressing other socio-economic aspects for sustainable development are very much essential. The green initiatives adopted for resource conservation , and environmental protection shall help sustain higher economic growth rate necessary to fulfill basic needs with some acceptable quality of life in future. So in the present paper we would thoroughly study the different aspects and initiatives taken for Environmental sustainability and various perspectives of Green technology for better healthy secure and sustainable future.

Keywords: Sustainable technology, Green economy, Renewable resources, Resource conservation.

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Abstract No. 141

Sericulture and integrated farming system

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ABSTRACT

Integrated Farming System (IFS) is a strategy for promising an environmentally friendly utilization of natural resources for the betterment of the present generation while preserving adequate stock for subsequent generations. Sericulture, as an ef ficient agro-enterprise, provides optimal integration and utilization of a diverse range of the agricultural sector such as poultry, fishery, horticulture, forestry, and livestock. The integrated farming offers numerous advantages because it allows right pooling and usage of current herbal sources in an effective manner, providing farmers with significant potential to achieve greater profitability in terms of efficiency and revenue production. Sericultural waste products that have been recycled into biofertilizers can be used to enhance soil health. In this regard, the sericulture sector provides an extremely integrated sustainable disposal of resources, mainly for remote and small-scale farmers.

Keywords: Sericulture, IFS, Resources, Sustainable, Agriculture.

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Abstract No. 142

Role of Effective Microorganisms (EM) in Sustainable Agriculture

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ABSTRACT

Agricultural production is mainly depends on the health of soil, which is a measure of a complex set of biological, chemical and physical interactions driven by microorganisms. Effective microorganism increases the beneficial microbial population in the soil for sustainable crop production. Effective Microorganisms are mixed cultures of beneficial naturally-occurring organisms that can be applied as inoculants to increase the microbial diversity of soil ecosystem. They consist mainly of the photosynthesizing bacteria, lactic acid bacteria, yeasts, actinomycetes and fermenting fungi. EM will improve the structure of the soil, increase its fertility and radically improve biological diversity, suppress soil borne pathogens, fixes the nitrogen in soil and enhances nutrient uptake, accelerates the decomposition of organic waste, residues and composting, increases beneficial minerals in organic compound, enhances the activities of indigenous microorganism and boosts the strength of plants and yield of crops. EM works by being dominant over other soil microbes. As a result, this encourages the bulk of the other microbes in the soil to follow them and in doing so suppress the activity of the smaller group of negative or opportunistic microbes. Effective microorganisms can help to improve and maintain the soil chemical and physical properties.

Keywords: Bioremediation, Effective microorganisms (EM), living soil.

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Abstract No. 143

The Efficacy of Vermiwash Foliar Spray on Agricultural Crop Productivity

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ABSTRACT

Due to pollution and soil degradation, sustainable agriculture has proven extremely important in recent years. One of the most essential techniques in this type of agriculture is the use of biologically derived organic manures and fertilizers. One of them is vermiwash, a liquid plant growth stimulant that has been shown to improve the growth of a wide range of plants. Vermiwash is a naturally occurring substance made from organic material that has been vermicomposted by a large number of earthworms. When applied to plants, Vermiwash is a rich source of vitamins, hormones, enzymes, macronutrients, and micronutrients that aid in effective growth. Due to the presence of essential antimicrobial and anti-pest compounds, it can be used as a fertilizer to enhance crop productivity as well as for disease suppression and pest control. When compared to solid vermicompost, its liquid form (vermiwash) is ideal because of its bioavailability, which allows it to reach the targeted area surrounding the roots of plants quickly. Vermiwash appeared to have an inherent property that functioned as a liquid organic fertilizer and mild biocide, and it was shown to make a significant contribution to organic agriculture, soil health, disease management, and long-term crop productivity. Vermiwash has been shown to increase plant growth and nutrition by containing a high concentration of important accessible elements. In the application of pure (100 percent) vermiwash, the plant growth indices of root weight, root length, shoot weight, number of primary and secondary roots, area of the leaf, number of leaves, and moist weight were significant. Because it is environmentally friendly, cost-effective, dependable, and readily available, vermiwash could play a helpful role in sustainable agriculture.

Keywords: Crop productivity, Earthworms, Liquid biofertilizer, Vermiwash.

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Abstract No. 144

Bioremediation of hexavalent chromium through *Trichoderma* strain

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ABSTRACT

Hexavalent chromium Cr(VI) is highly toxic, teratogenic and carcinogenic to man and other animals. Tannery sludge was dumped in the nearby agricultural area and in the vicinity of the industry. In nature, Cr exists in various valence states, including Cr(III) and Cr(VI). Cr(VI) is the most toxic because of its high solubility. Some fungal species have the ability to reduce Cr(VI) to a stable speciation state of trivalent chromium Cr(III), which is insoluble and comparatively less toxic. Therefore, the reduction of Cr(VI) thus provides potential as a means for environmental bioremediation of Cr(VI) pollution. In the present study fungus isolated from chromium contaminated sites were found to have the ability to rapidly reduce highly. Bioremediation of chromium by using fungal strains is environmentally safe and effective. In the present study, five fungal strains were isolated from Cr-contaminated soil and one of the strains of *Trichoderma* spp. (NBRICR110) showed higher potential for Cr(VI) reduction and tolerance. In this experiment, the reduction potential of the studied strain has been investigated and the NBRI-CRF-110 stain showed 98.06% for Cr(VI) reduction within 96 hat 100 mg/L of Cr(VI). Rest strains showed the rest showed 66.0% to 89% of Cr (VI) reduction. Thus fungal strains showed the promising ability to reduce Cr(VI) to Cr(III) and prevent food chain contamination.

Keywords: Hexavalent Chromium, Soil, Fungi, Bioremediation.

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Abstract No. 145

Locally available plant based fish feed application for sustainable aquaculture intervention in some selected regions of Ganjam district of Odisha

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ABSTRACT

With a coastline of 450 Kms, Odisha is considered to be a maritime state and fourth largest fish producer among states of India with the production of 8.73 Lakh Metric tons of fish in the year 2020-21. Ganjam is regarded as the potential districts for aquaculture production in Odisha due to vast stretch of water resources including 11580ha of freshwater, 4023.04 ha of brackish water and 60 Kms of coastline. The huge water resources boost pond aquaculture, reservoir fisheries and provide immense contribution towards employment generation, food and livelihood security. The present study was carried out in six different blocks in Ganjam district between March 2022 to March 2023. In total 12 ponds were selected for studies. Three fish species as Rohu (*Labeo rohita*), Catla/Bhakur (*Catla catla*) and Mrigal carp(*Cirrhinus mrigala*) were monitored in 3 months, six months, 9 months and 12 month intervals. Intervention in six culture ponds were done with application of homemade mixture of fish feeds made from rice flour, rice bran, rice polish, wheat flour, coconut oil cake, mustard oil cake, sesame oil cake along with kitchen organic kitchen wastes and cow dung. Further, interventions in six different ponds were made with the application of imported fish feeds. Depth of water, stocking density and other farm management practices including frequency of applications of fish feeds kept uniform across all culture ponds and both the cultures performed in semi-intensive mode. Planktonic growth, pond water quality, fish growth (SGR and MBW) and production from both types of interventions monitored. About 30% of investment of total fish production seen in homemade fish feed application as compared to 60% investment in of total fish production as in case of imported fish feeds. The difference in production was found to be statistically insignificant as verified by ANOVA. Water quality deterioration is seen in some ponds applied with imported aquaculture feeds as observed by significant decline in the level of DO and significant increase in level of Ammonia-Nitrogen, free phosphorous and Nitrogen.

Keywords: Plant based. Fish feed, sustainable aquaculture. Ganjam district.

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Abstract No. 146

Nutritional value and health benefit of Pearl millet

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ABSTRACT

Pearl millet *(Pennisetum glaucum L.*) is the most widely grown types of Pearl millet. It has been grown in different parts of the world since prehistoric times especially in Africa and Indian sub continent. It is believed that India or Africa is the country of origin (native land). India is the highest producer of Pearl millet in the world followed by Africa. In India Rajasthan, Maharashtra, Gujarat, UP, Haryana etc. are major Pearl millet producing states. It is grown in different seasons in different parts of India as well as other countries of the world. Pearl millet is a tall, erect, annual, herbaceous grass that ranges from 6 to 14feet in height, a highly tillering, cross pollinated, diploid and tropical C4 plant (cereal) with grains on the surface of erect candle shaped terminal inflorescence, *'Spike of spikelets'*. Grains are ovoid, 3-4mm length, nearly white or pale yellow or brown or grey or slate blue or purple in colour. The 1000- seed weight can be anything from 2.5 to 14gm with a mean of 8gm. They are good source of energy (365 kcal/ 100gm), Carbohydrate (67.5 gm/ 100gm), protein (12.0 gm/100gm), fat (5.0 gm/100gm), dietary fibres (11.5 gm/100gm), ash (1.0gm/100gm), Iron (7·6 mg/100gm), Zinc (2.8 mg / 100gm), Calcium (14.0 mg / 100gm), magnesium (97 mg/100gm), phosphorus (207 mg/100gm), potassium (401 mg / 100gm), different types of vitamins, phytic acid, tannin, Phenols (which can contributes to antioxidant activities) etc. Because of all these nutrients Pearl millet have many health benefits like: ideal for weight loss, reduce risk of colon cancers, lowers blood pressure, make bone stronger, lowers cholesterol, helps in relieving constipation, nutritious baby food and many more.

Keywords: Subcontinent, Prehistoric, Tillering, Coss- pollinated.

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Abstract No. 147

Bioremediation of water pollution through *Moringa oleifera*

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ABSTRACT

Moringa (botanical name "*Moringa oleifera*") or Sahjan also called Drumstick tree, Horseradish tree or Ben oil tree is a versatile tree useful not only for human beings but also for animals and also in various industrial applications. Due to its therapeutic qualities and health advantages, moringa has been utilized in ayurveda for millennia. The seeds, pods, leaves, blossoms and roots of the *moringa* tree are all edible and packed with nutrients. The goal of this was to determine whether *Moringa oleifera* seed powder could purify or enhance the quality of drinking water as well as whether seed extracts could effectively stop the growth of few bacteria. Samples of water are taken at various locations before its treatment, the following parameters are checked- pH, *odour*, temperature, TS and TDS. To create powder, *Moringa oleifera* seed are initially air-dried. We extract oil from the Soxhlet apparatus. In subsequent experiment, dried oil cake powder was used to create a biofilter sachet with the trace amount of sand, potash alum and charcoal powder. After dipping the designed biofilter sachet under various water samples for roughly 8 to 10 hours, found an improvement in water quality and examined the microbial activity that was decreased. The water is now of higher quality and is crystal clear. On treated oil extract, tests for antifungal and antibacterial activity were also conducted. It showed how the seed powder can reduce bacterial infections and enhance water quality. This research is beneficial, especially for those who living in rural regions, for those who cannot af ford or do not have access to clean drinking water.

Keywords : *Moringa oleifera*, oil cake powder, biofilter sachet, seed powder, water quality.

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Abstract No. 148

Study On Biological Efficiency of Different Strain of Pleurotus Mushroom in Different Agro waste

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ABSTRACT

Mushroom are a type of fungus. The mycelium of fungi grows into or around the food sources, secrets enzymes that externally break down the food and the mycelium than absorbs the nutrients that have been digested. Medicinal mushrooms have been demonstrated to enhance patient outcomes for those suffering from a range of serious illnesses, including cancer, hepatitis and other aliments where there are few viable nontoxic therapy choices. Many functional bioactive substance, such as polyphenols, polysaccharides, lipids and terpenoids as well as dietary fibre, protein, essential amino acids and minerals are thought to be abundant in Pleurotus mushroom. The current study compares the yield and nutritional characteristics of three different strains of the oyster mushroom Pleurotus florida (DMRP-136), *Pleurotus djamor* (DMRP-205), *Pleurotus sajorcaju* (DMRP-392). The growth of oyster was conducted using 4 distinct type of substate: sugarcane bagasse, wheat straw , masoor dal (latin) straw and peanut shell compared to *P. florida, P. djamor* and *P. sajorcaju* oyster strain on sugarcane bagasse and peanutshell was shown to have the fastest mycelium run. The maximum number of fruiting bodies, biological yield and biological efficiency were discovered in December to February(14-27 degree Celsius) in all the species that were chosen for this study. At the end of 3 week spawn running period *P. sajorcaju* (DMRP- 392) was overall best in supporting mycelia running rate. *P. florida* (DMRP-136) produced mushroom with longer and bigger stipes at the first flush, *P. sajorcaju* (DMRP-392) in a wheat is a higher number of fruit body (263 g).

Keywords: Agrowaste, oyster mushroom, biological efficiency.

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Abstract No. 149

Women and Environment

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ABSTRACT

Women have played an important role in conservation of environment from time immemorable. It starts from home, as a homemaker she has been keeping the home and surrounding clean and hygiene, efficient use of food and electrical appliances, thereby conserving food and energy. Many do home gardening and other hobbies which are eco-friendly. In many offices, hotels, houses, business outlets, educational institute and commercial malls women sweepers or house keepers are employed, keep the premises clean and hygienic, In Bruhath Bengalauru Mahanagara Pallike many pourakarmikas or safai karmacharis are women who sweep the streets routinely and keep it clean. There are many social organisations headed by women, work for environment. Women scientists working in various organisations are doing research excellently in the fields of toxicology, agriculture, health sciences, zoology, botany, chemistry, ecology, fishery biology, wildlife conservation, climate change, green technology, engineering and sustainable development and they are inventing many eco-friendly devices and machines which help the people and society and indeed sustainable development. Many women social reformers have changed the society and made it eco-friendly. Women activities are working for environmental conservation and creating awareness in society about environment, conservation of natural resources and care for fauna and flora.

Keywords: Women, Ecology, Sustainable Development, Environment.

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Abstract No. 150

Screening of Biocontrol Agent for the Eco-friendly Management of Water Hyacinth

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ABSTRACT

The water hyacinth *(Eichhornia Crassipes*) is a noxious plant that has drawn attention from all over the world due to its quick expansion and crowded development. The plant was introduced in India due to its beautiful leaf and flower which later turned out to be a havoc and widespread all over India. Due to its over expansion in Bengal the tittle "Terror of Bengal" is given to this plant.It causes difficulties in navigation, irrigation and occur as an issue for aquatic chemical and biological techniques being applied. Water blockage continues to be a barrier along with cost duration toxicity and come back. It decreases the level of dissolved oxygen present in the water thus disturbing the ecosystem. The fish suffer from severe oxygen deficit because the water below gets cooler than usual and the amount of dissolved oxygen decreases under the cover of the weed. Floating water hyacinth mats are a threat to aquaculture because they obscure the soils surface, making it difficult for fish to develop their principal food sources, phytoplankton. Along with that it hindered the process of photosynthesis as a result of which the deep water plant doesn't get enough sunlight to perform photosynthesis. Methodology to control water hyacinth is done by collecting infected plant parts. The samples are collected from Mahanadda pond, Gyan sagar pond, Adhartal pond and sewage of Maharajpur. The infection collected by various fungus includes 15 species in total. Out of which *Alternaria alternata* fungus species affect and kill the plant more rapidly. On the basis of all observation by noticing the occurrence, frequency and bioassay we concluded that by using selective fungal strain *Alternaria alternata* an eco-friendly weed management bioherbicide is promoted, which also turn out to be a life saviour and problem solver which control water hyacinth growth by killing the plant and keeps a check on it. Thus, saves the aquatic organism by maintaining a balanced ecosystem.

Keywords: Water Hyacinth, Havoc, Obscure, *Alternaria alternata*, Bioherbicides, Bioassay.

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Abstract No. 151

Bio Fertilizers- A sustainable alternative to chemical fertilizers for cytomorphological traits in *Anethum graveolens* L

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ABSTRACT

The agriculture sector requires a revolutionary alternative in order to increase crop production and elicits less ill-effects on the environment. The production of crops has recently expanded due to various chemical fertilizer applications, however their higher concentration has offered negative repercussions. Farmers frequently exceed over the permitted limit, and this exaggeration denatures the soil and exacerbates a number of ecological effects. This situation can be alleviated through the utilization of eco-friendly biofertilizer. The goal of the current experimental setup is to examine the effect of chemical fertilizers ammonium nitrate and biofertilizer agrozyme on the cytological and morphological features of *Anethum graveolens* and to identify a safer crop enhancer between the two. The results disclosed that fertilizer expelled to be more chromotoxic and mito-inhibitory at higher concentration in comparison to biofertilizer. Chemical Fertilizer has a detrimental impact on the plant's mitotic index while biofertilizer enhances mitotic index parallel to the increasing concentration. Biofertilizer shows positive effect on the morphological parameters while fertilizer shows this elevation effect at lower concentration.

Keywords: *Anethum graveolens* L., Agrozyme, Chromotoxic, mito- inhibitory.

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Abstract No. 152

Integrated application of Trichoderma and carbendazim affects the carbendazim extractability and microbial functions in maize rhizosphere

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ABSTRACT

Pesticides introduced in soil reduce the soil microbial diversity and induce shifts in the microbial communities. Leaving fallow fields is a common practice to improve soil quality, however, leaving pesticide contaminated soils in fallow conditions may enhance the toxic effect of pesticide on soil microbial community. A detailed study on availability of carbendazim in fallow and maize rhizosphere soil was studied using different concentrations of carbendazim. A treatment of *Trichoderma harzianum* inoculated maize was also included to study the role of microbial fungicide in maintaining the rhizosphere functional diversity in carbendazim contaminated soil. The HPLC analysis of soil and maize tissue reveals increased persistence of carbendazim and its degraded products in fallow treatment compared to maize with or without *Trichoderma.* Substrate utilization pattern using biolog were used for community-level physiological profiling (CLPP) studies. The application of *Trichoderma* enhanced the carbendazim removal and alleviated its effect on the microbial populations. The present study concludes that fallow conditions prolong presence of residual pesticides in soil and affects soil microbial community which may be reduced by using carbendazim tolerant bio-fungicides.

Keywords: Carbendazim, Maize, *Trichoderma*, HPLC, Community-level physiological profiling.

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Abstract No. 153

Need to Conserve the Biodiversity of Medicinal Plants

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ABSTRACT

Plants are the important part of our daily life. People use plants for many purposes like food, shelter , cosmetics clothing, medicine etc. Medicinal plants have a major role in human societies from history and prehistory time. For this filed human population is dependent mainly on plants. It is true that in the developed country many of our medicines are produced by chemicals in pharmaceutical companies, but the original formulas come from plants. Aspirin is comes from willows, opiate which is a pain relievers is derived from poppies and quinine from cinchona tree, which is used for the treatment of malaria. Neem leaves and Bark also used traditional by the rural people for the skin disease and also for malaria in these facts we are dependent on plants directly or indirectly. So it is our duty that we should conserve the biodiversity of medicinal plants because of its benefit for human health, however it also provides spiritual benefits as well as social benefits.

Kewords: Medicinal plants, Biodiversity, Traditional.

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Abstract No. 154

Birds as Conservation Indicators: Assessing the Status and Conservation Challenges of Indian Grey Hornbills in Gujarat, India

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ABSTRACT

Birds are trustworthy and often used indicators for conservation planning and monitoring. In India, there are nine different species of hornbills, all of which are prominent and well-known birds. We observed the Indian Grey Hornbill in the Gujarat countryside. We assessed the taxonomic diversity, level of global endangerment, dispersion patterns, and habitat preferences of birds surveyed across the landscape. We also discuss potential hazards and conservation challenges. Despite hopeful laws and regulations, the landscape faces a number of challenges, including habitat loss and fragmentation, unsustainable resource extraction, and climate change. As some of the approaches to preserving the landscape's rich avifaunal diversity, we propose increasing the importance of bird and biodiversity areas, reducing forest encroachment and habitat destruction, conservation awareness programs, thorough hornbill surveys with long-term monitoring to assess the impact of environmental change, and management of hornbill populations. The study's goal is to gather data on hornbill status, distribution, and conservation efforts. The primary goals are to stimulate public engagement in the collection of baseline data using sight recorders and to enable long-term monitoring of Indian Grey Hornbills in Gujarat. The current range of Indian Grey Hornbills in Gujarat, including both protected and unprotected habitats, has been mapped.

Keywords: Indian Grey Hornbill, Gujarat, Conservation, Threats.

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Abstract No. 155

Fungal and parasitic infections in fresh water edible fishes in central India, Jabalpur (M.P.)

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ABSTRACT

Fish constitutes half of vertebrates in the world. Fishes are totally dependent upon quality of water with respect to breathing, feeding, growth, excretion, maintenance of salt balance and also reproduction Some important genera found in M P. included *Catla catla*, *Channa*, *Cirrihinus*,*Cirihinus*, *Clarius*, *Ctenopharyngodon*, *Cyprinus*, *Heteropneutas*, *Labeo*, *Mastacembalus*, *Mystus*, *Notoptarus*, *Ompak*, *Puntius*, *Rita*, *Wallago*, *Xenenotdon*. Similar to other animals, fishes also suffer from various types of diseases. All fishes carry pathogens and parasites. Fungal and parasitic infections harmed fisheries and aquaculture. These infections on fishes causes damage on various parts of their body Fungal infections are mainly caused due to immune suppression. Fungi can attack fishes of all ages and it can also prevent successful hatching when it invades fish eggs. Among numerous aquatic fungi, species of oomycetes have special importance because of their effect on fish health. Parasites are extremely abundant and diverse in nature, representing a substantial portion of global biodiversity . Fishes are important from ecological, medicinal, nutritional, pharmaceutical and economical point of view. These fishes are parasitized by Helminthes in an urgent necessity today. These helminthic infection leads to various disorder i.e., Anemia. So, it is necessary to provide data for the prediction of integrated methods to achieve the regulation of numbers of harmful parasites.

Keywords: Fish, Fungus, Helminths, Ecological value.

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Abstract No. 156

Exploring Intertidal Habitat Characteristics and Actiniarians Diversity at South Saurashtra Coastline, Gujarat, India

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ABSTRACT

Saurashtra coast has one of largest continental shelf of India, with varying topographical and hydrological characteristics that result in distinct environmental variables in small spatial geographic areas. The mileolite limestone is the dominant substratum component of the Saurashtra coast, and the presence of carbonates leads to the formation of calcium carbonate exoskeletons build by organisms. The selected areas for this work to be conducted are along the Arabian Sea coast of South Saurashtra, which is rocky with irregular sand or mud patches. We explored the Saurashtra coastline and investigated intertidal habitat characteristics for this study. Based on the presence of sea anemones in the ecosystem, three coastal areas have been studied, namely Veraval, Chhara, and Mul Dwarka. Zone classification was performed, and the study sites were divided according to the established littoral zones. At the microhabitat level, sea anemone preferences were examined. The study was conducted during low tides, taking advantage of the high exposure of intertidal area. The environmental preferences of sea anemones have been classified into micro habitats for selected study sites based on a habitat classification method. When the coast was examined for detail habitat assessment was analyzed using a more modern categorization method, the absence of variation across habitats was also apparent. For sea anemone preference, 11 sub habitats were observed. The diversity and habitat preferences of eight species of intertidal sea anemones were reported from the intertidal zone of the South Saurashtra coast. The microhabitat preferences were documented based on their occurrence at the various study areas.

Key words: Microhabitat, Actinaria, Anthozoa, South Saurashtra coast, littoral zone.

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Abstract No. 157

Role of natural compounds and plant extracts in diabetes

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ABSTRACT

Diabetes is a chronic metabolic disorder that affects millions of people worldwide. Despite the availability of various medications, the management of diabetes remains a challenging task. Therefore, there is an urgent need for alternative and complementary therapies to manage this condition. Natural compounds and plant extracts have gained much attention in recent years due to their potential therapeutic properties in the treatment of diabetes. Several studies have reported the antidiabetic effects of these natural compounds and plant extracts, which include polyphenols, flavonoids, alkaloids, and terpenoids. These compounds have been shown to modulate various cellular pathways involved in glucose homeostasis, such as insulin signalling, glucose uptake, and glucose metabolism. The recent advances in the use of natural compounds and plant extracts for the management of diabetes, highlighting their potential as safe and effective therapeutic agents for the treatment of this metabolic disorder has been summarized.

Keywords: Diabetes, terpenoid, natural compounds.

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Abstract No. 158

Occurrence and Distribution of Microplastics pollution in the Indian subcontinent

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ABSTRACT

Microplastics (MPs), a new class of contaminants in our environment are the result of increased plastic production and consumption. Microplastic pollution is increasingly being recognized as pervasive in the environment and has recently been identified as a critical global challenge. United Nations Environmental Programme ranked microplastic pollution as one of the top ten environmental problems. Microplastics are plastic particles of size less than 5mm originated from primary and secondary sources. Primary microplastics include intentionally manufactured plastic particles (microbeads/plastic pellets) for direct use in personal care products, textiles, pharmaceuticals, and, industrial and cosmetic abrasives. Secondary microplastics are released into the environment as a result of weathering and fragmentation of larger plastic debris which eventually enters the aquatic, terrestrial, and atmospheric environments. The risk posed by microplastics is highly dependent on their diverse physical forms and chemical compositions that influence their occurrence, distribution, and fate in the environment. The increasing concern of microplastic pollution in every compartment of our environment is being globally explored, with relatively fewer studies in India. Among the total studies published on microplastic prevalence in the Indian environment, marine systems have received significantly higher attention compared to the other compartments like freshwater, atmosphere, terrestrial, and human consumable. This study aims to give the most recent understanding of the distribution and concentration (both qualitative and quantitative data) of microplastic contamination in the Indian environment including aquatic, terrestrial, and atmospheric systems as well as in human consumables. Also, the study will emphasize the requirement for an effective microplastic management system by keeping track of plastic waste production and identifying the potential risk associated with microplastic pollution.

Keywords: Microplastics, Occurrence, Distribution, Environment, India.

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Abstract No. 159

Groundwater Quality Assessment using Water Quality Index of Manipur, India

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ABSTRACT

In the present study, the water samples were collected from 22 sites of Manipur, India (North-Eastern Himalaya), to check the suitability of water for drinking and irrigation purposes. The study Scientifically demonstrates the estimation of Water Quality index (WQI) and hydrogeochemical characteristics of surface water samples by utilizing different statistical methods. The main water quality parameters considered for this study were TDS, conductivity, salinity, pH, hardness, cations and anions. In order to find out the deviation in the water quality parameters particularly with respect to BIS permissible limits WQI was calculated. To check the suitability of water for drinking purpose, hydrogeochemical facies and rock water interaction was derived by using established methods such as Piper Plot (determine water type), WQI (Quality monitoring), and saturation index (for mineral dissolution). The water quality index results revealed that 31 % of samples are in the good range for consumption. According to the hydrogeochemical analysis, the influence of ion exchange processes is attributed to the dominance of alkaline earth metals over alkali metals and weak acidic anions over strong acidic anions in the studied area. In order to check the suitability of water sources for irrigation, parameters like, Magnesium hazard (MH), Total hardness (TH), Permeability Index (PI), Sodium adsorption rate (SAR), and sodium percentage (Na%) were determined. Irrigation suitability for EC values ranges from moderate to high saline, whereas TDS values are classified as freshwater. Microbiological testing of water samples revealed that 30% of samples were contaminated. The research indicates that groundwater contamination is a problem in the location and more contaminated water is predicted as testing continues. Therefore, it is important to conduct regular surveys of water monitoring to detect other contaminants or to monitor how pattern changes in water resources with time.

Keywords: Water Sustainability, groundwater contamination, Water Quality Index, Piper Plot,

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Abstract No. 160

Need of Green Energy for Our Existence

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ABSTRACT

Green energy is compulsory for existence of all living organisms. It is the only option to protect our environment and keep it clean and healthy. As It does not emit carbon dioxide gas whichis mostly responsible for global warming and climate change. It is emitted by burning coals, petroleum and natural gases for electricity production. We can also produce more electricity through solar, wind or hydro energy which are green energy sources. So itsmore usecan reduce the use of fossil fuels and emission of CO2 gas. Humans are basically nature lover but they do not know that their acts are disturbing environment. They are not aware about their acts. Such as they are using refrigerator, coolers, air conditioners and many more instrument for their comfort which are consuming electricity. But most of the people do not know that most of the electricity are being produced by burning coal or natural gas or by nuclear fission which are causing major air pollution as they emit carbon dioxide, carbon monooxide gas, carbon etc. CO2 is a major green house gas causing global warming. It is a big issue causing environmental change. Electricity is also being produced by nuclear fission of thorium and uranium which are radioactive elements. Large amount of radioactive radiations are emitted during nuclear fission which are very harmful for our health as it is mutagenic. They can cause mutation in our cells which may results in cancer. Management of radioactive waste produced during electricity is also a very serious problem for us as they emit radioactive radiation continuously. Atomic weapons are also very dangerous for our existence. We already made a large number of atomic weapons which may destroy a major part earth. It may cause a major population size change of various species including human in a particular area. Threat of atomic war is a result of human foolish competition of weapons.Humans are doing many more thing which are harming environment and writing script of his own extinction. But human is intelligent. So it can be expected that they will understand their mistake soon and they will try to save environment for their own existence.

Keywords: Green energy, Nature, Petroleum, Mutation, Survival.

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Abstract No. 161

Sustainable Wastewater Management: A Natural approach using Algae in Oxidation Pond

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ABSTRACT

The oxidation pond treatment process is natural because it uses microor ganisms such as bacteria and algae. This makes the method of treatment cost-effective in terms of its construction, maintenance, and energy requirements. Oxidation ponds are also productive because they generate effluents that can be used for other applications. The ecological role of algae in the functioning of oxidation ponds has been well recognized. Algae play a dual role of oxygenation as well as stabilization of wastes in oxidation ponds. The determination kinds and abundance of algae in oxidation ponds can be used as a reliable index of the progress achieved in the oxidation of wastes. Finally, oxidation ponds can be considered a sustainable method for treatment of wastewater.

Keywords: Oxidation, Treatment, Algae, Wastewater, Sustainable.

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Abstract No. 162

Phytochemical screening, Antioxidant and Antibacterial efficacy of ethanol extracts of *Scoparia dulcis* L. and *Anisomeles indica* L.

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ABSTRACT

Several wild plants have antioxidant activity and exclusive defense properties against pathogens because they produce active compounds synthesized as the secondary metabolites and responsible for various biological activities. In the present investigation, the phytochemical screening, antioxidant and antibacterial efficacy of wild medicinal plants *Scoparia dulcis* L. and *Anisomeles indica* L.. Antioxidant properties were assessed by 2,2-diphenyl-1-picrylhydrazyl (DPPH), radical scavenging assay and antibacterial activity of the ethanol extract was assessed against two pathogenic bacteria viz. *E. coli* -ATCC10536 and Staphylococcus aureus - ATCC25923 by measuring zone of inhibition for both pathogens applying well diffusion method, comparing with the potentiality of standard antibiotics. Preliminary qualitative phytochemical screening showed the presence of alkaloids, flavonoids, glycosides, terpenoids, steroids, saponins and tannins in both plants. An effective free radical scavenging activity of *Anisomeles indica* L. 82.24% and *Scoparia dulcis* L. 59.86% was observed for chloroform fraction at 1.0 mg/ml. compared to n-hexane and butan-1-olfractions but less than the standards. The n-hexane fraction was found most effective for inhibiting bacterial growth where ZOI value of *Anisomeles indica* L. 21.2 ±0.57mm and *Scoparia dulcis* L. 17.1 ±0.41mmagainst *E. coli* -ATCC10536 and Staphylococcus aureus -ATCC25923 respectively, whereas the chloroform and butan-1-olfractionsof *Anisomeles indica* L. and *Scoparia dulcis* L. showed moderate antibacterial activity. The results also support ethno-medicinal use of plants reported earlier. Present study revealed that studied plant extracts could be efficacious remedial antioxidant and herbal antibiotics, particularly both in controlling Gram-positive and Gram negative bacteria as well known human pathogens.

Keywords: Phytochemical, Wild medicinal plant, Antioxidant, Antibacterial, *Anisomeles indica*.

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Abstract No. 163

Macrofungal Diversity of Kanha National Park and Its Ecosystem Services

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ABSTRACT

Fungi are one of the dominant ecological players in maintaining healthy forest ecosystems. They are playing a key role in litter decomposition and nutrient recycling. The existence of flourished forest is mainly due to mutualisticmycorrhizal association between fungi and green trees. There are some fungal species have known to cause diseases in trees leads to wilting and decaying of heartwood. Kanha national park situated in the Maikal range of Satpuras in Madhya Pradesh, have rich faunal and floral diversity. However, until now there has been a smaller number of studies on the diversity and distribution of macro-fungi in Kanha National Park.Therefore, the present study was conducted during July 2022 in Kanha national park to investigate the macrofungal diversity and distribution. Macromorphological examinations was done based on the field notes and color photographs of the fresh fruit bodies. A total of 65 macrofungal species were identified. They belonged to 38 genera spread over 25 families and 9 orders of 2 classes (Agaricomycetes and Sordariomycetes). Agaricales (33%) was the largest order followed by Polyporales(18%), Boletales (12%), Xylariales,(8%), and Geastrales Dacrymycetales, Lycoperadales and Auriculariales (1% each). The most represented families were Polyporaceae followed by Agaricaceae, Xylariaceae and Pluteaceae. Other important fungal families were Boletaceae, Lyophyllaceae, Geastraceae and Morchellaceae. Higher percentage of saprophytes (Presence of macrofungal orders and families has ensured the dominance of humicolousandlignicolousfungi) in the present study is showed that, the forests is in good health conditions. The availability of substrate (wooden logs, debries, decomposable litter) for colonialization, suitable weather condition for mycelial multiplication, undisturbed forest floor due to less anthropogenic interferencemight be the favourable factors for above fungal species dominance. Moreover, some wild fungi like Auricularia, Schizophyllumcommune, Pluteus Plautus, Polyporousgamocephallus, Boletus reticulens, Ganoderma spp. Coprinellus disseminates and Termitomycesheimii etc.,were also reported with brief history of potential nutraceutical and pharmacological importance. As these macrofungi has the lot of potential for research in food and medicine along with its ecosystem functions. Very few parasitic pathogenic fungi were reported and concluded that, forest health is at good conditions. The enriched fungal diversity was observed compared to other forest may be due to less human interference, habitat destruction practices and other destructive management practices is nil in this forest. The study will provide basic data of macrofungal diversity in Khana National Park. The reserve may also have different potential macrofungal diversity and distribution. Exploring the hidden relationship of macrofungal diversity and its impact on ecosystem functions can provide better strategies for its conservation and managements in forest.

Keywords: Macrofungal Diversity, Wild Mushrooms, Ecosystem functions, and National Park.

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Abstract No. 164

Study on Growth and Yield Performance of different Cucumbers under Agro-Climatic Conditions of Ranchi, Jharkhand

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ABSTRACT

The cucumber *(Cucumis sativusL.)* is an important and big group of vegetables belonging to the family cucurbitaceae. Cucumber has tremendous economic and dietic importance. The mature fruits are eaten raw as salad; the immature fruits are used in pickles. Cucumber is a coarse prostrate, annual vining plant with stiff hairs or spines on leaves and stems. Unbranched lateral tendrils developed at the leaf axils. Female flowers normally do not appear until the day length begins to decline. The flowers are monoecious and flowering start normally 40-45 days after sowing depending on the weather conditions. The present investigation was carried out during the month of March to May 2021 at the dept. of Botany, Ram Lakhan Singh Yadav College, Kokar, Ranchi University, Ranchi. The experiment consisted of eight different varieties of cucumber for growth and their yield. The study was covered under different parameters like seed germination, vine length, number of leaves per plant, number of branches per plant, leaf area index, days to first female flower initiation, number of fruits per plant, weight of a fresh fruit, fresh fruit weight per plant and fresh fruit yield per hectare were collected. On the basis of all observation it can be concluded that the highest cost benefit ratio was found in variety of Greenlong-Maphyco (CS#05) of cucumber.

Keywords: Growth, germination, reproductive characters.

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Abstract No. 165

Sustainable Development and Natural Resources

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ABSTRACT

Sustainable development is the cornerstone of a world that is fair and equitable for all. Achieving a balance between human progress and the environment is essential for a sustainable future. Natural resources are a critical component to this effort. Our world has been blessed with an abundance of natural resources, but it is up to us to use them wisely in order to ensure that they are available for generations to come. Natural resources include water, minerals, vegetation, and energy sources such as solar and wind. They are the foundation of life on Earth and essential for the health of all ecosystems. Unfortunately, these resources are finite and can be used up or exhausted if not managed responsibly. In order to ensure that natural resources are used sustainably, governments need to set clear regulations and laws. These should include limits on resource exploitation, restrictions on pollution, and incentives for environmental protection. Governments also need to provide support to those involved in sustainable resource management, such as farmers, foresters, and fishermen. Businesses must also play their part in the sustainability effort by implementing green practices. This includes reducing energy consumption, using renewable sources of energy, and incorporating sustainable production methods. Companies should also make sure that their supply chains are efficient so that they can minimize their environmental impact. Another important part of sustainable development is education. People need to be informed about the importance of natural resources and how to use them responsibly. Schools should teach students about environmental laws, resource management, and sustainability issues in order to ensure that they have a basic understanding of these topics. This can help them make better decisions when it comes to using natural resources in their everyday lives. Finally, individuals must also do their part by taking steps to conserve natural resources. This includes recycling materials when possible, choosing energy-efficient products, and reducing water usage. Individuals can also take part in conservation efforts in their local area by volunteering with organizations that are devoted to preserving natural habitats or planting trees. Sustainable development is essential for a better future for all of us. Natural resources are a crucial component of this effort, and it is up to us to use them wisely so that they can be enjoyed by generations to come. Through responsible government regulations, businesses practices that prioritize sustainability, educational programs, and individuals doing their part, we can ensure that our world has sustainable access to its precious natural resources.

Keywords: Sustainability, Environment protection, Energy efficiency.

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Abstract No. 166

Apoptosis Analysis in Spleenocytes of Guinea Fowl compared to Broiler Chicken

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ABSTRACT

Flow cytometric analysis for apoptosis and necrosis in spleenocytes of guinea fowl and broiler chicken infected with Salmonella enterica serovar Enteritidis (SE) was done at 1, 4 and 12 hrs Post inoculations. Spleenocytes were cultured in 6-well plate in RPMI-1640 maintenance media with 1x106 cells per well and stimulated with Salmonella enterica serovar Enteritidis (SE). Assay was performed using the Alexa Flour® 488 annexin V/Dead cell apoptosis kit (Invitrogen, USA). At 1 hr p.i., the percentage of annexin V positive cells (early apoptotic cells) and PI positive cells (necrotic cells) were notably higher in induced spleenocytes compared to uninduced spleenocytes of both GF and broiler. The percentage of annexin V and PI positive cells were notably lower in induced and uninduced spleenocytes of GF compared to those of broiler. Similar results obtained at 48 hrs p.t., except in GF percentage of necrotic cells was higher in uninduced spleenocytes in comparison to induced spleenocytes. At 12 hrs p.i. the results were on similar trend except the percentage of necrotic cells was higher in uninduced spleenocytes in comparison to induced spleenocytes in both GF and broiler. Apoptotic patho-physiological changes revealed that guinea fowl was more responsive than broiler chicken to pathogen induction occurred in cells. These unique responses in guinea fowl may be due to the low intensity of selection for growth traits in contrast to the broiler, which has the history of intense genetic selection for growth, a process which may leads to reduced or suppressed inflammatory responses. The results of the present investigation are encouraging for the establishment of guinea fowl as a model for the disease resistance studies.

Keywords: Apoptosism, guinea fowl, spleenocytes, Salmonella enteric.

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Abstract No. 167

Gamma rays induced Cytomixis and its consequences on meiotic and post-meiotic products in Pollen mother cells of *Corchorus capsularis* L.

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ABSTRACT

Cytomixis, is a phenomenon that exchanges nuclear and cytoplasmic material and is recognized as a sort of natural intercellular interaction observed in meiotic cells such as anther which is influenced by various factors.The use of Gamma irradiation is a common practice in mutation breeding. However, it is observed in several experiments that Gamma rays can induce cytomixis in plant cells and induce genetic variation. In the present study was planned to assess the cytomixis and its post-meiotic behavior in *Corchorus capsularis* L. The transmigration of chromatin material between two adjacent meiocytes was observed at various exposure rates of gamma radiation viz., 100, 200, 300, 400, and 500Gy in inbred seeds of jute (variety JRC-698). The consequence of gamma rays on pollen fertility, cytomixis frequency, and cytomixis form has been examined. Different meiotic stages (PI, MI, AI, and TI), direct fusion (DF)and cytomictic channels (CC) were observed in the cytomixis cells. The rate of cytomixis recurrence rises gradually with the dose rate of gamma radiation. The result of the present experiment shows that gamma rays have a significant effect on pollen fertility, frequency of cytomixis, and kind of cytomixis cells in pollen mother cells (PMCs) on *Corchorus capsularis* L. Being potent inducers of variety, gametes produced with unequal chromosomes can be subsequently utilised in breeding strategies.

Keywords: Cytomixis, *Corchorus capsularis* L., Gamma radiation, Mutation breeding.

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Abstract No. 168

Isolation and identification of phosphate solubilising microbes from the rhizospheric soil of gram plant growing in different agricultural fields of Jaunpur District (UP)

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ABSTRACT

Phosphorus (P) is a major and essential macronutrient for food production and it plays a key role in different growth processes occurring in plants, such as root production, flowering, seed formation, photosynthesis, and maturation. The unavailability of soil P to plants due to binding to soil mineral particles and elements (e.g., calcium (Ca), magnesium (Mg), aluminum (Al), iron (Fe)) present in the soil causes severe crop yield losses (Lun et al., 2018; Roy et al., 2016). The phosphate solubilising microbes (PSM) are solubilize the insoluble phosphorus from agricultural soil and make it available for plants. Pulses are the second most important group of crops after cereals. India is the largest producer and consumer of pulses in the world contributing around 25–28% of the total global production. Gram is the very common pulse crops grown in India. There is a need to increase the production of gram plant and other pulse crops. Low-cost and environmentally friendly agricultural practices have received increasing attention in recent years. Microbial inoculants containing phosphate solubilizing microbes (PSM) represents an emerging biological solution to improve rhizosphere phosphorus availability. The present study aims to isolation and identification of PSM from rhizospheric soil of gram plant from three different selected agricultural fields of Jaunpur district (UP). Total 12 phosphate solubilising microbes were isolated from the selected sites of the rhizospheric soil of gram plant. The diversity and population of PSM species varies with sites and stages of plant growth. Bacterial population were more dominant over fungal population in all the three sites.

Keywords: Phosphate solubilizing microbes (PSM), agricultural practices, rhizospheric soil.

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Abstract No. 169

Harmful snails and their control by the use of various natural plant products

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ABSTRACT

Liver fluke is important parasitic trematodes that cause Fascioliasis disease among humans and ruminants; although over the past three decades human fascioliasis has gained significance as an important disease in various parts of the world. It is a waterborne disease, caused by two major trematodes species of *Fasciola hepatica* and F. *gigantica.* It is also known as liver cirrhosis or liver rot. The carrier Fasciola host is a vector snail, in which *Lymnaea acuminata* and *Indoplanorbis exustus* species of the snails is an intermediate host. The control of the vector snail population below a threshold level is a major tool in reducing the incidences of fasciolosis. Several types of research and technique were designed for studying the effect of plants-derived products/molluscicides and their impact on the vector host snails. It is a safer and more biodegradable natural product. Plant-derived molluscicides have gained more importance because they are considered ecologically sound and culturally more acceptable than synthetic molluscicides. Several researchers have identified that plant products have a group of natural components that can frequently use as molluscicides. These natural compounds are spooning, alkaloids, alkanet, tannins, phenols, trapezoids, falconoid, steroids, lactones and glycosides, etc. which have molluscicidal properties. Some other natural products can be identified by the screening of plant species.

Keywords: Fascioliasis; Molluscicides; Natural products; L. *acuminata; I. exustu*s.

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Abstract No. 170

Climate affects ethno-medicinal plants of Barmer district of Rajasthan

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ABSTRACT

The climate change is predominantly affects the environment challenges. Almost all the region and societies of world are affected by the climate change. Ethno medicinal and aromatic plants have played important role for human, against many disease, as ailments etc. from earth's history. Decreasing of wild ethno-medicinal plants are due to natural and anthropogenic calamities i.e. rapid climate change, urban development, deforestation, industrial boom, over-population pollution, shrinking forest cover, habitat loss, over-harvesting, destructive harvesting, drought and floods. Rajasthan is the largest state of India is among the resource less regions, and the region is store of many important minerals but deficiency in basic resources like fertile and productive land and water. Ethno medicinal plants of this area are used to treat and cure various diseases. We have collected the information with the help of structured interviews during survey in region of Barmer with local communities and villagers as *Kalbelia, Lohar, Jogi, Ojha, Nath, Bheel, Bhopa, Baba, Bhagda, Mangniyaar, Langa, Banjara* and *Raika* are having vast knowledge of ethnomedicinal plants that are used in curing various health ailments. Diminishing of plant species of this Thar region is because of overexploitation and anthropogenic activities therefore their conservation is required because these plants are facing the danger of extinction. This study mainly focuses on survey, conservation, awareness, of ethnomedicinal endangered plants. The requirement of legal documentation and record of ethno medicinal traditional knowledge will be useful in making new drug discovery in the future.

Keywords: Ethno-Medicinal, Anthropogenic, Endangered, Over-Harvesting.

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Abstract No. 171

Green Technology and Environmental Sustainability

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ABSTRACT

World's resource system is already under stress. Furthermore, as the interactions between the food, energy, climate, water, and economic systems are increasingly understood, proper action is needed to both prevent future dangers and manage those that have already materialised. Therefore, resource scarcity and climate change represent a significant shift in the environment, and the long-term trend of climate change and the availability of vital natural resources will exert increasing pressure, having significant effects on economic growth and a variety of potential negative ef fects on society at large. Parallel to this, climate change is projected to continue to have an increasing amount of an impact on global economic and financial activity. The global resource system is already stressed. In addition, the interaction between food, energy, climate, water and economic systems is becoming better understood and appropriate action is required to proactively manage future risks as well as cope with impacts already evident. Therefore, the resource constraints and climate change represent a significant change in the environment and the increasing pressure of the long-term trend of climate change and the availability of essential natural resources will have significant impacts on economic development with a range of possible adverse effects on global society.

Keywords: Green technology, environment, wastewater, water sustainability, green materials.

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Abstract No. 172

Energy conservation: The benefits of energy storage

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ABSTRACT

Waste heat from industrial processes, steam from solar thermal power plants or electricity from photovoltaic panels are examples of energy resources, which cannot be used more extensively without energy storages. A huge potential of energy sources substituting fossil fuels can only be exploited by energy storage systems, utilizing renewable like solar thermal, PV and wind energy. Thermal and electrical energy storage systems enable greater and more efficient use of these fluctuating energy sources by matching the energy supply with the demand. This can finally lead to a substantial energy conservation and reduction of CO2 emissions. The growing peak demand of today's energy consumption, essentially caused by electrical air conditioning, leads more often to black outs all over the world. Such a problem- the shifting of a peak demand for only a few hours or minutes can be solved by cold storage technologies. In this context, energy storages can be the best solution not only from the technical point of view, but also for economical reasons.

Keywords: Photovoltaic panels , fossil fuels ,energy storage.

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Abstract No. 173

Study for biological potential of extracts from leaf sample of *Achyranthes aspera*

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ABSTRACT

Achyranthes aspera is a wild perennial herb commonly found in tropical region that has been considered as invasive weed. The importance of medicinal and pharmacological potential has not been studied in a larger extend along with importance of these plants in Nanotechnology. In this research study, the qualitative analysis for presence of bio-metabolites has been studied along with quantitative analysis of Total Flavonoid content (TFC) and Total phenolic content (TPC). Characterization of metabolites was done by thin layer chromatography and separation of bioactive compounds was concluded by column chromatography. In-vitro analysis such as antimicrobial, antioxidant properties and anti-inflammatory activity, green synthesis of silver nanoparticles from the extracts and characterization and study of their antimicrobial activity was studied. The Qualitative analysis of phytochemicals for hydro-alcoholic extract of leaf sample of Achyranthes aspera contained Alkaloids, Flavonoids, Phenols, Tannins, Terpenoid, Saponin, Steroids, Glycosides, Carbohydrates and fixed oil. Proteins and amino acids were absent. Whereas the aqueous extract contained Flavonoids, Phenols, Tannins, Saponins, Steroids, Carbohydrates, Glycosides and Amino acids. Quantitative estimation for Total Flavonoid content (µg Quercetin QE/mg extract) for hydro-alcoholic and aqueous extract of leaf sample were found to be 17.166±0.005µgQE/mg extract and 23.344±0.023µgQE/mg extract respectively; Total Phenolic content (µg Gallic acid GA/mg extract) found to be 12.726±0.018µgGA/mg extract, 7.087±0.023µgGA/mg extract respectively; and Total Tannin content (µg Tannic acid TA/mg extract) found to be 3.097±0.027µgTA/mg extract, 1.192±0.077µgTA/mg extract respectively. Antioxidant assay was carried out using DPPH (2,2-diphenyl-1-picryl-hydrazyl-hydrate) reagent, calculating the percentage of inhibition by reduction in absorbance of test sample and Ascorbic acid as standard. The percentage of inhibition for standard ascorbic acid was 89.65±0.07% whereas percentage of inhibition for hydro-alcoholic and aqueous extract was found to be 41.45%±0.06% and 62.77%±0.11% respectively. The hydro-alcoholic and aqueous antimicrobial activities against pathogens such as E.coli, Staphylococcus and Pseudomonas sp. Screening for production of silver nanoparticles from elemental silver nitrate solution detected by change in color to brownish to reddish brown in color. Hydro-alcoholic and aqueous extract both showed positive for synthesis of nano-particles that was further confirmed by spectrophotometric analysis. Antimicrobial activity for the extract-Ag nanoparticles show increase in antimicrobial activity. Exploring new prospect in extraction, purification, analysis and down-stream process can give new insight to new drug chemistry and pharmacological aspects.

Keywords: *Achyranthes aspera*, Antioxidant assay, Anti-inflammatory assay, Nanoparticles.

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Abstract No. 174

Trigonelline, a potent bioagent to combat N'-Nitrosodiethylamine-induced liver inflammation in rodents

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ABSTRACT

The development of chemically synthesized drugs has revolutionized health care in most parts of the world. Out of the total drugs prescribed worldwide, about 25% are plant derivatives. Large sections of the population in developing countries still rely on herbal medicines for their primary care as they are more affordable and more closely corresponds to the patient's ideology, and allays concerns about the adverse effects of chemically derived (synthetic) medicines. Out of various herbal medicines, Trigonelline (TG) is also considered to be effective in treating various diseases. Trigonelline is a plant alkaloid having molecular formula C7H7NO2 commonly found in fenugreek (Trigonella foenum-graecum) as well as in potatoes, garden peas, oats, hemp seed, dahlia and coffee beans and is produced from Vitamin B3 metabolism. Researches revealed TG as an anticarcinogenic, hypocholestemic, hypoglycemic, antiseptic, neuroprotective, hepatoprotective, nephroprotective and insulinotropic agent. We carried out biochemical and proteomics studies on the use of TG against experimentally-induced fibrotic male Wistar rats which showed distinct symptoms of amelioration and regeneration of hepatic cells. Significant restoration in the measurement of lipid peroxides, glycogen, hydroxyproline, AST/ALT, SOD, CAT, GST were also observed in TG treated animals. These results were also in confirmity with our histopathological examinations and proteomic studies. Thus, TG in prescribed doses may be recommended to treat experimental liver fibrosis in rodents.

Keywords: Ideology, Herbal Medicine, Amelioration, Proteomics.

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Abstract No. 175

Green IoT based Technology for Sustainable Smart Cities

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ABSTRACT

Environmental sustainability is a widely discussed subject around the world. The important role of Internet of Things (IoT) as an integral part of ICT infrastructure for sustainable smart cities. It makes the smart cities a greener place by identifying pollution through environmental sensors. Around the world the government and various public and private organizations are making individual as well as collective efforts to reduce the energy consumption and carbon production and recommending Green IoT (G-IoT) for smart cities. Extant literature on smart cities related architectures is very much present for some time. But this paper discusses the concept and utility of the G-IoT to create a green environment with an idea of energy saving in smart cities. Moreover, this paper proposes the design of a G-IoT configuration that clearly focuses on the reduction of the energy consumption and more particularly limiting the energy usage to achieve the objective of sustainable green smart cities. We have shown that our proposed G-IoT configuration that completely depends on cloud-based system ultimately reduces the hardware consumption.

Keywords: Internet of Things, ICT, Environmental sustainability.

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Abstract No. 176

Microbial Biodeterioration of Cultural Heritage: Events, Colonization and Analyses

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ABSTRACT

Geochemical cycles result in the chemical, physical, and mineralogical modification of rocks, eventually leading to formation of soil. However, when the stones and rocks are a part of historic buildings and monuments, the effects are deleterious. In addition, microorganisms also colonize these monuments over a period of time, resulting in formation of biofilms; their metabolites lead to physical weakening and discoloration of stone eventually. This process, known as biodeterioration, leads to a significant loss of cultural heritage. For formulating effective conservation strategies to prevent biodeterioration and restore monuments, it is important to know which microorganisms are colonizing the substrate and the different energy sources they consume to sustain themselves. With this view in scope, this review focuses on studies that have attempted to understand the process of biodeterioration, the mechanisms by which they colonize and affect the monuments, the techniques used for assessment of biodeterioration, and conservation strategies that aim to preserve the original integrity of the monuments. This review also includes the "omics" technologies that have started playing a large role in elucidating the nature of microorganisms, and how they can play a role in hastening the formulation of effective conservation strategies.

Keywords: Biodeterioration; Biofilm; Conservation; Metagenomics; Microorganism; Monument.

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Abstract No. 177

Advances in energy conservation and storage

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ABSTRACT

Two essential parts of our worldwide endeavour to move to a more sustainable and clean energy system are conserving energy and storing energy. As our need for energy grows, it is more crucial than ever to create new technologies and tactics that may help us save energy while also figuring out how to store renewable energy sources for later use. Reducing the quantity of energy required to carry out a task or finish a process without compromising comfort or performance is known as energy conservation. The creation of energy-efficient building materials and designs has been one of the most significant developments in energy conservation. For instance, improved window coatings and insulation materials may assist save on energy costs associated with heating and cooling buildings, while green walls and roofs can help control inside temperatures and enhance air quality. Transportation is a crucial sector for energy saving. Electric cars (EVs) are now much more common, and there are several new versions available with better driving ranges and quicker charging periods. In addition, improvements in transportation infrastructure, such as public transit networks and intelligent traffic management systems, can assist ease traffic congestion and boost the effectiveness of the transportation system. Energy storage is essential for permitting the use of intermittent renewable energy sources like solar and wind. The creation of lithium-ion batteries is one of the most important recent developments in energy storage. These batteries, which are used in everything from mobile electronics to electric vehicles, have recently improved in terms of efficiency and cost-effectiveness. Hydrogen fuel cells, which produce electricity from hydrogen gas, and flow batteries, which store and discharge energy using liquid electrolytes, are two further intriguing energy storage technologies. The usage of pumped hydro storage, which includes pushing water uphill to store energy and releasing it to produce power when needed, has also increased significantly . Although this technique has been around for a while, new developments in pump and turbine technology have increased its effectiveness and reduced its cost. Advances in energy conservation and storage are critical for achieving a sustainable and clean energy future. These developments can help reduce our dependence on fossil fuels, lower greenhouse gas emissions, and improve ener gy security. While there is still much work to be done, the progress that has been made in recent years is a promising sign of what is possible.

Keywords: Green Energy, Energy Conservation, Electricity.

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Abstract No. 178

Green synthesized nanomaterials as an emergent tool to remediate water pollution

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ABSTRACT

The exponential growth in urbanisation and industrialization has made water pollution a significant global problem. The quality of water resources has been impacted by anthropogenic influences such as the release of industrial waste, oil spills, dyes and other toxic contaminants. This leads to adverse effects on the ecosystem and human life. Even though some remediation technologies have been used to remove contaminants, they are time-consuming, non-eco-friendly to the environment, and expensive. Therefore, it is imperative to introduce an innovative, sustainable approach as a substitute for the conventional remediation methods. Nanomaterials have lately emerged as the promising for the treatment of wastewater due to their distinctive qualities, such as high surface area, chemical reactivity, energy requirements, cheap costs, and effective regeneration for reuse. As a result, green nanomaterial fabrication has become a viable solution for mitigating several types of environmental pollution. Unlike other traditional technologies, this approach is non-toxic, environment friendly, and economical. In this study, a glimpse at the green route of NPs synthesis from several natural extracts, as well as some of their potential application in waste water clean-up are considered. Additionally, the potential future prospects of this technology in preserving water quality and enhancing ecosystem is highlighted.

Keywords: Water pollution; Nanomaterials; Remediation.

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Abstract No. 179

Host diversity of flower chafer beetle (*Oxycetonia versicolor* Fabricius) on the verge of becoming a major pest on several plants

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ABSTRACT

The flower chafer beetle, *Oxycetonia versicolor* Fabricius, is a major agricultural and horticultural pest. Belonging to the Scarabidae family and the Coleoptera order, it has been reported to infest crops such as brinjal, sorghum, pearl millet, jatropha, maize, and roses. Its incidence and host range have been observed in the former field and D.G. College of Kanpur, where its population was found to be higher from August to October during the early flowering stage of the crop field. The study recorded the number of beetles present on ten plants at each location and presented the weather conditions during the study period. The survey found that adult flowers are preferred by the chafer beetles, which feed on and destroy the flowers, pollen, and other reproductive parts inside them. The beetles also damage the tender balls of plants, such as those on brinjal, cotton, pigeon pea, and roses. The presence of flower chafer beetles during the reproductive stage of various plants leads to significant economic losses for farmers and increases the cost of plant protection. The damage caused by these pests' results in direct and indirect yield loss. In conclusion, the flower chafer beetle, *Oxycetonia versicolor* Fabricius, is a destructive pest that poses a threat to various agricultural and horticultural crops. Its incidence and host range are widening, causing significant economic losses for farmers. Therefore, it is necessary to develop effective control measures to manage the infestation of this pest and minimize its damage to crops.

Keywords: Flower Chafer Beetle, Host Diversity, Rose flower petals.

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Abstract No. 180

Implications of Green Technology

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ABSTRACT

Any technology that is designed to be eco-friendly, from its development to its use, falls under the broad category of "green tech." Since humans are using up natural resources faster than they can be replaced, this constantly developing technology seeks to be less stressful on them. The main aim of 'Green technology's is to combat climate change, safeguard the environment, lessen our reliance on non-renewable resources like fossil fuels, and repair environmental harm. The transportation, energy, and waste management industries are a few of the sectors that are actively investing in this technology. Although employing this technology has many benefits, it still needs to overcome some obstacles before it can become the new standard. Green technology has experienced some of the fastest employment growth throughout the years. For the survival of humanity, it is becoming more and more evident that we must invest more in environmentally friendly technologies. Green technology is essential for lowering environmental hazards and conserving natural resources. Even while we now have cutting-edge technologies for decreasing emissions, such as wind power, improved solar cells, and electric vehicles, we still need to address the issue of technology transfer because the developing countries create the majority of these technologies.

Keywords: Green technology, Natural resources, Emerging technologies.

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Abstract No. 181

Nanotechnology and Environment

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ABSTRACT

The term "nanotechnology" refers to a broad range of currently being developed technologies at the nanoscale. It significantly influences the development of new production methods, the replacement of out-of-date production equipment, and the reformulation of new materials and chemicals with improved performance, all of which result in lower energy and material consumption, lessen environmental harm, and facilitate environmental remediation. Even if the environment benefits from less energy and material use, nanotechnology will make it possible to fix issues with current processes in a more environmentally friendly way. Applications of nanotechnology to the environment concentrate on creating solutions for present environmental problems, safeguards against possible concerns brought on by interactions of energy and materials with the environment in the future, and any potential risks posed by nanotechnology. Thus, nanomaterials exhibit special physical and chemical properties that make them interesting for novel, environmentally friendly products.

Keywords: Nanomaterials, Nanotechnology, Environmental Issues.

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Abstract No. 182

Vedic science and environment sustainability

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ABSTRACT

Vedas have description on all the spheres exist within and outside of the body. It is well known that water, air andland are basis of lives on the earth. So it is necessary to make these important elements clean. In Vedas it is said that, five elements (Panchmahabhuta) are essential for life; these are earth, water, air, fire and ether. These elements should be balanced otherwise nature will be disturbed. In Vedas and Puranas, important verses are mentioned to wish for a clean and unpolluted earth. Due to lack of Vedic knowledge, present machinery generation unaware of the scientific protocols and logic behind the Vedic practices to protect the environment. Development of different machines just to ease our work is actually the degradation of healthy environment. From aluminium utensils to microwave oven, fridge, air conditioner and many other items are not only affecting living beings health but also disturbing the ecosystem too. Vedas have concept of Oshadhi and plants were worshiped in Vedic period to protect their medicinal value but today thousands of plants are being cut just for the sake of civilization. This article is a beautiful presentation in which it has been told how the environment was kept clean during the Vedic period and how we are polluting the environment today in the name of innovation.

Keywords: Vedic science, Ancient practice, Environment sustainability, Modernization.

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Abstract No. 183

Antifungal activities of Eucalyptus oil against lignolytic fungi (*Aspergillus flavus, Aspergillus parasiticus, Collectoricum capsici*) invading leather

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ABSTRACT

Deterioration of leather due to invasion of lignolytic fungi is of great concern in India. These fungi metabolize substances in leather causing serious damage such as pigmented stain that is difficult to remove, deface, surface roughness and loss of physical and mechanical resistance affecting quality of the final product. An attempt has been made to evaluate the anti-fungal effect of *Eucalyptus* oil against growth of three common lignolytic fungi (*Aspergillus flavus*, *Aspergillus parasiticus*and *Collectoricum capsici*) with objective for application of this oil asbiocides for protection of leather against the bio-deterioration caused by these fungi. Growth of fungal hyphae of three lignolytic fungi on leather treated with *Eucalyptus* oil (EO) was visually estimated. EO was applied by well diffusion method and the fungal growth inhibition was measured. In this study, 1200 mg/L was the minimum inhibitory concentration (MIC) for *Colletotrichum capsici, Aspergillus parasiticus, Aspergillus flavus and* the growth of the fungus was invisible at a concentration 1,200 mg/L. The maximum zone of inhibition by fungicide (Fluconazole) was recorded towards *Aspergillus flavus*. The maximum zone of inhibition was 14±2.1, 12±3.1 and 11±0.9 for fungal isolate *Aspergillus flavus, Colletotrichum capsici* and *Aspergillus parasiticus*, respectively. The maximum zone of inhibition by *Eucalyptus* oil was 16±4.1 for *Colletotrichum capsici* followed by 16±4.1, 12±3.1 and 0.8±0.4 for *Colletotrichum capsici*, *Aspergillus parasiticus and Aspergillus flavus*, respectively. The data were significantly different at the level $p < 0.05$. The chemical constituents of the EO were analyzed by GC/MS, which showed presence of amino acid, protein, lipids such as 1,8 cineole, camphor, camphene, α-pinene and β-pinene, α-fenchone and β-eudesmol, phenolic compounds, thymol, carvacrol, p-cymene, and c-terpinene to complete inhibition against the growth of lignolytic fungi isolated from the leather. These findings support the potential use of EO for wood protection against lignolytic fungi infestation for surface-treatment or fumigation of leather products of cultural and historical properties.

Keywords: Leather, Lignolytic fungi, Biodeterioration, Antifungal activity, *Eucalyptus* oil (EO).

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Abstract No. 184

Green technology for sustainable agriculture development

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ABSTRACT

Agriculture plays a meticulous role in ensuring long-term sustainability for the development of agriculture and its allied field. The agro-based environment friendly technology is termed as "Green Technology (GT)". Green technology, sometimes also known as clean technology, aims to lessen humans' negative effects on the environment, and when properly implemented, can support the human population on Earth indefinitely while also providing future generations with effective agricultural systems to use for the higher production rate. Green technology seeks to lessen humans' negative effects on the environment. Green technology (GT) is a method of repairing environmental harm and so aiding in the eradication of poverty and the expansion of a sustainable agriculture sector. Food is produced through agriculture, which also depends on natural resources for proper development the of agricultural sector. Excellent stewardship in agricultural production is required to move towards a more sustainable path of economic development because both food and natural capital are essential for both the present and the future. In terms of food production, storage, and transportation, agriculture is one of the biggest contributors to environmental degradation today. This is because it causes enormous amounts of fossil fuels to be released into the atmosphere, hastening global warming. Focusing on the best green agriculture technologies is more important than ever given the expanding global population and rising standards of life. The importance of green farming technologies cannot be overstated.

Keywords: Green Technology, Sustainable development, Agriculture.

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Abstract No. 185

Biochar for Eco-efficient Removal of Environmental Pollutants: A Sustainable Approach

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ABSTRACT

In the last few decades, pharmaceuticals and personal care products (PPCPs), pathogenic microbes, and heavy metals of surface water bodies have become a major concern for sustainable development (SDGs. 6 and 14). Moreover, these different contaminant classes often co-occur in polluted water to varying degrees in different seasons, which pose a great risk to the human as well as aquatic life with large uncertainty. The Baddi-Barotiwala-Nalagarh (BBN) region of Solan, Himachal Pradesh, India is considered as one of the largest and important pharmaceutical industrial clusters in Asia (third largest in the world) accommodating more than 2000 noteworthy industrial giants. The dry summer season from March to June usually coincides with the shedding of needles by Chir Pine trees. Therefore, regular removal of the needles from Chir forests will reduce the risk of wild fires, which may create an enormous amount of forest biomass that is wasted without any value addition. To convert the "waste" (fallen dry pine needles) into "wealth" (waste recycling) this project aims to develop affordable and effective biosorbents (biochar) for the removal of bioactive compounds from the pharmaceutical wastewaterfor the first time in Indian perspective. An improved understanding of the transport and retention of emerging pharma compounds in the environment will provide a critical knowledge base for producing safe drinking water. Additionally, the proposed talk will deliver information to have insights on fundamental knowledge of biosorbent interaction with hydrophobic/hydrophilic organic contaminants which could also interest the very broad scientific communities' i.e biomaterial science, water resources engineering, soil, and groundwater engineering. Results obtained from the current study may be useful for (i) Utilization of local waste materials (waste recycling) (ii) Abatement of ECs pollution from water and (iii) Livelihood generation of local people.

Keywords: Biochar, Livelihood, Biosorbent, Waste, Eco-friendly.

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Abstract No. 186

5R's of Zero Waste Management to Save Our Green Planet: A Narrative Review

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ABSTRACT

Earth, the green planet is the only planet in our solar system known to host life. In the absence of food and water, life cannot survive. Without productive soil, the world would fail to support even half of its present organisms, or a tenth of its human population. At present, basic natural resources needed for human life are either growing scarce or are frequently polluted. In many parts of the world, soil is degraded, water is scarce, and food supplies are declining. In modern times, the waste generated by humans has become a big challenge for our environment. Several developed as well as developing countries are generating enormous amount of waste and struggling to deal with it in a sustainable way. Waste that is non-biodegradable or non-recyclable is not only filling landfills but also affecting our water bodies, grasslands, fields, climate, public health, wildlife, and so forth. Since we have limited space on earth to dispose all the waste, it is imperative to take steps to manage the waste by using the resources efficiently. Zero Waste management is a global movement designed to reduce waste in our society. The concept of 5R's is to decrease the number of things we use and simultaneously also decrease the number of things we throw away. The intent of this article is to understand the existing global status of Municipal Solid Waste (MSW) generation as well as to explore various ways to manage ever growing volume of waste, which poses formidable challenges to both high and low-income countries of the world.

Keywords: 3R's, 5R's, Zero waste management, Sustainability, Landfills.

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Abstract No. 187

Biotechnological strategies for conservation and therapeutic applications of ethno medicinal and ethno veterinary plants in Dang area of Dholpur District Rajasthan, India

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ABSTRACT

In medicinal plant research area documentation plays a major role since without correctly identified material and properly documented voucher specimens the results are at best suspect and at worst useless in the present scenario. The pharmacological evaluation of active compounds from plants is an established method for the identification of active constituents which leads to the development of novel compounds. Ethnopharmacological literature reveals medicinal plants used in traditional medicine by indigenous people in Rajasthan and facing danger of extinction. In vitro culture technology is potent and has opened extensive areas of research for biodiversity conservation. The present study deals with the futuristic view on the said subject restricted to the important ethnomedicinal plants around the rural areas of Dang region of Dholpur district, Rajasthan. Efforts are made to isolate the active constituents of these potent medicinal plants which are facing the danger of extinction. Antimicrobial assays were carried out in few selected ethnomedicinal plants facing threat for extinction.

Keywords: Antimicrobial, Conservation, Endangered, Ethno medicinal, Indigenous.

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Abstract No. 188

Bio-efficacy of *Ocimum sanctum* and *Cinnamomum tamala* plants against *Callosobruchus maculatus* on Vigna mungo

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ABSTRACT

Callosobruchus chinensis (chickpea weevil) is a stored as well as live grain pest of legumes. The pest feeds on beans, grains, leaves and other plants of family Leguminosae. The initial infestation might occur at fields; which causes damage during storage. So, it is a constraint on the stored grains. Many pesticides have been developed to get rid of these pests; which are actually good but at the same time it harms the environment too as well as the consumers are also at a higher risk. It can reproduce exponentially that's why it is a vigorous pest and can cause 60-70% of damage to the yield whether be it a fresh field grain or a stored grain. It causes a significant loss in its crop's market value as it decreases the seed weight and alters the germination viability and grain quality of the crop. Chemical based pesticides can protect the yield very well; but it has harmful effects on environment. So, we need an alternative method to protect our grains as much as possible; bio-pesticides are the best to use because they cause least to no harmful effect on earth. The present study has used the extracts from the following medicinal plants i.e. *Cinnamomum tamala* and *Ocimum sanctum*. At an interval of 7 days these extracts were used for 4 times for checking their efficacy against Callosobruchus maculatus. When results were observed it showed that out of Cinnamomum tamala and *Ocimum sanctum*; *Ocimum sanctum* was most effective with highest mortality of about 90.68% and Cinnamomum tamala was lesser effective with only 89.33% of mortality. Damage % on *Vigna mungo* after application of 1 st, 2nd, 3rd and 4th round of *Cinnamomum tamala* and Ocimum sanctum was 8.44, 10.64, 11.04 and 11.39 and 7.84, 8.89, 9.33 and 9.52 respectively. Percent infestation reduced drastically when *Cinnamomum tamala* and *Ocimum sanctum* was used together. The powders and essential oils are being used as the bio-pesticides. This research states the fact that medicinal plants can help in controlling pests and reduce the harm caused to environment. So, bio-pesticides should be used instead of chemical ones. It was obvious from the research that the botanical products are capable of controlling the growth of Callosobruchus maculatus.

Keywords: Bio-pesticides, Bio-efficacy, *Ocimum*, *Cinnamomum.*

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Abstract No. 189

Exploring the resistant sources against cotton sucking insects

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ABSTRACT

Cotton is an important natural fibre crop cultivated in India. It is also called as king of natural fibres. More than 166 insects have been reported from cotton in India. In Indian cotton growing tracts, sucking pests such as aphids, leaf hoppers, mealybugs, whiteflies, thrips and mites are causing economic crop loss. Among the sucking insects leaf hopper *Amrasca devastans* and whitefly *Bemisia tabaci* are serious one. Wide array of insecticides are being used to control this insect. Abuse and over use of insecticides caused the development of insecticides resistance in leaf hopper. In order to evaluate resistance sources, an experiment has been laid out at Cotton Research station, Srivilliputtur during 2022-23 with six AICRP entries (Br.04 (a) 2211-2216) and three station cultures (TSH 406, TSH 489 and TSH 387). Leaf hopper population was ranged in between 2.65- 3.10 leafhoppers/3leaves in AICRP entries and station cultures. Minimum number of leaf hoppers were recorded in Br.04 (a) 2213 (2.65 leafhoppers/3leaves) while in susceptible check (DCH 32) it was 3.27 hoppers/3 leaves. Based on the hopper population and leaf damage leaf hopper injury grade was calculated. Cotton culture TSH 406 found to be resistant (R) against leafhopper and Br.04 (a) 2211 susceptible(S) to leaf hoppers rest of the entries shows moderate resistance (MR). Whitefly population was ranged in between 2.12 – 2.60 whiteflies/3leaves. The culture TSH 387 recorded 2.17 whiteflies while in susceptible check DCH 32 it was 2.45.

Keywords: Cotton, leaf hopper, whitefly, resistance sources.

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Abstract No. 190

Study of impact of Mycotoxins on the Human Health

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ABSTRACT

Mycotoxins are secondary metabolites produced by fungi and are capable of causing various diseases in humans and animals. They are naturally occurring chemical substances and are chemically stable which is why they pose a great threat to public health. This worldwide contamination of foods is an enormous problem to human populations, principally in less industrialized countries and in the rural areas of some developed countries. Accumulation of mycotoxins in the food chain can cause hazardous effects in human. The gut microbiota has a bidirectional relationship with mycotoxin, being the leading cause of the development of mycotoxicosis. These fungal toxins exhibit a number of adverse health effects in animals, even at very low concentrations, and have been associated to cases of acute and chronic poisoning of humans and farm animals since historical times. Preventive measure for controlling contamination should be adopted both before and after harvest. Mycotoxin occurrence cannot be completely avoided, but a number of measures aiming at minimizing mycotoxin levels and mycotoxin exposure can be implemented at multiple points in the food and feed chains. Mycotoxins are poisonous, naturally occurring chemical compounds produced by fungi under favourable conditions. Almost 25% of the world's crops are contaminated by molds and fungal growth. Their toxicity not only leads to adverse animal and human health affects but also causes major environmental changes. Although, the extent of its toxicity depends upon several factors like period of exposure, type of mycotoxin, nutritional value, still it's harmful effects cannot be overlooked. Control of contamination by mycotoxin should be one of the foremost approaches in order to maintain public health and improve economic condition of the countries.

Keywords: Mycotoxins, Metabolites, Fungi, Diseases, Molds, Food chain.

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Abstract No. 191

Survey on the Incidence Pattern of Sucking Insects of Cotton in Madurai District

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ABSTRACT

A roving survey was conducted on incidence of cotton sucking insects in Madurai district from September, 2022 to February, 2023. Due to the staggered sowing of cotton, from September, 2022 to December, 2022 and January to February, 2023, observations were taken in vegetative stage and maturation stage cotton crop respectively. No. of leaf hoppers / top 3 leaves was maximum during the month October, 2022 (1.9) and minimum in January and February, 2023 (0.1). Cotton leaf hopper population showed significantly positive correlation with maximum and minimum temperatures with correlation coefficient values of 0.50382 and 0.95118 respectively. With maximum and minimum relative humidities, cotton leaf hopper population showed negative correlation. However, this correlation was significant (-0.60671) with maximum RH and non significant with minimum RH (-0.40233). Leaf hopper population was positively correlated with the rainfall, but the relationship was non-significant (0.35929). Population of whiteflies was maximum during the month September, 2022 (2.2/top 3 leaves) and minimum in February, 2023 (0.1 /top 3 leaves). Whitefly population showed significantly positive correlation with maximum temperature (0.53329) and minimum temperature (0.96643). However, with maximum and minimum RH, whiteflies exhibited negative correlation and this was significant (-0.78979) with maximum RH and non significant with minimum RH (-0.47473). Leaf hopper population was significantly and positively correlated with the rainfall (0.55432).

Keywords: Cotton, leaf hopper, whitefly, weather parameters.

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Abstract No. 192

Tilapia fish invasion and its impact on native fish fauna of River Yamuna at Mathura district, Uttar Pradesh, India

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ABSTRACT

Human activities have wiped out the native fish species of the Yamuna and alien fish species are now dominating the entire stretch of the river and affecting the catch composition of other fish. The deliberate or accidental introduction of the alien species was identified as a key component of the human induced biodiversity crisis that is harming native species and disturbing the ecosystem processes. Yamuna River supports a rich diversity of fishes of commercial value. But over the years the rivers has become highly polluted. The river water is extensively used for irrigation and receives heavy load of domestic and industrial wastes. All these factors have imparted the fisheries in the river as rejected by decline in fish catch a discernible shift in fish species composition and an increase presence of invasive fish species. Domestic pollutions, Industrial pollutions, Agricultural pollutions and sand mining are the main responsible source in declining the native fauna and making the favorable ground for invaders. Of the total of 20 recorded species, 16 were identified as local and 4 as alien invasive species in the River Yamuna at Mathura, U.P. Tilapia, *Oreochromis niloticus* (Linnaeus) a non-native fish species in the India is one of the invasive fish species reported in river Yamuna throughout the year. A perusal of the present data showed that Oreochromis niloticus formed the most dominant fish species in all the catches from the Yamuna River at Mathura.The invasion of *Oreochromis niloticus* has increasingly taken-over in Yamuna River at Mathura dist. contributing substantially to the fishery of this river, which is considered serious in view of sustainability of indigenous (native) fish diversity. Further investigations should be carried out to deter-mine the extent of spread of *Oreochromis niloticus* in Yamuna River and to understand its impact on native fish and fisheries.

Keywords: *Oreochromis niloticus*, Alien fish species, native fish species, Yamuna River.

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Abstract No. 193

Alterations in Haematological Parameters of Fresh water *Clarias batrachus* exposed to pesticides Endosulfan

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ABSTRACT

The freshwater fishes are an important source of animal protein to human population. They are adversely affected by agrochemicals such as fertilizers, pesticides, insecticides and fungicides to boost crop production. These agrochemicals are easily washed off into the water bodies. The pesticides used in agriculture are posing a great threat to aquatic fauna especially to fishes, which constitute one of the major sources of protein rich food for mankind. The effect may be direct when the pesticide is absorbed into the body through the skin, gill, intestine, wound, etc. It may be indirect when the pesticide alters the quality of the water, such as depletion of dissolved oxygen. The aim of this study was to evaluate the changes in some hematological parameters of the fresh water fish *Clarias batrachus* exposed to sub lethal concentrations of LC50 of the pesticide endosulfan for 30 days. The hematological analysis showed significant ($P > 0.05$) reduction in RBC, haemoglobin (Hb), packed cell volume (PCV), mean corpuscular hemoglobin (MCH), MCH concentration, and mean corpuscular volume (MCV). The parameters such as TLC and blood glucose level increased in pesticide exposed fish. The present study indicated marked changes in the blood of *Clarias batrachus* after exposure to endosulfan pesticide.

Keywords: Haematological Parameters, Endosulfan, *Clarias batrachus.*

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Abstract No. 194

Comparative Efficacy of Chemical and Biochemical Insecticides in the Control of Fall Armyworm

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ABSTRACT

Fall armyworm (FAW) is a specific pest of the maize crop which is belongs to the order Lepidoptera and family Noctuidae. This pest is a serious problem in the world. It has ability to destroy wide variety of the crops and cause huge financial loss so the control of FAW is very important. In India fall armyworm was first reported from Karnataka in 2018. The geographical co-ordination of Chitrakoot has 24048' to 25012' N latitude and 80058' to 81034' E. District is bounded in the North by Karwi, Chitrakoot, in the south by Rewa (M.P). Field experiment was conducted during Kharif season at the agriculture farm of Mahatma Gandhi Chitrakoot Gramodaya Vishwavidyalay, Satna (M.P). Standard procedure for growing maize crops was followed in the present work. The experiment was designed in randomized block design with three replications. Different type of chemical and biochemical methods are being used in the control of FAW. The biochemical insecticides like Neem seed kernel extract, neem oil, spinosad, and some parasitoids fly as *Trichogramma pretiosum*, T. *chelonis* etc. as well as chemical insecticides like chlorpyrifos and Alphamethrin etc. Both biochemical and chemical insecticides have ability to control the fall armyworm but spinosad and spinotorum show a beneficiary impact on FAW. Chemical pesticides also show a positive response in the control of fall armyworm.

Keywords: Insecticides, Fall Armyworm, Neem.

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Abstract No. 195

Fungal diversity in the rhizospheric soil of *Ocimum sanctum* and *Mentha piperita*

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ABSTRACT

Rhizosphere is the soil zone around the roots of plants that are directly affected by soil microorganisms and plant roots exudation. Provision of nutrients to plants is strongly influenced by the composition of microorganisms in the rhizosphere. The rhizospheric microorganisms physiological activities had an important role for influence soil properties, nutrient uptake, plant growth and development. The plant roots produce some organic compounds including organic acids, vitamins and sugars. The organic compound used as nutrients or signals for fungal population. In contrary, the fungi release iron carriers, volatile compounds, and plant hormones that may enhance plant growth, either directly or indirectly, by increasing the nutrient availability of their host. Rhizosphere is a part of the soil that is in the roots of plants in which there are many soil microorganisms. Rhizosphere fungi play an important role in increasing plant growth by various mechanisms that are carried out such as increasing nutrient absorption, as a bilogical control of pathogenic attacks and can produce growth hormones for plants. These fungi are also enhances the production of secondary metabolites. This study aims to identify and get the information of the diversity of rhizosphere fungi from the *Ocimum sanctum* (Tulsi) and *Mentha piperita* (Pudina) plants. The results showed that 15 rhizospheric fungal species were isolated. The dominant genera were *Rhizopus, Fusarium, Aspergillus, Penicillium, Trichoderma* and *Curvularia*. The diversity of fungal species were varies with stages of plant growth and physico-chemical properties of soil for both the plants. Both fungal diversity and fungal population were recorded more in *Ocimum sanctum* than the *Mentha piperita* for all the stages of plant growth.

Keywords: Rhizosphere, fungal species, secondary metabolites, diversity.

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Abstract No. 196

Biotechnological approaches for degradation of Microplastics using Soil biota

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ABSTRACT

Despite the fact that plastic pollution is a major global environmental concern, the need for and demand for accessible plastic things continues to rise as the world's population grows and lifestyles change. The majority of plastics and plastic trash are disposed of in landfills, where they pose a hazard to many different types of life, including bacteria, plants, and people. As a result, plastic pollution has gotten a lot of scientific attention over the past ten years. It contains 960 different hazardous toxins in concentrations up to 106 times higher than those present in their surroundings. Due to the refractory character of the majority of plastics and plasticizers, the breakdown of these compounds is difficult. Therefore, the primary difficulty is to properly breakdown plastic (micro- and macro-) wastes. The physical and chemical approaches to cleanup still have several shortcomings despite being in use for many years. In contrast, bioremediational methods using microbe-mediated treatments provide an economical, socially acceptable, and environmentally beneficial solution to reduce or eliminate a variety of environmental contaminants, including plastics, hydrocarbons, pesticides, heavy metals, and other xenobiotics. Even though culture-dependent methods have been in use for a long time, this bioremediation/biodegradation strategy hasn't yet offered solutions that are effective for managing and reducing pollution. Additionally, microbial communities' catabolic mechanisms for the decomposition of plastic additives have not yet been fully elucidated and have received less research. In order to comprehend the dynamic reciprocity between the structure of the microbial community and environmental contaminants, particularly plastics and plasticizers, new techniques are therefore urgently needed. Incorporating microbe isolation with other eco-genomics techniques and modelling variables can offer crucial insights and support the creation of plans for the efficient biodegradation of plastic waste. In order to reduce the effects of plastics and their byproducts on the environment and human health, the study aims towards creating techniques and cutting-edge technologies for bioremediation of plastics and their byproducts.

Keywords: Microplastics, Biodegradation, Metagenomics, Metabolomics, Soil pollution.

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Abstract No. 197

Nutraceutical properties of oyster mushroom and its health benefits

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ABSTRACT

An approach for production of oyster mushroom was experimented in our laboratory conditions. Oyster mushroom is the second runner-up among commercially produced mushroom due to its delicious taste, higher nutritional and medicinal properties. The several white rot fungi are edible mushrooms and are saprophytic basidiomycetes, which have been successfully, cultivated at commercial level worldwide using lignocelluloses wastes as substrate for their cultivation. *Pleurotus florida* (Oyster mushroom) is a wood digestive fungus which was first cultivated on logs. Mushrooms can convert lignocelluloses waste materials into a wide diversity of products, which have multi-beneficial effects to human beings, i.e., as food, health tonic and medicine as feed, as fertilizers and for protecting and regenerating the environment. Today it has become practice to prepare *Pleurotus* substrate from shredded wheat straw. There has been a recent upsurge of interest in mushrooms not only as health vegetables but also as a source of biological active compounds of medicinal value, including use as complementary medicine/ dietary supplements for anticancer, antiviral, immunopotentiating, hypocholesterolaemic and hypo protective agents. This new class of compounds termed 'mushroom nutraceuticals" (Chang and Buswell 1996), are extractable from either the fungal mycelia and fruiting body and represent an important component of the expanding mushroom biotechnology industry. 'Mushroom nutraceuticals may possess both nutritional and medicinal properties.

Keywords: *Pleurotus florida*, production, lignocelluloses waste, fruiting body, nutritional and medicinal properties.

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Abstract No. 198

A new fossil fruit of the genus *Accacia Adans.* (Fabaceae) from the Middle Siwalik sediments of Sarkaghat area, Himachal Pradesh, India

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ABSTRACT

The Siwalik Group is delimited by the Main Frontal Thrust (MFT) in the south and by the Main Boundary Thrust (MBT) in the north. The sedimentary sequence of Siwalik Group consists of Neogene fluvial deposits ranging in age from Miocene (~15 Ma) to the Pliocene (~3 Ma). Almost a complete and uninterrupted sequence of Siwalik Group is well exposed all along the road from Sarkaghat to Dharampur.The lithology and stratigraphy of the Siwalik Group has been discussed in detail, by several geologists. The Lower Siwalik has an average thickness of about 1800 m and is composed of well-bedded indurate sandstones and siltstones. The Middle Siwalik is about 2000 m thick and comprises dominantly of arenaceous rocks with clay intercalations. The study area (N 31° 44' 26" E 76° 43'33") lies along the National Highway 70 very near to Sarkaghat area of Mandi District, Himachal Pradesh. A large number of fossil leaves and fruits were collected from middle Siwalik beds exposed in a road cutting section (31º 44.265':76 º.43.339') about 7Km from Sarkaghat town on the left side of main road which leads to Dharampur and easily approachable through vehicle. The investigation on these fossil leaves and fruits revealed the presence of a new fossils fruit showing their affinity with the the genus *Accacia* Adans. of the tropical family, Fabaceae. This has been described and discussed in detail with its palaeoclimatic and phytogeographic significance. The fossil fruit is characterized by a flat pod, thin; 12 cm long, 3.0 cm, wide; oblong; apex indistinct; base acute; margin moderately thick, one side margin curved in middle portion, segmented, about 7 segments are seen, the segments are of almost same size, in some segments the impression of seed is distinct, distinct venation seen on the surface, veins arise from one margin side and run up to the other side, distance between two veins is not equal, few thin veins also seen in between them with irregular branching. These features collectively indicate its affinity with the modern fruit of the genus Acacia Adans. of the family Fabaceae. In order to find out specific affinity the herbarium sheets containing fruits of all the available species of this genus (*A. sericata, A. osanoldii, A. longifolia, A. auriculata, A cochlocarpa, A. glaucscense,* and *A. Australis* etc.) have been critically examined and found that the fruits of *Acacia caesia* show close affinity with the present fossil fruit in shape, size and other morphological features. The present day distribution of modern equivalent of the fossil fruit suggest a moist tropical climate in the study area.

Keywords: *Accacia*, Fossil fruit, Fabaceae.

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Abstract No. 199

Foliicolous Fungi on Some Important Ethanomedicinal Plants from Katarniaghat Wildlife Sanctuary Bahraich (U.P.) India

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ABSTRACT

The Katarniaghat Wildlife Sanctuary is a protected area in the Upper Gangetic plain, near Bahraich city in Bahraich district of Uttar Pradesh, India and covers an area of 400.6 km2 (154.7 sq mi) in the Terai of the Bahraich district. The Katerniaghat Forest provides strategic connectivity between tiger habitats of Dudhwa and Kishanpur in India and the Bardia National Park in Nepal. Its fragile Terai ecosystem comprises a mosaic of sal and teak forests, lush grasslands, numerous swamps and wetlands. The leaves provide a very suitable habitat for the growth and development of fungal pathogen by providing ample surface area and nutrient supply. Such leaf inhabiting fungi are known as foliicolous fungi and the invaded area of the leaf appears as leaf spot or leaf lesion. The weed and forest plants serve as reservoir of leaf spot pathogen which on getting opportunity may spread to agriculture & horticulture plants. Katarniaghat Wildlife Sanctuary Bahraich which represents a part of North Tarai Region of U.P. is next only to Eastern and Western ghats, as one of the hottest spots for Biodiversity in general and the diversity of fungal organism inhabiting plant leaves in particular offers an ideal opportunity for the morpho taxonomic exploration of fungal organism in general and foliicolous fungi in particular. Keeping this in mind the authors surveyed with thirty-nine Angiospermic host plants representing thirty-nine genera and twenty families being parasitized by forty fungal species representing thirty-fungal genera.

Keywords: Fungi, Katarniaghat Wildlife Sanctuary, Biodiversity.

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Abstract No. 200

Sketch of Genetic Variation in Tropical Forest Tree Species: An Overview

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ABSTRACT

Forest is vital component of the world's ecosystems and globally estimated to cover 31% of land area with approximately 80,000–100,000 different tree species (FAO, United Nations). People especially in the developing countries, comprehensively depends on forest tree species for their livelihood, including the supply of wood-based fuels, as well as non-timber based products for nutrition, health, and income. Forest trees have enormous effective population sizes and they are primarily undomesticated, exceptionally heterozygous, and have out breeding systems. Forest genetic resource in tropical region of world has much diversity. However, there are very little information about the genetic variation and variability within or between populations. The global efforts to restore tropical forests and their productive and ecological functions through plantation forestry largely depend on the available genetic variation in the tree species. By enhancing our comprehension of the distribution and the degree of genetic variation within and among species, molecular markers have proven to be incredibly useful tools for evaluating plant genetic resources. A wider coverage of the genome made possible by recently developed marker technology allows a previously unattainable discovery of an extent of genetic diversity. An extensive review study on most of the top economic species like *Eucalyptus tereticornis* (He=0.130) attributed to low levels of genetic diversity, while others like *Shorea laprosula* (He=0.0762) and *Swietenia macrophylla* (He=0.0780) still exhibit high heterozygosity across different tropical forest populations. The fitness, resilience, fecundity, production, and other ecological functions of populations are significantly improved by having sufficient genetic diversity within them. Additionally, it offers a foundation for tree breeding and enhancement in their genetic resources.

Keywords: Population, Heterozygous, Genetic variation, Molecular marker and Resilience.

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Abstract No. 201

Morpho-metric variations in *Haldina cordifolia* (Roxb.) Ridsdale- An important species in deciduous forest

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ABSTRACT

Haldina cordifolia commonly known as haldu due to yellowish colour of its wood belongs to Rubiaceae family. It is a big size tree species whose maximum height was recorded up to 30 meters with maximum diameter of 350 centimetres. This tree species among other species in the forest can be easily identified due to its peculiar branching pattern and heart shaped leaves. It possesses high timber quality suitable for flooring, panelling, railway carriages and construction works. Paste of stem bark and leaves are used for curing deep wounds, jaundice, stomachache and swelling in stomach. Stem bark is used for the treatment of malarial fever, abdominal disorders, inflammation, wound and ulcer. It is distributed throughout India, Burma, Sri Lanka, Bangladesh, Nepal, Thailand, South China, Bhutan, Vietnam, Myanmar and Malaysia. During the survey, occurrence of the tree species was reported in the plains as well as in the hills up to the elevation of 1100 meters in the states of Chhattisgarh, Madhya Pradesh and Maharashtra. In these states, CPTs of the species were selected based on the health and growth parameters of the individual tree. It was observed that the species possesses wide variations in terms of height; clear bole length, crown diameter and girth at breast height (GBH). Trees with long clear bole, more GBH, narrow crown and fewer branching were selected as CPTs. A total of 30 CPTs were selected across these three states and seeds of the same were collected to further propagate and to evaluate their genetic worthiness through establishment of multilocation trials.

Keywords: *Haldina*, Medicinal value, GBH, Deciduous forest.

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Abstract No. 202

Comparative analysis on bio-reduction of heavy metals using microalgal system

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ABSTRACT

The biotic system of our ecosphere attains major demand on creating an environment for their proliferation and growth. The factors such as water, light intensity, temperature, pH, and resource availability play a vital role in their metabolomic pathways to remain functional and susceptible for survival on a resistant environment. In the Aquatic ecosystem, the presence of heavy metal ions and metalloids due to human interaction leads to an adverse effect on a biota. The impact of heavy metals in our environment decreases the biological demand of the organisms in which they sustain. To overcome this environmental imbalance the bio-reduction of heavy metals is done by bioremediation. Bioremediation is a process by which microorganisms, such as algae, remove metal ions from aqueous solutions by binding them to the Extracellular Polymeric Substances (EPS) found on their cell surface. Microalgae has a high metal binding capacity for various metal ions, such as Arsenic, Mercury, Cadmiumand Nickel. The comparative analysis of the microalgae such as *Spirulina, Chlorella, Scenedesmus* and *Pediastrum* used as a substrate for the removal of excess heavy metal ions from a water system. The implementation of such a multi-microalgalsystem helps in the reduction of toxicity at a grade level compared to the reduction of toxicity by using the unialgal system. This study examines the possibility of reduction of metals by using a colonial microalgal system in a collected sample of wastewater and the capacity for removal of aqueous heavy metal ions from the wastewater sample collected near our local places was tested for purification in terms of dissolved impurities and heavy metals.

Keywords: Microalga, Bio-reduction, Heavy metals.

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Abstract No. 203

Consequences of electric vehicle on environment and health

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ABSTRACT

EARTH is our home, the only planet known to maintain life and is 4.5 billion years old. Over the centuries we have changed our climate. Climate crises is not something which is local but global, it affects all of us. "Our actions are harming the Planet". One of the sectors contributing majorly towards climate change is "automobile" industries. Transportation sector is the second lar gest source of CO2 emission causing large scale energy consumption and air pollution. Due to this people suffers from allergy, bronchial asthma and skin problems etc. India has always inspired the world with innovative solutions to complex problems; transportation sector launched 'Electric vehicles' (EVs) is one that operates on an electric motor; instead of an internal combustion engine that generates power by burning mix of fuel and gases. On one hand, electric vehicles are providing more cost effective transportation and also helping to reduce greenhouse gas emissions and air pollution. Electric vehicles are quieter and produce less noise hence contributing in preventing noise pollution. Due to electric vehicle cases of allergies, incidence of cardiopulmonary illness and asthma related disease level dropped. Electric vehicles reply on renewable energy, they assist to protect non renewable energy supplies, which are fast depleting. Government throughout the world is also encouraging for electric vehicles as a part of green program. However, it has few demerits too for the environment as EV battery production adversely impact the environment such as loss of biodiversity, air pollution and decreased fresh water supply. EV battery recycling program is still in their early stages, but they are not specifically designed to be recycled. More work must be done to ensure these vehicles as eco-friendly as possible. It is necessary to stop mindless destructive consumption and should adopt mindful utilization practices. We aspire to live long; our children too would live long and be free from sickness and consumption.

Keywords: Planet, life, electric vehicles, environment, biodiversity, pollution.

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Abstract No. 204

Green energy as eco-friendly to environment

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ABSTRACT

Green energy is a source of energy is neither harmful for humans nor for nature. Due to increasing population day by day, fossil fuels are getting exhausted. According to Environmental Protection Agency (EPA), green energy provides the highest environmental benefits and includes power produced by solar, wind, geothermal, biogas, low impact hydroelectric and certain eligible biomass sources. Renewable energy is speciality of green energy. Solar energies, green architecture, electric vehicles, water purification; generating energy from waves are the good examples of green energy. Solar power is common type of renewable energy is usually produced using photovoltaic cells that capture sunlight and turn it into electricity. A solar water solution has created a patented water purification system that is powered by purification system. Petrol and diesel vehicles are highly polluting and are being quickly replaced by fully electric vehicles (EV) have zero taipipe emissions and are much better for environment. Green energy paly a key role in the energy transition due to its low environmental impact and help to fight global warming by not producing green house gases.

Keywords: Green energy, EPA, environment, renewable energy.

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Abstract No. 205

Genetic Improvement Program of *Pterocarpus marsupium* (Roxb.) in Madhya Pradesh Critically Endangered Tree Species

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ABSTRACT

Pterocarpus marsupium is one of a valuable critically endangered medicinal tree species of tropical forests having so many alkaloids which are used in the preparation of several herbal medicines. The tree produces straight clear bole under favourable conditions. It is a deciduous tall tree belongs to family Fabaceae. Globally the species is distributed in India, Nepal and Sri Lanka. Its chief companions are Tectona grandis, *Terminalia tomentosa*, *T.belrica*, *Buchanania latifolia*, *Lagerstoemia parviflora*, *Anogeissus latifolia*, *Acacia catechu*, *Cleistanthus collinus*, *Butea frondosa*, *Dalbergia latifolia*, and other trees characteristic of the mixed deciduous forest. Today, in Madhya Pradesh the herbal industries are growing rapidly and several ayurvedic industries are utilizing the secondary bio-products of above species for the preparation of herbal medicines, which are in great demand in herbal medicine market because due to non toxic effect of herbal drugs on human body. There is huge gap between demand and supply and also due to unsustainable harvesting practices of raw products from wild sources, the natural habitat of several medicinal tree species are declining rapidly due to which most of the important medicinal tree species of Madhya Pradesh are at the verge of extinction. The classical examples among them are *Pterocarpus marsupium Litsea gultinosa*, *Terminalia chebula*, *Dillenia pentagyna*, etc. Genetic and tree improvement programme helps in identification of sound quality trees from the natural stands which are technically referred as Candidate Plus Trees (CPTs). The CPTs are used as a source of genetic material for production of their clones by vegetative propagation and these techniques may lead to their multiplication as well as conservation aspects also. Before the selection of CPTs it is essential to identify the potentially rich areas of specific species through reconnaissance survey. In Madhya Pradesh South Seoni, North and South Balaghat, Dindori, West Mandla, North Betul, Sheopur, Sehore and Raisen Forest areas are identified as potentially rich areas and total 104 Candidate Plus trees have been identified from these potentially rich areas of Bija. These CPTs can be used for further genetic and tree improvement programme of this valuable critically endangered tree species.

Keywords: *Pterocarpus marsupium*, Indian Kino,Tannin, CPTs.

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Abstract No. 206

Plant based biofuels as green energy alternatives for sustainable future

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ABSTRACT

Human has exploited plants for their innumerous interests and economic gains. Plants have be in the field of agriculture, forestry and horticulture, ethnobotany, therapeutics, cosmetics etc. but in the recent past, plants have also emerged to answer a very vital necessity of human in the form of biofuels. At present, with the upscaling in the fields of globalization and modernization there is an increasing demand for energy and fuel. Currently, the energy demand is met by the constantly depleting non-renewable fossil fuels and these fuels are at the brink of complete depletion. Therefore, searching for a green energy alternatives is inevitable. Finding green energy alternatives is also a quintessential need of the hour because of serious concerns regarding climate change and environmental deterioration. Biofuel is a non-toxic and biodegradable fuel that can decreases the reliance on fossil fuels and reduce harmful gasses emissions. Plant based fuels can always be replenished and can be effectively extinguished in atmosphere without emitting toxic greenhouse gaseous pollutants. At present, there are two types of biofuels i.e. bioethanol and biodiesel. Bioethanol, the principal fuel used as substitute for petrol for road transport vehicles, is mainly produced by the sugar fermentation process of cellulose (starch), which is mostly derived from maize and sugar cane. Biodiesel is mainly produced from oil yielding crops such as sunflower, rapeseed, palm and soybean. It is reiterated that to understand biofuels, to analyze all the pros and cons in its production and for their large scale utilization, there is need of substantial work in this field. This work emphasizes towards highlighting the role of biofuels in establishing new vistas in the field green and sustainable future and how these green fuels may prove promising in ensuring socio-economic stability for the changing global scenario.

Keywords: Biofuels, green energy, sustainable development.

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Abstract No. 207

Immunostimulant activity of *Ocimum tenuiflorum* in *Labeo rohita*

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ABSTRACT

Tulsi (Ocimum tenuiflorum L.), sometimes known as sacred basil, is highly esteemed for its curative powers in the Siddha and Ayurvedic medical systems. Tulsi has a wide spectrum of restorative characteristics, including adaptogenic, antibacterial, calming, cardioprotective, and immunomodulatory activities, confirmed by numerous in vitro, animal, and human studies. Tulsihas therapeutic effects on disorders of resistance, cognition, and metabolism. No study showed any significant antagonistic events, and all investigations showed flawless clinical outcomes. Chronic conditions including diabetes, metabolic illnesses, and high blood pressure can be effectively treated with tulsi when they are caused by lifestyle choices. In this study, 1.5% and 2% of Ocimum tenuiflorum aqueous extract were added to the diet of Labeo rohita to improve its development and induce certain humoral innate immune responses as well as the bactericidal activity of skin mucus.

Keywords :*Ocimum tenuiflorum*, Antioxidant, Anti-inflammatory, Antibacterial.

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Abstract No. 208

Pleurotus opuntiae affect the mucolysogenic activity and serum of *Labeo rohita* fingerlings

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ABSTRACT

The primary objective of our study was to manage fish bacterial infections or diseases by promising novel biocontrol strategies, including prebiotics, to avoid the downsides of conventional ones that might have a harmful influence on fish and human health. The use of chemicals and antibiotics has lowered the severity of bacterial infections in intensive pisciculture, but their messy administration is associated with a potential downside in the development of drug resistance. As a result, the use of prebiotics as biocontrol agents in aquaculture is increasing as researchers look for environmentally safe, eco-friendly alternatives for sustained fish production. Increased nutritional value, the reduction of dangerous germs, and improved immune response are all advantages of these supplements.

Keywords: Biocontrol, prebiotics, *Pleurotus opuntiae*, *Labeo rohita*, mucolydogenic activity.

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Abstract No. 209

Gene Edited Crops for Food Security and Sustainable Development

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ABSTRACT

Climate change and increasing global population pose a serious challenge for the achievement of global food security. Development of improved crop varieties with the desired characteristics through conventional breeding methods takes several years. Plant genomes can be altered through transgenic technique and genome editing technique. In transgenic technique, a foreign gene from another organism is inserted in the plant genome to tailor the species with new traits and this raises ethical concerns and biosafety issues and has to go through a rigorous process of regulation before its release. Whereas, in genome editing technique, the genome of an organism can be modified without introducing a foreign exogenous DNA. The introduced changes could range from alteration of a single base or a plant gene can be switched on or off to improve a desired trait without the need to insert a gene from other organisms. Genome editing techniques employ site-directed nucleases (SDN) such as Zinc Finger Nucleases (ZFNs), Transcription Activator-Like Effector Nucleases (TALENs), Clustered Regularly Interspaced Short Palindromic Repeats (CRISPR), and other nucleases. Through genome edited plant based technologies new improved plant varieties can be developed. CRISPR-Cas9 is the most successful genome editing technique used to develop elite cultivars with desired traits and has been used to improve crop plants including rice, wheat, maize, and barley. The gene-edited crops target precise changes in genomes to improve crop plants and are considered as a product of conventional breeding since they do not contain a foreign DNA. Site-Directed Nuclease SDN1 introduces changes in the host genome's DNA through small insertions/deletions without introduction of foreign genetic material. In the case of SDN 2, the edit involves using a small DNA template to generate site-directed mutagenesis. Guidelines and Standard Operating Procedures (SOPs) for the Safety Assessment of Genome Edited Plants, 2022 were notified on 17 May, 2022 by the Department of Biotechnology, Ministry of Science and Technology, Govt. of India. The SOPs provide regulatory road map requirements for research and development and meet the threshold for exemption of Genome Edited Plant(s) under the SDN-1 or SDN-2 categories. There is a need to develop high yielding stress tolerant crops to address climate change adaptability and food security. Genome editing can be used for improvement of plant varieties for food security and climate resilience including tolerance to drought.

Keywords: Edited crops, food security, biosafety, transgenic technique, genome.

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Abstract No. 210

Consequences of colchicine induced polyploidy in Fennel (*Foeniculum vulgare* Mill.)

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ABSTRACT

Polyploidization is an event that developed in plants during evolutionary path which confer them better survivorship than diploids towards the harsh environmental conditions. Considering this strategy, polyploids acquire the most alluring facts in it which are of particular interest to biologists. Present study is an attempt to induce autotetraploids in an important spice plant *Foeniculum vulgare* Mill. through colchicine. Different concentrations of colchicine viz., 0.2, 0.4, and 0.5%, (w/v) were applied to the seedlings of *Foeniculum vulgare* Mill. for three distinct time intervals. Eleven confirmed autotetraploids (2n=4x=44) were induced by 0.2% and 0.4% concentration of colchicines at 12 hours, 24 hours, and 36 hours, respectively. The autotetraploidy has been validated on the basis of morphological, cytological, and palynological inferences that include leaf thickness, wider stomata with low density, vigorous flowers, / chromosome doubling and larger pollen size, etc. Cytological analysis has revealed numerous chromosomal arrangements such as, Scattering, Stickiness, Disturbed polarity etc. Pollen fertility was found to be decreased (98.34 to 68.23) in autotetraploid than diploids. Seeds from matured tetraploids (C1) were sown to establish the second generation (C2), which could be utilized in future breeding programmes.

Keywords: Colchicine, Chromosome doubling, Cytological, Genome reorganization, Pollen fertility.

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Abstract No. 211

Survey on tikka disease of groundnut *(Arachis hypogaea* L.) in Purvanchal Region of Eastern Uttar Pradesh

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ABSTRACT

Cercospora sp. is one of the most destructive pathogen, causing Tikka disease in Groundnut and there by inflicting accountable quantitative (49.30%) as well as qualitative losses. The survey studies indicated that, overall Tikka incidence was comparatively higher in Kharif (2021-2022) grown Groundnut crop, compared to that of Kharif (2022-2023) grown crop. In all the eight districts of Purvanchal region surveyed, the disease was found to be widely distributed and regular occurrence with moderate to severe incidence and it's average incidence was found maximum in the district of Kanpur (15.74%) followed by Basti (15.65%) and Gorakhpur (15.40%) districts in the years 2021-2022and 2022-2023. The average incidence of Tikka disease was found more in 2021-2022 (15.36%) as compared to 2022-2023 (14.79%). The various cultivars / varieties of Groundnut grown in the Purvanchal region, local cultivars (21.02% and 20.50%) without any proven resistance were found to suffer severely with the disease, during both the years. The most popularly grown crop was found to suffer more with about 18.90 and 18.08 per cent (Tikka) disease incidence during Kharif (2021-2022) and Kharif, (2022-2023), respectively. However, the cultivars viz., Chandra, Chitra, Amber and Kaushal were found to suffer comparatively minimum with the Tikka disease.

Keywords: Groundnut, Survey, *Cercospora*, Tikka disease, Incidence.

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Abstract No. 212

Ethno-gynecological knowledge of medicinal plants used by Dindori tribes of M.P.

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ABSTRACT

Gynecological disorder is one of the most severe conditions under reproductive health. So we investigate and collect information from traditional practitioners on the use of medicinal plants for treatment of Gynecological disorder in Dindori district of Madhya Pradesh. The field study was carried out for a period of January 2021-January 2022.The Ethnomedicinal information was collected through interviews, informal meetings, open and group discussions and overt observations with semi-structured questionnaires among traditional practitioners. A total of 3 species of plants were identified as commonly used ethno medicinal plants used by traditional practitioners in Shahpura Dindori for the treatment of several ailments based on the reproductive systems treated. Bark, leaves and roots are the most frequently used plant parts and most of the medicines were prepared in the form of paste and administrated orally. We know the most important species according to their use value such as leaves of *Madhuca longifoila*, bark and root of *Saraca asoca* and bark of *Terminalia arjuna* were recorded. The present study may highlightthe use of the respective plants in the gynecological problems of women of the above mentioned district. Further pharmacological studies of these plants may provide some important drugs for the treatment of common gynecological disorders.

Keywords: *Madhuca longifoila*, *Saraca asoca* and *Terminalia arjuna*, Gynecology, Traditional practitioners, Dindori.

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Abstract No. 213

Studies on Viral Diseases of Bitter Guard *(Momordica charantia* L.) with reference to their Eco-friendly management in Eastern U.P.

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ABSTRACT

In the northernregions of India, throughout the warm season and the rainy season, one of the most significant cucurbitaceous vegetable crops that are cultivated is thebitterguard, which is scientifically known as *(Momoídica charantia* L). It is cultivatedall over the world, both in tropical and subtropical regions, and possesses a largegenetic variety. However, the crop is affected by a number of diseases, including anthracnose, powdery mildew, downy mildew, *Cercospora* leaf spot, *Alteínaíia* leaf blight, and anthracnose leaf spot. Of these diseases, the leaf spot caused by *Alternaria* spp. is found to cause serious losses throughout U.P. and otherstates. Other diseases include powdery mildew, downy mildew, and powdery mildew. The survey was carried out during the vegetative stage and the fruiting stage of thecrop during both the kharif and the Rabi seasons by visually inspecting the plants in each field in a "W" pattern. These crop growth stages occur throughout a singlecropping season (crossing the rows). According to the findings of the study, theoccurrenceof whiteflies and viral illnesses in bitter gourd were seen in all of the investigated areas with varying levels of damage and vulnerability. This was the case in all of the locations.

Keywords: Viral diseases, *Momordica charantia*.

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Abstract No. 214

Green Technologies for Environmental Remediation

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ABSTRACT

The widespread accumulation of heavy metals in the environment is becoming a serious problem as a result of industrial activities worldwide. Toxic elements from atmospheric emissions, fertilizers, paper mills and mining waste have contributed to the continuous deposition and consequent accumulation of toxic metals in the environment. Contamination of the environment with toxic metals has affecting crop yields, soil biomass and fertility, contributing to bioaccumulation in the food chain. Toxic metals can affect the biosphere for a long time and can be reached through soil layers thereby contaminating the water table. As a result, the use of plants contaminated with high concentrations of heavy metals for food, can pose a serious risk to human and animal health. Green technology is the application of environmental science and technology to the development and application of products, devices and systems for the conservation of natural resources and the environment, as well as to reduce the negative impact on the environment from human activities. It includes both process and product technologies that generate little or no waste and increase resource and ener gy efficiency. Green technology means not only individual technologies, but also systems, including information; processes, goods and services and equipment, as well as organizational and managerial processes. Traditional green technologies have been applied in the fields of solid waste treatment and management, wastewater treatment, air pollution control, environmental treatment and energy conservation. Advances in science and technology have contributed to the development of emerging green technologies that can help solve the various environmental issues.

Keywords: Green technology, energy conservation, solid waste treatment, environment.

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Abstract No. 215

Biodiversity of Foliar Forest Fungi from North Tarai Region,Uttar Pradesh

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ABSTRACT

Fungi are ubiquitous in nature and have occupied almost all places in the biosphere. These are the most important organisms in the universe, because of their vital functions in the maintenance of ecosystem, on human beings and their related activities. Fungi are often directly involved in our day to day life and play a crucial role in the nutrient cycling, decomposition and nutrient transport from soil to plants. These are extremely adaptable and can break down many substances including some toxic substances. This adaptability accounts for the presence of fungi in different environment around the world. The leaves provide a very suitable habitat for the growth and development of fungal pathogen by providing ample surface area and nutrient supply. Such leaf inhabiting fungi are known as foliar fungi and the invaded area of the leaf appears as leaf spot or leaf lesion. The weed and forest plants serve as reservoir of leaf spot pathogen which on getting opportunity may spread to agriculture. North Tarai Region of U.P. is next only to Eastern and Western ghats, as one of the hottest spots for Biodiversity in general and the diversity of fungal organism inhabiting plant leaves in particular offers an ideal opportunity for the morpho taxonomic exploration of fungal organism in general and foliicolous fungi in particular. Keeping this in mind the authors surveyed the habitat of North Tarai Region with thirty-nine angiospermic host plants representing thirty-nine genera and twenty families being parasitized by forty fungal species representing thirty-fungal genera.

Keywords: Tarai Region, Fungi, Biodiversity, taxonomic exploration.

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Abstract No. 216

Development of Recombinant Granulocyte Macrophage Colony Stimulating Factor Protein

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ABSTRACT

GM-CSF is protein of cytokine family and a pleiotropic growth stimulating factor that plays an important role in differentiation and proliferation of various hematopoietic cells, i.e. monocytes, dendritic cells and granulocytes. The hematopoietic cytokine has enormous effects on our immune system, activation of T cells and maturation of dendritic cells. GM-CSF protein has proven ability to promote humoral and cell mediated responses as well. Human GM-CSF consists of 127 amino acids and has two potential N-glycosylation sites and several O-glycosylation sites and highly bioactive protein and a therapeutic bio marker. In this study, strain of the Yeast GS115 *Pichia pastoris* were constructed by PCR amplification and recombinant human granulocyte macrophage colony stimulating factor (r-GMCSF) produced. Expression of PCR product was optimized conducting shake flash studies and methanol induced *Pichia pastoris* expressed GM-CSF was confirmed by monitoring the OD at 600 nm. GM-CSF protein were secreted in culture medium and protein build up inside the cell, which is further studied for protein yield by optimizing three step purification and studying it is Physico-chemical and functional properties. Approximately 98% purity were observed by chromatography. In 200 ml of Shake Flask studies, 2.5 mg/mL of purified protein were obtained, hence statistically productivity calculated 80 mg/L. To understand GM-CSF functional role of stimulation of neutrophilic granulocytes, to induce maturation of dendritic cells from human monocytes and macrophage colonies, bioactivity was assessed to evaluate its ability to stimulate the proliferation of TF-1 erythroid cells. The biological activity of *Pichia pastoris* derived GM-CSF protein exhibited cell differentiation and proliferative responses, which demonstrate that presence of cytokine expression increased in Human erythroid TF-1 cells by GM-CSF protein. TF-1 cells were also primed with IL-3 (Interleukin 3) cytokine to study relative activity in cells that depend on IL-3 for proliferation compared with compared to activity related to priming for mediator release from basophils or other leukocytes. The functional evaluation of GM-CSF supports the molecular basis providing its ability as a molecular target for cytokine induces apoptotic bio marker.

Keywords: GM-CSF, Granulocytes, Proliferation, Inflammatory Cytokines, Macrophage.

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Abstract No. 217

Chenopodium and *Trachyspermum* oils for the management of post harvest loss of *Arachis hypogaea*

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ABSTRACT

Legume seeds are highly valued for their nutrient content. Storage fungi are the dominant type of moulds associated with post harvest losses of stored food commodities. *Aspergillus, Penicillium*, *Fusarium moniliformae, Alternaria, Curvularia lunata* are the microorganisms primarily responsible for post harvest spoilage and are active in stored grain with moisture content in the range of 13.2 to 18%. Chemicals used to prevent these spoilage have phytotoxic effect and create pesticidal pollution. In present study the phytotoxic effects of the *Chenopodium* and *Trachyspermum* oils were studied with respect to seed germination and seedling growth of groundnut. The result showed that the difference in germination percentage and seedling growth of groundnut is not significant. Thus *Chenopodium* and *Trachyspermum* oils did not show adverse effect on germination and seedling growth of groundnut seed showing their non-phytotoxic nature. The stored groundnut seeds were fumigated by these two oils at the concentration of 1000ppm, 2000 ppm and 3000ppm. The result indicates that *Chenopodium* oil showed percent protection of 48,83 and 95 respectively at 1000ppm, 2000 ppm and 3000ppm concentrations while *Trachyspermum* oil showed percent protection of 38,79 and 90 respectively at above concentrations. So it is concluded that treatment of groundnut seeds with Chenopodium oil is more effective in controlling post harvest loss in comparison to *Trachyspermum* oil.

Keywords: Antimicrobial, Legumes, Post- harvest loss, *Chenopodium, Trachyspermum*.

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Abstract No. 218

Evaluation of Fungal strains tolerance and its potential to degrade PAH

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ABSTRACT

In aquatic sediments, polycyclic aromatic hydrocarbons (PAHs) are among the most prevalent organic pollutants.Polycyclic aromatic hydrocarbons (PAHs) have contaminated aquatic sediments widely, necessitating the development of efficient remediation techniques.Because of incomplete combustion of organic matter, emission sources, automotive exhausts, stationary matter, home matter, area source matter, and food, a variety of polycyclic aromatic hydrocarbons (PAHs) are found in the environment. The synthesis of many organic chemicals used in pesticides, fungicides, detergents, dyes, and mothballs has also used several PAHs. Numerous PAHs are carcinogenic, mutagenic, and/or hazardous. Because PAHs are extremely fat soluble, they are easily absorbed from the mammalian digestive system. They spread out quickly in a variety of tissues, with body fat showing a clear preference for localisation. Physicochemical techniques have been used to eliminate these substances from our environment, but they have several drawbacks. Various microorganisms have enormous potential to degrade these contaminants. The study focusses on the potential of various fungi to degrade petrol. Twenty fungal strainsdesignated as SA1 to SA20 were isolated from various places in Vadodara to test their potential towards petrol tolerance using two different methods. Out of these twenty fungal strains 3 of them showed promising results. These findings suggest that this fungus could be an effective option for bioremediation of PAH-contaminated soils.

Keywords: Fungal strains, tolerance, polycyclic aromatic hydrocarbons, bioremediation.

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Abstract No. 219

Anti cancerous and anti inflammatory properties of Turmeric (*Curcuma longa*) based on biochemical analysis

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ABSTRACT

Turmeric *(Curcuma longa)* is a spice which has been widely used for its medicinal properties in traditional medicine system of South Asia including china and India (ayurvedic system), the main component of turmeric; curcuma includes the three curcumin, which are responsible for its different physical and medicinal properties. Present study deals with systematic review of literature on anti-inflammatory activity curcumin in treatment of cancer. Researchers have shown curcumin to be highly pleitropic molecule capable of interacting the numerous molecular targets. A careful literature survey reveals that curcumin, the most active component of turmeric contributes significantly in certain types of cancer. The anticancer potential of curcumin is mainly due to its ability to inhibit and or activate various intercellular transcription factors which regulates the expression of proteins and development. The mechanism of action and effects are discussed briefly in present review.

Keywords: Curcumin, Anti-Inflammatory properties, Pharmacology.

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Abstract No. 220

The Impact of Dietary Dandelion Extract on Growth Performance in (Tilapia) *Oreochromis niloticus* during different feeding periods

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ABSTRACT

Dandelion leaf extract has been suggested as a potential feed additive for enhancing the growth performance of fish. However, the effect of the application duration of dietary dandelion extract supplementation on fish growth performance and health was still unknown. Therefore, In this study, the effect of dietary supplementation with dandelion leaf extract on the growth performance of tilapia *(Oreochromis niloticus*) fish was investigated at different feeding periods. The experiment was conducted with four treatments of fish, with group A fed a control diet and groups B, C, and D fed diets containing dandelion leaf extract for 30, 60, and 90 days, respectively. The results showed that the inclusion of dandelion extract in the diet had a significant effect on the growth performance of tilapia. Fish in groups B and C fed with dandelion extract for 30 and 60 days, respectively , had significantly higher final body weights, weight gain, and specific growth rates than the control group. Additionally, the feed conversion ratio was significantly improved in group C compared to the other groups. However, when the fish were fed the dandelion extract for 90 days (group D), there was no significant improvement in growth performance compared to the control group. In conclusion, dietary supplementation with dandelion extract can improve the growth performance of tilapia when included in the diet for 30 or 60 days. However, the extract's inclusion for 90 days did not significantly improve the fish's growth performance. These findings suggest that dandelion extract could be a valuable additive in aquaculture feed formulations if included for a shorter period of time. Further research is necessary to explore the mechanism underlying the beneficial effects of dandelion leaf extract and to optimize its inclusion level in tilapia feed.

Keywords: Growth performance, Inclusion level, Aquaculture, Dietary supplementation, Dandelion leaf extract.

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Abstract No. 221

Women's role in ecological restoration and sustainable development

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ABSTRACT

Ecological feminism considered women to be more attached by the nature than men, and excessively affected by ecological issues. It may be in the form of vegetarian, spiritual or materialist ecofeminism. Indigenous women are the primary users of the natural resources, and perform both productive (land tilling, sowing, weeding, harvesting, food gathering taking care of flora and fauna) and reproductive (selection of seeds, fertilizers, nourishing seedlings and plants) roles in conservation of natural deposit. This innermost and harmonious association of women with the nature considered them as a promoter for sustainable development. In spite of these women has also played an important role in various environmental movement of India.

Keywords: Ecological feminism, ecological issues, environmental movement.

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Abstract No. 222

Management and Prevention of environmental pollution by proper disposal of unused drugs

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ABSTRACT

The presence of pharmacologically active organic micropollutants including pharmaceuticals and personal care products is an emerging issue of great concern. The potential negative effect of pharmaceutical compounds to aquatic and terrestrial wildlife makes it interesting to study their existence, activity and removal from natural environment. Active pharmaceutical ingredients (APIs) are the biologically active ingredients in a pharmaceutical drug which are specifically designed to interact with biochemical pathways. Disposal of unused drugs, pharmaceutical production facilities, hospital wastes, human excretions and veterinary applications are the origin of the pharmaceutical pollution. Indeed, in most places of the world, these leftovers are commonly and inappropriately discarded by citizens in the ordinary garbage and sewers, as lack of own personal attention, lack of understanding, knowledge, and education, or even by absence of proper governmental and healthcare authorities' directions and regulations. Because of improper management of unused or expired drugs at households led to their presence in the environment. The study focuses on identifying the practice and disposal method of commonly unused medicines by households from various parts of Vadodara. Findings of the present study open up the dire need of organizing various awareness programs by government bodies, authorities or pharmaceutical companies to manage unused leftover drugs to save our environment in long run. The best way to dispose and manage the unused or expired medicines (both prescription and over-the-counter) without creating an environmental pollution has been discussed in the study.

Keywords: Vadodara, organic micropollutants, disposal, unused drugs, environment.

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Abstract No. 223

Pollen Diversity Assessment and its Role in Sustainable development

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ABSTRACT

We, the humans are running after the so called 'development' or advancement. The consequences of this progression or advancement are urbanization and industrialization which further result in deforestation, environmental pollution, depletion of freshwater resources, habitat loss leading to decreased biodiversity and species range alterations & interactions thus having negative impact on environment. The development is essential but it should be sustainable i.e. without compromising the needs of our future generation. The sustainable development can be achieved by the practices which support long-term economic growth without having negative impact on social, environmental and cultural aspects of the community. Pollen diversity assessment is a critical tool in sustainable development approaches, offering insights into the biodiversity of plant communities. Pollen are produced by the plant in enormous amount to ensure successful reproduction. Apart from reproduction, the sheer amount of pollen produced by the plants has significant impact on the environment and its components. Pollen analysis can provide the valuable information regarding plant diversity in the given area and better understanding about the pollinators. Pollen diversity in our environment gives information about ecosystem & climate contributing improvement in human health and well-being as well as the health and functioning of our natural and managed ecosystems. To achieve sustainable urbanization, we need to transform the way we manage urban biodiversity and the species that produce allergenic pollen. Fine-scaled pollen monitoring and pollen distribution models can provide essential information for urban green space management, giving plant taxa recommendations to reduce allergenic pollen, developing allergy risk projections, increasing pollinator abundance, healthy urban farming and food production. Pollen as natural micro-particles can be used for the engineering of sustainable and eco-friendly biocompatible pollen-inspired materials e.g. micro-gels and natural pollen based paper. By better assessment, screening and characterization of morphological and chemical structures of pollen can provide more cost-effective materials from renewable natural sources. Thus incorporating pollen diversity analysis into environmental and sustainability strategies, one can better understand the complexities and interaction of the natural components and work in the direction to create sustainable and resilient ecosystem for healthier planet.

Keywords: Pollen diversity, sustainable development, pollinators.

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Abstract No. 224

The eco-friendly outlook of Tharu tribal people in their various rituals and ceremonies in Tarai belt of Uttar Pradesh

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ABSTRACT

The Tharu people are divided into various divisions, each of which has its own dialect, traditional attire, rituals, and social structure. They consider themselves to be forest people. In Chitwan, they have been cultivating a short fallow, shifting crop in the forests for hundreds of years. In addition to cultivating rice, wheat, mustard, maize, and lentils, they also hunt deer, rabbits, and wild boar, and they fish in the rivers and oxbow lakes. They also gather wild fruits, vegetables, medicinal plants and building materials from the forest. The Rana Tharus lived a secluded life inside their own communities since they never travelled abroad for employment. They created a distinct culture free from the sway of nearby India or the mountainous ethnic groups of Nepal. The colourful rice crates, brightly painted verandas, and exterior walls of their homes-all made of locally accessible materials like clay, mud, cow dung, and grass-are the most remarkable features of their surroundings. A lot of the intricate design is derived from devotional practises and passed down from one generation to the next, with sporadic additions of modern objects like a bus or an aeroplane. In the Udham Singh Nagar district's Mira Bara Rana, a statue of Maharana Pratap was erected. A museum has been built to display farming equipment, food, heritage, and lifestyle related items of Tharu people.

Keywords: Tharu, shifting crop, heritage.

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Abstract No. 225

Obstacles in malaria vaccine

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ABSTRACT

Basically, a vaccine contains a disease-causing microorganism that is often made from weakened or killed forms of the microbe, its toxins or one of its surface proteins which are unable to cause disease but can boost the immune system. As such (parasite), the have evolved several mechanisms to escape the immune attack and overcome their hosts. The parasite protein, which plays an important role in the host cell invasion and multiplication, are generally considered to be good candidate genes for vaccine development.Malaria parasite has complex life cycle including pre-erythrocytic, erythrocytic and post-erythrocytic stages. In present scenario, most of the vaccine related research work is confined to *P. falciparum* whereas *P. vivax* (which is equally prevalent) has been ignored. Since *P. falciparum* provides some advantages over *P. vivax* due to possibility to culture the former species (P. vivax is still impossible to culture in the lab), most of the vaccine targets in P. vivax have been identified based on the homologous genetic information between these two species. RTS, S (Mosquirix) is the only leading vaccine developed against malaria in 2021 WHO recommended this vaccine for malaria (*P. falciparum*) in malaria infected areas but later in 2022 WHO issued prequalification approval for it. So, we must focus on *P. vivax* vaccine also because this parasite is also causing fatal illness now a days and RTS, S are found not be very successful on ground level.

Keywords: Malaria, vaccine, RTS, S, immunity, immune response.

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Abstract No. 226

Survey of fruit-waste management in some fruit based industries of Gujarat

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ABSTRACT

Mangifera indica L., commonly known as "Mango" or the "King of fruits", belonging to family Anacardiaceae is one of the most popular tropical fruit all over the world, owing to its great sensorial features and nutritional value. India is the world's largest producer of mangoes, at 20.01 million metric tonnes according to the report of FAO (2018). Some well-known native mango types grown in Gujarat state include the Kesar variety, which grows in the Kutch, Junagadh, and Valsad districts, and the Jamadar and Rajapuri varieties, which grow in the Valsad and Navsari districts. In a few locations of southern Gujarat, the wildly popular Central and South Indian mango cultivars like Alphonso and Totapuri are also grown. These aforementioned varieties are the lifeline of mango products based industries of Gujarat. The survey of various types of mango-based industries such as pulp, pickles, dried powder, slices etc., of more than 10 districts of Gujarat was conducted in the early months of Year 2023. This included the major mango-growing belt of the state i.e. the districts of Kutch, Saurashtra region and South Gujarat. The data of survey reveals about the various varieties of mango used by different industries as well as their waste management practices.V arious research findings of the last few decades have primarily proved the bioactive potential of mango fruit-waste in different fields. Thus, characterisation as well as commercial valorisation of the mango fruit-waste can be a turning point for food, cosmetics and pharmaceutical industries worldwide, with the promise of returning economic benefits as well as waste minimisation. Thus, enhanced research on the numerous significant commercial mango varieties grown in India should be conducted for promising benefits in return.

Keywords: Fruit-waste management, Benefits, Gujarat, Industry.

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Abstract No. 227

Impact of Climate change on food sector: Challenges and future perspectives

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ABSTRACT

Expanding food production and economic growth have often come at a heavy cost to the natural environment. Almost one half of the forests that once covered the Earth are now gone. Groundwater sources are being depleted rapidly. Biodiversity has been deeply eroded. Every year, the burning of fossil fuels emits into the atmosphere billion of tonnes of greenhouse gases, which are responsible for global warming and climate change. All of these negative trends are accelerating in pace and intensity, and agriculture is an important part of the problem. Deforestation, mainly for farming, produces a significant share of global greenhouse gas emissions and causes the destruction of habitats, the loss of species and the erosion of biodiversity. Deforestation, the degradation of natural buffers protecting coastlines and the poor state of infrastructure have increased the likelihood that extreme weather events will escalate into full-fledged disasters for affected communities and the economy. The lengthening of food chains and changes in dietary patterns has further increased the resource, ener gy, and emission-intensity of the global food system. These trends threaten the sustainability of food systems and undermine the world's capacity to meet its food needs. Although the full implications of climate change on agriculture, forestry and fisheries are difficult to predict, it is expected that the impacts will be of different levels and of a different nature in each region, ecological zone and production system. Even small changes in the climate, for example slight shifts in annual rainfall or seasonal precipitation patterns, can severely affect productivity. Thus, Climate change adaptation and mitigation measures need to be integrated to achieve food security.

Keywords: Climate Change, food sector, Biodiversity, adaptation, mitigation.

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Abstract No. 228

Exploring Constraints of Fisherwomen in Membership of Fisheries Cooperative Societies: A Case Study of Bargi Reservoir, Madhya Pradesh

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ABSTRACT

The study was conducted in 6 fishing villages of the Bargi reservoir of Madhya Pradesh state. Key Informant Interviews of 6 chairpersons of Fisheries Cooperative Societies (FCS), Personal interviews of 180 fisher women, a daily routine chart of 18 fisherwomen members and non-members of FCS through Participatory Rural Appraisal technique, and Focus Group Discussions with 180 fisher women were carried out for data collection. To explore the participation status of fisherwomen, in the beginning, membership in FCS was gathered through Key Informant Interviews. Then, primary data on fisherwomen's participation in FCS and fisheries activities were collected. The constraints in fisherwomen's membership were collected using Focus Group Discussions. The Rank Based Quotient method was used to analyze and rank various constraints. The results showed that only 8.88 percent of the fisherwomen possessed membership in FCS. Though 80.54 percent of the fisherwomen were engaged in fisheries activities such as fish smoking (33.33 percent), fish trading (12.22 percent), fish harvesting (11.11 percent), and net making/repairing operations (23.88 percent). The daily routine chart showed that fisherwomen were engaged for 8 hours/day in productive work and 9 hours/day in reproductive and community work. The constraint analysis revealed that poor social status, poor social acceptance, and lack of ownership of assets were the major social constraints. The economic constraints were; poor income, lack of working capital, and lack of alternative livelihood opportunities in the fishing close season. Gender biases in getting membership of FCSs, limited access to training & extension services, and the lack of access to saving schemes were the main institutional constraints. The production constraints were; the lack of skills in the operation of craft and gear, a decline in stocked and native fish species, and the operation of destructive fishing gears.

Keywords: Fisherwomen, fisheries activities, participation, constraints, membership and Fisheries Cooperative Societies (FCS).

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Abstract No. 229

A Preliminary survey to document odonates along the Sri Krishna Lake, Byatarayana Doddi, Bengaluru, Karnataka

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ABSTRACT

Dragonflies are bioindicators depicting the health of an ecosystem. In an ongoing study to document diversity of odonates at Sri Krishna Lake (12.4927N, 77.3253E), Byatarayana Doddi, Bannerghatta, Bengaluru is undertaken.A total of 10 species of anisopterans were observed in and around the water body during April 2023, eight species under the family Libellulidae (*Brachythemis contaminate, Acisoma panorpoides, Crocothermis servilia, Aethriamantha brevipennis, Orthetrum sabina, Ryothemis variegate, Neurothermis tullia, Brachydiplax sobrina*),One under Aeshnoidea *(Anax guttatus)* and a species under Gomphidae (Ictinogomphus rapax) among which two species were found to be common and more in number during the present observations viz., *Brachythemis contaminata* and *Crocothermis servilia*. Maximum activities were noted during the midday hours with increasing temperatures. Future studies based on temporal variations are monitored.

Keywords: Odonata, Byatarayana Doddi, Bengaluru.

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Abstract No. 230

Aptamer based biosensors for the detection of Environmental toxicants

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ABSTRACT

Biosensor is a device that avails selective quantification through a biological recognitionelement. They ascertaingood sensitivity, swift detection, cost effectiveness, portability, ease of modification, longerendurance, disposability, and suitability for differing environmental conditions. Aptamers have been employed as bio-recognition element in various biosensors as they OFFER several advantages. They are single stranded oligonucleotide molecules which are screened from oligonucleotide library through SELEX. Immobilization free GO-SELEX is a popular method for screening of aptamers against small targets where graphene oxide is used to segregate target binding and non-binding sequences. In the present study, an electrochemical aptasensor fabricated on screen printed carbon electrode (SPCE) was devised for application in detection of organophosphate insecticide acephate through cyclic voltammetry (CV). The screening of acephate specific aptamers was accomplished with the help of GO-SELEX (Graphene Oxide - Systematic Evolution of ligands by Exponential enrichment) technique, and their binding affinities were quantified through fluorescence-based assay. The amine modified aptamer sequence AAPT3, demonstrating highest affinity (Kd = 9.04 ± 0.1 nM), was attached on the SPCE surface through electrochemical diazotization coupling followed by end group activation method. The electrochemical properties and surface structure of modified SPCE were determined by the application of cyclic voltammetry (CV) and Fourier transform infrared spectroscopy (FTIR).

Keywords: Biosensor, Aptamer, Environmental toxicants.

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Abstract No. 231

A Review on Pharmacological compounds from Fungi

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ABSTRACT

The eukaryotic organisms that constitute the kingdom fungi have, for a long time, been of pharmaceutical and industrial interest as they serve as natural sources of important bioactive secondary metabolites. As a kingdom that comprises over 1.5 million species, with only a few thousand explored so far, fungi still represent a vastly untapped reservoir of chemical backbones and actual bioactive for potential therapeutic uses. During the past decades, several novel compounds with diverse biological activities have been identified and isolated from fungi. Compared to other plant-derived active products, biochemicals from fungi represent an underexplored source despite the historical contribution of this kingdom to the discovery of antibiotics (penicillin, cephalosporins, among others), immunosuppressants (including cyclosporin, mycophenolic acid), antifungal drugs (griseofulvin, echinocandins), cholesterol-lowering statins, anti-migraine er got alkaloids, among others. In spite of being proven sources of pharmaceuticals, only a fraction of the described species of fungi has been screened for drugs. The diversity in the ecology, morphology and physiology of fungi makes them more scientifically vital for pharmaceutical research. The present review focus on the rich diversity of fungi in nature and different bioactive compounds derived from them with pharmaceutical potential.

Keywords: Fungal Diversity, pharmaceutical compounds, bioactive, secondary metabolites and therapeutic.

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Abstract No. 232

Productivity and economic feasibility of linseed (*Linum usitatissimum* L.) and buckwheat (*Fagopyrum esculentum Moench*.) intercropping systems in rabi under Northern Transition Zone of Karnataka

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ABSTRACT

A field experiment was conducted to study the productivity and economic feasibility of linseed and buckwheat intercropping systems in rabi season at Main Agricultural Research Station, University of Agricultural Sciences, Dharwad, Karnataka during rabi 2021. The research was laid out in randomized complete block design with three replications consisting of eight treatments under different row ratios. The treatment includes six different row ratios of linseed + buckwheat viz., linseed + buckwheat at 1:1, 2:1, 3:1, 2:2, 4:2 and 4:4 with sole linseed and sole buckwheat. The results indicated that sole buckwheat produced a grain yield that was noticeably higher (5.90 q ha-1). Among the intercropping systems grain yield of buckwheat was higher (3.73 q ha-1) with 2:2 row ratio of linseed + buckwheat which was on par with 2:2 and 4:4 row ratio. The sole linseed treatment produced a much greater grain yield of linseed (7.04 q ha-1) than any of the other treatments. Linseed + buckwheat intercropping systems with 3:1 row ratio yielded significantly greater linseed grain yield (4.93 q ha-1), which was comparable to linseed + buckwheat systems with 4:2 and 2:1 row ratio. There was no significant difference with respect to linseed equivalent yield. Buckwheat equivalent yield was higher (771 kg ha-1) with 2:2 row ratio of linseed + buckwheat. Net returns and B-C ratio was higher (17920 ha-1 and 1.63 respectively) with 2:2 row ratio of linseed + buckwheat which was on par with 4:2, 2:1row ratio and sole linseed.

Keywords: Linseed, buckwheat, economic feasibility.

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Abstract No. 233

Study of physicochemical parameters of fish diversity in Sangam Sagar pond at Jabalpur

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ABSTRACT

The present study deals with water quality of Sangram Sagar pond at Jabalpur, MP, India to access the impacts of anthropogenic activities. Water samples were collected monthly from five sampling sites of the pond over two years (August 2014 to June 2016) for analysis of various physic-chemical parameters. Results indicated higher values of some parameter correlation between fish and physicochemical parameter such as total rainfall, atmospheric temperature, water temperature, pH; Dissolve oxygen (DO), nitrate, and phosphate were performed. The diversity Index of sangram sagar indicates that the pond is less polluted present study revealed that physico chemical parameters play vital role in special distribution.

Keywords: Water quality, physicochemical parameters, fish diversity.

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Abstract No. 234

Adsorption as Green Technique for phenolics using Coal Flyash as Adsorbent

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ABSTRACT

In present, the most serious environmental problems are the presence of hazardous and toxic pollutants in industrial wastewaters. The major different types of pollutants as dyes, heavy metals, phenols, pesticides, pharmaceuticals and many more. Adsorption is considered as the most important techniques for wastewater treatment from long back ago. The economic crisis in this respect led researchers to concentrate their interest in low cost adsorbent materials. In this way, a new term will be introduced as green adsorption. These green adsorbents are expected to be inferior due to their low adsorption capacity compare to the the super-adsorbents as chitosans, activated carbons, structurally-complex inorganic composite materials etc., but their cost-potential makes them competitive. So green adsorption topics such as adsorption capacity, kinetic and equilibrium modeling leading to batch experimental data to fixed-bed column calculations for designing/optimizing commercial processes having critical techno-economical data of green adsorption processes in order to scale-up experiments (from lab to industry) with economic analysis is very important application as green adsorbents. Adsorption technique is widely used for removal of toxic organic contaminants from aqueous streams. Although commercial activated carbon is an effective adsorbent, it's widespread used is restricted due to its high cost and substantial lost during regeneration. The aim of this study is to investigate the possibility of flyash as an alternative adsorbent for phenolics removal from aqueous solution .The removal characteristics of phenolics from aqueous solution by flyash are investigated under various conditions of contact time, particle size, pH, concentration and temperature. The level of uptake of phenolics by flyash decreased with increasing particle size and pH but increases with temperature. The rate constants for different conditions are evaluated in terms of first-order kinetics. The experimental results underlined the potential of flyash for recovery of phenolics from wastewater. The main mechanisms involved in the removal of organics from solution by fly ash were electron –withdrawing effect of substituent group present in benzene ring and adsorption at the surface of the flyash. It was found that these low cost flyash adsorbent demonstrated good removal capability of phenolics and hence can be used economically on large scale.

Keywords: Flyash, phenolics, adsorption, Green adsorbents; wastewaters; low-cost materials.

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Abstract No. 235

Role of Pre-Monsoon Dry Sowing in Natural Farming

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ABSTRACT

Natural farming, sometimes referred to as zero-budget natural farming, is a cutting-edge farming technique. One of its strategies was to encourage farmers to use different agro-ecological practices that can be obtained locally at a low cost, and which are intended to improve soil fertility and biota, lower soil temperatures, retain soil moisture, etc., to make the agro-ecosystem profitable and sustainable. The practice of Pre-Monsoon Dry Sowing (PMDS) increases farmers' levels of net value addition, the gross value of the product, and the cost of cultivation. Farmers with advanced degrees and those who depend on farming for their living are most likely to practice PMDS. Crops can be planted on schedule during seasons with a delayed break by using dry sowing. In dry direct agriculture, seeds are sown directly into the ground while the area is being ploughed by tractors. On dry soils, sowing began in April and continues until the first significant rains arrive, at which point farmers begin planting crops in June, July, or August. Farmers in semi-arid rain-fed fields may now cultivate three harvests each year with a wide variety of crops and improved farmland biodiversity, this was made possible through practicing the Pre-Monsoon Dry Sowing. It is a method of planting, tilling, and caring for the land where the farmer raises crops outside of the growing season or whenever there isn't a crop cover. It makes use of the airborne water vapor that condenses to generate morning dew. Plants may thrive because the dew provides enough moisture. The mulch that has been spread all over the field makes things easier. The use of less water overall, and particularly less groundwater, results in lower pumping expenses for groundwater bailing. Therefore, the major concern of this article is to cover all the aspects of PMDS benefiting the farmers and ultimately improving the Indian socio-economic health.

Keywords: Natural farming, Zero-budget, Pre-Monsoon Rains, Pre-Monsoon Dry Sowing.

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Abstract No. 236

The role of libraries and info services towards ensuring environmental sustainability

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ABSTRACT

Beginning in the early 1990s, libraries began engaging in a variety of initiatives designed to lessen the strain they placed on the environment. Libraries that engage in such practices are referred to as "green libraries." According to the Online Dictionary for Library and Information Science (ODLIS), the term “green libraries” is synonymous with “sustainable library”. The sustainable library is defined as “designed to minimize negative impact on the natural environment and maximize indoor environmental quality by means of careful site selection, use of natural construction materials and biodegradable products, conservation of resources (water, energy, paper), and responsible waste disposal (recycling, etc.)”.By providing appropriate and relevant information relating to green problems and worries, librarians can serve as role models for sustainability. Developing a strategy that incorporates green policies and actions is the primary stage.This paper aims to emphasize the necessity and significance of implementing environmentally-friendly practices in libraries, commonly referred to as "green libraries." Furthermore, it will propose several strategies for achieving sustainable development through the adoption of green practices in library operations.

Keyword: Sustainable development, Green libraries, Environment, LEED.

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Abstract No. 237

Spirulina, a tool for achieving sustainable development goals-Zero hunger and good health and wellbeing

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ABSTRACT

The Global Hunger Index, 2022 has ranked India 107th among 121 countries with a score of 29.1 putting our country in the 'serious' category in level of hunger and according to National Family Health Survey-4 data, among children under five years in India, 38.4 % are stunted, 21 % are wasted and 35.7 % are underweight. Malnutrition, especially that affecting young children, is one of the principal public health problems in India. It is multi-factorial and one of it's main cause is the lack of wholesome and nutritious food. This is preventable or treatable through effective nutritional interventions. Nutritional intervention can be done by supplementing or fortifying food with nutrients and vitamins. Many researches point out the fact that natural sources are superior to the artificial or synthetic supplements. Considering the natural resource, *Spirulina* has been studied for decades as a dietary source of micro- and macro nutrients. Many researches concerning the phytochemical screening of *Spirulina* extracts have concluded the presence of exceptional nutritional properties and have referred *Spirulina* as the healthiest food on earth, containing high protein levels, beta-carotene, iron, calcium, anti-oxidants and lots of minerals that could never be replaced by just one food. *Spirulina*, the blue green alga , thus can be the perfect solution to reestablishing food security in areas that suffers malnutrition. Apart from improving health, by nature *Spirulina* is a renewable source of energy and food that only requires very minimal care. In India researchers have reported "mission against malnutrition" with the help of *Spirulina*. So this super food can be exploited and grown in large scale for a sustainable health development. Growing *Spirulina* will not only address two very important SDGs – Zero hunger and Good health and well being but also it will take care of three core elements of sustainable development i.e economic growth, social inclusion and environmental protection. Achieving the World Health Assembly's Global Nutrition Target of a 40% reduction in the number of under-5 stunted children and to reduce wasting to less than 5% by 2025 is challenging but not impossible.

Keywords: *Spirulina* , malnutrition, Sustainable development, super food.

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Abstract No. 238

Polymorphism and association study of IGF-I gene for growth traits in Indian goats

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ABSTRACT

Domestic goat *Capra hircus* commonly known as poor man's cow is a multipurpose, most adaptable and thus geographically widespread inhabitant livestock species of India. Archaeological references also indicates goat among the first animals to be domesticated around 10,000 years ago. Since then, despite of its recognized socioeconomic values, adaptability, versatality most of the goat breeds in India shows average economic value because of low growth, reproductive and productive performance of the goats. The candidate gene approach for detecting genetic variation as polymorphisms in genes that cause phenotypic variation, could accelerate the improvement of growth, reproductive and productive traits, also provide a tool for selection of animals with desired gene combination. To detect the immunological role of IGF-I gene genetic polymorphism and association of polymorphic variants of IGF-1 gene with growth and reproductive traits in different Indian goat breeds,the study used PCR- RFLP method to analyse genetic variability in Insulin like growth factor (IGF-1) gene in Barbari, Sirohi and Black Bengal breeds of Indian goats. Polymorphic variants found in the IGF-1 gene is then associated with some of growth and reproductive traits of economic importance in goats. The amplified fragment of 363bp of IGF-1 gene after digestion with *Hae* III restriction enzyme showed three different gel patterns, which later designated as AA, AB and BB genotypes. Genotype frequencies for AA genotype ranged between 0.40- 0.46, for AB genotype ranged between 0.23- 0.30 and 0.27-0.34 for BB genotype in Sirohi, Barbari and Black Bengal goats respectively. Whereas, the allelic frequencies for A allele in Sirohi, Barbari and Black Bengal goats were found to be 0.55, 0.60 and 0.55 and the allelic frequencies for B allele 0.45, 0.40 and 0.45, respectively and none of goat population was found to be in Hardy Weinberg equilibrium at this locus. Association between different genotypes and economic traits considered in the study was found non-significant, however some genotypes showed nonsignificant superiority over other genotypes in all the traits under study. Considering the importance of IGF on growth and reproductive traits the results of study need to be validated using more number of goats.

Keywords: Polymorphism, IGF-1, Indian goats.

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Abstract No. 239

Isolation and characterization of pathogenic fungus from leguminous agricultural weeds affected

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ABSTRACT

Leguminous plants are incredibly important since they are the main source of protein, which we are quite familiar with. The best meatless diet choice in India is this. Since they are an affordable source of high- quality plant protein, vitamins and minerals, legumes satisfy a significant portion of our protein need, which is why they are sometimes referred to as "poor people's meal". Weed infestations are responsible for a 33% loss in crop productivity. The sustainability of legume crops is increasingly being threatened by pests particularly weeds. In agriculture, weeds are a persistent and ever-evolving problem. Crop protection and increased productivity can solve all these issues. A survey was conducted at various sites throughout the state of Chhattisgarh including Raipur and Dhamdha. It has been discovered that various fungi diseases, including root rot and leaf spot are linked to weeds. A total 18 fungal genera were isolated throughout this investigation. *Echinochola colonum* leaf showed the most infection. The most frequent species discovered was *Alternaria alternata.*

Keywords: Weed, leguminous, fungi, *Echinochola colonum, Alternaria alternata.*

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Abstract No. 240

Advances in green synthesis of herbal nano-medicines

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ABSTRACT

Natural products based medicines have been used for ancient time. Many herbal compounds have shown potential as therapeutic agents to treat cancer, microbial infection, inflammation, and other human diseases. However, their success in clinical trials has been less impressive, particularly due to the low bioavailability. The incorporation of silver nanoparticles into a delivery system for natural products would be a major advancement to increase their therapeutic effects. Recently, advances have been made showing that nanoparticles can significantly increase the bioavailability of these compounds. Nanotechnology has demonstrated its capability to manipulate particles in order to target specific and controlled release of drugs. *Rosa indica* is a traditional medicinal plant belonging to family rosaceae and is well known for its antioxidant, antidiabetic, anti-inflammatory and antimicrobial activities. Another plant of high medicinal value is *Catharanthus roseus* belonging to the family apocynaceae. The plant is known to have anti-diabetic, anti-bacterial, anti-ulcer, anti- helminthic, anti diarrhoeal and hypotensive activity. We have successfully synthesised herbal nanosilver particles from these two important medicinal plants. However, it is not without issues such as potential nanoparticle toxicity. It needs to be further investigated, especially if these systems are to be used to treat chronic human diseases.

Keywords: *Rosa indica*, bioavailability, herbal nanomedicine, *Catharanthus roseus*.

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Abstract No. 241

Study on shelf life of millet based vermicelli for rural areas to combat malnutrition

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ABSTRACT

Consumption of traditional Indian foods has contributed over centuries to the nutrition and sound health of the people. However in order to increase their nutrient density, the technology used for preparation of these foods needs to be upgraded to meet the changing needs. Hence, for the present study, popular traditional extruded food vermicelli was selected and enriched by incorporation with minor millet i.e barnyard millet and defatted soy flour. Barnyard millet malt and defatted soy flour supplemented foods were consistent with the increased nutrient contents and reduced levels of anti-nutritional factors. Vermicelli can be used satisfactorily up to 60 days in all containers with respect to alcoholic acidity, peroxide value, moisture content, total plate count and sensory evaluation test. The shelf life of this vermicelli is good; therefore vermicelli prepared in advance from materials available at home can be a very handy food for a busy working or labourer mothers. It can also be advocated for community feeding centers. This is a significant addition to the existing knowledge in this area. Fortified vermicelli is not only easy to cook but also helps preserve the nutrients at a low cost especially for the diet of children who are more prone to the nutritional problems. It is concluded that effective use of both millets and defatted soy flour protein can go a long way toward correction of dietary protein inadequacies. Since it is economical particularly in comparison to animal products, its availability should benefit low income segments of the population.

Keywords: Millet, economical, shelf life of this vermicelli.

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Abstract No. 242

Effect of chemical fertilizers on environment and ecosystem

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ABSTRACT

Though the chemical fertilizers increase the plant growth and vigour .hence meets the food security of the world, but the plant growth in this way does not develop good plant characters such as, good root system, shoot system, nutritional characters and also will not get time to grow and mature properly. Chemically produced plant will accumulate in the human body, toxic chemical which are very dangerous chemical fertilizer harm the micro present in soil. They reduce soil fertility and chemical fertilizers are expensive.

Keywords: Fertilizer, chemical, soil, fertility, plant growth, microbes, root, shoot, toxic chemical.

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Abstract No. 243

Moringa oleifera: A Miracle Plant for Accomplishing Sustainable Development Goals

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ABSTRACT

Moringa oleifera popularly known as the 'drumstick tree,' is a miracle tree with multiple benefits. It belongs to the family Moringaceae. Native to India, it is widely cultivated throughout the world. *M. oleifera* has been used traditionally for treating many diseases and is reported to have therapeutic, nutritional and industrial properties. It is widely grown in many parts of the world and can potentially remove malnutrition. Once a neglected and underutilised plant, today, *Moringa oleifera* is studied and researched to understand its medicinal, nutritional, and phytoremediation properties. Phytoremediation is the use of plants to treat contaminated water soil. Phytoremediation using *Moringa oleifera* is an economically viable alternative in many developing and underdeveloped countries. Moringa can improve household food security and nutrition and mitigate climate change. Various uses of moringa can be directly put into use for enhancing livelihood. It is been considered a wonder plant that can directly contribute to achieving various sustainable development goals. This review aims to analyse the scientific information on *Moringa oleifera* Lam. regarding its phytoremediation property, medicinal uses, potential as a biofuel and more importantly, its nutritional value and contribution to sustainable development goals.

Keywords: *Moringa oleifera*, Phytoremediation, sustainable development.

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Abstract No. 244

Sustainable modern resilient smart cities through intelligent application of green technologies

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ABSTRACT

Cities are the centres of life, livelihood and development of modern human societies. Cities are the heart of modern economy as 80% of GDP is generated in it which is contributive to lasting social and economic benefits. Near about 55% of global population (nearly 4.4 billion) lives in cities and as per 2045-50 projection the cities of the world will expand beyond the actual capacities to hold the population near to 6 billion. Migration of the human population from rural to urban areas to cities mainly related to better job opportunities, infrastructure, education facilities, natural disaster and crop failures, displacement due to dam construction. Major challenges in cities include inadequate infrastructure in parallel with the population growth, environmental pollution, poor waste disposal facilities, and depletion of natural resources, crisis of safe drinking water, infectious diseases. Modern cities release 78% of the total carbon dioxide emission which is largely contributive to green house effect and climate change. Energy consumption pattern is putting immense pressure on the local and global environment. Our research using multivariate statistical methods is useful to identify the crisis of modern cities today and in future which will be useful to establish sustainable cities with resilience through intelligent intervention of green and resilient technologies.

Keywords: Sustainable. Smart cities, Intelligent, Green technologies.

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Abstract No. 245

Nature is the best medicine for well-being: A review

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ABSTRACT

Nature the broadest sense is the physical world or universe the most amazing thing about nature is its infinite variety. It provides us with water, soil, clean air, food and raw materials for medicines, industry and buildings. All these improve our health and well-being. Natural science is part of the interplay between nature and us. Medicines are not only always found in bottles, tablets and vaccine forms. There are various many others form that exists around us responsible for getting better health such as detoxification is the medicine, exercises, quitting junk foods, fasting, laughter, sleep, sunlight, meditation, listening, creativity, accepting & expressing is the medicine, friends, gratitude & love, being fearless, positive attitude, speaking up and sharing, vegetables & fruits, unconditional love towards all living beings, staying in 'present moment' are the medicines and one of the our "nature" is the best ever medicine to us. Being in 'nature' or even viewing 'scenes of nature' reduces anger, fear & stress and increases pleasant feelings. Exposure to nature not only makes you feel better emotionally; it also contributes to your physical and boost psychological well-being, reducing blood pressure, heart rate, muscle tension and the production of stress hormones. It improved better sleep, mode and immune function; also keep you free from many different types of ailments or disorders and diseases. Nature leads to 'expansive thinking' which allows us to consider different perspective and can lead to innovative ideas and increased your power of creativity. Spending time in nature also inspire essence of awe. There are surprising social benefits too. Natural resources occur naturally within our environment. Improvements and advancements in science and technology have resulted in over utilization of natural resources. The utilization of natural resources has increase considerably due to the rapid growth in population. Therefore, in present clip we must utilize these resources carefully to maintain a balance between nature and mankind & also for the sustenance of life on earth.

Keywords: Nature, Medicine, Natural resources, Improved health, Well-being.

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Abstract No. 246

Treatment of Liver Cirrhosis by the Interaction of β-Peltatin with Tubulin Receptor

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ABSTRACT

Liver cirrhosis is caused by drinking of too much alcohol continuously for many years. Cirrhosis is the final stage of alcohol-related liver disease in which liver is scarred and permanently damaged. If a person is having cirrhosis, it means he has an advanced level of liver cancer. β-Peltatin is a herbal therapy medication obtained naturally from some marine or ganisms like *Libocedrus bidwilli, Eriope macrostachya* etc., used to treat a vast variety of cancers. It may also helpful in the treatment of pancreatic cancer, breast cancer, ovarian cancer, lung cancer, brain cancer etc. Opticalultra centrifuge studies of β-Peltatin treated tubulin shows a small reduction in 25-S to 30-S peaks at 0°C. In electron microscopic studies, the ring structure of tubulin is seen at 0°C but disappears if the temperature of tubulin incubated with β-Peltatin is raised to body temperature. β-Peltatin repels the replication of chromatin reticulum in mitosis there by inhibiting the fast growing cancerous cells of the body for current as well as for future generations. Interaction of β-Peltatin with the Tubulin promotes receptor-independent activation of Guanine Nucleotide-Binding proteins (G-proteins) which helps in modifying cell morphology for the treatment of cancerous cells. Their interaction studies will also be a boon for treating the problems caused by the SARS COVID-19 virus in the future scenario. The drugs produced from the β-Peltatin will show a promising result in cancer therapy. However, the toxicity of these drugs as well as acquired drug resistance allows for an opportunity to develop agents with increase tolerability and specificity to the body cells. My investigation has opened the pathways of cancer cell resistance to antimitotic drugs that will result in the subsequent identification of novel biomarkers for future chemotherapy possessing increased efficacy in an innovative way for the future researchers.

Keywords: Liver cirrhosis, β-Peltatin, G-protein, tubulin, polymerization, inhibitors.

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Abstract No. 247

Importance of Biofertilizer in present time

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ABSTRACT

Biofertilizers are substance that contains micro or ganisms, which when added to the soil increase its fertility and promotes plant growth. Biofertilizer on the other hand, enhanced the water holding capacity of the soil and added essential nutrients, such as nitrogen, vitamins and protein the soil. Two main objectives are -to maintain and increase the long terms fertility of soil. And to avoid all forms of pollution that result from agricultural techniques. Biofertilizers are three main types first is Nitrogen fixing biofertilizer - these are free living, symbiotic, associative symbiotic. Second is P- Solubilizing biofertilizer, like - bacteria, fungi and third one is P-Mobilizing biofertilizer like - Arbuscular mycorrhiza, ecotomycorrhiza. Biofertilizers are required to restore the fertility of soil. Prolonged use of chemical fertilizer degrades the soil and affects crop yield.

Keywords: Biofertilizer, Nitrogen fixing biofertilizer, P- Solubilizing biofertilizer, P-Mobilizing biofertilizer.

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Abstract No. 248

Green technology and socio-economic sustainability

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ABSTRACT

Green technologies are environmental friendly and they have low carbon, speedy growing and are positioned to dominate the world's future. Unfortunately at the negative environmental, health and economic impression if non-sustainable choices become ever more abominable there is a very clear way to accelerate the penetration of green technologies to create a new global society. Green technologies help in many areas which help in real development of our new world, with our conservation of our resources. In current scenario, such technologies are utmost necessity for sustainable development with environmental ethics. So we must promote environmental friendly approaches widely.

Keywords: Green technologies, sustainable development, environmental friendly.

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Abstract No. 249

Exploring Terrestrial and Wetland Avian Diversity in an peri-urban Ecosystem of Challaghatta village, South Bengaluru, Karnataka

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ABSTRACT

A comprehensive study was conducted to explore avian diversity in the Challaghatta village, located in the southern part of Bengaluru, Karnataka during 2022-23. Opportunistic observations were undertaken in the study area experiencing intense urbanization. A total of seventy five species belonging to forty four families were identified, of which 62 species were terrestrial birds and 13 water birds. Two species *viz*., *Threskiornis melanocephalus* and *Anhinga melanogaster* are 'Near Threatened' according to the IUCN Red List. Additionally, 74 species were found to be residents, indicating the ecological significance of Challaghatta as an important ecotone.

Keywords: Challaghatta, water birds, ecotone, urbanization.

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Abstract No. 250

Self-assembled micellar *Sapindus laurifolia*; investigation on the surfactant activity and degumming of silk coccon

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ABSTRACT

The manufacture of textile in India is dependent on muga silk more than any other component. It involves from the species of muga silkworm, which is known technically as *Antheraea assmensis*. This silk worm eats on the leaves of sualu (*Litsaea polyantha).* Silk thread with a golden yellowish colour is the most expensive because of the distinctive qualities it possesses. These qualities include the quality of the texture, its glossiness and its life span. Raw silk is made up of two constituents, filamentous (fibroin) and non filamentous (sericin) proteins. It is necessary to remove the maximum amount of sericin from the silk fibroin during the degumming process to acquire the shininess, stretchability, snowiness, dye capacity and durability of the silk thread. Based on sericin elimination by the degumming process, the silk fibrion quality improves. In the investigation commercial surfactant *Sapindus laurifolia* is utilize for the muga silk coccon degumming purpose. The present degumming investigation results in 22 to 23% sericin extraction within 25 minutes at temperature range from110-130. The efficiency of extracted fibroin has been conducted with crucial parameters such as Sapindus concentration.

Keywords: Degumming, Sericin, *Sapindus*, Silk fibroin.

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Abstract No. 251

Effect of Photoperiod on Mammalian Reproductive Health

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ABSTRACT

Photoperiod duration is one of the most compelling environmental cues responsible for coordinating daily variations in mammalian physiology, including the reproductive system. In seasonal species, the photoperiod securely regulates reproduction to ensure that birth occurs at the most favourable time of year. The reproduction of seasonal breeders is modulated by exposure to light in an interval of 24 h defined as photoperiod. In mammals, a photo-neuroendocrine circuit controls this process via the pineal hormone melatonin. Several genes have been identified which are regulated by the photoperiod, in the brain of seasonal mammals. These genes play active role in the regulation of reproduction and body weight. In studies it has been observed that non-seasonal male rodents, such as rats and mice, short-day photoperiod (SP) conditions or exogenous melatonin treatment have anti-gonadotropic effects. In seasonally breeding rodents, the effects of short-photoperiod in the reproductive system are credited to an extended period of melatonin secretion. Acute administration of melatonin can directly impact aspects of physiology and immune function. It alters the duration of pineal melatonin secretion and causes stable changes in many physiological systems, including the HP A axis, the HPG axis, the brain-gut axis, the autonomic nervous system, and the immune system. This complex interplay of systems is regulated at all levels by melatonin. It is becoming imperative to study the far-reaching effects of photoperiod resulting in understanding physiological and endocrine responses to improve mammalian reproduction and help in its management.

Keywords: Photoperiod, Seasonal Mammal, Rodents, Melatonin, HPA Axis, HPG Axis, ANS, Brain-Gut Axis.

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Abstract No. 252

Recycling, waste management and socio-economic impact

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ABSTRACT

Recycling continues to contribute to the sustainable management of plastic solid wastes (PSWs) and it's among the important approaches currently used for reducing the impacts of PSWs in the plastic industry. It provides opportunities for reducing quantities of wastes disposed, oil usage and carbon dioxide emissions. Further, it creates opportunities in the form of job creation, global warming reduction, reduction of virgin material consumption, reduction in landfill contamination etc. It also presents demerits such as being costly, contamination, littering, pollution etc. The chapter outlines the concept of recycling with particular attention to plastics. It discusses the two strategies of recycling: OPEN LOOP RECYCLING and CLOSED LOOP RECYCLING. These strategies are compared and the difference is that, open-looprecyclingprovides an opportunity for new product development while closed-loopis confined to the original products. Different recycling processes such as primary recycling, secondary (mechanical) recycling, tertiary recycling and energy recovery are discussed by focussing on the processes, merits and demerits. Recycling is contributing to the sustainable management of wastes and, because of advances in technologies and systems for segregating, collecting and reprocessing of recyclable wastes, it is rapidly expanding. It is creating new opportunities for integration with industries, communities and the governments.

Keywords: Recycling, waste management, pollution, environment.

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Abstract No. 253

Biodiversity conservation in India: An Outline of the Challenges

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ABSTRACT

The conservation of biodiversity is a challenging issue in India. Subsistence agriculture, including livestock rearing, is the main occupation of the majority of the people in rural areas. It puts an ever-increasing demand on the forest as the human population increases. Continuous population growth, faulty planning and ever-increasing biotic pressure have altered the landscape, with little or no concern for long-term environmental consequences and threats posed to biodiversity. Furthermore, the weak economic structure and minimal employment opportunities have added to the problem. Hence, many forests are either badly degraded or encroached upon by people seeking essential resources for their survival. Thus, conservation challenges in India are of anthropogenic origin and the result of an unsustainable extraction of biological resources. The challenges get more complicated as the human population grows, and conservation strategies to effectively modulate human and conservation needs.

Keywords: Conservation area, Forest management, Biological resources, Environmental issues.

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Abstract No. 254

Biochar-induced changes in soil properties and microbial diversity: A meta-analysis

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ABSTRACT

Biochar is a widely known soil amendment to improve soil health, sequester carbon, and enhance plant growth. In this study, we conducted a meta-analysis to synthesize the available information on the impact of biochar application on different soil properties. We collected global data on the effects of biochar application on different physical, chemical, and microbial soil properties from relevant literature and statistically analysed by using the statistical software SPSS version 28. Based on selection criteria, total 805 data entries from 57 studies from the literature published between 2013 and 2022 were selected for the meta-analysis. The application of biochar resulted in an increase in soil pH, cation exchange capacity and organic carbon, with greater effects observed in soils with coarse and fine textures. However, the effects on chemical properties varied depending on the type of feedstock used to produce the biochar. Among physical properties, biochar application reduced bulk densities and increased porosity. Biochar prepared at higher pyrolytic temperatures (>500 ℃) improved bulk density and porosity to greater extent. Biochar prepared at lower pyrolytic temperatures (<500 ℃) had a greater effect on microbial diversity (both bacterial and fungal), with more diverse bacterial populations in medium and coarse textured soils, while fungal diversity increased in fine textured soils. The meta-analysis emphasized the necessity of carrying out extended field experiments to elucidate the changes in biochar properties as it undergoes aging, its prolonged impacts on soil properties, and the optimal timing for re-applying various types of biochar.

Keywords: Biochar, Soil properties, Microbial population.

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Abstract No. 255

Role of Thymoquinone against Malathion toxicity in freshwater fish *Labeo rohita*

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ABSTRACT

Thymoqunione is a bio-active component of *Nigella sativa*. It is well known for its pharmacological properties, which mainly composed of Thymoqunione (TQ) thymol (THY), and α hederin and their antioxidant effects. TQ, THY and alpha hedrin (α- hedrin) provide a protection to heptoprotective via different mechanisms including inhibition of iron-dependent lipid peroxidation. Malathion is an organophosphate pesticide that is known for its high toxicity to insects. Its toxicity has been associated with the inhibition of acetylcholinesterase activity, leading to the interference with the transmission of nerve impulse, accumulation of acetylcholine at synaptic junctions. It also associated with the increase of oxidative stress response in the immune system. In this current study, authors will focus to study the ameliorative effect of Thymoqunione against Malathion fish toxicity with respect to environmental responses.

Keywords: Thymoqunione, Malathion, Acetylcholinesterase activity, Oxidative stress.

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Abstract No. 256

Analysis for Nutritive value of fruit part of *Annona reticulata* Linn

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ABSTRACT

Proximate analysis of plants plays a crucial role in assessing their nutritional significance. Carbohydrate, fats, fiber and protein are the essential nutrients of life. For proximate analysis, the fine powder obtained from dried plant parts as shown earlier were used. The following quantitative parameters were carried out using standard methods and Mean of the triplicate analysis was calculated. The nutritive value was assessed based on estimation of percentage of moisture, total ash, total carbohydrates, total crude fiber, total protein and total lipids in the plant samples. The results are calculated by analyzing one sample and presented as mean ± SD. Fruit powder showed moisture content to be 6.77 ± 0.07. Fruit showed ash percent to be 5.22 ± 0.066respectively. Carbohydrate content was found 41.01 ± 1.07 in fruit of *A. reticulata.* While in fruit only 32.71 ± 0.39 percentage of crude fiber was found. Fruit showed protein content to be 9.23 ± 0.28. Fruit showed fat content to be and 3.99 ± 0.098 respectively.

Keywords: *Annona reticulata*, Proximate analysis, Fruit part of plant, Phytochemicals, Antioxidants.

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Abstract No. 257

Multiple natural spawning of *Chagunius chagunio* (Hamilton-Buchanan, 1822) a coldwater cyprinid in captive conditions.

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ABSTRACT

Chagunius chagunio, a coldwater cyprinid commonly known as "Chaguni"is one of the economically important indigenous fish of Himalayan region. An attempt was made to standardize the breeding protocol of this species under captivity in aquarium condition. Wild stock was collected from Bhimtal lake .12 numbers of brood stock in ratio of 1:2 (F:M) with average weight of 40-60 g, respectively were maintained in glass aquarium at ICAR DCFR Bhimtal.. The aquarium tank has dimension of 110x90x95 cm with water holding capacity of about 750 liters. The aquarium tank was equipped with an under-gravel biological filtration system to maintain ammonia free crystal-clearWater temperature was maintained with immersion thermostat glass heaters within a range of 18-22^{0}C. Brood stock was fed with wet feed containing 30-40% protein. Male and female both attained gonadal maturity in confined aquarium condition. In males, nauptial tubercles were heavily developed on snout and check region. The first natural spawning was observed in the month of June followed by successive natural spawning by same brood stock. in aquarium several times without using any hormone. Males dig the spawning nest on the gravel surface. During spawning female deposit the eggs in the gravel nest pits that subsequently fertilized by the male. Incubation and hatching take place in the gravel pits. Free swimming hatchlings come out from the pits after 5-6 days depending on the environmental water. Fertilized eggs were transparent, with a mean diameter of 1.61±0.16 mm. Incubation period was recorded 96-146 hours at 22-24^{0}C. Average length and weight of larva, having completely absorbed yolk sac were 8.4±0.18mm. Spawning behavior and breeding habits of this species were also recorded. The present study is the first report of successful natural spawning and breeding of *C. chagunio* in aquarium without using any synthetic hormone. Successful natural spawning breeding and rearing of seed in aquarium conditions will pave the path of species diversification in coldwater aquaculture.

Keywords: *Chagunius chagunio*, multiple natural spawning, aquaculture, tubercles.

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Abstract No. 258

Formulation, Development and Evaluation of algal based herbal cosmetics

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ABSTRACT

Beauty products are formulated in India from ancient era. In recent years cosmetics development has grown exponentially as demand of consumers. Cosmetics are substance of products used to enhance of alter the appearance of the face of fragrance and texture of the body. Many Cosmetics are design for use of applying to the face, hair and body. They are generally mixture of chemical compounds some being derived from natural sources and some being synthetic and artificial. Cosmetics are formulated by a complex combination of toxic chemicals that is harmful for the skin. Synthetic cosmetics products have shown comparatively higher toxicity than the herbal cosmetics. Biological cosmetics are turning to more natural and organic ingredients. The aim of my research work is to prepare a moisturizing and anti-aging biocosmetic based on spirulina blue-green microalgae adding with some herbal plants extract like citrus sinensis peel, citrus limon, turmeric, thyme etc. The selection of suitable plant extract or natural raw material in cosmetic research and development is a key point, orderly it will give good results and to avoid undesirable side effects. In this work microalgae and herbal plants will be used to prepare cosmetic product. Spirulina and citrus sinensis have great antioxidant and antimicrobial properties. Evaluation of product includes determination parameters such as Moisture content, Ash content, Volatile matter content, Rancidity, Heavy metals content, Fitness of powder, Density, Viscosity etc. Evaluation of the main ingredients are organic compounds including fats, oils and various petrochemical agents and inorganic compounds including processed minerals such as iron oxide, talc zinc oxide.

Keywords: Herbal cosmetics, BGA, Formulation, plant extract.

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Abstract No. 259

Floristic diversity of Kothagudem Working Plan Forest Division of Telangana state

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ABSTRACT

Working plan is the most important document prepared for scientifically managing the forest resources of a forest division and it is prepared as per National working plan code-2014. Kothagudem division is having an extent of 59,721.71 ha of forest area is spread over five Ranges namely Kothagudem, Chandrugonda, Jullurpadu, Ramavaram and Tekulapally. Phyto-sociological study was conducted by applying quadrat method during 2017-18. 31.62m x 31.62m size quadrat was laid out for trees (Central plot). Nested quadrats of size 3m x 3m (for shrubs & saplings) and 1m x 1m (for herbs & seedlings) were laid out at a distance of 30m from the center of central plot in the two directions (NE & SW). A) Herbs and Seedlings: Within 98 inventory points a total of about 33 species belonging to 28 genera under 18 angiospermous families were found under this category. Poaceae is the family having maximum number of plants (303) in the division. B) Shrubs and saplings: Within 98 inventory points a total of about 73 species belonging to 61 genera under 35 angiospermous families were found under this category. Leguminosae is the family having maximum number of plants (371) in the division. C) Trees: Within 98 inventory points a total of about 74 species belonging to 63 genera under 35 angiospermous families were found under trees category. Leguminosae is the family having maximum number of plants (340) in the division. Chandrugonda range was having 4, 29, 39 species under Herbs and Seedlings, Shrubs and saplings, Trees category, Jullurpadu range was having 5, 36, 36 species, Kothagudem range was having 1, 28, 26 species, Ramavaram range was having 22, 57, 62 species and Tekulapally range was having 13, 32, 35 species respectively.

Keywords: Working Plan, Inventory points, Phyto-sociological study, Families.

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Abstract No. 260

Vanillin from Lignocellulosic Biomass

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ABSTRACT

Lignocellulosic biomass is a heterogeneous complex of polysaccharides and lignin (a complex polymer of phenylpropanoid units). It is considered as the major resource left on earth to produce value-added chemicals, enzymes, and energy. Annually about 2.0 ×1011 tons of biomass is generated making this biopolymer most abundant on earth. It is generated by photosynthesis consuming atmospheric CO2, water and sunlight. A large portion of this biomass is generated as waste in agricultural activities and has the potential act as the feedstock for conversion to high-value compounds after chemical or enzymatic hydrolysis. Vanilla is the main natural flavoring agent used in industries such as pharmaceuticals, food, flavoring, and fragrance, in which vanillin is the major component. Vanilla is the one of the most expensive spices, second to saffron. Thus, vanillin is expensive compound because growing vanilla seed pods is labour-intensive and it is estimated that only 0.2% of the global demand for vanillin is met by natural sources and the other relied source is a chemical synthesis which is based on petroleum product as a raw material. Biovanillin is one of the widely used flavour compounds in the foods, beverages and pharmaceutical industries. An alternative production approach for biovanillin as a food flavour is hoped for due to the high and variable cost of natural vanillin as well as the limited availability of vanilla pods in the market. Natural vanillin refers to the main organic compound that is extracted from the vanilla bean, as compared to biovanillin, which is produced biologically by microorganisms from a natural precursor such as ferulic acid. Herein, an overview of biovanillin production from lignocellulosic biomass as an alternative food flavour has been presented. In fact, a brief discussion on natural, synthetic and biovanillin and the types of lignocellulosic material that are useful as sources for bioconversion of ferulic acid into biovanillin has been highlighted along with the current application of vanillin as well as the utilization of biovanillin as an alternative food flavour.

Keywords: Lignocellulosic, biovanillin, natural, vanillin, flavour.

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Abstract No. 261

Urban Agriculture: A healthy city's future

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ABSTRACT

With the increase in population around the world and that too mostly in the urban areas, the future of non-availability of fresh food in the urban areas can be seen. There is much need to satisfy the greater population developing in the urban areas. Regarding the health concept of the population the fresh produce must be available to the people. The food wastes can be used for the composting purpose and soil can be made good soil producing the good produce which will be utilised in the same place such that their freshness is intacted and it is utilised being fresh. Urban agriculture gives city dwellers the option to eat fresh, locally grown food.Urban agriculture is changing across the world as a result of political, economic, environmental, and technological developments. Cities and towns have long been plagued by food insecurity.Urban agriculture has always played a part in providing food security for city dwellers along with major health prospective. Urban agriculture is about growing plants, fish and livestock in around towns and cities. There are many different types of urban agriculture projects around the world including low tech community farms to medium tech projects like urban farms using aquaponics or hydroponics to high tech projects such as rearing animals in high rise buildings. The requirement of urban agriculture is because of the increasing global population and changing of people's diet thus putting increased pressure on land. The climate change is affecting the growth and we have to lower the amount of energy and water that we use and find new places to produce foods sustainability to make sure that everyone has access to safe and healthy food. Urban agriculture is evolved from a simple traditional and informal activity into a commercial and professional initiative and a key element in food security strategies. It was officially recognised by the 15th FAO AG council of Australian government's session in Rome during January 1999 and subsequently in World Food Summit in 2002. To combat food shortages there was an urgent need for an alternative way and the urban agriculture will provide some secure access of food. It can cover the daily demand of consumers within a town or city using the urban wastes.

Keywords: Urban agriculture, Cities, Towns, Food security, Fresh.

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Abstract No. 262

Environmental Economics

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ABSTRACT

Environmental economics is discipline of economics that studies the economic effects of environmental policies around the world. It focuses is on environmental and natural resources and environmental policies which deals with environmental damages. Principles of environmental economics are to the study of how environmental and natural resources are developed and managed in the world. Environmental economics promotes policies of sustainable development, economic valuation of natural resources, and strategies for stability of environmental concerns. Its main objective is to balance the sustainability of the environment and economic development for the benefit of natural society. With the growing awareness of environmental issues and concern for sustainability, there is a job opportunity in this field also. Valuation is an important aspect of environmental economics, as it helps to evaluate in managing challenges the use of environmental and natural resources. Resources are of multiple benefits and are of difficult to value – for example, mountains may prevent flooding, provide scenic beauty, direct river flow patterns, and provide fertile soils for agriculture. There are three main types of economic systems: command, market, and mixed. Key factors are available land at reasonable costs and region, high plantation yields, well-developed plantation practices, a skilled labor, strong research results, the existence of a viable market, with strong support of infrastructure to ensure cost-effective delivery to markets.

Keywords: Economics, environment, sustainability, policies, agriculture.

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Abstract No. 263

Green roof: A sustainable solution and combat the ongoing climate crisis

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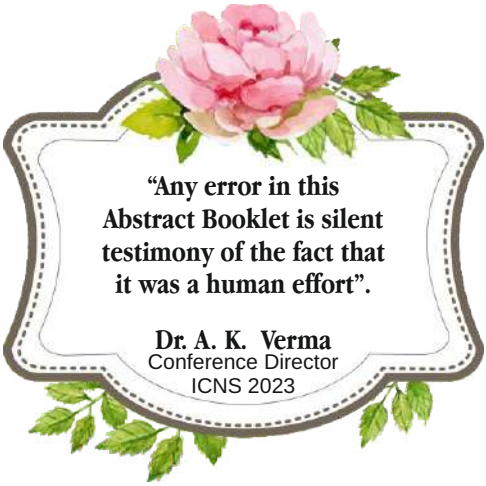
ABSTRACT

These days Green rooftop topics famous in developed countries. But in India it is not that much popular and owners of building are still unfamiliar to making garden on their building roofs. Indian cities are slowly treading towards the widespread infrastructural advancement, which is destructive, the ecological balance of these cities. This study aims to analyses green roofs are sustainable solution to increase the green cover on the earth's surface and combated the ongoing climate crisis. The survey has addresses a large variety of environmental issues associated with urbanizations and many factors of roof gardening reduce greenhouse gas emission, pollutant reduction, limitations, labour, maintenance system, physical and mental benefits, enhance biodiversity etc. if it can be maintained properly then Green roof garden provides an extra layer insulation that reduces heating and cooling expenses and also cut down the electricity consumption by 3%-7%. The flora on the roof also improves air quality and climate .it reserves rainwater in superficial engineered soil medium and improve water quality by absorbing and filtering, it has better storm water management benefits. Environmentally aware urbanites acknowledging the importance of sustainable living as it is the need of the hour to keep up with the changing ecological conditions. Green roofs are looked upon as a sustainable way to produce and proficiently supply locally grown fresh crops and vegetables to cities. The convenience of safe pesticides free vegetation also they increases the amount of oxygen in the air. Terrace garden gives an ornamental and beautiful view; if you want a peaceful appealing designer look without spending a single penny then terrace gardening is a good option. Green roofs garden are decreasing the pressure on sewer system when the rainwater flow is forceful. Green roofs are investment for next generation for their better lifestyle. Coexistence of Human and greens at the same time and in the same place is dynamic state, through this coexistence may contain same level of impact to both and is characterized by level of benefits.

Keywords: Green roof, soil, storm water management, sustainable solution, albedo effect, temperature, urban.



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Dr. A. K. Verma
Conference Director
ICNS 2023

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Asian Biological Research Foundation (ABRF), Prayagraj, India

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Asian Paradise Flycatcher (*Terpsiphone paradisi*)

The State Bird of Madhya Pradesh