आज़ादी का अमृत महोत्सव

आज़ादी का अमृत महोत्सव

HYBRID MODE

National Conference on

OZONE LAYER, ITS DEPLETION AND IMPACT ON LIVING BEINGS (ODIL 2022)

16-17 September, 2022

Venue: National Research Centre on Camel (NRCC), Jorbeer, Bikaner (Rajasthan)

Organized by

National Environmental Science Academy
New Delhi

ICAR-National Research Centre on Camel
Bikaner (Rajasthan)

In collaboration with

Vidya Bhawan Rural Institute, Udaipur (Rajasthan) India
CAZRI Regional Research Station, Bikaner (Rajasthan)
SKRAU, Bikaner (Rajasthan)
Dungar College, Bikaner (Rajasthan)
Asian Biological Research Foundation (ABRF) Prayagraj, India
ISRS and PRSC, Ludhiana, Punjab

Abstracts and Souvenir

ICAR-National Research Centre on Camel Jorbeer, Bikaner (Rajasthan)

ICAR-National Research Centre on Camel Jorbeer, Bikaner (Rajasthan)

SKRAU Bikaner (Rajasthan)

Dungar College Bikaner (Rajasthan)

Asian Biological Research Foundation (ABRF) Prayagraj, India

ISRS and PRSC, Ludhiana

Sponsored by

Ministry of Earth Sciences
Govt. of India

APPLICATIONS ARE INVITED FOR NESA ANNUAL AWARDS 2022

Last Date 30th September, 2022

1. NESA FELLOWSHIP OF THE YEAR AWARD

AGE: 42 years and above

The recipients shall get Citation, Certificate, Memento, Medal and Conference Registration along with Kit will be provided in the event.

Can suffix F.N.E.S.A. after their names.

2. NESA EMINENT SCIENTIST OF THE YEAR AWARD

AGE: 40 years and above

The recipients shall get Citation, Certificate, Memento, Medal and Conference Registration along with Kit will be provided in the event.

3. NESA SCIENTIST OF THE YEAR AWARD

AGE: 32 years and above.

The recipients shall get Citation, Certificate, Memento, Medal and Conference Registration along with Kit will be provided in the event.

4. NESA ENVIRONMENTALIST OF THE YEAR AWARD

AGE: Up to 32 and above

The recipients shall get Citation, Certificate, Memento, Medal and Conference Registration along with Kit will be provided in the event.

5. NESA GREEN TECHNOLOGY INNOVATIVE AWARD

AGE: 32 years and above

The recipients shall get Citation, Certificate, Memento, Medal and Conference Registration along with Kit will be provided in the event.

6. NESA DISTINGUISHED SCIENTIST OF THE YEAR AWARD

AGE: 35 years and above

The recipients shall get Citation, Certificate, Memento, Medal and Conference Registration along with Kit will be provided in the event.

7. WOMEN EXCELLENCE OF THE YEAR AWARD

AGE: 32 years and above

The recipients shall get Citation, Certificate, Memento, Medal and Conference Registration along with Kit will be provided in the event.

8. NESA YOUNG SCIENTIST OF THE YEAR AWARD

WHO CAN APPLY

The recipients shall get Citation, Certificate, Memento, Medal and Conference Registration along with Kit will be provided in the event.

9. NESA JUNIOR SCIENTIST OF THE YEAR AWARD

AGE : Up to 30

The recipients shall get Citation, Certificate, Memento, Medal and Conference Registration along with Kit will be provided in the event.

10. NESA BEST RESEARCHER AWARD

AGE : Up to 35

The recipients shall get Citation, Certificate, Memento, Medal and Conference Registration along with Kit will be provided in the event.

11. NESA BEST PHD THESIS AWARD

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PRESCRIBED APPLICATION FORMS

The application forms can be downloaded from **www.nesa-india.org.** Separate application forms should be submitted for independent awards. The application forms are non-transferable and it can also be obtained by sending a bank draft of **Rs. 1000/- only (per form)**, drawn in favour of **National Environmental Science Academy, payable at NEW DELHI.**

*Please log on to our website for Guidelines

E-mail: infonesa88@gmail.com
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Website: http://nesa-india.org/nesa-annual-awards-2022/

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भारतीय कृषि अनुसंधान परिषद
कक्ष क्र. 101, कृषि अनुसंधान भवन-II, नई दिल्ली-110 012, भारत
INDIAN COUNCIL OF AGRICULTURAL RESEARCH
Room No. 101, Krishi Anusandhan Bhavan-II, Pusa, New Delhi-110012, India

डॉ. सुरेश कुमार चौधरी
उप महानिदेशक (प्राकृतिक संसाधन प्रबंधन)
Dr. Suresh Kumar Chaudhari
Deputy Director General (Natural Resources Management)

07.09.2022

Message

Emission of greenhouse gases affects ozone layers causing global warming which, in turn, would have consequences on climate change *vis-a-vis* food production. Agriculture sector contributes 28% of total greenhouse gas emissions in India. There is a need to develop collaboration, forge partnerships and global cooperation to address the challenges of ozone layer depletion through application of scientific technologies to protect life on earth for future generations.

It is a matter of great pleasure to know that ICAR-National Research Centre on Camel is organizing a National Conference on "*Ozone layer, its Depletion and Impact on Living Beings (ODIL 2022)*"on the behest of National Environmental Science Academy (NESA), New Delhi during 16-17 September, 2022 at Bikaner. The conference is rightly focussing the theme of World Ozone Day 2022 i.e "Montreal Protocol@35: global cooperation protecting life on earth".

I am sure, the outcome of this National Conference will explore strategic intervention and mitigation strategies on this important issue that commemorates with "International Day for the Preservation of the Ozone Layer" on 16 September.

I wish the Conference a success.

(S.K. Chaudhari)

Ph.: +91-11-25848364 Fax: +91-11-25848366 Email: ddg.nrm@icar.gov.in Website: www.icar.org.in

राजस्थान पशुचिकित्सा और पशु विज्ञान विश्वविद्यालय, बीकानेर
RAJASTHAN UNIVERSITY OF VETERINARY AND ANIMAL SCIENCES, BIKANER
प्रो. (डॉ.) सतीश के. गर्ग
कुलपति
Prof. (Dr.) Satish K. Garg
Vice-Chancellor
Azadi Ka Amrit Mahotsav
Bijey Bhawan Palace Complex
Bikaner-334001 (Rajasthan) India
Tel. : +91 151-2543419 (O)
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No. F. 1/PS/VC/RAJUVAS/2022/ 562
Dated: 07.09.2022

Message

It is a matter of great pleasure to know that ICAR-National Research Centre on Camel is organizing the National Conference on "***Ozone layer, its Depletion and Impact on Living Beings (ODIL 2022)***" in collaboration with the National Environmental Science Academy (NESA), New Delhi on September 16-17, 2022. It further enlightens me as the inaugural day i.e. 16th September also coincides with the "International Day for the Preservation of the Ozone Layer".

Organizing Committee of the National Conference on ODIL 2022 has very aptly chosen the theme "Global cooperation protecting life on earth" as per Montreal Protocol@35 for the 'World Ozone Day'. It is very important to protect the crucial ozone layer by taking appropriate measures to minimise global production and consumption of those substances that deplete ozone layer. Scientists should seriously deliberate on ways for minimizing and/or elimination of such pollutants which threaten ozone layer in the light of latest scientific developments and knowledge. Certainly with scientific interventions, we can reduce the threats to ozone layer and also mitigate the detrimental effects of ozone layer depletion on 'Mother Earth' and its inhabitants.

This National Conference will provide a platform to scientists to share their scientific knowledge and deliberate on the challenges to environmental and human health including agriculture and animal health due to depletion of ozone layer and evolve policies and strategies to ensure 'Clean & Green' environment. I am sure that from the scientific deliberations during ODIL 2022 Conference, underlying issues will be flagged and certain actionable strategic mitigation measures be suggested to policy makers to address the emerging challenges.

I wish the Conference a grand success.

07.09.2022

(Satish K. Garg)

Chair,NICRA Expert Committee
Former Vice Chancellor, VNMKV,
Parbhani and
Ex-Director,ICAR-CRIDA,Hyd

Dated: 05-09-2022

Message

I am extremely happy to know that ICAR-National Research Centre on Camel is organizing a National Conference on ***"Ozone layer, its Depletion and Impact on Living Beings (ODIL 2022)"*** on the behest of National Environmental Science Academy (NESA), New Delhi during 16-17 September, 2022 at Bikaner.

Ozone depletion is a serious environmental issue, which has been causing considerable damage to the environment as well as human and animal health, e.g. skin cancer, cataracts, genetic and immune system damage all around the world.The conference aptly starts on 16th September to commemorate the World Ozone Day 2022. It is rightly deliberating on the principal theme of the Montreal Protocol @35: 'Global cooperation protecting life on earth".The theme reiterates adherence to the protocol to combat climatic changes and minimize its effect on environment, agriculture as well as livestock, which in return will contribute to food security.

Globally, efforts are underway to preserve and protect ozone layer . Needless to say ozone layer depletion has to be seen in the larger context of climate change and environmental pollution. Indian Council of Agricultural Research(ICAR) has been conducting extensive research on climate change impacts on Agriculture including the impact of ozone on crops through its flag ship project, the National Innovation on Climate-Resilient Agriculture (NICRA). Iam happy to know this conference would discuss various aspects of ozone layer depletion in the context of all life forms including humans,crops,livestock and fisheries.

I am sure, the conference will increase the awareness on application of science, engineering and technology to mitigate the detrimental effects of the ozone layer depletion on 'Mother Earth.

I convey my best wishes for the success of the Conference.

B. Venkateswarlu

(B. Venkateswarlu)

Prof. Ambarish S. Vidyarthi
Vice Chancellor,
Bikaner Technical University
Bikaner

Message

Dated: 05-09-2022

I am glad to know that ICAR-National Research Centre on Camel is organizing a National Conference on "***Ozone layer, its Depletion and Impact on Living Beings (ODIL 2022)***" on the behest of National Environmental Science Academy (NESA), New Delhi during 16-17 September, 2022 at Bikaner. The schedule also commemorates "International Day for the Preservation of the Ozone Layer" on 16 September.

The theme of the Conference reiterates adherence to the Montreal Protocol@35: 'Global cooperation protecting life on earth". Ozone depletion is a serious environmental issue because it increases the amount of ultraviolet (UV) radiation reaching the Earth's surface, which has been causing considerable damage to the environment as well as human and animal health. Globally, efforts have been implemented to preserve and protect Ozone. This platform with a congregation of experts, scientists, researchers and technocrats will offer a unique opportunity for interactive discussion that will certainly address all critical issues related to Ozone layer depletion and find out solutions or mitigation strategies intended at national food security and human wellbeing.

I am certain that the outcome of this National Conference will be a reconnoiter for strategic intervention and application of mitigation strategies on this important issue for a greener and healthier environment.

I convey my best wishes for the success of the Conference.

(Prof. Ambarish S. Vidyarthi)

Convener, ODIL 2022
& Director
ICAR-National Research Centre on Camel
Bikaner-334001

12.09.2022

Message

It is my pleasure that ICAR-National Research Centre on Camel is organizing a National Conference on "*Ozone layer, its Depletion and Impact on Living Beings (ODIL 2022)*" behest of National Environmental Science Academy (NESA), New Delhi during 16-17 September, 2022 at Bikaner. I am thankful to all my local collaborating partners, viz. Swami Keshwanand Rajasthan Agricultural University, Government Dungar College and CAZRI Regional Research Station at Bikaner in organizing this event.

Ozone depletion is a serious environmental issue because it increases the amount of ultraviolet (UV) radiation reaching the Earth's surface, which has been causing considerable damage to the environment as well as human and animal health, e.g. skin cancer, cataracts, genetic and immune system damage all around the world. But, it is a challenge which we can overcome through application of science, engineering and technology and able to mitigate the detrimental effects of the ozone layer depletion on 'Mother Earth. The conference aims to bring together leading academicians, scientists, researchers and research scholars to exchange and share their experiences on all aspects of environment pollution and ozone depletion on the environment, agriculture and animal health and at the same time provides a premier interdisciplinary platform for researchers, practitioners and educators to present and discuss the most recent innovations, trends, and concerns as well as practical challenges encountered and solutions adopted to check the adverse effects or to mitigate the overall impact to live in a greener and healthy environment.

I am sure, the outcome of this National Conference will explore strategic intervention and mitigation strategies on this important issue that commemorates with "International Day for the Preservation of the Ozone Layer" on 16 September.

I convey my best wishes for the success of ODIL 2022.

(Artabandhu Sahoo)

National Environmental Science Academy
(Registered Under Society Act XXI of 1860)
206, Raj Tower-I, Alaknanda Community Centre, New Delhi-110 019
Phone: 011-2602 3614 (O)
E-mail: infonesa88@gmail.com; nesapublications@gmail.com

09.09.2022

Message

It gives me immense pleasure that we are organizing a two-day National Conference on **Ozone Layer, Its Depletion and Impact on Living Beings (ODIL 2022)** which is being held at the National Research Centre on Camel (NRCC), Jorbeer, Bikaner (Rajasthan) during 16–17 September, 2022 organized by the National Environmental Science Academy (NESA), New Delhi in collaboration with ICAR-National Research Centre on Camel, Jorbeer, Bikaner (Rajasthan), VidyaBhawan Rural Institute, Udaipur (Rajasthan), India CAZRI Regional Research Station, Bikaner (Rajasthan), SKRAU, Bikaner (Rajasthan) Dungar College, Bikaner (Rajasthan) and Asian Biological Research Foundation (ABRF) Prayagraj, India.

I hope the issues about various aspects of the environment, science and technology and their dissemination to the end user will be deliberated and discussed by the delegates, at length, during the conference to come up with certain adoptable, low-cost, location-specific recommendations for the management of environmental issues on the occasion of Ozone Day that will surely benefit the participants on a large scale.

The awareness programme of Ozone on health aspects will be beneficial for common people. As in big cities the high concentration of Ozone triggers and initiates the respiratory diseases and lung cancer. As its concentration increases in high temperature during the use of vehicular traffic in mega cities. Related data will be more useful for the cure of such diseases.

I convey my best wishes for the great success of the conference and my compliments to the organizers and collaborators.

I wish the conference a grand success.

(Javed Ahmad)
President

National Environmental Science Academy

(Registered Under Society Act XXI of 1860)

206, Raj Tower-I, Alaknanda Community Centre, New Delhi-110 019
Phone: 011-2602 3614 (O)
E-mail: infonesa88@gmail.com; nesapublications@gmail.com

09.09.2022

Message

It gives me immense pleasure that we are organizing a two-day National Conference on **Ozone Layer, Its Depletion and Impact on Living Beings (ODIL 2022)** which is being held at the National Research Centre on Camel (NRCC), Jorbeer, Bikaner (Rajasthan) during 16–17 September, 2022 organized by the National Environmental Science Academy (NESA), New Delhi in collaboration with ICAR-National Research Centre on Camel, Jorbeer, Bikaner (Rajasthan), Vidya Bhawan Rural Institute, Udaipur (Rajasthan), India CAZRI Regional Research Station, Bikaner (Rajasthan), SKRAU, Bikaner (Rajasthan) Dungar College, Bikaner (Rajasthan) and Asian Biological Research Foundation (ABRF) Prayagraj, India.

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I convey my best wishes for the great success of the conference and my compliments to the organizers and collaborators.

(Dr. Shakeel A. Khan)
General Secretary, NESA
Principal Scientist, Division of Environment Science,
ICAR-Indian Agricultural Research institute, New Delhi 12

Dr. Syed Shabih Hassan Scientist (Fisheries) & Joint Secretary, NESA, Department of Fisheries Resource Management, College of Fisheries, Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana – 141004 (Punjab)

11.09.2022

Message

The atmosphere of Earth makes it possible for people, animals, bacteria, and plants to live there. The atmosphere is made up of rings-like layers that encircle the Earth. Beyond the troposphere, the stratosphere rises to a height of 50 km. The stratospheric ozone layer protects life on earth by absorbing UV light, which is damaging to people, animals, and plants. But because of human activity, which increases greenhouse gas emissions, it is being depleted in recent years to the atmosphere. Ozone holes consequently result in greater exposure to ultraviolet radiation on the earth's surface, which has a number of harmful impacts including immunological deficiency illnesses, cataracts, and skin malignancies. A rise in UV radiation in addition to altering ecosystems, radiation may also have an impact on terrestrial and aquatic biogeochemical cycles. Therefore, it becomes our moral obligation as a collective to contribute to its preservation.

In this regard, the National Environment Science Academy, New Delhi, ICAR-National Research Centre on Camel (NRCC), Jorbeer, Bikaner and Indian Society of Remote Sensing – Ludhiana Chapter and other institute/NGOs initiatives in organising a National Conference on "Ozone Layer, Its Depletion and Impact of Living Beings (ODIL-2022)" hosted on the occasion of International Ozone Day is a fantastic endeavour. Such catastrophes are required given the current GHG emission forecast, the time to raise public awareness about ozone layer protection. I would like to congratulate the organiser, secretary, conveners, patrons, coordinator and dignitaries involved in various committees for a commendable works even during COVID-19 situation. I believe that this admirable initiative will prove to be a significant step toward preserving the ozone layer and ensuring human life on the planet.

I hope that the national conference's discussions will contribute to the development of practical proposals for ozone layer protection as well as for reducing environmental concerns including global warming, greenhouse emissions, climate change, environmental dangers, natural disasters, and their effects on agriculture, food security, and the health of both humans and animals. I express my best wishes for a productive meeting to the distinguished visitors, delegates, scientists, academics, faculty members, and students. I send my best wishes for the national conference's resounding success.

With all my good wishes,

(Syed Shabih Hassan)
Joint Secretary, NESA, New Delhi &
Organising Secretary-ODIL-2022

ASIAN BIOLOGICAL RESEARCH FOUNDATION

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8299707543
abrf prayagraj
JLN Road 'The Little House'
Tagore Town Prayagraj 211002 (India)

11.09.2022

Message

It is a matter of great pleasure that we are organizing a National conference entitled "Ozone layer, its depletion and impact on living beings (ODIL 2022)" on the occasion of World Ozone Day (International Day for the Preservation of the Ozone Layer) at NRCC, Bikaner (Rajasthan) on 16th and 17th September 2022. The ODIL 2022 is being jointly organized by Asian Biological Research Foundation(ABRF) Prayagraj, India, ICAR-National Research Centre on Camel (NRCC) Bikaner, National Environmental Science Academy (NESA), New Delhi, Vidya Bhawan Rural Institute, Udaipur, CAZRI Regional Research Station, Bikaner, SKRAU, Bikaner and Dungar College, Bikaner.

The theme of this National conference is quite pertinent in contemporary scenario of the world in general and India in particular. No doubt, ozone layer depletion, biodiversity conservation and sustainable development, all are big challenges of this century having global effects. Each and every one has to play a significant role in conserving not only the biodiversity but also the water and nature to save the human and humanity.

I congratulate the entire organizing team for taking up this challenging but momentous initiative. I hope that this national 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 area of research. I am confident that outcomes of this national conference on various issues on the subject will generate a new concept in order to conserve and protect the water, nature, biodiversity and humanity (key objective of ABRF).

I on behalf of ABRF, impart ecofriendly best wishes to the organisers for organising the ODIL 2022 and welcome all the participants across the nation and abroad as well.

(A.K.Verma)
Secretary (hony.), ABRF & Convener, ODIL 2022
www.abrf.org.in

Dr. Sandeep Kumar
Scientist
Division of Environment Science,
ICAR-Indian Agricultural Research institute, New Delhi 12

09.09.2022

Message

It is a great pleasure to welcome you all to the National Conference on **Ozone Layer, Its Depletion and Impact on Living Beings (ODIL 2022)** which is being held at National Research Centre on Camel (NRCC), Jorbeer, Bikaner (Rajasthan) during 16–17 September, 2022 organized by National Environmental Science Academy (NESA), New Delhi in collaboration with ICAR-National Research Centre on Camel, Jorbeer, Bikaner (Rajasthan), Vidya Bhawan Rural Institute, Udaipur (Rajasthan), India CAZRI Regional Research Station, Bikaner (Rajasthan), SKRAU, Bikaner (Rajasthan) Dungar College, Bikaner (Rajasthan) and Asian Biological Research Foundation (ABRF) Prayagraj, India.

Environmental pollution is not a new phenomenon, but it is still the world's most severe issue, as well as one of the primary causes of disease and mortality. Urbanization, automation, mining, etc. are all examples of human activities that contribute to global environmental degradation. Both developed and developing countries share this commitment, even though environmental pollution has received worldwide attention, the impact is still felt owing to its severe long-term implications.

I would like to express my sincere thanks to all the participants, organizers and collaborators for organizing such kinds of National Conference to exchange the knowledge of environmental pollution issues and their management in current scenario.

(Sandeep Kumar)
Organizing Secretary, ODIL-2022

Organisers

National Environment Science Academy, New Delhi

This ACADEMY is registered by the provisions of Societies Act XXI of 1860 under the Government of Bihar in 1988, presently has its headquarters at 206, Raj Tower-1, Alaknanda Community Centre, New Delhi. The main objective of the Academy is to bring awareness about environmental issues among the masses by arranging lectures, workshops, training programmes, seminars, symposia, conferences, publishing journals, etc.

Aims Objectives and Functions of the Academy

- To enhance and promote the study of the environmental sciences by encouraging students, scientists, researchers, academicians and members of the Academy for pursuing research on environment and allied areas.
- To set up Regional/State Chapters for dissemination of information on environment.
- To motivate and prepare young minds on environmental management.
- To hold Annual Conference of the Academy.
- To organise national/international level conferences, symposia, seminars, meetings and workshops on themes of environmental concerns.
- To publish policy papers, synthesis volumes, proceedings, journals, newsletter, transactions and other publications for the promotion of Environmental Sciences.

Various eminent personalities have graced the Academy as President. The first President of the Academy was Dr. K.C. Bose, Vice-Chancellor of Ranchi University; then Dr. B.S. Attri, Advisor, Ministry of Environment and Forest. Most recently Padmabhushan Dr. S.Z. Qasim was the President of the Academy till June 2015, who is a renowned marine scientist known for his Antarctica mission in 1981-82, he also served as the Secretary at the Deptt. of Ocean Development (now Ministry of Earth Sciences); Member, Planning Commission and Vice-Chancellor, Jamia Millia Islamia, New Delhi. Currently Prof. Javed Ahmad, (Former Dean, Faculty of Science), Jamia Hamdard, New Delhi, is the President of the Academy.

Annual Awards

The Academy recognises the merit and achievements of individuals who have contributed to the field of environmental science, education and societal values by conferring **(1) NESA FELLOWSHIP OF THE YEAR AWARD (2) NESA EMINENT SCIENTIST OF THE YEAR AWARD (3) NESA SCIENTIST OF THE YEAR AWARD (4) NESA ENVIRONMENTALIST OF THE YEAR AWARD (5) NESA GREEN TECHNOLOGY INNOVATIVE AWARD (6) NESA DISTINGUISHED SCIENTIST OF THE YEAR AWARD (7) WOMEN EXCELLENCE OF THE YEAR AWARD (8) NESA YOUNG SCIENTIST OF THE YEAR AWARD (9) NESA JUNIOR SCIENTIST OF THE YEAR AWARD (10) NESA BEST RESEARCHER AWARD (11) NESA BEST PHD THESIS AWARD.** Any life member of the Academy can apply for the awards. Any life member of the Academy can apply for the awards. *For more information please, log on to our website:* **http://nesa-india.org/award-form-submission/**

In addition, the Best Oral Presentation and Best Poster Awards are given away during the Annual Conference of the Academy.

Publications

The Academy is publishing the following Journals (Biannual):

1) **INTERNATIONAL JOURNAL ON AGRICULTURAL SCIENCES**
2) **INTERNATIONAL JOURNAL ON ENVIRONMENTAL SCIENCES**
3) **INTERNATIONAL JOURNAL ON BIOLOGICAL SCIENCES**
4) **INDIAN JOURNAL OF UNANI MEDICINE**
   http://nesa-india.org/nesa-journal/
5) **E-NESA Newsletter (Monthly) http://nesa-india.org/newsletter/**

Asian Biological Research Foundation (ABRF) Prayagraj, India

The ABRF Prayagraj, India is a self-supporting, academic and research associated body. It is basically nonprofit 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) t to encourage, facilitate and perform the activities related to conservation of water, nature and biodiversity, (4) 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 and (6) 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.

The ABRF confers following categories of awards and honors to its members through search and nominations:

1. ABRF Lifetime Achievement Award (above 57 years of age)
2. Hon. Fellowship/Fellowship (FABRF)
3. ABRF Excellence Award for Environmental/Agricultural/Botanical/ Zoological Research
4. ABRF Global Recognition Award
5. Outstanding Extension Professional/Agriculture Scientist/ Social Services Award
6. Best Teacher Award for Agricultural/Botanical/Environmental/Zoological Innovations
7. Eminent Ichthyologist/ Environmentalist/ Ecologist/ Entomologist/ Geneticist/ Parasitologist/ Cytologist/Taxonomist/ Plant Pathologist/ Physiologist/Biotechnologist/ Anthropologist Award
8. Senior Botanist/ Zoologist/ Biochemist/ Scientist/ Environmentalist Award **(above 45 years of age)**
9. Innovative Botanist/Zoologist/Scientist/Environmentalist/Agriculture Scientist/Biotechnologist/ Extension Professional Award
10. Innovative Biologist Award for Wild Life/ Biodiversity Conservation
11. Vigyan Ratna Puraskar (**No age bar**)
12. Paryavaran Shri Samman (**No age bar**)
13. Young Botanist/Zoologist/Scientist Award (**below 30 years of age; mainly for research scholar**)

Note: Only ABRF Life Members are eligible to apply for these awards. Each award consists of a multicoloured award certificate, a potted plant and a high quality memento. ABRF Award selection is strictly based on API and biodata both. For detail guidelines, please log on to website: **http://www.abrf.org.in [emailid:secretary.abrf@gmail.com]. Ph: 8299707543**

ICAR-National Research Centre on Camel, Bikaner

ICAR-National Research Centre on Camel (NRCC), Bikaner, is a Premier Research Centre of the Indian Council of Agricultural Research (ICAR) which is an autonomous organization under the Department of Agricultural Research and Education, Ministry of Agriculture and Farmers Welfare, Government of India. Since th its inception on 5 July, 1984, the Center is working with a vision"Improvement of traditional and economic utility of camel through scientific conservation, management, nutritional security, disease control and extension methods" by focusing on basic and applied research on one humped camel (Camelus dromedarius) mostly confined to the arid and semi-arid areas of North-western India and also double humped camel (Camelus bactrianus) found in the arid cold-desert of Nubra Valley of Laddakh region.

Climate change has been observed to impact mostly the extreme climatic regions and the native camel seems to be most resistant animal in these regions. The camel production system in India remains traditional, e,g, nomadic, transhumance, sedentary that is mainly linked with the social life of the pastorals and camel herders. Despite its indispensability as a mode of transportation and draught power in the desert ecosystem, modern-day transportation and road-network has diminished its potentiality and it is now thus facing the threat of unsustainability. India's camel population has decreased drastically from 10.0 lakhs in the early part of the century to only 2.5 lakhs in 2019 and the populated state of Rajasthan has the maximum decline compared to neighbouring Gujarat. In this scenario, promotion of 'Camel Dairy' emphasizing therapeutic benefits of camel milk would definitely widen the prospects of camel rearing and earn additional revenue to the farmers for their socio-economic stability and may possibly also block its declining trend. Tactical intervention in production and application of marketing strategies for higher return from produce and products would open up avenues for future investment and maximize profit from 'Camel Dairy' based livestock enterprises. Further, possibilities need to be explored for use of male camels in eco-tourism business for additional revenue and socio-economic upliftment of camel herders. The unique species of the desert ecosystem has also widened its scope in biomedical research due to its exceptional immune system and adaptive thermoregulation mechanism. Concerted efforts from policy makers, research and development agencies, stakeholders and the farmers for its potential application as 'Multi-utility' animal will definitely serve the socio-economic livelihood of the traditional rearers and block its declining trend in safeguarding the community as well as the camel.

The main research and developments programmes of NRCC are carried out under two sub-heads:

1. **Camel Production and Technology**
2. **Camel Health and Bioscience**

and the Programmes are:

- *Improvement of camel production system*
- *Enhancing camel produce and technology for value addition*
- *Exploration of camel immune system and therapeutics*
- *Healthcare, disease surveillance and diagnosis*
- *Exploration and extension of camel based ecotourism*
- *Transfer of technology and development of public-private partnership*

CAZRI Regional Research Station, Bikaner (Rajasthan)

The arid zone of India covers about 12% of the country's geographical area and occupies over 31.7 m ha of hot desert and about 7 m ha is under cold desert. The production and life support

systems in the hot regions are constrained by low and erratic precipitation (100-420 mm/year), high evapotranspiration (1500-2000 mm/year), and poor soil physical and fertility conditions. The local inhabitants have evolved suitable landuse and management systems of farming, pastoralism and animal husbandry; of late, these local survival systems have become inadequate to fulfill the ever increasing needs. This has resulted in over-exploitation of the resources causing rapid and widespread land degradation and decline in productivity. To arrest this degradation process and for scientific and sustainable management of the resources, Desert Afforestation Station was established in 1952 at Jodhpur. This was later expanded into Desert Afforestation and Soil Conservation Station in 1957, and finally upgraded to Central Arid Zone Research Institute (CAZRI) in 1959 under Indian Council of Agricultural Research, New Delhi. The CAZRI operates through Six Divisions, located at the headquarters in Jodhpur. There are five Regional Research Stations located in different agro-climatic zones to work on location-specific problems.

SKRAU, Bikaner (Rajasthan)

Swami Keshwanand, after whom the RAU has been renamed as Swami Keshwanand Rajasthan Agricultural University, Bikaner (SKRAU, Bikaner) vide Gazette notification No. F. 4 (2) vidhi/ 2/ 2009 dated June 09, 2009, was born at the village Magloona in Sikar district of present-day Rajasthan in the year 1883. His actual name was Birama. The famine of 1899 forced the 16-year-old Birama to leave the desert region and move to Punjab in search of livelihood. Driven by an ineffable spiritual quest, he became a sanyasi in 1904 and was inducted into the Udasin sec. He commenced his education at the Sadhu Ashram Fazilka. He learned the Hindi and Sanskrit languages and the Devanagari and Gurmukhi scripts at the Ashram. At the Kumbha Mela held at Prayag in 1905, Mahatma Hiranandji Avadhut conferred on Birama the new name “Swami Keshwanand”. Swami Keshwanand lived an accomplished life of myriad facets such as freedom fighter, educator, Hindi propagator and social reformer.

Dungar College, Bikaner (Rajasthan)

Govt. Dungar College, Bikaner is named after Maharaja Shri Dungar Singhji and in its nascent state was called The Darbar School. Shri Dungar Singhji was the 20th ruler of the erstwhile state of Bikaner and established The Darbar School in the year 1873.After his demise, his brother Ganga Singhji elevated the Darbar School to Dungar Memorial College on 25 September, 1912. College level teaching started in the year 1928. In the year 1937 degree classes started in the college and in the same year the school was separated from the college with the name of Sardul School. In July 1940, intermediate Science Faculty started with Physics and Chemistry subjects. In 1942, Degree level Science, law classes and post- graduate Departments of Hindi, Sanskrit, English, History and Economics were opened. In the year 1951, there were only five postgraduate colleges in Rajasthan and Dungar College was one of them. In 1962, the college shifted from Sardul school premises to its present-building. Postgraduate teaching in Physics and Chemistry started in the same year. In 1970 M.Sc in Zoology, Botany and LLM were started. The college extended its academic growth with the postgraduate teaching in Geography, Sociology, Economics, Geology and Urdu departments. From 1988-1995 the college was given the status of an autonomous college. In the session 1996-97, commerce faculty was started in the college. Today this college is one of the premier institutions of Rajasthan, where 22 subjects are being taught at Graduate and Post Graduate level and 10 at M.Phil level. Research work is also being carried out for Ph.D Degree in all three faculties Arts, Science & Commerce. Dungar College was recognized by the UGC u/s 2f and 12B in the year 1972 as per its policy for colleges established before 1972.

About Vidya Bhawan Rural Institute, Udaipur

Vidya Bhawan Rural Institute, an institution of Vidya Bhawan Society, Udaipur was established in 1956 with the vision of "Empowering Rural Youth with the Quality Education". Under the aegis of the Union Ministry of Education, Government of India, it was conceived as one among the chain of rural institutes in higher education; started at various places in the country; focusing on teaching, research and extension to cater to the growing and fast emerging needs of the rural community. Over the 50 plus years, Vidya Bhawan Rural Institute has successfully completed its long and arduous journey, and continues to make an impact. The Institute today offers graduate and postgraduate courses in all the disciplines. Department of Botany, VBRI, Udaipur have well equipped and sophisticated research facilities. The Botany Department has excellent faculty members with impressive research and academic experience. It has undertaken many research projects funded by various government agencies like DST, UGC, SK Jain institute of Ethnobiology, Gwalior. It offers excellent academic and career opportunities to young students.

ISRS and PRSC, Ludhiana

Punjab Remote Sensing Centre (PRSC), an autonomous organization under the Department of Agriculture, Government of Punjab, is the apex body in the State for all Remote Sensing (RS), Geographic Information System (GIS) and Global Positioning System (GPS) related works. It is designated as a Nodal Agency by the Govt. of Punjab for geospatial needs of the State and also acts as the centralized hub for the geo-spatial data to all the user departments.

Indian Society of Remote Sensing (ISRS) was established in 1969 as "Indian Society of Photo-interpretation" with the main objective of advancement and dissemination of remote sensing technology and education by conjunctive use of remote sensing with conventional mehods in the fields of survey, planning and management of natural resources and environment by organising seminars/ symposia and by publishing journal, bulletins, proceedings, etc. From its modest beginning with 56 members, the Society has grown into a premier professional body with a membership of over 3700, including both individual and Institutional members. The Journal of the Society, JISRS, a quarterly publication, is the only journal in the country exclusively dealing with remote sensing technology and its applications. The Society has been organising annual conventions and national symposia regularly since 1981, giving opportunities to the remote sensing community in the country to present their papers and discuss the problems and methods of applications of remote sensing in development and management of resources. Remote Sensing has been universally recognised as a highly effective and extremely versatile technology for evaluation and management of natural resources and environment. With the advent and advancement of Geographic Information System (GIS), the concept of multidisciplinary integrated approach got an impetus in monitoring and management of resources and environment. Realising this in recent years ISRS is giving emphasis on application of integrated approach for solving various types of real world problems related to resource management, environmental assessment and disaster management.

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National Conference on

'Ozone layer, its depletion and its impact on living beings (ODIL 2022)'

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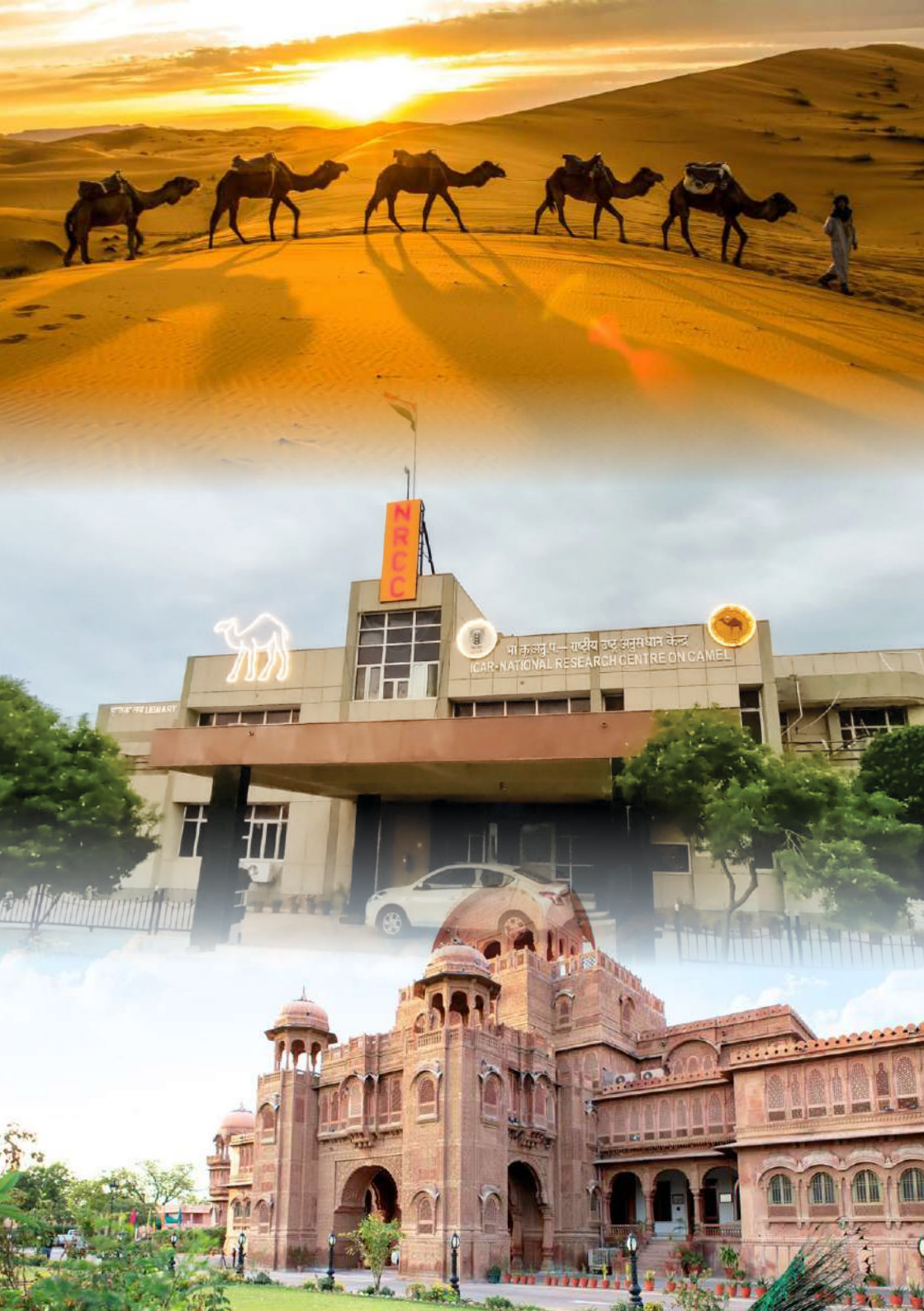
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abstracts

National Conference on

OZONE LAYER, ITS DEPLETION AND IMPACT ON LIVING BEINGS (ODIL 2022)

16-17 September, 2022

National Research Centre on Camel (NRCC), Jorbeer, Bikaner (Rajasthan)

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ARID ECOLOGY AND CAMEL: THE MOST RESISTANT AND LESS GHG EMITTING ENVIRONMENTAL-FRIENDLY LIVESTOCK

A. Sahoo

Director
ICAR-National Research Centre on Camel, Bikaner, India

ABSTRACT

The two most-promising climate resilient species of camel thrive well in hot arid and semi-arid regions of the desert (e.g. Camelus dromedaries) and arid cold-climatic regions of the mountains (e.g. C. bactrianus) and continue to provide livelihood opportunity to co-habiting human population. They serve as multipurpose animals producing milk, fiber/hair, as a means of transport or draught, excreting urine and providing manure, often yielding meat as a part of culling process and supplying leather and bones after death. The unique ability to adapt to extreme desert ecosystem with peculiar physiological (thermoregulation, water metabolism, glucose and energy metabolism, salt tolerance, forbearance against choking dust, etc.) and anatomical (fore limb and hind limb, long neck, single and double hump, third eye-lid, forestomach, etc.) differences has a significant bearing on its productive lifespan. Methane emission from ruminants is a significant component of greenhouse gas (GHG) production that contributes to global warming, but camel seems to contribute less due to its unique fiber-utilizing capability and foraging on phytochemical-rich forages that controls methane emission. Thus, it is noteworthy to say that camel is an environmental-friendly livestock of the globe and its remarkable adaptive characteristic projects it as the animal for future as the world is preparing itself to face the untoward challenges of climate change.

CLIMATE RESILIENT LIVESTOCK SPECIES OF THE HOT-ARID CLIMATIC REGIONS OF INDIA

Ved Prakash[1*], Nistha Yadav[2], Basanti Jyotsana[1] and A. Sahoo[1]

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ABSTRACT

Climate change is thought to be the most important cause of unstable productivity in livestock production systems. Resilience of livestock to such climatic aberrations/alterations is an important homeostatic phenomenon in animals. In animal-agriculture system, crop-failure has a catastrophic effect on livestock productivity and often survivability due to feed resource crunch. The resistant livestock breed needs to have survivability, fertility and productivity and thus, identification of agro-ecological zone-specific climate-resilient thermotolerant animals to sustain livestock production is an important criterion. Besides, it is necessary to build or improve the adaptive capacity of the animal through application of molecular genetics targeting identification of thermo-tolerant genes and transfer of these traits to less tolerant livestock species. The thermo-tolerant cattle breeds of India, viz. Ongole /Nellore, Sahiwal, Tharparkar, Kankrej, Nagori, Rathi etc. hold promise in sustaining livestock productivity under climate-change scenario. Studying the integration of different homeostatic mechanisms viz. physiological responses and hematological parameters, molecular mechanisms, physiological changes, proteomic and transcriptomic profiles, gene functions and metabolomics will make way to know better body adaptation under heat and cold stress. Similarly, exploring the genetic resistance to (or tolerance of) diseases after studying the 'Gene-Environment' interaction will help us selective breeding for the resistant genotype that can expect to perform relatively better in a high challenge than in low challenge environment. A shift from cattle to camel and goat farming may be considered that can sustain milk production with lower inputs and emissions.

ROLE OF MEDIA IN GLOCAL ENVIRONMENT AWARENESS

Ashok Kumar Verma

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ABSTRACT

India is a nation of diversity and unity and is famous for big democracy . The democracy has four pillars namely Legislature, Executive, Judiciary and Media. The Media performs its responsibility as fourth pillar in democracy which ensures that all people of country are aware of what is happening in and around the world. It educates the youths in order to establish national integration, patriotism and social harmony. The media helps and motivates the people to conserve the biodiversity and other environment related issues. The media campaigns the global and local environmental issues including ozone layer depletion and their future impacts on biotic life. In this way media has ver y crucial and dynamic role in creating awareness related with environmental issues. It can establish a positive impacts at local levels by giving information around the globe specially related with ozone layer. The media has to educate, aware and describe the people on large scale about the recent advancements in the arena of global environment. All these collective efforts can bring a state of sustainable development.

NEED OF EFFECTIVE ETHICS RELATED WITH CONSERVATION OF ENVIRONMENT

Shri Prakash[1] and Prabhakar Singh[2]

[1]Department of Zoology, KA PG Prayagraj (U.P.)
[2]Department of Anthropology, University of Allahabad, Prayagraj (U.P.)

ABSTRACT

Environment is basically the surroundings of life. These surroundings include living and non-living things which make up of natural and built environments. Natural environment is composed of things which exist naturally whereas built environment is one that man has made. 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. It is now an urgent need to conserve the environment and nature for the survival of humanity. The environmental conversation is a practice of protecting the environment, an individual, organizational or governmental level.

OZONE LAYER DEPLETION AND ITS EFFECTS: A REVIEW

Sadguru Prakash

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ABSTRACT

There are a variety of circumstances in which human actions have a substantial impact on the environment. One of these is harm to the ozone layer. With the "The Montreal Protocol on Substances that Deplete the Ozone Layer," which was signed in 1987, governments from all over the globe, including the United States, have collectively taken action to address ozone depletion under the aegis of the United Nations Environment Programme (UNEP). This essay's goal is to examine the reasons, mechanisms, biological effects, and preventative methods for the ozone layer's disappearance.

Strong ozone deflators include halogens and chlorofluorocarbons. The expected increase in UV radiation received at the earth's surface and its impact on human health and the environment are two of the main causes of the widespread concern over the ozone layer's depletion. Ozone recovery chances are still unclear. In the future, stratospheric ozone abundances should increase if other factors remain constant as the halogen loading decreases in response to regulation. However, the shifting atmospheric abundances of methane, nitrous oxide, water vapour, sulphate aerosol, and changing climate will also have an impact on how ozone behaves in the future.

When the stratosphere, where the ozone layer is located, gets colder, ozone depletion worsens. Less heat will reach the stratosphere as a result of global warming, which will result in a colder stratosphere. The troposphere is covered by greenhouse gases, which also cool the stratosphere. In other words, just when ozone depletion is due to start recovering over the course of the next century, global warming might make it considerably worse.

DISTILLERY INDUSTRY EFFLUENT INDUCED HEMATOLOGICAL ALTERATIONS IN A CATFISH, *MYSTUS VITTATUS* (BLOCH)

Santosh Kumar Tiwari and Sadguru Prakash

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M.L.K.P.G. College, Balrampur, U.P.

ABSTRACT

The main source of freshwater pollution can be attributed to discharge of untreated waste, dumping of industrial effluent, and run-off from agricultural fields.Water pollution is characterised by the addition of anthropogenic contaminants to the extent that it either cannot serve humans for drinking purposes or support the biotic communities. A change in the quality of water by the presence of toxicants or contaminants makes it potentially harmful to life forms, instead of sustaining them. The entry of toxicants into waterbody may affect the water quality parameter which in turn leads to changes in the haematological and biochemical variables of fish and other aquatic lives due to close association with the external environment. *Mystus vittatus*, one of the common edible fish if exposed to industrial effluents containing harmful substances may be a serious threat to human health. Therefore, the present study aimed to study the impact of distillery effluent on *Mystus vittatus*. Fish were exposed to sublethal concentration of distillery effluent. The physico-chemical parameters such as biological oxygen demand (BOD) and chemical oxygen demand (COD) of distillery effluent were also analyzed as these parameters were not in range as per guidelines. Hematological parameters such as Red Blood cells (RBC), Haemoglobin (% Hb), Mean corpuscular volume (MCV), Mean Corpuscular Hemoglobin (MCH) and Mean Corpuscular Hemoglobin Concentration (MCHC) showed significant decrease while there was sharp increase in differential leucocyte count (DLC) especially the neutrophil count. This condition may adversely affect the health of aquatic organisms, the fish and ultimately the human beings.

PHYSICO-CHEMICAL CHARACTERISTICS OF WATER INRELATIONS TO PISCICULTURE IN BHAGADA TAAL, A WETLAND OF BALRAMPUR, U.P.

Varsha Singh and Sadguru Prakash

Department of Zoology
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ABSTRACT

Wetlands have been identified as one of the key life supporting ecosystems on this planet. They are considered as the most productive ecosystems as they constitute huge floral as well as faunal diversities. They also play a very important role in socioeconomic condition of the concerned region as they are used for aquaculture activities at commercial level, crucial for biodiversity conservation and maintain the ecological integrity. Water quality is an important limiting factor in the productivity of aquatic ecosystems, including fish resources. The health of an aquatic ecosystem depends on its physicochemical and biological characteristics. Adverse changes in water quality of aquatic ecosystems are reflected in the biotic community structure and the most sensitive species often act as sentinels of water quality. Therefore, water quality monitoring is necessary for conservation of water resources and their sustainable use for drinking water supply, irrigation and fish farming. Fourteen physico-chemical parameters of Bhagada taal in 3 sampling sites for pisciculture purpose have been analyzed for pre, post and monsoon seasons. The estimated values of physical and chemical parameters of water samples were compared to the desirable, permissible and acceptable ranges for pisciculture recommended standards. The pH of the water was found to be in alkaline range of this taal. The values of DO and BOD fluctuate according to the seasons and sites, COD was very less due to absence of chemical pollution.

LIMNOLOGICAL STUDY OF CHITTAURA JHEEL, A WETLAND OF TARAI REGION OF BAHRAICH DISTRICT IN RELATION TO FISH PRODUCTION

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ABSTRACT

Wetlands are areas where water is primar y factor controlling the environment and the associated plants and animal life. They occur where the water table is at or near the surface of the land, or where the land is covered by water. Wetlands are among the world's most productive environments. They are cradles of biological diversity, providing the water and primary productivity upon which countless species of plants and animals including fish, amphibians, reptiles, birds, mammals, and invertebrate species depend for survival. Chittaura Jheel of Bahraich district of Uttar P radesh is one of the largest natural wetland of this district. It covers an area of about 15 ha and is rich in faunal and floristic diversity.

Fourteen physico-chemical water quality parameters have been analyzed for pre, post and monsoon seasons. The values of DO and BOD fluctuate according to the seasons and sectors, COD was very less due to absence of chemical pollution. The value of all the parameters are found to be more during pre monsoon season when compared to monsoon and post monsoon. Other parameters such as calcium, magnesium, sulphate and phosphate were under permissible limits and widely fluctuated according to seasons and sectors.

BIODIVERSITY OF FOLIAR FUNGI FROM KATARNIAGHAT WILDLIFE SANCTUARY BAHRAICH U.P. INDIA

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ABSTRACT

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. The weed and forest plants serve as reservoir of leaf spot pathogen. Katarniaghat Wildlife Sanctuary, a tropical moist deciduous forest along the Indo-Nepal border comprises of 778 species of angiosperms, out of which 613 species are dicots under 386 genera and 91 families and 165 species are monocots under 103 genera and 23 families. It contains 82 species that are in cultivation and/or growing as alien invasive. The species include 149 trees, 81 shrubs, 445 herbs and 103 climbers. Fabaceae with 100 species and Poaceae with 65 species occupy the first position in dicots and monocots, respectively. Cyperus with 14 species has been found to be the largest genus represented while 355 genera are represented by solitary species. India is the one of the twelve mega biodiversity countries of the world, has two of the worlds eighteen biodiversity hot spots located in the Western ghats and in the Eastern Himalayas. In north the Himalayas rise as a virtual wall beyond the snow line. Above the alluvial plain lies the Tarai strip, a seasonally marshy zone of sand and clay soils. Katarniaghat Wildlife SanctuaryBahraich belongs to Northern Tarai Region.Keeping this in mind the authors surveyed with sixty-fiveAngiospermic host plants representing fifty-five genera and thirty-one families being parasitized by fifty-seven fungal species representing forty-five fungal genera.

FOLIICOLOUS FUNGI FROM KATARNIAGHAT WILDLIFE SANCTUARY BAHRAICH UP

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ABSTRACT

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. The weed and forest plants serve as reservoir of leaf spot pathogen. India is the one of the twelve mega biodiversity countries of the world, has two of the worlds eighteen biodiversity hot spots located in the Western ghats and in the Eastern Himalayas.Katarniaghat Wildlife SanctuaryBahraich belongs to Northern Tarai Region.66 medicinal plants were collected during survey and 40 plants represented 35 genera of 25 families were found infected with 25 fungal species. *Alternaria* alternata And *Cercospora* sp. Infected with5 plants each. *Phoma* sp. was found on *Glycosmis pentaphylla*, *Teliocora* sp. And *Mallotusphilippensis*. *Meliola* was recorded on *Mallotusphilippensis, Rungia* sp. Rest was found on single host.

ALLELOPATHIC EFFECT OF *LATHYRUS SATIVUS* L. ON SEED GERMINATION AND SEEDLING GROWTH OF *LENS CULINARIS* L.

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ABSTRACT

In the present investigation, lentil (Lens culinaris or Lens esculenta) is taken as a target crop to study the effect of Lathyrus sativus L. which grows as a weed in the fields. This weed affects the growth and productivity of lentils. The effects of different concentrations of L. sativus root extract on the shoot and root length of L. esculenta were observed at five, seven, and ten days after germination. Data revealed that the shoot and root lengths of the test plants significantly decreased. The biomass accumulation of the germinated seedling was also following the same pattern, and it declined as the extract concentration increased. The methanolic and ethanolic L. sativus extracts were prepared and tested on the same plant. Maximum growth inhibition was observed in the ethanolic extract. UPLC analysis of the methanolic extract revealed the presence of phytochemicals that inhibit growth.

SEASONAL OCCURRENCE AND ABUNDANCE OF *LEUCINODES ORBONALIS GUENÉE*, 1854 IN EGGPLANT

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ABSTRACT

The goal of the current experiment was to determine the frequency and severity of *Leucinodes orbonalis* infection on eggplant throughout specific seasons. On the randomly chosen plant, information was gathered by counting the number of sick and healthy shoots. The adult population of the brinjal shoot and fruit borer *Leucinodes orbonalis* Guenée varied greatly not only from year to year but also in various months, according to the findings of two consecutive years. The number of adults significantly climbed in the months of October and November before falling off in the second week of December. During both years, there was a positive association between the highest temperature and the number of moths (r=.302). The minimum temperature showed a positive connection with moth trapping (r=.392), suggesting that the minimum temperature is crucial for the development of moth populations.

THE LIVER AND KIDNEY OF CLARIAS BATRACHUS SUFFER FROM COBALT CHLORIDE-INDUCING NECROPTOSIS

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ABSTRACT

The hepatorenal tissue of the cobalt chloride-exposed *Clarias batrachus* sustained substantial histopathological damage, demonstrating its hazardous nature. It first affects molecules necessary for cellular functions by altering their structure and/or functional characteristics. The eight batches of the treatment group were run for 60 days with 96 hours of LC 50 x1/10 concentration of cobalt chloride. The liver and kidney tissues showed considerable vacuolization and hyperplasia, as well as histological alterations. Necrosis and vacuolization were seen after the 60-day exposure period. There was a significant increase in inflammation.

INDUSTRIAL TOXICANTS EFFLUENT AND THEIR EFFECT

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ABSTRACT

The rising pollutant emissions from expanding industrial sites are presently having a harmful effect on the ecology. One of the industrialization's biggest adverse consequences is water pollution. Hazardous chemicals created by industrial sectors put the health of people, animals, and aquatic life in danger. These pollutants also have a significant impact on the portability and hygiene of drinking water.

Despite the fact that health is a top priority, industrial development is essential for a thriving economy. The methodologies utilised to carry out various industrial programmes and interventions are always being improved upon and evaluated. Understanding how pollutants interact with biotic and abiotic systems and how they impact the environment and human health is crucial before creating successful remedial methods. In a word, it's critical to take remedial action to implement industry pollution cleaning. Even with the corrective steps mentioned in the prior sections, there are still challenges.

A NEW PROBLEM FOR HUMANITY TO RECOVER FROM COVID-19

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ABSTRACT

The latest 73rd report of COVID-19 from national authorities to WHO by April 2, 2020, has 896450 confirmed cases with 45526 deaths globally. 0 to 14 days is the average range of incubation period. A recent study from China Center for disease control (CDC) showed that most patients were asymptomatic in the early days of infection, leading to the widespread virus. Nosocomial transmission is another severe problem facing the world with this public health crisis. Coronaviruses are known to cause respiratory and enteric diseases in humans and animals. These are round or oval and pleomorphic in shape. Limited information is present now about COVID-19. It suggests that its infection ranges from previous coronavirus encounters. Here in this review, we summarize all current news and briefly compare SARS and MERS. This is to identify the gaps in knowledge to share resources to recover from COVID-19. It also includes pharmaceutical drugs that showed a negative impact on SARS-CoV-2 in in-vitro studies that can be used for its treatment till a suitable vaccine candidate is available. The most important task at this hour is to find a vaccine for the infection. Moreover, research needs to be conducted to find measures to face these challenges.

IMPACT OF OZONE DEPLETION ON LIVING ORGANISM

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ABSTRACT

Ozone depletion does impact on plants and animals. It is a natural filter absorbing most of sun's burning ultraviolet rays (UV). The stratospheric ozone depletion can disrupt biological processes and damage a number of materials. Ozone layer protects the environment from damaging effect of UV radiation causing skin cancer, cataract and impair our immune system.

The depletion of ozone indirectly causes higher risk of UV rays impact as skin cancer, malignant melanoma, quick ageing, eye cataracts and blindness.

The chlorine and bromine atoms in the atmosphere came in contact with ozone and destroy the ozone molecules. One chlorine can destroy 100,000 molecules of ozone. The chlorofluorocarbon (CFC) is the main cause of ozone layer depletion. These molecules can be released by solvents, spray aerosols (insecticides) refrigerators and air conditioners. These molecules are broken due to exposure of ultraviolet radiation and release chlorine atoms which eventually affect on the ozone layer.

A REVIEW OF POTENTIAL USE OF AGRO-RESIDUES FOR PAPER MANUFACTURING

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ABSTRACT

World is facing challenges to reduce global environmental issues including waste management, greenhouse emissions, pollution, deforestation and depletion of non-renewable resources originated due to speedy industrial and urban development. Agricultural wastes management is one of the biggest burdens in the 21st century. Poor waste management and lack of sowing time between next crop are the major reasons for various environmental and health issues. The main adverse effects of agricultural residue burning includes the emission of greenhouse gases (GHGs) that contributes to the global warming, increased levels of particulate matter (PM) and smog that cause health hazards, loss of biodiversity of agricultural lands, and the deterioration of soil fertility. There are various alternatives uses of agricultural residues such as production of bio-energy, biofuels, manufacturing of bioplastic, composting etc. but paper manufacturing is an emerging option for the significant use of agricultural residues. However, growing demand in paper industry, at a time of dwindling forest resources has compelled the sector to turn to other sources of raw materials such as cereal straws, sugarcane bagasse etc. Pulp and paper industry is highly dependent on forest and water resources. It has more concern on fair utilization of these resources and their conservation for its further expansion. This review paper elaborates the need of using agro-waste with environment friendly pulping to combat with the problem of waste management and substitute for wood based raw materials in paper making. The innovative raw materials used has the potential to replace the raw materials that are either expensive or taxing the environment. Such approach of using agricultural waste as a raw material with its environmentally safe processing for making paper can proved to be valuable, waste management and towards sustainable growth.

A REVIEW: ENVIRONMENTAL EFFECTS OF NEWLY-EMERGING MICROPLASTICS

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ABSTRACT

Global concern over new persistent pollutants such as microplastics (MPs) is rising. Microplastics (MPs) are stubborn, developing contaminants in the environment that have sparked intense interest across a variety of academic fields. Compared to marine environments, MPs contamination in soil environments has received little scientific attention, despite the fact that the former may be 4-23 times bigger in terms of mass. More MPs tend to collect in terrestrial soil than in aquatic habitats. The United Nations Environment Programme (UNEP) determined that the land-based sources account for a significant portion of the particulate plastics found in the marine environment worldwide (UNEP, 2016). Every year, 4.8 to 12.7 Mt of terrestrial plastic debris or 1.7% to 4.6% of all plastic waste produced globally enters the ocean. The technique that enables the transmission of particulate plastics from terrestrial to aquatic habitats is sediment transfer during soil erosion. Despite this connection to earthly sources, the majority of scientific studies on plastic particles have neglected their effects. Various approaches have been applied to this goal in order to comprehend the characteristics, ecological activities, and possible implications of MPs. We review the characteristics, environmental distribution, and potential effects here. The most prevalent MP types, their shapes, and personalities will all be thoroughly introduced. Then, it will be reported on how MPs are distributed in the environment and how they affect humans, plants, and microbes. And how the application of sludge and composting, sewage treatment, mulch film, polymer-based fertilisers and pesticides, and atmospheric deposition are the main sources of MPs pollution in agricultural soils. The features of the soil, farming methods, and variety of the soil biota are primarily responsible for the destiny and dispersion of MPs in the soil environment. Despite the rising MP pollution of the soil environment, there are no standardised methods for detection and quantification.

A SHORT TERM STUDY OF LEPIDOPTERAN DIVERSITY IN AN AGRO-ECOSYSTEM IN SHEKHAWATI REGION

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ABSTRACT

Biodiversity is the variation of life at all levels of biological organization. An ecosystem with high biodiversity may have a greater chance of adapting to environmental change and withstand environmental stress. To ensure intra and intergenerational equity, it is important to conserve biodiversity.

The insect fauna is one of the most diversified biological components of any habitat and Lepidoptera are the second largest order of the class Insecta. In an agro ecosystem majority of the world's cultivated crops are pollinated by different varieties of butterflies and moths. To ensure stable crop yields, various aspects of insect and crop relationship should be studied. So, the present study focused on compiled information of pest and pollinators insect fauna which would be definitely helpful in preventing economic damage by pest insects and increasing biodiversity. The aim of the present work was to study the Lepidopteran diversity in selected crop fields of Chelasi village (Jhunjhunu) at Shekhawati region. The present study was carried out from January 2022 to June 2022 on Major crops like Wheat, Mustard, Barley and Grams (Rabi) and some seasonal vegetables crops. Sweep net and light trap was used for Insect collection.

This exploration show the presence of Lepidopterans represented by families including Nymphalidae, Pieridae, Papilionidae, Pyralidae, Saturniidae, Plutellidae and Noctuidae.

Larva of *Agrotis ipsilon* (Cutworm) was observed as pest on ground touching green leaves of gram and alfa alfa grass. *Plutella xylostella* (Diamondback moth) was observed on the leaves of cruciferous like cauliflower and cabbage. *Heliothis armigera* was recorded on tomato while Indigo caterpillar (*Spodoptera exigua*) was observed on the leaves of coriander, tomatoes and cabbage as a pest. Lime butterflies (*Papileo demoleus*) was recorded on leaves of *Citrus limon* and *Citrus limetta.*

A STUDY ON POPULATION DYNAMICS OF PARASITIC HELMINTHES *CUCULLANUS* SP. (NEMATODE: CUCULLANIDAE) FROM RIVER YAMUNA AT YAMUNA NAGAR (HARYANA), INDIA

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ABSTRACT

The present study deals the population dynamics of helminthes parasites in freshwater fish *Mystus vittatus* in river Yamuna at Yamuna Nagar (Haryana), India during 2018-2020. During the investigation average infection prevalence was recorded 46.67% with mean intensity 1.60 in the total infected fish. The lowest nemic prevalence (20.0%) was recorded during the month of July, however the highest infection prevalence of *Cucullanus* sp. (73.33%) was documented in the month of May in both the years of investigation. On the other hand, the mean intensity was observed highest (1.88) in mid winter season (December) while the least mean intensity (1.33) examined in months of June.

ADSORPTIVE REMOVAL OF HAZARDOUS AZO DYES BY ALGAE/MAGNETIC CHITOSAN (ALG/MCS) BIONANOCOMPOSITE

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ABSTRACT

With industrial revolution, the utilization level of azo dyes is also accelerated. Eradication of these dyes is one of the major concerns due to their intense color and toxicity level. In the present study, a bionanocomposite comprising of magnetic chitosan embedded with algae isolated from native habitat was fabricated and utilized as an efficient adsorbent for the removal of hazardous azo dyes, namely, Direct Red 31 (DR31) and Direct Red 28 (DR28). The prepared bionanocomposite was characterized by Fourier Transformation infrared spectrometer (FTIR), X-ray Powder Diffraction (XRD), Scanning electron microscope (SEM), Energy Dispersive X-ray Analysis (EDAX) and Brunauer-Emmett-Teller (BET). On the sorption of dyes, effect of various parameters like pH, adsorbent dosage, contact time, temperature, and initial dyes concentration were also addressed. Herein, considering all the results, maximum adsorption of DR31 and DR28 was observed at pH 5 and 3, respectively. The maximum adsorption capacity of DR31 and DR28 was observed at Alg/mCS dose of 0.6 g L^{-1} and 7 g L^{-1} in 10 and 30 mins, respectively. Kinetic investigations revealed that adsorption was best fitted to pseudo-second-order kinetics with a linear regression coefficient of 0.999 and 0.998 for DR31 and DR28 dye, respectively. The Redlich Peterson model was found to be the best-described model for adsorption equilibrium data of both the dyes. The investigated data concluded that Alg/mCS proved to be a suitable adsorbent for azo dye decolourization as components of the fabricated adsorbent are economical and easily available.

AGROFORESTRY: A SATISFACTORY ACTION OF IMPROVE SOIL HEALTH AND ENSURES THE CONSERVATION OF SOIL & WATER

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ABSTRACT

Agroforestry systems contribute significantly to the conservation of natural resources, particularly soil. Soil conservation is one of the key benefits of agroforestry, but empirical assessments of these benefits have been scarce due to the temporal and spatial complexity of agroforestry systems and soil resource dynamics. The soils are shielded from erosion caused by wind and water. Agroforestry systems mitigate the negative impacts of temperature and wind on soil fertility, soil flora, and fauna. In the context of sustainable management, soil quality, soil resilience or soil conservation, and protection of local or regional agroecosystems, the function and relevance of soils in agroecosystems has been recognised. Agroforestry practises contribute to increased production, improved nutrient cycling, and improved farmer socio-economic position. The dominance of many traditional agroforestry systems in India presents an opportunity for carbon sequestration, improved livelihoods, biodiversity protection, soil fertility improvements, and rural employment that should be reconsidered. Trees can be seen of as investments made by economic agents to keep natural assets like top soil and water from degrading. Farmers employ trees in this way in agroforestry systems by purposely mixing them with agricultural crops on the same plot of land. Despite the fact that one of the key benefits of agroforestry is soil and water conservation.

AIR POLLUTION BY SMOG - ITS HEALTH HAZARDS AND STRATEGIES FOR MITIGATION

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ABSTRACT

Smog is a type of air pollution. Pollution may be defined as an undesirable change in the physical, chemical or biological characteristics of our air, land and water that may or will harmfully affect living conditions and cultural assets or that may or will waste or deteriorate our raw material resources. The nature of air pollution is dependent upon the type of pollutants. There are two type of smog phenomena, one called *London or classic smog* which consists mostly of combination of sulphur oxides and particulates, and second called *photochemical or modern smog* which is the result of chemical reactions between hydrocarbons, oxides of nitrogen and sunlight.

1. London or Classic Smog: The word 'smog' was coined in the first decade of the 20th century by combining the words smoke and fog to refer to "smoky fog" which was a familiar atmospheric phenomenon in London up to the middle of 20th century. Cause of London Smog: The London smog is caused by mixing of fog with the smoke and the particulates created by burning of coal. The worst ever smog disaster in the world, called '*Great Smog*', occurred in London from 5th to 9th December 1952. According to estimates the quantity of pollutants emitted each day during the smog period were 1000 tonnes of smoke particulates, 2000 tonnes of carbon dioxide, 140 tonnes of hydrochloric acid, 14 tonnes of fluorine compounds and 370 tonnes of sulphur dioxide.

Effects of Great London Smog:

a) During the smog period visibility was reduced to one meter or less (almost zero). Public transport, including ambulance service, was completely stopped. Smoke even seeped indoors, stopping all entertainment activities.
b) Health Effects: It is estimated that in six days of smog period about 4000 people died prematurely and 100,000 more were made ill.
c) Environmental Impact: The Great Smog demonstrated the lethal potential of this type of air pollution and led to the enactment of U.Ks clean air act, 1956.

2. Photochemical or Modern Smog:

There is another type of smog in modern cities, called photochemical smog, which was first recognized in the 1950s. It is completely different from London smog as it is neither related to smoke of coal burning nor to fog. It is formed by vehicular emission and industrial fumes containing nitrogen oxides (NO_x) and volatile organic compounds (VOCs, hydrocarbons) as primary pollutants reacting in atmosphere with sunlight and forming secondary pollutants mainly ozone (O_3) and peroxyacetyl nitrate or PAN ($CH_3CO_3NO_2$). Ozone and PAN are usually referred as photochemical oxidants. The problem of photochemical smog is the product of large scale use of automobiles and modern industrialization. Photochemical smog is visible as clouds having brown colouration due to oxides of nitrogen.

AIR POLLUTION

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ABSTRACT

Air pollution refers to any physical, chemical or biological change in the air. It is the contamination of air by harmful gases, dust and smoke which affects plants, animals and humans drastically. There is a certain percentage of gases present in the atmosphere. An increase or decrease in the composition of these gases is harmful to survival. This imbalance in the gaseous composition has resulted in an increase in earth's temperature, which is known as global warming.

Types of Air Pollutants

Primary Pollutants

The pollutants that directly cause air pollution are known as primary pollutants. Sulphur-dioxide emitted from factories is a primary pollutant.

Secondary Pollutants
The pollutants formed by the intermingling and reaction of primary pollutants are known as secondary pollutants. Smog, formed by the intermingling of smoke and fog, is a secondary pollutant.
Causes of Air Pollution

● Burning of Fossil Fuels ● Automobiles ● Agricultural Activities ● Factories and Industries ● Mining Activities ● Domestic Sources

AN EPIDEMIOLOGICAL ASSESSMENT OF OZONE DEPLETION ON HUMAN HEALTH

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ABSTRACT

Human health has emerged the main concern in the field of life science. Globally speaking, scientists are trying to foster the human health by exploring the natural as well as manmade health hazards. In the same arena, there are many situations where human activities have significant effects on the environment. Ozone layer damage is one of them. Ozone depletion gets worse when the stratosphere (where the ozone layer is), becomes colder. Because global warming traps heat in the troposphere, less heat reaches the stratosphere which will make it colder. Greenhouse gases act like a blanket for the troposphere and make the stratosphere colder. In other words, global warming can make ozone depletion much worse right when it is supposed to begin its recovery during the next century. The researcher analysed this researcher study with the help of descriptive researcher method. Accordingly, the researcher found that the chlorofluorocarbon and the halons are potent ozone depletors. One of the main reasons for the widespread concern about depletion of the ozone layer is the anticipated increase in the amounts of ultraviolet radiation received at the surface of the earth and the effect of this on human health and on the environment. The prospects of ozone recovery remain uncertain. In the absence of other changes, stratospheric ozone abundances should rise in the future as the halogen loading falls in response to regulation. However, the future behaviour of ozone will also be affected by the changing atmospheric abundances of methane, nitrous oxide, water vapour , sulphate aerosol, and changing climate. The researcher recommended there is dire need to take human efforts in staying eco-friendly with natural cosmic system.

AN EPIDEMIOLOGICAL SURVEY OF CAMEL SKIN DISEASES IN BIKANER REGION

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ABSTRACT

Rajasthan is characterized with hot semi-arid climate. The dromedary camel (*Camelus dromedaries*) survives and reproduces successfully in these conditions. Camel is widely distributed over the north-western parts of India, playing a key role in the social and economic life of the people. Camel is a very important animal for transport, milk and a source of livelihood. The district of Bikaner has the second highest contribution in the camel population of 57% in Rajasthan. The aim of the present study was to categorize the diseases in camels giving a picture of the skin disease problems of Bikaner region which would help to identify risk factors of diseases for developing future control measures. The present study was carried out from July, 2021 to June, 2022 in some villages of Bikaner region. The present study focused on the prevalence of sarcoptic mange, camel pox, trypanosomiasis and skin candidiasis. The camel examined in this study were mainly those owned by the local people and which are involved in farm work, transportation, domestic household work, or kept as source of milk and meat. The camel's age, gender and sampling season were found to be most significant risk factors associated with the disease. The present study reveals that occurrence of skin diseases was higher in male than female. More diseases were reported in winter season followed by the rainy and summer season. The skin diseases of camels cause significant economic losses in terms of decline in working capability, growth and productivity. Our study suggests further research is needed for management of camel skin diseases in Bikaner region.

ANALYSIS AND MONITORING OF AIR POLLUTION

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ABSTRACT

Air pollution is the greatest environmental health risk today and in the twenty-first century, air pollution is a major threat to human health and causes a number of potentially deadly diseases and illness. Air pollution is widely divided into two major groups viz. (a) outdoor air pollution which includes ozone, SO2, CH4, particulate matters of all sizes and (b) indoor air pollution mainly includes gaseous pollutants (e.g., NO2, CO) and ultrafine particles emitted from combustion sources. These air pollutants are present in the atmosphere from both primary (directly from natural and anthropogenic sources) as well as secondary emission sources (gas to particle conversion). These pollutants have harmful effects on human health for short time scale (e.g., eye irritation, respiratory irritation, ear infection) as well as on long time scale (e.g., lung cancer, heart disease. The accurate measurements of air pollutants are needed for mitigation and future air quality-related policies. Over the last few decades, several techniques and instruments have been developed to measure air pollution. Several techniques, i.e., spectroscopic, chromatography, remote sensing techniques along with sampling and size distribution measurement are quite popular and widely used for the measurement of air pollutants. Every instrument and measurement techniques have their own merits, demerits and limitations. Remote sensing is one of the most effective and economical tools for air pollution measurements. It has the capability to measure the vertical distribution of air pollutants which play a substantial role in the calculation of the radiation budget. A brief description of the measurement of air pollutants using different remote sensing techniques is discussed here.

ASSESSMENT OF FOOD WASTE AND LEFTOVER FROM THALI IN THE GIRLS HOSTELS OF UNIVERSITY OF RAJASTHAN, JAIPUR

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ABSTRACT

"Food waste" refers to items that are fit for human consumption but thrown away by the consumer, it is one of the most significant problems faced globally, that contributes to social, environmental, and economic problems. It leads to higher rates of food insecurity, causes atmospheric pollution, results in a lot of capital wasted on inputs. Throwing away food can also mean that resources such as water and energy it used to produce it have been wasted. In the University and college hostels contribute to food wastage in a humongous scale on daily basis. Recently, the Food and Agriculture Organization (FAO) of the United Nations Environment Programme (UNEP) released the Food Waste Index Report 2021. It revealed that 17% of all food available at consumer level (11% in households, 5% in food service and 2% in retail) was wasted in 2019 and around 690 million people had to go hungry. The two main objectives of study were To assess the food waste produced by girls hostel and develop a strategy on institutional food waste management.

Locale of the study was two out of seven girls hostels of Rajasthan University namely Mahi and Savitri hostel were selected randomly with the help of random number table. Total number of respondents were 500. Observation method was used to collect data on daily basis by the researchers. In which 41 days of food was audited from Mahi Girls Hostel and 29 days from Savitri Girls Hostel. The study revealed that the majority of leftover from thali in the breakfast of mahi hostel 61.00 per cent as well as Savitri hostel 75.90 per cent in the range of 1.0 to 3.0 kg. Whereas the study also concluded that the majority of leftover from thali in the lunch of mahi hostel 39.00 per cent and from Savitri hostel 89.70 per cent in the range of 3.1 to 6.0 kg and 1.0 to 3.0 kg respectively. In the context of dinner majority of leftover from thali in mahi hostel 46.3 per cent and Savitri hostel 51.70 per cent in the range of 3.1 to 6.0 kg was found on the basis of the results. It can be concluded that a lot of food is wasted in each hostel per day. It is a serious issue but less talked about. To combat this problem, we can make both the staff and the students aware about the issues and also make them realize the outcomes of food wastage.

ASSESSMENT OF SOCIO-ECONOMIC IMPACT OF TEXTILE INDUSTRIES IN HAPUR DISTRICT OF WESTERN UTTAR PRADESH

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ABSTRACT

Excessive exploitation of natural resources, anthropogenic activities, industrialization and urbanization are responsible for contamination of aquatic system. Textile industry is one of the important and largest industrial sector of India. The textile industries discharge huge amount of effluent directly into public drain and on open space. The untreated effluent discharged by the industries leads to serious pollution of surface and ground water, soil and ultimately enters in human-beings via food chain. Wastewater released from textile industries contain inorganic and organic contaminants, heavy metals, dye and show negative impact on human health. In the present study, survey was conducted and interview and observations of industrial workers and local people resided near textile industries were collected through questionnaires. In addition to the theoretical data physico-chemical parameters such as color, temperature, pH, TDS, TSS, BOD and COD of textile effluents were also analyzed. The local residents reported that water of the area is not clean and they were suffered from various health related disorders such as asthma, headache, skin diseases etc. Many methods such as oxidation, coagulation, ozonation and reverse osmosis have been used for treatment of wastewater. All the above mentioned methods are expensive and energy intensive. Hence, there is a need of cost- effective and eco-friendly methods for decontamination of wastewater. Biological procedures such as application of microbes and biochar can play significant role in the treatment of industrial effluents as these are sustainable solution for environmental problems.

BEHAVIORAL STUDY OF CONTAMINATED WATER COLLECTED FROM LABORATORIES WASTE OUTLET AND ITS POSSIBLE TREATMENT USING HYBRID ADSORBENT ZEOLITES

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ABSTRACT

Daily intake of drinking water is the fluoride major source (75%) of fluoride and attracted to positively charged calcium in teeth and bones. Major health problems caused by fluoride are dental fluorosis, teeth mottling, skeletal fluorosis and deformation of bones in children as well as adults and also affects agricultural crops and animals. During the past two decades the ground water level in several parts of the country has been decreasing rapidly due to an increase in extraction by tube wells and pumping[1].

Fluoride is ubiquitous in the environment and is always present in plants, vegetation, agricultural crops, food items, drugs exposure, soils and phosphatic fertilizers. Water with high fluoride content is generally soft, has high pH and contains large amount of silica (Meenakshi and Maheshwari, 2006). The main source of fluoride in ground water is fluoride bearing rocks such as fluorspar, fluorite, cryolite, Fluor apatite and hydroxyl apatite etc. It is become a content of ground water is a function of many factors such as availability and solubility of fluoride minerals, water current, pH, temperature, amount of Ca++ and HCO3- in water. As fluoride enters the body through water, food, vegetations, soil, grains, pulses, industrial exposure, drugs, cosmetics etc. then shows its effects[2].

BEST FROM WASTE -A WAY FOR ORGANIC FARMING

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ABSTRACT

Climate change will dramatically alter agriculture along with global food production .Natural resources, environment and particularly agriculture is under intense pressure, due to ever increasing demand for the food grains. Agriculture is notonly affected by climate change but also contributes to it, as ten to twelve percent of global greenhouse gas emissions are due to human food production .Organic farming is a chemical free, traditional farming method, it is considered to be the most sustainable approach in food production. Expanding agricultural activities has naturally resulted in increased quantities of agricultural crop residues , livestock waste and agro-industrial by products. A very huge quantities of agricultural wastes are produced in Indian farm fields every year exceeding around 620 million tones per year .In organic farming or integrated plant nutrient management system, agro wastes can be the important sources of plant nutrients which on decomposition give good nutrients to plants. Recycling is an eco-friendly technology through which we can convert organic waste into best product that is rich in nutrient content and can replace chemical fertilizers. Composting is one of the best methods by which agricultural solid waste product can be recycled. Composting /Vermicomposting technology has the considerable economic potential of using earthworms to convert a wide range of organic agricultural waste and city garbage into plant growth media .Waste from livestock activities include solid waste such as cow dung, litter, organic materials, waste water, urine, cage wash water etc. The utilization of animal manures for fertilizer has a definite impact on input energy requirement at farm level. As organic farming works on the principle that there is no shortage of nutrients in the soil, air and water, and healthy soil biology can unlock these nutrients. All the nutrients required for the growth of plant are available around the root zone of the plants. There is no need to add anything from outside, as our soil is prosperous and full of essential nutrients. The nutrients in the soil are in the unavailable form, the roots cannot take it in this form. This non-available form is converted into available form by the millions of micro-organisms. The cow dung, base of vermin compost and NADEP compost is a miraculous culture as one gram of cow dung contains about 300 to 500 crores beneficial and effective microbes. Thus, importance of Cow dung/urine, considered as waste has proved beneficial and worthy for the betterment of soil, agriculture, horticulture, environment and health of society.

BIODIVERSITY LOSS DUE TO URBANIZATION ON IL TOWNSHIP AREA OF KOTA RAJASTHAN

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ABSTRACT

Biodiversity is essential for the existence and proper functioning of all ecosystems as it supports habitats for all species. We all depend on biodiversity for food, air and water and many medicines. Growing human population and land conversion has resulted in loss of species habitat and even their extinction. This article focuses on the loss of biodiversity due to development of concrete roads and human interferences in dense forest area of IL township area of Kota district. As Habitat loss is a challenge for all species. People harm biodiversity by their inter ference on environment through their outdoor recreation their by creating stress on local animal species and plants. Conserving biodiversity and even all forms of habitat will help save species for our future and in turn help in maintaining ecological balance.

BIODIVERSITY OF INDIGENOUS AND MIGRATORY AVIAN FAUNA AT AND AROUND BADOPAL WETLANDS (DISTRICT HANUMANGARH, RAJASTHAN)

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ABSTRACT

The area of Badopal wetlands are situated towards Suratgarh - Rawatsar road, district Hanumangarh. Its geographical coordinates are $29^0 19^0 0"$N latitude and $73^0 5^0 0^{"}$ E longitude.

It is an important wintering ground for migratory birds from the palaearctic region and South East Asia.

These birds are observed and recorded by the point count method. A number of 81 species of different birds belonging to 39 families have been recorded at and near Badopal wetlands area. Most probinate representative exotic birds and migratory avian fauna……. Greator flamingos, Bareheaded Geese, Painted stork, Brahmini ducks and coots, Red-wented bul bul, Cattele igret etc.

BIOTECHNOLOGY: AN ECO-FRIENDLY APPROACH FOR WASTEWATER MANAGEMENT IN PULP AND PAPER INDUSTRY

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ABSTRACT

In a world of increasing population, the demand for paper and its products is tremendously increasing and the meeting up of the demand comes up with a price of large amount of wastewater generation, containing dissolved wood-derived substances and residual process chemicals which adversely affect the environment. Owing to the increased environmental awareness, these potentially highly polluting raw wastewaters from the mills cannot be directly released in nature. Instead, recycling of the wastewater with the help of microbes is becoming an attractive alternative for many pulp and paper mills as it also offers potential savings in the cost of fresh water. Recycling of the wastewaters can be done either by closing up the systems in the mill or by treating the wastewaters such that they can be reused. Wastewater purification is usual carried out by a sequential approach.-sedimentation and an aerobic microbial process called the activated sludge operation, or an anaerobic digestion. The activated sludge process, which is the most commonly used approach for treating the waste water in pulp and paper mills, operates through successive action of many different microbes active in the sludge. The process is often carried on site in large aerated tanks. The success of the process is dependent on successful maintenance of the dissolved oxygen as well as good settling of the sludge. The settlement, in turn, depends on the type of microbial flora involved; the presence of excessive amounts of filamentous bacteria forming a matrix for flock forming bacteria can cause significant settlement problems. However, at the growth requirements are different for different microbial species, these problems can often be controlled by varying the rate of aeration, temperature or the nutrient composition of the process. Several enzymes isolated from microbes such as lignin peroxidise, manganese peroxidise and laccase can be potentially used in wastewater management in pulp and paper industry.

C- NANOMATERIALS SUBORDINATED MEMBRANE TECHNOLOGY TO GET ENCIRCLEMENT OF COMPASSIONATE POTABLE WATER

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ABSTRACT

New technologies are required to improve desalination efficiency and increase water treatment capacities. Large amount of specific energy requirement, leading to high operational costs, bio-fouling and less resistance of membrane to chlorine ion presents a big challenge in adopting desalination technologies. These challenges can be addressed by considering the newly emerging nanomaterials especially those made from carbon. Carbon CNTs have recently attracted considerable attention for the synthesis of novel membranes with attractive features for water purification. This paper critically reviews the recent progress on the synthesis and applications of carbon CNT based membranes in water treatment. Various synthesis techniques for the preparation of CNT based membranes are discussed. Furthermore, the effect of incorporating CNTs in the matrix on the membrane properties has deliberated in detail. The key issues associated with the synthesis of CNT based membranes for actual applications are highlighted. Finally, research directions are given to ensure the fabrication and application of CNT membranes in a more effective manner. This paper presents a comprehensive literature survey and review that brings those CNMs into focus which directly participate in desalination processes. The structural and functional properties of CNMs, their fabrication into membranes, their hybridization with polymer membranes are some of their usages in desalination processes which are exploited. The survey and analysis of the available literature shows that CNMs can enhance capacity and efficiency of next generation desalination systems particularly RO and membrane distillation.

C- NANOMATERIALS SUBORDINATED MEMBRANE TECHNOLOGY TO GET ENCIRCLEMENT OF COMPASSIONATE POTABLE WATER

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ABSTRACT

New technologies are required to improve desalination efficiency and increase water treatment capacities. Large amount of specific energy requirement, leading to high operational costs, bio-fouling and less resistance of membrane to chlorine ion presents a big challenge in adopting desalination technologies. These challenges can be addressed by considering the newly emerging nanomaterials especially those made from carbon. Carbon CNTs have recently attracted considerable attention for the synthesis of novel membranes with attractive features for water purification. This paper critically reviews the recent progress on the synthesis and applications of carbon CNT based membranes in water treatment. Various synthesis techniques for the preparation of CNT based membranes are discussed. Furthermore, the effect of incorporating CNTs in the matrix on the membrane properties has deliberated in detail. The key issues associated with the synthesis of CNT based membranes for actual applications are highlighted. Finally, research directions are given to ensure the fabrication and application of CNT membranes in a more effective manner. This paper presents a comprehensive literature survey and review that brings those CNMs into focus which directly participate in desalination processes. The structural and functional properties of CNMs, their fabrication into membranes, their hybridization with polymer membranes are some of their usages in desalination processes which are exploited. The survey and analysis of the available literature shows that CNMs can enhance capacity and efficiency of next generation desalination systems particularly RO and membrane distillation.

CONCERN OVER POTENTIAL ENVIRONMENTAL IMPACTS OF AIRCRAFT OPERATIONS

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ABSTRACT

Human society's dependence on means of transport, long-distance shipping, and aviation for travel is ever-increasing. The fraction of transport fuel use by aviation is a concern over the potential environmental impacts of future aircraft operations because aircraft engines emit CO2 and H2O are greenhouse gases that directly affect the Earth's climate.

Jet aircraft operations burning hydrocarbon-based fossil fuels which results in emitting by-products Gaseous and particulate combustion. Aircraft jet engines directly emit aerosol particles and condensed gases such as water vapor (H_2O), sulfuric acid (H_2SO_4), and organic compounds, which undergo gas-to-particle conversion (nucleation) processes., NOx), sulphur oxides (SOx), unburned hydrocarbons (HC) and H_2O are aerosol and cloud precursors, (CO_2) and emit water (H2O) these affects ozone and climate. These are atmospheric pollutants. Also, NOx and HC are reactive gases that affect atmospheric ozone and methane levels. All of them participate in ozone-controlled reactions of free radicals and free radical precursors.

The relationship between aircraft exhaust products and ozone is complex and depends on the balance between many ozone-producing and depleting chemical processes. Ozone chemistry in the stratosphere and troposphere is driven by solar-initiated free radical reactions. Due to the differences between the two, the pollutants emitted in the upper troposphere (UT) / lower stratosphere(LS) stay there longer. The major polluting effects of aircraft are high to occur in the UT/LS region of the atmosphere.

CROP MANAGEMENT PRACTICES FOR ENHANCING FODDER PRODUCTIVITY IN ARID REGION OF RAJASTHAN

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ABSTRACT

At present India having only 5.4% of total cropping area under fodder cultivation, which has resulted in a severe deficit of 36% green fodder, 11% dry crop residues and 44% of concentrate feed ingredients. The scarcity of green forages and grazing resources in the country has made the livestock especially camel to suffer continuously with malnutrition resulting in their production potentiality is low compared to many developed nations. Forage mustard (*Brassica rapa* L. subsp. *Chinensis*) is a short duration winter crop has a potential to be cultivated as a catch crop, which provides green fodder during scarcity period. The crop provides around 150-350 q ha-1 of green and nutritive fodder having 12 and 53% of DCP and TDN, respectively. Camel manure is an untapped precious resource which is not been properly utilized so far and can be utilized as organic fertilizer in fodder production. Composted materials have gained a wide acceptance as organic amendments for sustainable agriculture, as they have been shown to increase soil organic matter levels, improve soil physical properties and modify soil microbial communities, thereby enhancing microbial biomass, activity and diversity. Therefore, a field experiment was conducted to improve the fodder productivity and availability of arid region agronomic management. Results of the study revealed that application of camel manure and chemical fertilization significantly improved the fodder yield. 100% supply of nutrient with chemical fertilizer produced the highest green fodder yield and it was around 139% higher over control treatment. The combined application of camel manure and 50% RDF resulted in 14.3% and 54.8% higher over 50% RDF and camel manure alone, whereas, it was only 12.5% lower than 100% RDF. The significant increase in green and dry fodder yields of Chinese cabbage were largely a function of improved growth like plant height, number of leaves, leaf are index and the consequent increased in biomass due to better supply of nutrients in RDF and combined application of camel manure with 50%RDF. Our study also reported that although fertility status of soil was better in RDF and statistically at par with camel manure+50% RDF, so in sustainable way, it can be said that combined application of camel manure with 50% supply of nutrient through fertilizer is better, not only in terms of forage productivity but as of soil health.

DECONTAMINATION OF WASTE WATER EMPLOYING PHOTOCATALYSIS AND OZONATION

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ABSTRACT

The word photolysis is composed of two parts: The prefix *photo,* means light and *catalysis* means the process where a substance participates in modifying the rate of a chemical transformation of the reactants without being altered in the end. Hence, photolysis is a reaction which uses light to activate a substance which modifies the rate of a chemical reaction without being involved itself. In other words, photolysis is the acceleration of a photoreaction in the presence of a catalyst. In catalyzed photolysis, light is absorbed by an adsorbed substrate. In photogenerated catalysis, the photocatalytic activity (PCA) depends on the ability of the catalyst to create electron-hole pairs, which generate free radicals able to undergo secondary reactions. Commercial application of the process is called Advanced Oxidation Processes (AOP). Its comprehension has been made possible ever since the invention of water electrolysis by means of titanium dioxide (TiO_2). Photocatalysis employing semiconductors under irradiation has been extensively studied for about three decades. In 1972, Fujishima and Honda invented the photolytic splitting of water on TiO_2 electrodes. This event marked the beginning of a new era in heterogeneous photolysis. The main focus of previous studies has been to investigate the principal applicability of photolysis systems for efficient treatment of water polluted with toxic substances. Also, in the present study nanocomposites of the TiO_2 were fabricated by a modified dip coating method using titanium tetraisopropoxide and activated carbon (AC) granules as precursor. The composite were characterized by scanning electron microscope (SEM). The monograph studies showed perfect photocatalytic treatment systems were generated with $1gL^{-1}TiO_2$ nanocomposite for the treatment for the treatment of pulp and paper mill effluent. The results showed that 81.4. 68.6. 89.9 and 85.5 per cent of color, lignin and total phenol, respectively were removed in g h of treatment respectively were removed in 6 of treatment. The comparison on NMR chemical shift of pulp and paper mull effluent indicated the photocatalytic treatment caused significant changes in the functional groups of the samples.

DEFLUORIDATION GROUNDWATER EMPLOYING NANOTECHNOLOGICAL APPROACH

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ABSTRACT

One in eight persons in the world lack access to safe water. The need to provide safe potable water to poor people in developing countries cannot be overemphasized. Nanotechnology has the potential to deliver affordable and effective solutions for water purification, providing access to safe potable water to millions of people. This will contribute to poverty alleviation and achievement of the Millennium Development Goals (MDGs). Nanotechnology has introduced a new generation of water filters and purification systems. Research nano catalysts like silver, iron, titanium dioxide and carbon nano-filtration membranes for water treatment applications is a fast growing field. Nanotechnologies can provide solutions to alleviate water problems, both in terms of detection and removal of contaminants. Also since small amounts of nanomaterial are used for purification, costs and waste generation are low, providing an effective and affordable water treatment solution to the poor. Many water sources are contaminated with both biological and chemical pollutantssuch as arsenic, fluoride, etc. Fluorine is one of the elements of halogens and exists abundantly in crust, especially in some organics and stones. Fluoride deficiency may cause dental caries and excessive use of its standard may cause dental disease, liver and skeletal fluorosis. Fluorosis can cause weakness of dental and skeletal str ucture and stagnate the growth. Optimal fluoride content is within the range of 0.5–1.0 mg/L. Nanotechnology, the engineering and art of manipulating matter at the nanoscale (1–100 nm), offers the potential of novel nanomaterials for treatment of surface water, groundwater, and wastewater contaminated by toxic metal ions, organic and inorganic solutes and microorganisms. Due to their unique activity toward recalcitrant contaminants and application flexibility, many nanomaterials are under active research and development. Accordingly , literature about current research on different nanomaterials (nanostructured catalytic membranes, nanosorbents, nanocatalysts, and bioactive nanoparticles) and their application in water treatment, purification and disinfection is reviewed in this article. Moreover, knowledge regarding toxicological effects of engineered nanomaterials on humans and the environment is presented. The aim of this review is to investigate fluoride removal efficiency of nanotechnology with a concentration exceeding the permitted value.

DEFLUORIDATION OF CONTAMINATED WATER EMPLOYING NAGFANI [*OPUNTIA DILLENI*]

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ABSTRACT

Drinking water with excessive concentration of fluoride causes fluorosis which progresses gradually and becomes a crippling malady in the long run. It affects young, old, poor, rich, rural, and urban population. It has attained a very alarming dimension. The state has extreme climatic and geographical condition. Rajasthan suffers both the problems of quantity and quality of water. In most part of the state groundwater is either saline or having high nitrates and fluoride content. Obviously, groundwater is the major source of drinking water and over 94% of the drinking water demand is met by groundwater. Excess fluoride concentration in drinking water has deleterious effects on human health. All the districts in Rajasthan are engulfed by the clutches of fluorosis, to a varying degree. There being no perennial surface source for drinking water, the state is dependent chiefly on groundwater and its level is deeper year -by-year due to over exploitation. As the water table is receding more and more water sources are becoming prone to higher fluoride concentration. The pattern and prevalence of fluorosis in human population are determined by a number of epidemiological factors like water chemistry, demographic and nutritional profile of the community and high mean annual temperature of the area. Adsorbent prepared from Opuntia dilleni is employed to defluoridate contaminated water in the present investigation.

DEVELOPMENT OF PINE NEEDLE BIOCHAR FOR ECO-EFFICIENT REMOVAL OF PHARMACEUTICAL EFFLUENTS: A ROADMAP TOWARDS SUSTAINABLE REMEDIATION

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ABSTRACT

Biochar is typically defined as a carbonaceous, stable, and recalcitrant product obtained on the thermal treatment of carbon-containing biomass in a limited supply of oxygen. The composition and properties of biochar are mainly dependent on the thermal treatment technique, the treatment temperature, and the feedstock type. Different techniques have been utilized for biochar production such as torrefaction, carbonization, combustion, gasification, and pyrolysis, with pyrolysis being most commonly used due to its simplicity and high yield of production. A wide range of feedstocks has been used previously including kitchen waste, agricultural wastes, leaf litter, wood biomass, rubber tyres, poultry litter, animal litter, sewage sludge, and algae. Biochar application could also help in climate-smart agriculture, waste management, clean energy production, contaminant removal, and climate change mitigation.

Biochar amendments have been proposed to ameliorate the adverse effects of temperature rise on soils and plants. The application of biochar improves the thermal properties of soils. Reflectance reduced in the infrared wavelength range and increased in blue-light and near-ultraviolet range. Amendment of soil with biochar reduces the bulk density and thermal diffusivity of soil and improves its moisture content. These changes affect the thermal conductivity and reflectance of soil which ultimately moderates the soil temperatures. These changes could also influence plant growth and biochemical processes in soil. Further, soil depth, soil moisture content, and biochar application rates affect soil temperature and volumetric heat capacity. The reduction in organic matter and clay fraction with a rise in soil temperature decreases the cation exchange capacity of the soil. Biochar has a high surface area, which coupled with an abundance of carboxyl and hydroxyl groups, helps in improving its cation exchange capacity. Consequently, the addition of biochar to soils helps in enhancing its cation exchange capacity. With regards to microbial activity, an increase in soil temperature affects the soil microbes. However, the addition of biochar to soil supports microbial proliferation and the community structure. The high surface area, enhanced porosity, escalated pH, increased electrical conductivity, surplus moisture retention, and abundant organic matter support the microbial activity in the soil. The present invited talk will focus on how biochar is becoming popular in environmental remediation and playing an important role in the sustainable decontamination of toxicants.

ECONOMIC FEASIBILITY STUDY FOR WASTEWATER TREATMENT: A COST-BENEFIT ANALYSIS

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ABSTRACT

Water resource management should be made from a multi disciplinary perspective .In this sense economic research into the design and implementation of policies for the efficient management of water resource has been emphasized by the Indian government .cost benefit analysis is one of the more widely accepted economic instruments since it is a rational and systematic decision making tool. moreover the west water treatment process has significant associated environmental benefits .However these benefits are often left and uncalculated because they have no market value .In this paper using the concept of shadow price quantification of environmental benefits derived from west water treatment is made .once the environmental benefits are estimated and the economic cost of the treatment process are known, cost benefit analysis is made for any of the west water treatment plants in Rajasthan and under this study.

ECOTOXICOLOGY OF TWO COMMON FUNGICIDES ON BIOMOLECULES OF LOCAL SPECIES OF EARTHWORM *EISENIA FETIDA*

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ABSTRACT

Tebuconazole and copper oxychloride are two widely used fungicides in Haryana against fungi harming banana, apple, potato and cucurbits, chili, paddy, onions, etc. Both fungicides induce free radicle-induced oxidative stress by disturbing the antioxidant defense mechanism and other biochemical mechanisms. Even the copper from copper oxychloride accumulates in soil and poses a serious ecological threat to the environment and the non-target organisms, like farmer's friend earthworms. In the present study, the acute toxicity (LC50) using probit analysis, the activity of antioxidant enzymes Catalase (CAT), Peroxidase (POD), Ascorbate peroxidase (APX), Glutathione S- transferase (GST), and lipid peroxidation (MDA) in the whole-body extract while total antioxidant (TAC) and phenolic content (TPC) using the coelomic fluid of earthworm. All the objectives of *Eisenia fetida* were determined spectrophotometrically after exposure to 60 and 80% of the calculated LC_{50} after the 14^{th} and 28^{th} day of exposure. Results showed that both the fungicides are toxic to test organisms inducing oxidative stress as the concentration was increased. Here, fungicides-induced oxidative stress was determined by a noticeable change in the antioxidant enzyme activity. TAC and TPC value are irreversibly interconnected to each other and a decrease in these indicates a change in earthworm's biomarkers.

EFFECTS OF OZONE LAYER DEPLETION ON EARTH AND LIVING ORGANISMS

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ABSTRACT

Ozone (O3) is a stratospheric layer. Ozone layer protects the earth living organism from harmful ultraviolet (UV) radiation. Global ozone depletion has been going on far year. It is getting worse every year. The ultra-violet (UV) beams discharged from sun are caught by ozone and in this manner give a stable ontological structure in the biosphere. Due to different anthropogenic exercises, like, emission of CFCs, HCFCs and other organic incandescent lamp lead to the depletion of ozone. The introduction to these radiations is seriously influencing all living things on earth, particularly the people. Perpetual or transitory visual deficiency, skin malignancy and insusceptibility concealment are the principle impacts of these radiations revealed by different scientists on people. Indeed the world is taking serious information as the emission of chlorofluorocarbons, halogens, and other destructive gases are causing ozone holes to appear in the stratospheric ozone layer. Various anthropogenic activities such as emissions of CFC S, HCFS and other organic-halogenes lead to the depletion of ozone. Which is responsible for adverse effects on plants, human and environment with increased number of bronical disease human. The mutation caused by UV rays result in variation in morphogenic traits of plants with ultimately decreases our productivity. UV radiation is required in optimum intensity for both plants and animals. Chlorofluorocarbons, halons and methyl bromide are largely critical ozone exhausting substances controlled under the Montreal Protocol.

The 1985 Vienna Convention for the Protection of the Ozone Layer is an international agreement in which United Nations States recognized the fundamental importance of preventing damage to the stratospheric ozone layer. The 1987 Montreal Protocol on Substances that Deplete the Ozone Layer and its succeeding amendments, adjustments, and decisions were subsequently negotiated to control the consumption and production of anthropogenic ozone depleting substances (ODSs) and some hydrofluorocarbons (HFCs).

EMPOWERMENT OF FARM WOMEN THROUGH SELF HELP GROUP ACTIVITIES IN UDAIPUR DISTRICT OF RAJASTHAN

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ABSTRACT

A Self-help group (SHG) is a financial intermediary committee. It usually composed of 10-20 local women members. The research work was performed in Udaipur district of Rajasthan state. For this research among the 17 tehsils of Udaipur district Rishabhdev and Kherwara tehsil were selected as they are having highest number of SHG. We have selected 20 SHG from 2 selected tehsil and 6 far m women from each SHG. Thus, total 120 farm women were selected for proposed study. For data collection, the face to face interview technique was opted. The gathered data was refined, tabulated, analyzed and interference were made in accordance with objective.

E-WASTE MANAGEMENT: CHALLENGES AND OPPORTUNITIES

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ABSTRACT

Growth in the IT and communication sectors has enhanced the usage of the electronic equipment exponentially. Faster upgradation of electronic product is forcing consumers to discard old electronic products very quickly, which, in turn, adds to e-waste to the solid waste stream. The growing problem of e-waste calls for greater emphasis on recycling e-waste and better e-waste management.

E-waste recycles in India is predominantly an informal sector activity. There are thousands of poor households seeking a living from scavenging materials from waste dumps. The common recycling practices for middle-class urban households, particularly for waste paper, plastic, clothing, or metal, is to sell out to small-scale, informal sector buyers often known as 'kabadiwalas,' and they further sort and sell these as an input material to artisanal or industrial processors. Consumers are the key to better management of e-waste. Initiatives such as Extended Producer Responsibility (EPR); Design for Environment (DfE); Reduce, Reuse, Recycle (3Rs), technology platform for linking the market facilitating a circular economy aim to encourage consumers to correctly dispose their e-waste, with increased reuse and recycling rates, and adopt sustainable consumer habits. In developed countries, e-waste management is given high priority, while in developing countries it is exacerbated by completely adopting or replicating the e-waste management of developed countries and several related problems including, lack of investment and technically skilled human resources.

The present study is an attempt to provide information about the threats of e-waste and to suggest preventive measures to protect our environment and conservation steps for green environment.

FLORISTIC ANALYSIS OF BEER CONSERVATION RESERVE OF SHEKHAWATI REGION, RAJASTHAN (INDIA)

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ABSTRACT

The Shekhawati region is a part of Great Indian Desert and located in the North-East part of Rajasthan lies in between $27^0$24' to $29^0$02' N latitude and $73^0$4' to$76^0$5' East longitude. The region is not only a vast stretch of sand dunes, but also with the mountain range of Aravalli, interspersed with low hills and gravel plains. Beer conservation reserve or Beer Jhunjhunu area lies in Jhunjhunu district. It covers 1047.48 hectares area and declared as protected forest area in 1969. In 2012, this protected area was established as Conservation Reserve.

A total 116 species of 95 genera were reported from Beer Jhunjhunu during the period of investigation. Dicotyledons contributed 100 species of 81 genera and monocotyledons by 16 species of 14 genera in Beer Jhunjhunu Family Poaceae was represented by maximum 13 species belonging to 12 genera followed by Fabaceae (8 species of 7 genera), Amaranthaceae (7 species of 6 genera) and Mimisaceae (6 species of 4 genera). Out of 116 species, 62 species belongs to herbaceous nature, 23 species to shrub, 18 to trees and 13 species belongs to grass habits.

FRIGHTENING BRUNT OF CHANGING CLIMATE: ITS ADAPTATION AND MITIGATION STRATEGIES FOR SUSTAINABLE ERA

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ABSTRACT

The rapid changes in global average surface temperature have unfathomed influences on human society, environment, ecosystem, availability of food and fresh water. Multiple lines of evidence indicate that warming of the climate system is unequivocal, and human-induced effects are playing an enhanced role in climate change. It is of utmost importance to ascertain the hydroclimatological changes in order to ascertain the characteristics of D & A of human-induced anthropogenic influences on recent warming. Global climate change is a change in the long-term weather patterns that characterize the regions of the world. It is stated unequivocally that the earth is warming. Natural climate variability alone cannot explain this trend. Human activities, especially the burning of coal and oil, have warmed the earth by dramatically increasing the concentrations of heat-trapping gases in the atmosphere. The more of these gases humans put into the atmosphere, the more the earth will warm in the decades and centuries ahead. The impacts of warming can already be observed in many places, from rising sea levels to melting snow and ice to changing weather patterns. Climate change is already affecting ecosystems, freshwater supplies, and human health. Although climate change cannot be avoided entirely, the most severe impacts of climate change can be avoided by substantially reducing the amount of heat-trapping gases released into the atmosphere. However, the time available for beginning serious action to avoid severe global consequences is growing short. Given the worsening of global warming, climate change has attracted increasing attention from academia, industry, and branches of government, which sufficiently reflects the growing demands of all circles of the community on substantial scientific research and decision-making on climate change. In effect, scientific studies on climate change are the cor nerstones of policy making and involve several key aspects: scientific basis, facts and evidences of climate change, climate impacts and adaptation, and climate change mitigation. Generally, mitigation and adaptation are the two core channels to cope with climate change risks; these two topics, therefore, have become the main focuses of current climate change research. For mitigation, the general interests include analysis of emission trajectories, assessment of mitigation costs, design of specific policies, and options of available low-carbon technologies. It is clear that the issue of climate change raises difficult questions of science and economics, which have been debated widely over the years. What has been ignored for long is the legal side of the problem of climate change, which is equally significant. In this background, an attempt is made in this paper to analyze climate change and its impact on India from a legal perspective.

GLOBAL CLIMATE CHANGE: ALGAE AS A SOLUTION

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ABSTRACT

Today, the world is witnessing an extraordinary situation in form of deteriorating climate conditions across various parts of world. Our planet has witnessed large cycles of climatic change throughout history. However, most of those cycles were natural phenomenon known as climate cycles. We have already witnessed seven such cycles with last one bringing the Ice age to stop. This time the situation has changed as the conditions are moving beyond the regular climate cycles and can be mostly attributed to the human causes which have had a highly negative impact on the climate after the beginning of industrial revolution.

One of the major causes of this continuous change in climatic conditions is excess of heat trapped on earth due to global warming which is disturbing the delicate balance of heat across the regions. Industrial revolution allowed mankind to come up with various sources for release of carbon dioxide which is considered as one of the most important reason for global warming. This increase was supported by the increase in use of CFC based compounds making the atmosphere susceptible to this increase in climate conditions.

Algae biofuel is a promising energy source and is in the last stages of development. Although the production of biofuels with algae is not yet a cost-effective solution for the replacement of gasoline, adaptation of the advance methods and the economies of scale can change it for some markets in the future.

GLOBAL WARMING AND CLIMATE CHANGE

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ABSTRACT

"Global Warming" and "Climate Change" are the hot topics of today and they threaten the very existence of our planet. Global Warming refers to the increase in the overall temperature of the Earth and this causes Climate change. Due to many human activities like deforestation, it has resulted in several changes in the atmospheric temperature wherein the major part of the heat and invisible radiation reach the Earth and stay on it thus, increasing the heat energy on the Ear th's surface. Thus global warming directly results in the climatic change of our Earth. As long as mankind produces greenhouse gases, global warming will continue to accelerate. The consequences are felt at a much smaller scale which will increase to become drastic shortly. The power to save the day lies in the hands of humans, the need is to seize the day. Energy consumption should be reduced on an individual basis. Fuel-efficient cars and other electronics should be encouraged to reduce the wastage of energy sources. This will also improve air quality and reduce the concentration of greenhouse gases in the atmosphere. Global warming is an evil that can only be defeated when fought together.

GLOBAL WARMING INDUCED TOXICITY OF THE FLUORIDE IN DRINKING WATER

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ABSTRACT

Fluoride contamination in ground water has drawn attention worldwide. Natural contamination of ground water by fluoride causes irreversible damage to human health. Fluoride may occur in water, food, drugs, cosmetics and natural resources. It has been stated that 45% of the water sources have fluoride content exceeding 10ppm and varies from 0.5 to 50 ppm, the most seriously affected areas of the India are Andhra Pradesh, Punjab, Maharashtra, Rajasthan, Karnataka, Orissa and Bihar. India, it is estimated that nearly 25 million people are affected with fluoride poisoning due to the environmental pollution Fluorosis is also wide spread in many countries like Kenya, China, Algeria, Morocco, Senegal, Turkey and Thailand and also in developed countries like Japan and USA. The high content of fluoride in natural water supply has adverse effect on hard parts of the body such as bones, teeth and soft tissue/organs/systems. When the Fl8 content reaches beyond 3mg/lit than it is known as endemic fluorosis. Endemic fluorosis is of three viz. Dental, Skeletal and Non-Skeletal. Thus long-term high-level fluoride intake can lead to severe damage of the metabolism of many system and organ. Fluoride ions in the presence of trace amount of aluminum form alumino fluoride compounds and may act with powerful pharmacological effects. Alumino fluoride complexes appear to be a new class of phosphate,. analogs for laboratory investigation. These metallofluoride complexes may thus mimic or potentiate the action of numerous extracellular signals and significantly affect many cellular responses with the appearance of acid rain and due to the widespread use of aluminum in the industry.

GLOBAL WARMING CAUSES ENVIORNMENTAL DEGRADATION

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ABSTRACT

Climate change is expected to bring about major change in freshwater availability, the productive capacity of soils, and in patterns of human settlement. However, considerable uncertainties exist with regard to the extent and geographical distribution of these changes. Predicting scenarios for how climate-related environmental change may influence human societies and political systems necessarily involves an even higher degree of uncertainty. The direst predictions about the impacts of global warming warn about greatly increased risks of violent conflict over increasingly scarce resources such as freshwater and arable land. We argue that our best guess about the future has to be based on our knowledge about the relationship between demography, environment and violent conflict in the past. Previous rigorous studies in the field have mostly focused on national-level aggregates. This ar tic le represents a new approach to assess the impact of environment on internal armed conflict by using geo referenced (GIS) data and small geographical, rather than political, units of analysis. It addresses some of the most important factors assumed to be strongly influenced by global warming: land degradation, freshwater availability, and population density and change. While population growth and density are associated with increased risks, the effects of land degradation and water scarcity are weak, negligible or insignificant. The results indicate that the effects of political and economic factors far outweigh those between local level demographic environmental factors and conflict. Water pollution has become world-wide phenomenon. Both deficiency and excess of minerals and trace elements in water can have deleterious consequences on biological system.

GREEN AUDIT & GREEN CAMPUS : NEED OF THE HOUR

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ABSTRACT

Green Campus is one of the mandatory condition as per realistic grounds but also according to NAAC too. Green Auditing provides means and modes towards Green Campus. NAAC accreditation is mandatory for all the higher learning institutes, particularly state universities. Without NAAC accreditation, universities are not eligible for UGC grants, RUSA grants, financial aid etc. On the other hand,NAAC accreditation determines the quality of the institute in terms of education, infrastructure, research, teaching & learning etc. Institutes with top NAAC grades such as 'A++', 'A+' and 'A' are most sought-after institutes, as they offer high quality education. Green auditing is one of the most important area not only important for industrial organization but for academic institutions too. The aspects, principle and procedure for Green audit is essential to be understood and applied at institutional level, it will be helpful for students learning perspective as well as from environmental monitoring point of view. In the present research simplified approach has been designed, developed and encapsulated particularly for academic institutions. Few examples based on the principals of Green chemistry have been explored for the purpose. The paper also describes a general procedure and methodology which can be applied by any institute to perform Green auditing at campus in order to turn the campus Green.

HARNESSING THE POWER OF ETHNOBOTANY WITH BIOTECHNOLOGY

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ABSTRACT

The field of Biotechnology has enhanced the value of genetic resources and related indegenous knowledge of communities. However, the vast diversity of resources as well as indegenous knowledge is diminishing at an accelerated rate. Biological diversity, coupled with indegenous knowledge are essential to maintain the options for the survival of mankind in a changing world in the present scenario.

In medicinal plants pertaining to ethnobotany, documentation plays a major role since without correctly identified material and properly documented specimens the results are at best suspect and at worst useless. The pharmacological evaluation of principle active compounds from plants is an established method for the identification of main compounds which leads to the development of novel drugs. Ethnopharmacological literature reveals medicinal plants used in local traditional medicine by indigenous people in some rural areas of Rajasthan are facing damger of extinctiom. Plant Tissue culture technology 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 endangered ethnomedicinal plants around the rural areas of Dang region of Dholpur district , Rajasthan. Efforts are made to isolate the active constituents of these potent ethnomedicinal plants which are facing the danger of extinction.

HEALTH EFFECTS OF OZONE DEPLETION

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ABSTRACT

Due to ozone layer depletion ultra violet radiations reached the earth surface and causes sun burns, cataracts, skin cancer (melanoma) and effects of human immune system. Ultraviolet- B damages the living systems and reduces global food supply. Basal and squamous cell carcinoma are easily removed by surgery, in case of melanoma, which can be fatal. In case of eyes UV rays damages lens, cornea and eye membrane covering i.e. conjunctiva. Scientists have demonstrated a direct reduction in phytoplankton production due to ozone depletion- Also affects our ability to fight diseases. So protect ourselves from intensive sun rays during 10 to 3 pm, use sun glasses, sun protection SPF-30 for skin protection, hats and covered hand and legs. Sun rays also affect latitude, seasonal changes, time of the day, altitude, rain and air pollution. In the environment Chloroflouro carbons (due to volatile and non combustible properties) launches of rockets, global warming and nitrogenous compound causes ozone depiction. Due to depletion of Ozone UV rays are penetrating in troposphere and leading to more ozone formation in troposphere which is causing injurious(toxic) effects on our health.

HEALTH EFFECTS OF OZONE DEPLETION

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ABSTRACT

Ozone layer is a protecting guard for all living organisms including humans, which is present in stratosphere of earth. But unfortunately, depletion of this layer is occurring very fast since last some decades. This change is likely to have had impact on human exposure to UV-B radiation with harmful effects on their health. The main effects occur on skin and eyes, which are more sensitive to this radiation. Cataracts is the major reason behind the blindness in the world. On decreasing 1 % in ozone layer , then chances of increase in risk of cataracts will be 0.3-0.6%. oxidative agents can damage the eye lens and cornea of eye is also badly damaged by UV radiation. It causes photokeratitis, cataracts, blindness in humans. Cases of skin cancer is gradually increase globally. Major reason is UV rays. These rays alter the biomolecular structure and thus lead to different diseases and disorders. Skin is most often exposed organ of body to UV rays. Those people who have less melanin pigment in their skin are more prone to these diseases and disorder, because melanin pigment protects the skin form harmful radiation. The intensity of radiation is increased in summer so also cause sun burn problem. Sun burn problem is more in females because their skin is thinner in compare to males. In some cases, it is also observed that UV rays also badly affect the immune system of living beings. The immunosuppression is due to the changes in antigens present in cells, skin photoreceptors and change in DNA. Lung disorders like Emphysema, asthma, bronchitis etc. are resulted from UV radiation exposure. So, for survival of humans and other animals it is essential that we put some serious efforts and steps to protect our guard ozone layer, before it's too late.

IMPACT ANALYSIS OF AGRICULTURAL MECHANIZATION IN RICE FARMING OF CHITWAN NEPAL

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ABSTRACT

A study was conducted in five municipalities of the Chitwan district to assess the mechanization impact on rice farming in 2021. The study was also focused on exploring farmers' preference for mechanization tools and constraints during the implementation of farm machinery. Primary data were collected from paddy cultivators using a semi-structured questionnaire from 150 respondents whereas secondary data were obtained through a review of literature from various sources. Impacts on agricultural mechanization were observed in its various aspects by farm-households that were categorized as high and low implementers on the basis of the rate of adoption of modern machinery/equipment's recommended twelve types of machinery in the study area among them Mould Board plough, paddy thresher, and combined harvester were some of them. For primary tillage Mould Board plough and disc, plough were most used while for secondary tillage rotavator was used and all respondent farmers used harvester for threshing rice. A major reason for preferring mechanization was the labor shortage. Human labor was displaced by the mechanization of the ploughing and threshing activities. Binary logit was applied to analyze the impact of mechanization in rice farming. The findings reveal that the adoption of machines in rice farming operations has positive impacts on working efficiency, productivity, annual income, and income from rice farming. Labour shortage at peak farming period forced farmers to prefer agricultural mechanization however; income is the prime barrier to shifting their traditional tools towards its mechanization. Mechanization in rice farming would only be effective if the stakeholder realizes the importance and organizes proper training on agricultural mechanization. An assessment to find out the capacity gap for taking an initiative on capacity building programs for farmers to operate those machines and providing subsidy for purchasing the machine.

EFFECTS OF OZONE LAYER DEPLETION ON EARTH AND LIVING ORGANISMS

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ABSTRACT

Ozone (O_3) is a stratospheric layer. Ozone layer protects the earth living organism from harmful ultraviolet (UV) radiation. Global ozone depletion has been going on far year. It is getting worse every year. The ultra-violet (UV) beams discharged from sun are caught by ozone and in this manner give a stable ontological structure in the biosphere. Due to different anthropogenic exercises, like, emission of CFCs, HCFCs and other organic incandescent lamp lead to the depletion of ozone. The introduction to these radiations is seriously influencing all living things on earth, particularly the people. Perpetual or transitory visual deficiency, skin malignancy and insusceptibility concealment are the principle impacts of these radiations revealed by different scientists on people. Indeed the world is taking serious information as the emission of chlorofluorocarbons, halogens, and other destructive gases are causing ozone holes to appear in the stratospheric ozone layer. Various anthropogenic activities such as emissions of CFC S, HCFS and other organic-halogenes lead to the depletion of ozone. Which is responsible for adverse effects on plants, human and environment with increased number of bronical disease human. The mutation caused by UV rays result in variation in morphogenic traits of plants with ultimately decreases our productivity. UV radiation is required in optimum intensity for both plants and animals. Chlorofluorocarbons, halons and methyl bromide are largely critical ozone exhausting substances controlled under the Montreal Protocol. The 1985 Vienna Convention for the Protection of the Ozone Layer is an international agreement in which United Nations States recognized the fundamental importance of preventing damage to the stratospheric ozone layer.

The 1987 Montreal Protocol on Substances that Deplete the Ozone Layer and its succeeding amendments, adjustments, and decisions were subsequently negotiated to control the consumption and production of anthropogenic ozonedepleting substances (ODSs) and some hydrofluorocarbons (HFCs).

IMPACT OF APPLIED STATISTICS ON DATA SCIENCE

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ABSTRACT

With the advent of technological advances in data collection and storage, it has become easier and less expensive to collect data in many fields, calling for new job openings for data scientists and statisticians. But these terms are often used interchangeably, which can be confusing, and leads to the question: what's the difference between data science and applied statistics?Data science includes areas viz. database management, statistics & machine learning, distributed and parallel systems. Statistics has been generally understood to be the use of both theory and experience to gain an understanding of a particular phenomenon or relationships between behaviors or events. While statisticians are thoroughly immersed in statistical theory, they can seamlessly move beyond theory and solve practical problems in the manner of a data scientist. In this sense, it becomes clear that there is no difference between data science and statistics that renders a statistician's skills as being less practical than a data scientist.Research proves the value of exploratory analysis has increased with the expansion of data availability and computation; value has also increased for individuals' ability to use data to think innovatively and create hypotheses. Technology is growing at an exponential rate to produce even more data with less expense. With the advent of more data obtained much more quickly, the need for statisticians and data scientists is growing. Working together, the statistician and the data scientist can join abilities to: organize data, create appropriate and efficient computations, present accurate interpretations and efficient solutions. With the right educational program, the statistician and the data scientist can be one person. In this paper, we substantiate our premise that statistics is one of the most important disciplines to provide tools and methods to find structure in and to give deeper insight into data, and the most important discipline to analyze and quantify uncertainty. We give an overview over different proposed structures of Data Science and address the impact of statistics on such steps as data acquisition and enrichment, data exploration, data analysis and modeling, validation and representation and reporting. Also, we indicate fallacies when neglecting statistical reasoning.

IMPACT OF OZONE DEPLETION ON LIVING ORGANISM

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ABSTRACT

Ozone depletion does impact on plants and animals. It is a natural filter absorbing most of sun's burning ultraviolet rays (UV). The stratospheric ozone depletion can disrupt biological processes and damage a number of materials. Ozone layer protects the environment from damaging effect of UV radiation causing skin cancer, cataract and impair our immune system.

The depletion of ozone indirectly causes higher risk of UV rays impact as skin cancer, malignant melanoma, quick ageing, eye cataracts and blindness.

The chlorine and bromine atoms in the atmosphere came in contact with ozone and destroy the ozone molecules. One chlorine can destroy 100,000 molecules of ozone. The chlorofluorocarbon (CFC) is the main cause of ozone layer depletion. These molecules can be released by solvents, spray aerosols (insecticides) refrigerators and air conditioners. These molecules are broken due to exposure of ultraviolet radiation and release chlorine atoms which eventually affect on the ozone layer.

IMPACT OF OZONE LAYER DEPLETION ON HUMAN HEALTH

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ABSTRACT

Medical geography has largely contributed in human health. The concern of medical geography in the last years has remained dominant in finding the burning issues related to human health. Keeping in view, this research study has been carried out to explore the impact of ozone depletion on demographic profile especially on human health. The researcher carried a meta-analysis of the 50 researcher studies carried at national and international level. Hence this study has largely based on the secondary data. The descriptive methodological parameters were taken into consideration for car rying the same research process. The researcher found that the ozone layer is continuously depleting which is highly alarming situation of today. Chlorofluorocarbons are major cause of ozone depletion. These substances should be banned or we should use their alternatives so that in future we can protect ourselves from the harmful effects of UV radiation. Human eye and skin are the most exposed part of the body to these radiations. The majority of these researcher studies examine that there is high degree of incidence of blindness and skin cancer disease increasing day by day with the depletion of ozone layer so we should use sunglasses and full body clothes especially in summer when there is high intensity of sunlight so that we can protect our body from harmful UV radiations. In addition to this, the number of the researcher found that depletion of ozone layer is also causing the problem of food shortage to humans. UV radiations are disturbing developmental and physiological processes which is decreasing the productivity of crops. As humans are heavily dependent on crops for food so there is a great chance if depletion of ozone layer is not checked it may cause seriously shortage of food to human

IMPORTANCE OF BIOTECHNOLOGY IN HUMAN HEALTH AND ENVIRONMENT

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ABSTRACT

Biotechnology is the most important for its implications in health and medicine. Biotechnology solve many global problems such as climate change, food security, infection diseases and many others problem which is related to health and medicine. The application of biotechnology in agriculture field also improve the quality and quantity with processing of food energy by which we can improve the high yield and production. Biotechnology also develop the process of micropropogation system of plant breeding for producing new plant species. The importance of biotechnology to improve human health by increasing the therapist proteins solutions and other drugs which can improve the quality of medicines and many diseases problems. Biotechnology process also include to enhance the industrial biotechnology status, animal health by biotechnology process, environmental biotechnology, plant biotechnology and also human biotechnology like by producing antibodies, test tube babies, involve in vitro fertilization and embryo transfer in human.

INDIGENOUS AND LOCAL KNOWLEDGE FOR CLIMATE CHANGE IN ARID REGION

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ABSTRACT

Climate change direct affects arid region farming community's economy, due to heavy dependence of the agricultural sector on climate in India. A decrease of rainfall and rise in temperature has been increasing the exposure of the whole community to frequent droughts. This study examined arid region farmers' perception about climate change. Farmers' perceptions about climate change, therefore, strongly affects how they understand and deal with climate induced risks and uncertainties, and undertake specific measures to mitigate the adverse impact of climate change on agriculture traditionally. The study was conducted in western district of Rajasthan (India) which was deemed to be vulnerable to climate change. Both primary and secondary data were used for the study purpose. The multistage sampling methods were employed to select farmers in western district of Rajasthan. The study sample comprised of 200 farmers selected randomly. Our findings showed that farmers have high level of perception about in the distribution of rainfall, rise in temperature, increase in frequency of heat waves and droughts in the region. Further climate adaptation measures, farmers resorted to heat tolerant varieties and water conservation techniques. Moreover, lack of access to institutional credit, poorly defined property rights, inadequate infrastructure and information gaps were some of the major barriers to climate adaptation in the region. Many cultural, social and religious beliefs and activities superstitious pertaining to the prediction of future weather prevail since generations. From time immemorial farmers have predicted the weather on the basis of these beliefs/activities. Hence, an appropriate policy framework and specific programmes for sustainable agriculture growth are needed for enhancing farmers' perception towards climate change and for promoting climate smart agriculture.

INDIRECT IMPACT OF LOCKDOWN (DUE TO COVID-19) ON CLIMATE CHANGE

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ABSTRACT

The worldwide disruption caused by the COVID -19 pandemic has resulted in numerous impacts on the environment and the climate. The considerable decline in planned travel by the people has caused many regions to experience a large drop in air pollution. In China and some other countries, lockdowns and other measures resulted in a 25 per cent reduction in carbon emissions and 50 per cent reduction in nitrogen oxides emissions. Other positive impacts on the environment include governance-system-controlled investments towards a sustainable energy transition and other goals related to environmental protection. However, the outbreak has also provided cover for illegal activities such as deforestation of the Amazon rainforest in South America and poaching in Africa, hindered environmental diplomacy efforts, and created economic fallout that some predict will slow investment in green energy technologies. Up to 2020, increases in the amount of greenhouse gases produced since the beginning of the industrialization era caused rise in the Earth's average global temperatures, causing effects including the melting of glaciers and rising sea levels. In various forms, human activity caused environmental degradation, an anthropogenic impact. Prior to the COVID -19 pandemic, measures that were expected to be recommended to health authorities in the case of a pandemic included quarantines and social distancing. Prior to the COVID -19 pandemic, researchers argued that reduced economic activity would help decrease global warming as well as air and marine pollution, allowing the environment to slowly flourish. Researchers and officials have also called for biodiversity protections to form part of COVID -19 recovery strategies. In this chapter, authors are discussing about the various types of indirect impacts lockdown on climate change. Some of the changes are like air quality, water quality, wildlife, deforestation and reforestation, carbon emissions, food production, litter, investments and other economic measures, weather forecasts, predicted rebound effect, psychology and risk perception etc.

INDOOR AIR POLLUTION: ITS SOURCES, IMPACT ON HEALTH AND REMEDIATION MEASURES

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ABSTRACT

Most of the research around the world has been pursued on outdoor air pollution, but in India we have a more severe problem of Indoor Air Pollution (IAP) which means the degradation of indoor air quality by harmful chemicals and other materials; it can be up to 10x worse than outdoor air pollution. This is because contained areas enable potential pollutants to build up more than open spaces. Statistics suggest that in developing countries, health impacts of indoor air pollution far outweigh those of outdoor air pollution. The foremost factor cited for is burning of fossil fuels for cooking. Among the 70% of the country's rural population, about 80% households rely on biomass fuel making India to top the list of countries with largest population lacking access to cleaner fuel for cooking. 4 million deaths and 5% disability-adjusted life-years is an upshot of exposure to IAP from unhealthy cooking making it globally the most critical environmental risk factor. India alone bears the highest burden (28% needless deaths) among developing countries. Moreover, about ¼ of ambient $PM_{2.5}$ in the country comes from household cook fuels. As there are no specific norms for IAP in India, urgent need has arisen for implementing the strategies to create public awareness. Moreover improvement in ventilation and modification in the pattern of fuel will also contribute to eradicate this national health issue. These considerations have prompted the discussion of the present knowledge on the disastrous health effects of pollutants emitted by biomass combustion in India. Additionally, Particulate Matter as an indoor air pollutant is highlighted with main focus on its spatial temporal variation and some recent Indian studies are further explored.

INDUSTRIAL EFFLUENT TREATMENT AND CONTROL

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ABSTRACT

It is common experience that many electroplating units discharge their effluents into the drainage system without minimum treatment. This can cause:

a) Huge losses to the electroplating unit;
b) Pollution of air, water & land.

Study and experimentation have shown that acids, alkalis, Cyanide, Cadmium, Hexavalent chromium, phosphates etc. may be the type of toxic waste which can be pre-treated to recover metal values and the water regenerated for other purposes.

Many are not aware of the alternatives to the toxic chemicals. Or even if known, one is scared to try fearing impact on final quality of finished products and cost. However there are many eco-friendly chemicals and processes (Cyanide free) that can be used in place of the polluting Chemicals. E.g. Instead of using Hydrochloric acid, Sulphuric acid, Nitric acid, etc, we can use safer and affordable chemicals by combining of Citric acid base chemicals.

If one is to look at the status and scope of the electroplating sector, there is vast potential and there is no end in sight. Demand exists for safer, quicker; less expensive better methods and these are growing by the hour. The demand is more conspicuous in the aerospace and automobile sectors.

With the advent of innovative modern techniques, there is a change in methods of rinsing. “Reactive Rinsing Techniques” are used in which water consumption is much reduced and as well as the cost of effluent treatment. All metal values can be recovered and can be used in the electroplating bath.

Studies indicate that by using 6 Sigma Techniques, there is a reduction of ~80% of the hazardous waste.

IS HOUSE CROW (*CORVUS SPLENDENS*) PRESENCE INDICATES UNSUSTAINABLE ENVIRONMENT?

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ABSTRACT

House crow (*Corvus splendens*) is omnivorous, scavenger, invasive bird species. Its food preference is very broad and elastic includes everything it can eat. House crow mainly feeds upon human refuges/garbage, food scrap, carcasses, seeds, fruit, grain, nectar, berries, bird's eggs, nestlings, fledglings, insects, fish, amphibians, reptiles. Apart from these, inorganic substances such as soaps, candles etc. are also part of its menu. Habitat abundance relationship suggests that house crow is highly dependent on anthropogenic food sources. Urban habitat, because of poor waste management system and huge turnover of human refuges/food scraps provide enough opportunity to this creature to flourish and propagate. Therefore house crow is highly opportunistic and well suited to urban scenario. House crow is a food storing or scatter- hoarding bird. It stores food and consume later when ever required. Recent works suggested that complex cognition of food caching corvids is similar to that of apes, hence called as 'flying apes'. House crow helps us as scavenger, insect pest controller, seed disperser. It is also closely associated with human culture. Adequate literature is available those describes that over population of house crow resulted in threat to local biodiversity, hygiene, human health and livestock. This led to the proposal to recognize the presence of house crows as unsustainable urban indicator and may be regarded as pest bird. This issue should be handled carefully considering all walk of human life associated with house crow. Therefore proper management this organism is required for sustainable development without compromising human health and negative impacts on the environment, economy and livestock.

ISOLATION AND CHARACTERIZATION OF BACTERIOPHAGES AGAINST STAPHYLOCOCCUS AUREUS FROM STOOL SAMPLES

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ABSTRACT

Phage therapy is an emerging approach for the treatment of infections caused by *Staphylococcus aureus* such as pneumonia, endocarditis, atopic dermatitis, osteomyelitis, suppurative infections, meningitis, and IBD in humans. This study aims to isolate and characterize bacteriophages specific against *S. aureus* from stool samples of healthy individuals. Using the conventional double agar layer technique three bacteriophages of concentrations 1.54×10^5, 1.8×10^4, and 1.12×10^5 pfu/ml were isolated from the six different stool samples tested. Then, these phages were purified by repeated serial dilution and evaluated via plaque assay to check the lytic activity against *S. aureus.* Results showed that the isolated phages had significant lytic activity against *S. aureus.* However, these isolated phages must be further characterized before they can be used in commercial lysate preparations such as phage cocktails and possibly replace antibiotics when they are unable to kill bacteria. Animal models of phage-bacterial interactions, followed by clinical trials, will shed light on this topic and may provide better alternative treatment for infections caused by multidrug-resistant microbes.

ISOLATION IDENTIFICATION AND CHARACTERIZATION OF AMYLASE-PRODUCING BACTERIA FROM COW DUNG

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ABSTRACT

Cattle dung offers enormous economic potential in various bioengineering applications, including nutrition and manufacturing. Amylase is a protein that breaks starch polymers but does not release free sugars, resulting in less homogenous starch gluten. Chemicals are necessary for the survival of living things because they speed up biological and organic processes. As a result, the term "biocatalyst" was coined to refer to proteins. Amylose is a water-insoluble glucose polymer linked by -1, 4 glycosidic linkages. Amylopectin is a polysaccharide that is branched and water-soluble. Proteins that are hydrolyzed by starch might be endo- or exo-acting. The dairy animal compost suspension is arranged using a serial dilution technique. Different bacterial societies are decontaminated on agar media Using a streak plate approach. Antibacterial enzyme assays are used to identify bacteria that can produce various exoenzymes.

LAND USE DRIVERS OF RIVERINE METHANE DYNAMICS IN A TROPICAL RIVER BASIN, INDIA

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ABSTRACT

Rivers are globally significant natural sources of atmospheric methane (CH_4)- an important greenhouse gas (GHG) responsible for global warming and climate change. However, the effect of land use changes on riverine CH_4 dynamics, particularly in tropical climate zones, remain ambiguous, yet important to predict and anticipate the present and future contribution of rivers to the global CH_4 budget. The present study examines the magnitude and drivers of riverine CH_4 concentration and emission in the tropical Krishna River basin, India. The large spatial variability of CH_4 concentration (0.03 to 185.34 μmol L^{-1}) and emissions (0.04 μmol m^{-2} d^{-1} to 1666.24 μmol m^{-2} d^{-1}) in the KR basin was linked to the site-specific features of the catchments through which rivers are draining. Several fold higher CH_4 concentration and emission was observed for the urban river sites (64.63 ± 53.17 μmol L^{-1} and 294.15 ± 371.52 μmol m^2 d^{-1}, respectively) than the agricultural (1.05 ± 2.22 μmol L^{-1} and 3.45 ± 9.72 μmol m^2 d^{-1}, respectively) and forested (0.49 ± 0.23 μmol L^{-1} and 1.26 ± 0.73 mmol m^2 d^{-1}, respectively) sites. While the concentrations of dissolved oxygen, total phosphorus, and Chlorophyll-*a* were emerged as significant hydrochemical variables to accounts for the fluvial CH_4 concentrations. While we support the growing notion that tropical urban rivers are hotspot of CH_4 emission, we further show that riverine CH_4 concentration is a predictive function of percentage urbanized area. As the urban land cover and population following an exponential increase, Asian rivers will contribute substantially to the regional and global CH_4 budget.

LIVELIHOOD IMPROVEMENT OF WOMEN THROUGH COW DUNG MANAGEMENT

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ABSTRACT

The livestock sector provides important avenues for upliftment of the rural sector of India. Urbanisation followed by out-migration of male from villages has left traditional animal husbandry in hands of rural women. Additionally, mechanisation has made the male calves futile to rear. Shrinking grazing lands and high feed costs made dairy farming less profitable for dairy producers. Under this scenario, effective management of dung can be a key economic source to supplement the income of the households. This paper discusses the uses of Flexi biogas by women dairy farmers in Adashpur block of Cuttack district in Odisha. One hundred households were provided with Flexi biogas with all attachments like biogas balloons, churning machines, pipes and chula by National Dairy Development Board (NDDB). Data collected from 50 beneficiaries revealed that on average the households that were rearing 5 crossbred cows produced about 50kg of dung and 60 litres of urine that were sufficient to produce enough cooking gas to cook meals two times a day with an average family size of 8 persons. Before this intervention, this dung was used to make cow dung cake or unscientifically disposed of that pollute the environment and locality. This intervention helped them to save an average of Rs. 1000 per family by substituting the LPG cylinder in cooking practices. This transformation helped them to get wealth from waste. This Flexi biogas is a sustainable alternative to non-renewable fuels. Further, they reported that the drudgery associated with the preparation of cow dung cakes and the health hazards due to burning them was also reduced by this intervention.

MAMMALIAN DIVERSITY OF CHURU DISTRICT IN RAJASTHAN, INDIA

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ABSTRACT

Churu district located in northern region of Rajasthan and cover only 4.91% area of the state. Climatic condition of the area is both extreme – very hot summer and very cool winters. The district lies in semi-arid zone with low floral diversity due to scantly and irregular rainfall. Wind velocity in the region is quite high during the summer and sand storms are common feature of the area. Sand dunes are dominant in the entire district.. The area of district is part of Indian Thar Desert exhibit little mammalian diversity. During last three decades numbers of large mammals has been drastically decreased in the district due to inference of people in natural habitats of mammals for their beneficiary activities. The mammalian diversity of district is represented 37 species of mammals belonging to 18 families and 30 genera. The district covers about 9 % mammalian diversity of India and 58.8. % of Thar. During survey of mammalian species both direct methods like line transect method and indirect methods by identification of sign were used. The conversion of desert land into irrigated agriculture is also affecting the biodiversity scenario in the region. Mammals that are adapted to desert environment is rapidly vanishing due to interference and destructive activities of man.

MENACE OF AIR POLLUTION WORLDWIDE: PREVENTIVE AND MITIGATION MEASURES

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ABSTRACT

Air pollution is the introduction of chemicals, particulate matter, or biological materials that cause harm or discomfort to humans or other living organisms , or cause damage to the natural environment or built environment, into the atmosphere. The atmosphere is a complex dynamic natural gaseous system that is essential to support life on planet Earth. Stratospheric ozone depletion due to air pollution has long been recognized as a threat to human health as well as to the Earth's ecosystems. These are greater cause for concern because they are inadequately monitored. Air pollution from growing vehicular traffic, cutting down of trees to build express highways and flyovers and the hazards from industrial effluent have sharply increased the incidence of a range of diseases , from asthma to cancer to mental retardation, caused by increasing levels of lead (Pb) in the blood stream. Air pollution has become a devastating child killer throughout Asia. Children living in cities are unintended victims of the rapid industrialization and urbanization of most of Asian countries, poisoned by breathing air polluted by motor vehicle exhausts and industrial smokestacks. But kids in rural areas don't escape harm either. Children die every year from breathing smoke from fires that turn their own homes into death traps. Because diseases tied to environmental factors can have more than one cause, it's impossible to state flatly how many children are victims of air pollution. The large proportion of time that most people spend inside air-conditioned spaces increases the likelihood that poor indoor quality may cause adverse reactions such as allergies, eye irritation, headaches, feeling of confusion, and drowsiness as well as more serious long term effects. Carbon dioxide levels can be used as an indicator to evaluate whether adequate ventilation is taking place in the building. A high concentration of CO_2 may indicate that other contaminants in the building may be concentrating. Problems associated with high CO_2 are drowsiness, fatigue, and sick building syndrome. Environmental tobacco smoke (ETS) is the major sources of indoor air contamination. Inhalation of ETS is commonly termed as "second hand smoking" or "passive smoking". The ubiquitous nature of ETS in indoor environment indicates that some unintentional inhalation of ETS by non-smokers is inevitable. ETS is a dynamic and complex mixture of more than 4000 chemicals found in both vapour and particle phase. Air pollution is usually concentrated in densely populated metropolitan areas, especially in developing countries where environmental regulations are relatively lax or nonexistent. However, even populated areas in developed countries attain unhealthy levels of pollution. This manuscript delineates about various air pollutants, related health hazards and control measures.

MICROWAVE ASSISTED PREPARATION AND APPLICATIONS OF BIOADSORBENTS FOR THE REMOVAL OF METAL IONS FROM COMMERCIAL SAMPLES

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ABSTRACT

Environmental pollution viz water, air, sound and land pollution etc. have been a threat to mankind since long. Water pollution although is a major worldwide problem but in desert area where already a scarcity of water is there, solid and liquid wastes from different sources making the conditions ugly. Entry of toxic metals in water above a particular concentration is extremely harmful and sometimes lethal too. In recent past use of bioadsorbents for the removal of hazardous metal ions from wastewater have been reported, few of these were found suitable whereas many were not and further improvements and modifications are required to increase the adsorption capacity. In the present paper use of Microwave radiation for the quick preparation of *Aerva javanica* based bioadsorbent and its application for the removal of Cadmium (II) and lead (II) ions from the aqueous solutions have been described. Experiments were carried out in a batch and column process to determine the adsorption capacity or the metal uptake of the *Aerva javanica* Flower adsorbent. Parameters studied were initial metal ion concentration of the experimental stock solutions; time of agitation; temperature, and pH. The effect of these parameters on the removal of metal ions was studied. The results of pre-concentration and recovery of metal ions using column method have been found to be 97.8%, 97.2% for cadmium and lead, respectively.

MITIGATION OF FLUORIDE TOXICITY OF GROUNDWATER USING VARIOUS ADSORBENTS

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ABSTRACT

Fluoride concentration in water depends on several contributing factors such as pH, temperature, total dissolved solids, alkalinity and hardness. Various technologies are currently available to remove fluoride from water, but adsorption processes are generally considered attractive because of their effectiveness, convenience, ease of operation, simplicity of design and for economic and environmental reasons. Performance comparison of different adsorbents is difficult because of inconsistencies in the data, principally due to different experimental conditions (pH, temperature, ionic strength, particle size, initial fluoride concentration, presence of competing ions, etc.). The pH of water is a dominant factor influencing fluoride adsorption. Generally, fluoride adsorption increases from acidic to near neutral pH and then decreases with increase in pH. Another highly important factor influencing fluoride adsorption is the type and concentration of other ions present in treated water, i.e., the adsorbent's selectivity for fluoride ions since they can occupy adsorbents' active sites and thereby reduce theoretical adsorption capacity. Studies on fluoride removal from aqueous solutions using various adsorbents are described and compared here. The results showed that higher adsorption capacities for fluoride ions possess metal oxides and hydroxides and its binary or trimetal combination. Among the oxides and hydroxides, various titanium, iron and aluminum oxides and hydroxides were most frequently tested and showed the highest adsorption capacities over the wide range of pH as well as a high selectivity for fluoride ions. However, due to its high adsorption capacity, activated alumina is still the most used adsorbent for fluoride removal in practice although performance limits regarding pH-dependence are well known. The biosorbents, chitin and chitosan, are mostly modified and tested due to fluoride removal. The use of chitosan composites and derivatives for fluoride removal from water is of great interest since they are obtained from natural low cost sources. Fluoride adsorption efficiency of biosorbents usually depends of type of multifunctional group and modification that has been conducted with aim to increase adsorption capacity. Most of the tested biosorbents showed good results in bench scale studies but only some of them were tested with real water samples. Geomaterials have also shown good adsorption performances during water defluoridation. One study's result shows that geomaterials adsorb fluoride via both precipitation and sorption. Adsorption capacities and defluoridation efficiency of most tested geomaterials and its modifications depend on initial fluoride concentration, pH and contact time and satisfactory results usually were achieved within fluoride initial concentrations up to 10 μg/L, in an acid environment and during the longer contact time (a few hours). The most commonly used adsorbents belong to a group of carbonaceous materials and activated carbons, respectively. Fluoride adsorption onto carbonaceous materials depends on base material, activation process, valence of metal ions used for its modification, and pore size distribution since adsorption occurs mainly in the pores of the material. The advantages of carbonaceous materials, especially of modified activated carbons, are high adsorption capacities and partially good regeneration properties, but their maximum adsorption performances are usually strongly pH dependent. Different industrial products and by-products have been tested for fluoride removal due to its ecological and reuse aspects and the fact that those materials are available in significant quantities and at low prices. Although authors usually report good fluoride uptake and high adsorption capacities of those adsorbents, most of them were strongly pH-dependent and authors often report problems with difficult adsorbent regeneration.

MODULATORY INFLUENCE OF NATURAL HERBS AGAINST RADIATION INDUCED CHANGES IN MICE

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ABSTRACT

Ionizing radiations produce deleterious effects in the living organisms and the rapid technological advancement has increased human exposure to ionizing radiations enormously. There is a need to protect humans against such effects of ionizing radiation. Attempts to protect against the deleterious effects of ionizing radiations by pharmacological intervention were made as early as 1949 and efforts are continued to search radioprotectors, which may be of great help for human application. Radiation is used therapeutically for the treatment of various types of malignancies. The severe side effects of radiotherapy resulted from the damage of normal cells. Rapidly dividing cells of gastrointestinal tract, haematopoietic systems are more prone to radiation induced damages. Chemical radiation protection is an important strategy to protect living being against deleterious effects of radiation. Earlier the synthetic chemical substances, which could minimize the pathological changes in the living system after exposure to ionizing radiation, were looked into. Medicinal plants are the local heritage with global importance. World is enclosed with a rich wealth of medicinal plants. Herbs have always been the principle form of medicine in India.

Several Indian medicinal plants (*Moringa oleifera*, *Emblica officinalis, Aloe vera, Ocimum sanctum, Rosemarinus officinalis, Moringa oleifera, Trigonella foenum-graecum, Alstonia scholaris, Tinospora cordifolia, Panax ginseng* etc.) or plant-derived compounds that have been reported to be effective in countering the harmful effect of radiation in different experimental models of radiation injuries were evaluated for their possible role in radiation counter measure strategy. The radiation exposure can cause numerous pathophysiological conditions including oxidative damage, inflammation and fibrosis, processes known to affect the survival of organisms. These natural herbs have been proved to be potent enough to check the radiation induced histopathological, biochemical, histochemical and haematological levels in animal models.

NATURAL FIBERS TO REDUCE AIR POLLUTION

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ABSTRACT

Air pollution is a global concern attributing to adverse effects on human lives and the entire ecosystem. Clean air is much needed for the entire globe to breathe and live long. Modern society is taxing the environment with its rapid industrialization and transportation. This has increased the complexity of air pollutants and it is estimated that around 6.5 million premature deaths by 2050 due to air pollution. In such a context, the reduction of air pollution becomes crucial and mandatory. Polymers have been an invariable choice of air filter manufacturing because of the effective single fiber capture mechanism, dimensional stability, versatility and lightness of materials. However, petroleum-based synthetic fiber manufacturing itself adds tons of air pollutants to the atmosphere much before its use as an air filter. On the other hand, natural fibers are a sustainable choice for air filtration. Natural fiber-based filter media, especially protein and cellulose-based materials, have not been limited to trapping aerosols (particulate matter) of various sizes but also extended to capture gas molecules and volatile organic compounds (VOCs) in the air besides providing anti-viral and anti-bacterial protection as well. Recently, there is great attention towards sustainable bio-based polymers for air filtration applications. Nano-biopolymers offer surface functionality and excellent filtration per formance which is at par with synthetic polymers. P rotein-based nanomaterials have shown excellent air filtration performance and VOC capturing ability. The advent of biotechnology and nanotechnology combination with natural fiber science has the potential to design energy-efficient, smart and sustainable air filter media with a great amount of reduction in air pollution.

NATURE-BASED SYSTEM FOR WASTEWATER TREATMENT AND REUSE

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ABSTRACT

The water crisis is an alarming issue in the recent era. The population explosion, climate change, industrialization, and changing lifestyles of humans have created this global issue. Water stress varies significantly from place to place and can have a profound negative impact on public health, economic growth, and international trade. To meet the global demand for accessing pure water, it is necessary to follow sustainable approaches that manage the wastewater problem and help reuse the water. Traditional wastewater treatment systems' energy-intensive and mechanical components need significant upfront investment and high ongoing operational expenses. High maintenance costs and poor expertise in conventional treatment technologies have been unsuccessful in treating the wastewater adequately in developing countries like India. Compared with traditional approaches, nature-based technologies are pocket and user-friendly. Nature-based treatment system uses plants, soil, microbes, and other natural components to eliminate pollutants from wastewater. Thus, no chemicals and energy are used in the nature-based approaches, which makes it affordable, eco-friendly, and sustainable. Natural wetlands, constructed wetlands, and lagoons are nature-based systems used for various wastewater treatments. Water treatment and socio-economic benefits like increasing biodiversity, improving urban microclimates, control of flood and storm, biomass production, and water reuse could be achieved while treating water through nature-based systems. This paper will discuss the role of various nature-based systems in wastewater treatment and recent advancements developed in nature-based systems to enhance treatment efficiency.

OCCURRENCE AND ECOLOGY OF CUCULLANID NEMATODES *DICHELYNE* SP. IN THE CATFISH *RITA RITA* FROM RIVER YAMUNA, BAGHPAT, U.P., INDIA

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ABSTRACT

The occurrence of parasitic nematodes in the fishes leads to the deterioration of aquaculture productivity in terms of quantity and quality. The consumption of theses infected fishes resulted in the negative health effects of the societies dependent on the aquaculture as a source of food. Thereby the economic growth of fishermen and country may also disturb significantly. Therefore, the present study was designed to work out the occurrence of nemic parasites and their ecology in the important catfishes which is most like by the societies interested to consume the fish as food source. The study was conducted during 2018-2022 on the catfish *Rita rita,* from river Yamuna, Baghpat, U.P. to observe the parasitic helminthes infections. Simultaneously the fortnightly oscillations in hydrobiological parameters were also analyzed to ecology of the worms in fish hosts from riverine ecosystem. The morphotaxometric analysis based on *Keys to the fish Nematoda* (Yamaguti, 1961) as well as Polytheic divisive classificatory system (Malhotra et al., 1981) substantiated and evaluated the recovered worms of genus *Dichelyne sp.* (Nematoda: Cucullanidae). The ecological attributes favored the increased nemic infection prevalence in autumn and winter however, relatively lower in the other seasons including spring, summer and monsoon. The twin peak of infection prevalence during June and December supported the seasonal waves of recruitment of infective larvae during the life span in the aquatic environment, thereby indicating a significant role of the constituents of food and feeding habits of the carnivorous fish.

ORGANIC PRODUCTION OF *JAPANESE* MINT (*MENTHA ARVENSIS*) AS AN OPTION FOR CROP DIVERSIFICATION

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ABSTRACT

Rice- wheat cropping system is most widely adopted cropping system and major supplier of the country's food demand. Over the years this system has been cause of great distress due to various reasons; therefore crop diversification is being looked upon. During the course of achieving diversification, introduction of high value crops in the system is being preferred, as it makes system more remunerative and provides more feasible options to farmers. Introduction of Japanese mint (*Mentha arvensis*) in cropping system is one such option. This crop has huge demand in industries and has huge export potential. Many studies based on comparative economics of different rice based cropping system, established the fact that introduction of mint crop in the system provided farmers with higher income options.

Mentha crop is heavy feeder and consume high amount of nutrients. This crop produces high biomass and major economic product of the crop is essential oil, which is mainly produced for obtaining menthol. Menthol is basically a mono-terpenoid; having huge demand in pharmaceutical industries. Increased nitrogen supply could enhance terpenoid emission by promoting electron transport rate and simultaneously phosphorus is required to form precursors of terpenoids. These precursors contain high energy phosphate bonds. So, heavy supply of nutrients becomes more important. Wide use of chemical fertilizers as source of nutrients is responsible for- reduction in soil quality, ground water pollution, reduction in quality of produce etc. At the same time high cost of fertilizers is other major concern. Use of organic source of nutrients in mentha crop can make the production of the crop more sustainable. Organic sources are able to supply crop with macro and micro nutrients and have positive effect on mono-terpene biosynthesis. In this way use of organics can increase vegetative growth and essential oil production in *Japanese* mint.

OZONE – A NATURAL SHIELD FOR INSECT BIODIVERSITY

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ABSTRACT

Earth's stratosphere contain high amount of ozone as compare to the other parts. Ozone layer protects organisms from the exposure of dangerous UV-rays coming from the sun. Human's activities affect the nature in many different ways. Depletion of ozone layer is one of them. The gradual thinning of earth's ozone layer that is present in the upper atmosphere is refers to as Ozone Depletion. The CFC and Halons used by human are the strongest ozone depletors. In the whole animal kingdom, insects are belonging from the class Insecta of Arthropoda phylum. Insects are unique arthropods that are found in almost all ecological niches such as – aerial, terrestrial, aquatic, etc. So the biodiversity of insects is rich. Ozone depletion affects insect diversity indirectly. It alters insect performance to do modification in secondary metabolites present in plants. Ozone alters the foliar phytochemistry in plants thereby impeding insect oviposition. This research addressed that ozone layer works as a natural shield for insects so the numbers of insects are decreases as the ozone depletion is increases. Ozone layer depletion can be reduced by environmental protection, more plantations, avoiding the use of CFC, Halogens, etc.

OZONE DEPLETION IMPACT ON PLANTS AND ANIMALS

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ABSTRACT

World ozone layer day '16 September' every year is celebrated to spread awareness among people about the depletion of ozone layer. This year slogan for ozone day is "Ozone for life".

The ozone layer provides protection from harmful UV radiation reaching Earth's surface. The ozone layer is present in Earth atmosphere 15-35 kilometers above and has relatively high concentration of ozone.

Due to gradual thinning of ozone layer it impacts on humans as well as plant's growth. The UV-β rays affects the plant growth and crops, it may lead to minimal plant growth, smaller leaf size, issue in flowering and photosynthesis of plant and lower quality of yield of crops. Due to declination in productivity of crops and plants it would be turn affect soil erosion. Phytoplankton and zooplanktons are very much affected by the exposure of UV rays in the fresh water as well as marine ecosystem.

OZONE DEPLITION: ITS EFFECT ON PLANKTONS AND ECOLOGICAL FOOD WEB IN AQUATIC ECOSYSTEM

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ABSTRACT

Ozone is a protective layer found in the Earth's stratosphere that makes the environment friendly by absorbing approximately 95 to 99% of the harmful UV-B radiation from sunlight. But ozone layer depletion can impact on aquatic ecosystem, terrestrial ecosystem and aerial ecosystem. Plankton and other small organisms found in aquatic ecosystem that play an important role in the ecological food web. These planktons and other small organism are found in the upper surface of water or in the euphotic zone and here their biodiversity is very high. Phytoplanktons and zooplanktons are microscopic aquatic organism which play crucial role in complex ecological food web, are more sensitive to UV-B radiation because UV-B radiation is absorbing by few layers of cells. Depletion of ozone layer could have drastic effect on plankton and other small organisms. These creatures are highly sensitive to UV-B radiation because they lack protective outer layer. UV-B radiation can reach up to 20 meters in clean water and damage their calls and can destroy plankton and other small organisms. And changes in their numbers and species composition disturb the ecological food web. There is also a huge impact on all consumers involved in the food web. The increase in UV-B radiation threatens growth and survival of small creatures that provide the original food source for the rest of the aquatic food web. Along with this, UV-B radiation also affects the development, reproduction, and early development of larva of aquatic organisms like fishes, amphibians, prone etc. Therefore, if there is an increase in the level of UV-B radiations, then there is also a drastic effect on the entire aquatic ecosystem

OZONE LAYER DEPLETION AND ITS DELETERIOUS IMPACTS

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ABSTRACT

There are many situations where human activities have significant effects on the environment. Ozone layer damage is one of them. The chlorofluorocarbon and the halons are potent ozone depletors. One of the main reasons for the widespread concer n about depletion of the ozone layer is the anticipated increase in the amounts of ultraviolet radiation received at the surface of the earth and the effect of this on human health and on the environment. It is revealed that introduction of Chloroflourocarbons (CFCs) in the environment is the most rated cause of said depiction. Ozone depletion is allowing the UV radiation to earth surface. The exposure to these radiations is severely affecting all life forms on earth, especially the humans. Permanent or temporary blindness, skin cancer and immunity suppression are the main effects of these radiations reported by various researchers on humans. In the absence of other changes, stratospheric ozone abundances should rise in the future as the halogen loading falls in response to regulation. However, the future behaviour of ozone will also be affected by the changing atmospheric abundances of CH_4, N_2O, water vapour, sulphate aerosol, and changing climate. The prospects of ozone recovery are still undiscovered. The current situation of ozone depiction demands urgent remedial measures to protect lives on this earth.

OZONE LAYER DEPLETION AND ITS EFFECTS ON AQUATIC ECOSYSTEM

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ABSTRACT

The ozone layer is a layer in Earth's atmosphere which contains relatively high concentrations of ozone (O3). This layer absorbs 93-99% of the sun's high frequency ultraviolet light, which is potentially damaging to life on earth [1]. Over 91% of the ozone in Earth's atmosphere is present here.[1] It is mainly located in the lower portion of the stratosphere from approximately 10 km to 50 km above Earth, though the thickness varies seasonally and geographically[2]. The ozone layer was discovered in 1913 by the French physicists Charles Fabry and Henri Buisson. Its properties were explored in detail by the British meteorologist G. M. B. Dobson, who developed a simple spectrophotometer (the Dobson meter) that could be used to measure stratospheric ozone from the ground. Between 1928 and 1958 Dobson established a worldwide network of ozone monitoring stations which continues to operate today. The "Dobson unit", a convenient measure of the total amount of ozone in a column overhead, is named in his honor. A. Ozone Without ozone, life on Earth would not have evolved in the way it has. The first stage of single cell organism development requires an oxygen-free environment.

Aquatic ecosystems provide a significant share of the world's animal protein for human consumption. Phytoplankton form the foundation of aquatic food webs. In addition, the oceans play a key role with respect to global warming, because marine phytoplankton is a major sink for atmospheric CO_2. Recent studies continue to expand our knowledge of how increased exposure to solar UV-B radiation affects the structure and function of aquatic ecosystems and the consequent impact on global biogeochemical cycle.

Cyanobacteria play a much larger role in biomass production than previously thought. They are capable of fixing atmospheric nitrogen and making it available for other members of aquatic and terrestrial ecosystems. In the 1970s, scientists discovered that chlorofluorocarbons (CFCs) could destroy ozone in the stratosphere. Ozone is created in the stratosphere when UV radiation from the Sun strikes molecules of oxygen (O2) and causes the two oxygen atoms to split apart. If a freed atom bumps into another O2, it joins up, forming ozone (O3). This process is known as photolysis. Ozone is also naturally broken down in the stratosphere by sunlight and by a chemical reaction with various compounds containing nitrogen, hydrogen and chlorine. These chemicals all occur naturally in the atmosphere in very small amounts. In an unpolluted atmosphere there is a balance between the amount of ozone being produced and the amount of ozone being destroyed. As a result, the total concentration of ozone in the stratosphere remains relatively constant. Under the auspices of United Nations Environment Programme (UNEP), Governments of the world, including the United States have cooperatively taken action to stop ozone depletion with the "The Montreal P rotocol on Substances that Deplete the Ozone Layer", signed in 1987. Scientist's are concerned that continued global warming will accelerate ozone destruction and increase stratospheric ozone depletion. In other words, global warming can make ozone depletion much worse right when it is supposed to begin its recovery during the next century. Maintain programs to ensure that ozone-depleting substances are not released and ongoing vigilance is required to this effect. In fact, global warming, acid rain, ozone layer depletion, and ground-level ozone pollution all pose a serious threat to the quality of life on Earth. They are separate problems, but, as has been seen, there are links between each. The use of CFCs not only destroys the ozone layer but also leads to global warming.

OZONE LAYER DEPLETION AND ITS PREVENTION

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ABSTRACT

The earth's biosphere is shielded from dangerous solar ultraviolet (UV) radiation by atmospheric ozone. The global ozone layer has been depleting for many years. Every year, things worsen. As ozone holes start to occur in the stratospheric ozone layer due to the production of damaging chemicals like halons and chlorofluorocarbons, the globe is taking this information very seriously. The ozone layer is being depleted as a result of several human activities, including emissions of CFCS, HCFS, and other organo-halons. It is to blame for harmful impacts on plants, people, and the environment along with an increase in bronchial illness cases in people. The diversity in plant morphogenic characteristics brought on by UV-induced mutation eventually lowers agricultural output. For both plants and animals, UV radiation must be at its highest level.

OZONE LAYER DEPLETION, CAUSE AND EFFECT: A REVIEW

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ABSTRACT

The ozone layer is present in earths' atmosphere in lower portion of stratosphere and has relatively high concentration of ozone.The ozone layer act as a shield for life on earth by absorbing harmful ultra-violet radiations.Ozone layer depletion is one of the significant environmental issues in the world.Ozone layer depletion is gradual thining of earths' ozone layer.The main causes of ozone layer depletion are both anthropogenic and natural. Anthropogenic sources include halocarbons, refrigerants, solvents, propellants, foam blowing agents, chlorofluorocarbons, halons refer red as ozone depleting substances. Natural sources include anaerobic biological process, lightening, supervolcanic eruptions and polar vortexes. Photo dissociation of ODS generates chlorine free radicals that destroy ozone. Ozone depletion would magnify all of the effects of UV on human health both positive like production of vitamin D and negative like sunburn, skin cancer, cataract etc. The international community to establish a mechanism for cooperation to take action to protect the ozone layer was formalised in the Vienna Convention for the protection of ozone layer and drafted as Montreal Protocol. The protocol requires the control of nearly 100 chemical in various category .For each group of annex of chemicals, the treaty sets out a timetable for the phase-out of production and consumption of those substances, with the aim to eventually eliminating them completely. This paper reviews all possible reasons of ozone depletion and impact on human beings. A direct link still not set up between skin cancer and ozone layer depletion, hence requires an explainatory research.

PERMACULTURE FOR SYSTEM SUSTAINABILITY AND ECONOMIC UPLIFTMENT IN DHAB AREA OF BIHAR

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ABSTRACT

The major factor contributing to poverty in the rural Bihar is unemployment which particularly affects the poorest segment of the rural population. Hence, the most urgent need in rural Bihar today is the diversification of opportunity for sustainable production and income generation among the multitier permaculture farming system is agriculture and social design principles centered on simulating or directly utilizing the patterns and feature observed in natural ecosystems. Permaculture is an international grassroots network focused on the sustainable design of human settlement, both in rural and urban areas although it was initially developed in a rural setting. It is central concept is that humanity can reduce or replace energy and pollution-intensive industrial technologies, especially in agriculture, through intensive use of biological resources and thoughtful, holistic, design, patterned after natural ecosystems (eco-mimicry), integrates ecology, landscape, organic gardening, architecture and agro-forestry in creating a rich and sustainable way of living. It uses appropriate technology giving high yields for low energy inputs, achieving a resource of great diversity and stability. Permaculture is based on the principle of self sufficient and sustainability where plants are support each other and animal life. In permaculture grow herbs or raise chickens; put in a rain water harvesting pond or create artificial lake, plant vegetable in rows, but then you ideally just tend to the various elements as they interact and evolve into what looks, more or less like that patch of wildness, the tall trees form on outer perimeter, trees with large canopies are planted here and there, to offer shade to the shrubs perennials like lemongrass, tulsi, kadipata and drumstick offer diversity and contribute to mulch. The inner zones are carefully designed to grow nutrient-intensive cash crops like maize along with legume crops like bean, which provide nitrogen to enrich the soil. Permaculture is an effective sustainable system for dhab area of Bihar for the increase the income of the farmers and amelioration of the soil and environmental health.

PHYTOCHEMICAL ANALYSIS OF ANTICANCEROUS PLANTS IN THE INDORE REGION

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ABSTRACT

Cancer remains one of the leading causes of morbidity and mortality globally. Among the non-communicable diseases, cancer is the second leading cause of death, after cardiovascular disease. Chemotherapy is routinely used for cancer treatment. Since cancer cells lose many of the regulatory functions present in normal cells, they continue to divide when normal cells do not. This feature makes cancer cells susceptible to chemotherapeutic drugs. However, chemotherapeutic treatments are not devoid of their intrinsic problems. The toxicity of chemotherapeutic drugs sometimes creates a significant problem in the treatment of cancer using allopathy or established medicine. Various therapies have been propounded for the treatment of cancer, many of which use plant-derived products. The anticancer characteristics of many plants are still being actively researched and some have shown promising results. In the present study extraction and phytochemical analysis of twelve such plants showing promising results as anticancer agents have been discussed.

POTENTIAL OF BAMBOO TO COMBAT CLIMATE CHANGE

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ABSTRACT

Continuous increase in human population has generated huge demand for wood and wood-based products in the service sector, causing severe deforestation. Climate change is one of the serious problems facing worldwide due to deforestation, and the rising carbon dioxide level in the atmosphere is the major contributor to global warming. The United Nations Framework Convention on Climate Change (UNFCCC) passed the resolution of the Paris agreement in 2015 to limit the rise of atmospheric temperature. The increase in global temperature should be limited to 2^0C to avoid irreversible disastrous effects on human society (Dwivedi *et al*., 2019). Hence, for achieving sustainable development, non-woody forest products have been gaining attention. Over 1200 species of bamboo are found in south-east Asia, primarily in China, India and Myanmar (Liu *et al*., 2018; Dwivedi *et al*., 2019). Asia accounts for approximately 65 percent of all bamboo-growing areas and India is reportedly home to approximately 125 indigenous and 11 exotic species of bamboo from 23 genera (FSI, 2019). Bamboo being the fast growing species has the potential to capture and stored the carbon and restore degraded lands, which ultimately depends on its rate of growth and life cycle The CO_2 sequestration potential of bamboo varies with species to species. Due to its excellent qualities in physical and mechanical properties, bamboo is also considered as an alternative to wood.

PREVALENCE OF COVID-19: AN ANALYSIS OF THE FIRST WAVE IN BIKANER REGION

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ABSTRACT

COVID-19 is affecting the entire population of India. COVID-19 was recognized in December 2019 in India. The cause of this was a novel corona virus which shows structurally relatedness to the virus that causes severe acute respiratory syndrome (SARS). Corona viruses are important pathogens that can affect the lower respiratory tract in humans and can cause diseases ranging from a simple cold to severe infection. The objective of this paper is to show a statistical analysis for better understanding of COVID-19 spread according to gender by thoroughly study in Bikaner from April 2020 to December 2020. This study is based on real time data. The data were obtained from CMHO office, Bikaner, Rajasthan for research work.

PROSPECTS OF COAL BED METHANE IN TERTIARY BASIN AT BIKANER, NORTH-WESTERN RAJASTHAN

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ABSTRACT

Coal Bed Methane is an unconventional gas resources contains methane and stored in coal seams. Coal is most demanding energy resource of the world. At present a gap exists between demand and supply of petroleum resources. Thus, attention towards coal fuels are increasing in which coal bed methane is the most important one and considered as an alternative source for supplementing India's energy resources. According to the Directorate General of Hydrocarbons, India has the fifth-largest proven coal reserves in the world and holds significant prospects for exploration and exploitation of CBM. The Gondwana basin contains most coal deposits of India in which Damodar Valley basins i.e. Jharia, Raniganj, East Bokaro, West Bokaro, Ramgarh, Girdeeh, North Karanpura and South Karanpura and Kamthi in Godavari valley are important. Besides these Tertiary age coals also exist in India. Deposits are found in Tertiary basins of Assam, Meghalaya, Arunachal Pradesh, Tamil Nadu, Rajasthan and Gujarat. Tertiary coals are of lignite to sub-bituminous in rank. In tertiary basin of Bikaner lignite deposits are occurs at Palana, Barsighsar, Gurha, Bithnok, Mandal charnan, Hadla and Raneri etc. These lignite deposits have huge potential of coal bed methane which is yet to be explored. Exploration of CBM from these deposits can generate alternatives for energy resources which surely bring new dimension in energy sector in Rajasthan. Since India has huge resources of coal and it is not mineable from greater depth. Hence there is need to sensible utilization of all coal resources i.e. both conventional and unconventional coal resources coal resources present in India to bond the gap between demand and supply.

PROTECTING AND CONSERVING OUR ENVIRONMENT

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ABSTRACT

As we are advancing our needs are increasing and accordingly the environment is also being altered. Indeed, nature's capacity is too accommodating and too regenerative, yet, there is a limit to nature's capacity, especially when pressure of exploding population and technology keep mounting. What is required is the sustenance, conservation of our natural resources. Problems of hazardous chemicals and radiation, depletion of Ozone layer and natural resources at alarming rate, is adversely effecting the life on earth. People are now getting aware of the need to protect the natural environmental resources of air, water, soil and plant life that constitute the natural capital on which man depends. Due to the pressures of over consumption, population growth and technology, the biophysical environment is being degraded, sometimes permanently. This has been recognized, and governments have begun placing restraints on activities that cause environmental degradation. Since the 1960s, environmental movements have created more awareness of the multiple environmental problems of the earth's resources.

As a result of this, many attempts are made by countries to develop agreements that are signed by multiple governments to prevent damage or manage the impacts of human activity on natural resources. This can include agreements that impact factors such as climate, oceans, rivers and air pollution. These international environmental agreements are sometimes legally binding documents that have legal implications when they are not followed and, at other times, are more agreements in principle or are for use as codes of conduct.

The present paper is an attempt to understand various measures taken by the gover nments all over the world to protect the environment from various challenges and make our earth a better place to live in.

REMOVAL CHOLESTEROL FROM MILK NVITH CROSSED LINKED B-CYCLODEXTRIN AND DETERMINATION OF CHOLESTEROL BY HPLC

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ABSTRACT

A sensitive and high-per formance liquid chromatographic method has been developed to deter mine the cholesterol content in milk and dairy products. A comparison was made between acetonitrile: 2-propanol (8:1, v/v), acetonitrile: methanol (3:1, v/v), and acetonitrile: methanol: 2-propanol (7:3:1, v/v) for optimizing cholesterol separation. In comparison with other mobile phase systems for separating cholesterol, acetonitrile/methano1/2-propanol was the best. To remove inter fering compounds, the liquid-liquid extraction (LLE) of cholesterol was simplified with hexane, a nonpolar solvent that has a high recovery (100±1.0%) of cholesterol. Sep-pak Cl8 was used to develop a solid phase extraction (SPE) method that was compared with liquid phase extraction (LLE). There was high reproducibility and rapidity in the SPE method. In combination with saponification of esterified cholesterol, both extraction methods were useful to determine total cholesterol. It was possible to detect cholesterol at a level of 0.01 i

RICE STRAW-DERIVED BIOCHAR AS AN ADSORBENT FOR PHORATE TOXICITY IN *EISENIA FETIDA*

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ABSTRACT

Agricultural crop residue management and unscientific use of pesticides are two major environmental concerns that need a sustainable solution. Biochar derived from surplus agricultural crop residue (plant-based organic matter) works as a soil conditioner. It plays a multidimensional role as an adsorbent for contaminants(pesticides), sequestering carbon, energy production and waste management. However, the biochar application rate to the soil for maximum beneficial output remained largely understudied. Therefore, we investigated the impact of 0%, 1.5%,3%,6.5%, 8% and 10% of rice straw -derived biochar amendments on earthworm *(Eisenia fetida*) mortality at LC50 of Phorate for 14 days. The LC50 of Phorate was calculated by artificial soil test and probit analysis; it was found to be 27.436 mg/kg. The 14-day artificial soil test was performed to assess the impact of different application rates of rice straw-derived biochar on nullifying the mortality at LC50 to below 50%. Compared to zero amendments, mortality was 50% at LC50, whereas 3% and 5% amendment was found to be most effective in reducing the mortality at LC50 to below 50%; also, histological analysis (body wall, villi and chlogoganous cells) revealed the attenuation of toxicity of phorate at sublethal doses (30%LC50 and 60%LC50 phorate) amended with 5%biochar was more effective as compared to 3% amendment. Although, the amendments at the low level (1.5%) and high level (6.5%,8% and 10%) were ineffective and increased the mortality at LC50 of phorate, respectively. This study highlights the necessity to evaluate the biochar application rate to attenuate the toxicity of pesticides and benefit the noble non-target animals-earthworms.

ROLE OF SELENIUM IN MITIGATION OF PARACETAMOL TOXICITY IN CYANOBACTERIA

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ABSTRACT

Increasing pollution in aquatic system now has been recognized as emerging pollutants. These emerging pollutants present in the aquatic water since very long time and now being recognized as toxic pollutants e.g. personal care products, nanomaterials, microplastic, pharmaceuticals. Detection of emerging pollutants in the environment can be a challenging. Now a days pharmaceuticals are most popular in the world due to different biological effects for human or animal health care. Because of their biological and physiochemical properties, they are more concern about the potential impacts on non-target organisms in environment. The present work aimed at evaluating the interactive effects of paracetamol and selenium on cyanobacteria. Selenium is an essential trace element, reported in plants, animals, and photosynthetic micro-organisms. It defends the plants from variety of abiotic stresses like drought, high temperature, metal stress, cold and desiccation etc. To find out the ameliorating role of selenium in cyanobacteria we exposed the selenium with paracetamol stressed culture. Growth of culture showed positive response in the presence of selenium. Photosynthetic pigments (chlorophyll, carotenoid and phycobiliprotein) increased as compared to stressed culture. Reduction of oxidative stress found in the presence of selenium in paracetamol treated culture. Higher amount of antioxidant activity showed the enhanced defence system of test organism. In the presence of paracetamol stress, the proline content increased as compared to control. In paracetamol treated culture, selenium (both sodium selenite and selenium dioxide) produces the more proline to balanced or reduced the toxicity of drug. Total phenol and total flavonoid content higher in control and very low in paracetamol exposed culture. Addition of selenium in paracetamol stress, enhanced the amount of total phenol and total flavonoid content. Cell viability of cells through confocal microscopy provide a qualitative assessment toward the selenium function. During ICP-OES (inductively coupled plasma-optically emission spectroscopy) technique, it was observed that culture with sodium selenite showed maximum uptake of selenium in biomass as compared to selenium dioxide in the presence of paracetamol. While in spent medium low amount of selenium detected in sodium selenite treated cells and higher in selenium dioxide treated cells. It confirmed that sodium selenite has a greater ameliorating capability than selenium dioxide.

SEASONAL FLUCTUATION OF RESERVOIR WITH REFERENCE TO PHYSICOCHEMICAL CHARACTERISTICS OF WATER

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ABSTRACT

This paper explains the physico-chemical status of Chandora reservoir in Betul district Madhya Pradesh, where the limnological parameters was carried out during Aug. 2020 to July 2021. Different analysis from surface water of reservoir were water temperature, transparency, pH, Dissolved oxygen, electrical conductivity, total dissolved solids, alkalinity, chlorides, nitrates, nitrite and phosphate. On another hand seasonal distribution pattern of phytoplankton was carried out in Chandora reservoir. The overall qualitative and quantitative distribution of phytoplankton in different study sites of Chandora reservoir. The sequence of dominant groups of phytoplankton's species distribution was observed as Chlorophyceae> Cyanophyceae >Becilariophyceae>Uglenophyceae was observed in different sites of Chandora reservoir.

STUDY OF SOME VARIABLES OF A DESERT WATER BODY OF RAJASTHAN

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ABSTRACT

The study was carried out for a period of fifteen months at Harsholav pond of Bikaner. It was noted that Harsholav pond is an Oligotrophic, hard, alkaline water body had low water level (0.19m to 1.15m), turbid, low transparency (0.05m to 0.45m), alkaline pH (7.1 to 8.7), EC (0.3 to 0.7 mmhos/cm), high TDS (300 to 700 mg/l), Sufficient DO (1.63 to 6.52 mg/l), free Co_2 (10 to 18 mg/l), Total alkalinity (110 to 230 mg/l), Hardness (80 to 380 mg/l), Sodium (1 to 4 mg/l) Potassium (0.4 to 1.5 mg/l), Magnesium (5.25 to 20.17 mg/l), Calcium (22.44 to 60.01 mg/l), Carbonates (9 to 34 mg/l), Bicarbonates (7 to 70 mg/l), Chlorides (8.9 to 32 mg/l), Sulphates (3.4 to 19.3 mg/l), Nitrates (0.09 to 0.30 mg/l),Phosphates (0.006 to 0.027 mg/l), Silica (1.2 to 5.8 mg/l). Total phytoplankton population ranged from 1800 to 4600 units x 10^3/l. Average population of greens, diatoms and blue greens respectively were 1166.67 units x 10^3/l, 1354.7 units x 10^3/l, 816.67 units x 10^3/l respectively. Total Zooplankton population ranged from 320 to 1060 No./l. Net primary productivity values ranged from 0.0507 to 0.456g c/m^3/h and values of Gross primary productivity varied between 0.1520 to 0.8615gc/ m^3/h. Values of most of the variables studied were in permissible limits and water body is oligotrophic in nature its water can be used for drinking, washing, bathing and for other domestic purposes and for aquaculture practices also.

STUDY OF THE PHYSIOBIOCHEMICAL QUALITY OF THE INTERACTION BETWEEN *SACCHARUM OFFICINARUM* (L.) AND ROADSIDE TRAFFIC POLLUTION IN THE HAPUR DISTRICT: A REVIEW

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ABSTRACT

One of the most important parts of all time is air, and every living thing needs clean air to thrive and develop healthily. However, because of anthropogenic activity, the air is currently becoming extremely impure. Flora forms the inspiration of all ecosystems. They are jointly most at risk of being affected by traffic pollution, as they have the greatest potential to be affected by localised traffic pollution. Automobiles and pollution have accumulated in tandem with the increase. Its upbeat angle suggests that the negative impacts of transport emissions are also self-addressed. Potential bio-indicators of traffic pollution have been projected as ways that suggest that for crop. The nanocarbon particle features of automotive pollution and their interactions with margin crops may be of serious concern. Physiobiochemical quality activities reactions caused by traffic pollutants are reduced in crop growth in impure environments. The importance of developing mitigation ways to seek out long-term solutions to those growing challenges has been stressed.

SUBSTITUTION POTENTIAL OF GREENHOUSE GAS EMISSION REDUCTION BY WOODEN FURNITURE IN INDIA

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ABSTRACT

Wood is primary content of the stems of woody plants, especially trees and made of cellulose fibres and lignin, due to different proportions of organic compounds in wood, it stores different proportion of carbon in it. The stored carbon and CO_2 sequestration from environment used to reduce the amount of CO_2 from the environment by the woody plants. Carbon sequestration involves two steps: (1) CO_2 capture from the atmosphere (2) storage. Wood has the unique ability to do both reducing emission by reducing carbon sinks and storing in it. The present study deals with the second approach storage and the emission saving during the process of furniture making. In India the requirement of raw materials such as wood, metal and plastic for furniture annually was in proportions of 65%, 25% and 10% respectively. Based on the analogy as defined in the methodology, the replacement of $1m^3$ metal or plastic by wood would save 2 tons of carbon dioxide emission. Therefore, this results of the saving of 1248000 tonnes CO_2 emission against 10% of replacement of each metal and plastic as furniture raw material by wood. This study advocate, use of wood as raw material for furniture, which have a significant potential for mitigating the climate change impacts

SULPHUR FERTILIZATION INFLUENCED FODDER YIELD AND QUALITY OF GROUNDNUT UNDER DRIP IRRIGATION IN ARID REGION

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ABSTRACT

Availability of ample and nutritious fodder for livestock is always a challenge in arid region. Choice of crop such as groundnut that can fulfil the requirement of fodder with its crop residues along human needs can be a viable option to bridge the gap between availability and requirement of fodder. The fodder yield and quality largely depend on soil moisture and nutrient supply especially sulphur (S), a key nutrient for improving groundnut fodder quality. However, no researchers have given emphasis on coupling effect of drip irrigation (DI) and sulphur on fodder yield, quality, digestibility and water use efficiency (WUE). Therefore, the study was conducted to determine the effect of drip irrigation levels and different doses of sulphur in groundnut on fodder yield, fodder value, quality of dry fodder and water saving in arid environments. The field experiment was conducted during kharif season of two consecutive years of 2020 and 2021 at COA, S.K. Rajasthan Agricultural University, Bikaner (Rajasthan). The experiment was laid out in split plot design with irrigation as main plot treatment and sulphur fertilization as sup-plot treatment and replicated thrice. Six levels of drip irrigation viz., 0.6 PE(from sowing to maturity), 0.8 PE(from sowing to maturity), 1.0 PE (from sowing to maturity),0.6 PE (0-45DAS) + 0.8 PE (46 DAS to maturity), 0.6 PE (0-45DAS) + 1.0 PE (46 DAS to maturity) and 0.8 PE (0-45DAS) + 1.0 PE (46 DAS to maturity) and four levels of sulphur fertilization i.e., 0, 20, 40 and 60 kg S ha^{-1} were used. Wettable powder of soluble sulphur was applied as per the treatments, it is a readily available form of S, and therefore it was applied at the time of sowing. Results revealed that higher regimes of DI i.e. 0.8 +1.0 PE and 1.0 PE level of irrigation along with 40 kg S ha^{-1} significantly improved the yield, primary quality traits (crude protein, ether extract and ash), digestibility indices and significant reduction in fibres which indicates improvement in quality of fodder. Fodder productivity was 27.0 and 25.6% higher in 1.0 PE and 0.8+1.0 PE level of irrigation, respectively, as compared to 0.6 PE level (lower water regime) of irrigation, although 0.6 PE level of irrigation recorded higher WUE and was at par with 0.8 PE and 0.6 +1.0 PE level of DI. By changing the levels of DI from 1.0 PE to 0.8+1.0 PE, considerable water can be saved without affecting the yield and quality of fodder. Similarly, crop responded to S upto 60 kg ha^{-1} but at par with 40 kg S ha^{-1} indicating that application of extra S after 40 kg did not warrant any extra benefit in terms of yield, WUE and quality of fodder. Thus, adjusting the PE levels of DI for water saving and optimal S application can be a sustainable strategy to improve the productivity and quality of groundnut fodder in arid region.

SUSTAINABLE AGRONOMIC PRACTICES FOR MITIGATION OF GREENHOUSE GASES (GHGs)

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ABSTRACT

Out of six major greenhouse gases, agriculture is the sources of three greenhouse gases in the atmosphere (CO_2, CH_4, N_2O), accounting for 18% of emissions in India. Paradigm shift in conventional agronomic practices can reduce the emission of GHGs. Conservation agricultural practices like minimum tillage and zero tillage limit the emission of CO, CO_2, Hydrocarbons and NO_x by reducing the number of tillage operations. Reduced tillage operations leads to less usage of fossil fuels and there by less release of GHGs. Zero tillage and minimum tillage enhance carbon (C) sequestration in surface soils by protecting existing carbon in soil as rate of decomposition of organic matter decreases. GHGs emission from agriculture can be mitigated by reducing the denitrification losses by enhancing nitrogen-use efficiency through precision nutrient management, use of nitrification inhibitors and coated urea. Residue retention and incorporation in the field can be the substitute for on-farm burning of crop residues which contributes 2% of the greenhouse gas emission from agriculture. Drip and sprinkler irrigation can limit the emission of N_2O from fields by maintaining proper moisture regime. Ensuring proper surface and subsurface drainage, optimum aeration and organic matter content in soil by addition of organic manure decreases the rate of GHG emission from soil surface. Thus adoption of sustainable agronomic practices is a long term approach to mitigate the emissions of GHG from agricultural fields.

THE IMPACT OF STRATOSPHERIC OZONE DEPLETION AND UV-B RADIATIONS ON THE AVIFAUNAL DIVERSITY

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ABSTRACT

Ozone (O_3) is indispensable to survival of living beings. It acts as a protective shield for the biological communities as it absorbs almost all of the UV rays of solar radiation and thus defends the earth's surface from becoming too hot. Uncontrolled human activities resulting in the depletion of stratospheric ozone gas. The stratospheric ozone depletion leads to an upsurge in the amount of UV-B component of solar radiation reaching to the earth's surface. The main objective of the study was to investigate the impact of increased UV-B radiation on the Avifaunal diversity.

The Avifaunal diversity is a crucial element of the ecosystem. Birds are playing a significant role in regulating the earth's ecosystem by mutualism, pollination and seed dispersal etc. There are several factors which affects the bird life such as habitat, climate change, seasonal variations, extreme weather and temperature conditions. Excessive exposure to UV-B radiations significantly affecting the bird eyes, eggs, embryonic growth, feather growth, respiratory system and also causing inflammatory disease, skin irritation, derma disease etc. On the other hands when UV-B radiation increases at an ideal level, cell viability of the cell also increases but it reduces if the level of exposure is high. The study shows changes in the feeding behavior of the birds and imbalance food behavior. Natural range of light exposure give high calcium and rich iron in the birds but higher subjection with the rays or light imbalances the ratio of calcium and iron. The finding of the study shows that UV-B radiations directly or indirectly affects the life of the bird species.

THE ROAD MAP OF SUSTAINABLE DEVELOPMENT THROUGH JAIN PERSPECTIVE

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ABSTRACT

Development by its own nature must be limited to some degree. According to Acharya Mahapragya, it becomes imperative for us to limit the concept and dimension of development aroused by greedyness. We should develop a balanced lifestyle by controlling economic development and consumption. The Jain response to development must be mindful of traditional Jain teachings of non-violence and non-possessiveness. According to the Jain perspective, development decisions need to follow the criteria of least harm, conservation of resources and the degree to which a mix of projects represents a balance between destruction and preservation of the environment. Although the Jain community is called upon to engage in economic development, such activities are to be pursued within the guidelines of minimal harm to all living beings (*ahimsa*) and moderation in the enjoyment of wealth for personal gratification (*aparigraha*). the Jain response to development is based on an ancient Jain teaching that all life is bound together by mutual supports and interdependence *parasparopgraho jeevanam.*

USE OF SOLAR RADIATION BY PHOTOGALVANIC CELL INTO ELECRIC ENERGY

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ABSTRACT

Energy security, like the security of the oil supply in India, is a major worry nowadays. While the rising demand for hydrocarbons and reliance on oil are significant, India's energy security should be taken into account when it comes to the major source of energy, whether it be commercial or non-commercial. Our annual demand for power is rising by 5.4 billion KW. About one-fourth of the overall energy requirement is made up of biomass, which includes animal waste and fuel wood. With the necessary technology and opportunity, many renewable resources are now commercially viable. The demand for technological needs promotes the whole range of renewable form of energy as solar hydro, solar photovoltaic, bio-energy etc. One of the most essential issues is conservation of energy. A number of moves has been taken for hundreds of years in regard of this, especially in the case of oil but the best thing could not be achieved till now. Therefore, to solve our energy conservation and global changes issues, new technology and energy efficient are so crucial. Photo galvanic effect has observed in a particular system which contain a dye Victoria Blue act as photosensitizer and a reducing agent Ascorbic acid. In light and dark under reverse and forward biases, the current voltage relationship has been observed of the cell. There are several parameters were studied which acts on electrical outcome of the cell and for production of photocurrent, a procedure has also been put forward.

A STUDY ON SOME PHYSICO-CHEMICAL PARAMETERS OF GAULA RIVER, KUMAUN HIMALAYA, UTTARAKHAND, INDIA

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ABSTRACT

During the present survey some physico-chemical parameters of Gaula River was investigated to assess its water quality status. Gaula River is one of the important spring-fed river of Kumaun region. Water samples was collected from two selective study sites along the bank of the river studying the respective parameters including Water temperature, Atmospheric temperature, pH, Total dissolved Solid, Transparency, Dissolved Oxygen, Nitrate, Phosphate throughout the study period of six months (October 2020-March 2021). The result of this parametric study was compared with Bureau of Indian Standards for safe Drinking water (2012) and WHO Guidelines for Safe Drinking Water (2021), for analyzing whether the water of the river is fit for drinking purpose. It has been found that the general water quality of the river is not yet polluted but is prone of getting polluted because of the activities that are prevailing in and around the water area which needs to be monitored, managed and controlled.

A STUDY RELATED TO THE ROLE OF CYBERSECURITY IN THE FIELD OF ENVIRONMENTAL PROTECTION

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ABSTRACT

When we see prima facie the words cyber security and environmental protection are not connected with each other. When we hear about environmental protection we might think of forests, water, air or endangered species and when we hear about cyber security we might think of Identity theft, privacy issues, hackers or email scams. So what do cyber security and environmental protection having common? A lot more than it initially appears.

Cyber security threats to the environment is at the infrastructure level. As an example we take water infrastructure first, in developed economies most of municipal drinking water supplies come from utility districts that rely on massive infrastructure to capture, clean and distribute drinking water supplies. Municipal water is transported away via wastewater infrastructure where it is treated and added back to natural systems. Treating Municipal water at both the consumption and disposal ends of the spectrum requires pipelines, massive treatment facilities, and distribution networks. All of this infrastructure is tied together with command and control centres. And those centres are all operated from connected computer networks which are vulnerable to a number of security threats ranging from outside hacks to insider bad actors.

This paper is intended to provide an overview of the role of cyber security in Environmental Protection. It will focus mainly on the role of the command and control elements of the cyber physical systems that are used to protect environmental health.

APPLICATION OF ANIMAL WASTE IMPROVES CROP GROWTH, PRODUCTIVITY AND SOIL HEALTH

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ABSTRACT

Generation of animal based bio-wastes has increased due to upsurge in food production leading to huge loads of organic waste in environment. Wool is a biodegradable fiber, rich in nutrients and can be recycled in soil as a fertilizer for maximum benefits. The present study was planned with the hypothesis that waste wool could be used as a nutrient source or manure to forage crops and aim of this study was to identify practicable recycling options of sheep based wastes in agriculture. The experiment was arranged in factorial randomized block design with six replications. In the treatments, different combinations of irrigation water/cumulative pan evaporation (IW/CPE) ratio for irrigation and manures were considered. Two IW/CPE ratios were kept i.e. 1.0 (normal) and 0.67 (slight deficient); and five different manure were used i.e. control, sheep manure, wool manure (Avikhad), and waste wool. Sheep manure used was natural and untreated; wool manure was prepared with mixing of waste wool, sheep manure and crop residues in ratio of 30:50:20. In our study, we have compared the effect of different sheep based organic wastes on soil health, crop productivity and water use. Growth, yield and quality of barley were significantly affected by the addition of different organic manures and IW/CPE ratio of irrigation. To observe the effect of manures, different growth parameters were recorded periodically, i.e. dry matter, leaf area and growth rate. Deviation from the normal irrigation to slight stress led to the reduction in growth of all parameters. The dry matter and leaf area was significantly higher when waste wool was applied as manure. Waste wool application neutralized the soil pH and improved overall soil fertility, but significant effect was build up of organic carbon and increase in concentration of nitrogen. The use of all organic amendments significantly increased yield and quality of barley forage by improving the soil properties and crop water use. The results were more promising under waste wool, even under water deficit conditions. Although it is a new concept and needs further research on its impact on crop, soil, food and humans before any concrete recommendation and for that new scientific development needs to be explored.

ASSESSMENT OF RIVER WATER DYNAMICS AND WATER QUALITY OVER PUNJAB, INDIA USING GOOGLE EARTH ENGINE APPROACH

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ABSTRACT

River water dynamics and water quality has direct impacts on natural and anthropogenic activities. River water bodies in Punjab region have been impacted extensively by natural changes and human influences. Remote sensing approach along with high end computational resources offers multiple observations for mapping and monitoring river water dynamics and water quality parameters with high spatial and temporal resolutions. Monitoring and understanding the spatial-temporal patterns of river water extent and water quality parameters will help in understanding water cycle, water conditions and is paramount to researchers, scientists and policy makers. This study used high resolution multispectral datasets for mapping river water dynamics and estimates water quality parameters viz. chlorophyll-a concentration and total suspended matters in Satluj and Beas River over Punjab. Landsat multispectral imagery (1984-2019) from Google Earth Engine (GEE) database has been used to derive the river water dynamics while sentinel-2 imagery (2018-2021) has been used to derive optical active water quality parameters over Satluj and Beas river in Punjab region. A pixel based classification system has been utilized to extract the water and non-water pixels and semi-analytical inversion model is used to retrieve the optically water quality parameters. The highest peak of surface water area has been observed in year 1998 and deficit peak has been observed in year 2019. The images of derived chlorophyll concentrations and total suspended matter have been found ranging from 0 to 36 mg/m3 and 0 to 153 mg/m3. Water quality parameters monitoring is an important indicator to measure the productivity and eutrophication of the river water system. The decay pattern of river water and water quality changes from the newest generation of high resolution earth observation satellites will be beneficial for the water resources management. The decay pattern of river water and water quality changes analysis can provide timely inputs for better policy making and management of water resources.

DEVELOPMENT OF PINE NEEDLE BIOCHAR FOR ECO-EFFICIENT REMOVAL OF PHARMACEUTICAL EFFLUENTS: A ROADMAP TOWARDS SUSTAINABLE REMEDIATION

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ABSTRACT

Biochar is typically defined as a carbonaceous, stable, and recalcitrant product obtained on the thermal treatment of carbon-containing biomass in a limited supply of oxygen. The composition and properties of biochar are mainly dependent on the thermal treatment technique, the treatment temperature, and the feedstock type. Different techniques have been utilized for biochar production such as torrefaction, carbonization, combustion, gasification, and pyrolysis, with pyrolysis being most commonly used due to its simplicity and high yield of production. A wide range of feedstocks has been used previously including kitchen waste, agricultural wastes, leaf litter, wood biomass, rubber tyres, poultry litter, animal litter, sewage sludge, and algae. Biochar application could also help in climate-smart agriculture, waste management, clean energy production, contaminant removal, and climate change mitigation.

Biochar amendments have been proposed to ameliorate the adverse effects of temperature rise on soils and plants. The application of biochar improves the thermal properties of soils. Reflectance reduced in the infrared wavelength range and increased in blue-light and near-ultraviolet range. Amendment of soil with biochar reduces the bulk density and thermal diffusivity of soil and improves its moisture content. These changes affect the thermal conductivity and reflectance of soil which ultimately moderates the soil temperatures. These changes could also influence plant growth and biochemical processes in soil. Further, soil depth, soil moisture content, and biochar application rates affect soil temperature and volumetric heat capacity. The reduction in organic matter and clay fraction with a rise in soil temperature decreases the cation exchange capacity of the soil. Biochar has a high surface area, which coupled with an abundance of carboxyl and hydroxyl groups, helps in improving its cation exchange capacity. Consequently, the addition of biochar to soils helps in enhancing its cation exchange capacity. With regards to microbial activity, an increase in soil temperature affects the soil microbes. However, the addition of biochar to soil supports microbial proliferation and the community structure. The high surface area, enhanced porosity, escalated pH, increased electrical conductivity, surplus moisture retention, and abundant organic matter support the microbial activity in the soil. The present invited talk will focus on how biochar is becoming popular in environmental remediation and playing an important role in the sustainable decontamination of toxicants.

EMERGING CAMEL MILK ENTREPRENEURSHIP: NEW IS A FUTURE TREASURE OF CAMEL POPULATION IN INDIA

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ABSTRACT

Entrepreneurship is an ability of willingness to organize and manage a business idea into venture along with its risks in return a guarantee of some profit in order to sustain the business. It is a matter of proud that on 29th November, 2016, the Food Safety and Standards Authority of India (FSSAI) had approved camel milk standards. As Rajasthan state is having maximum number of camels in India so Rajasthan become a capital hub for camel milk business. Different models of business evolved in Rajasthan one of the model named Sarika Raika and Advik Foods are emerging fit model for camel entrepreneurship. Camel milk business is playing a big role in the boosting of living standard of the Raika community and those associated in camel farming. Camel rearing should be practiced in a professional manner along with government policy framework for conserving the number of camels in India. These emerging start-ups will become pillar in the future for Sustenance camel milk industry and will enhance its commercial value in the new generation dairy food market at global level.

FLORISTIC ANALYSIS OF BEER CONSERVATION RESERVE OF SHEKHAWATI REGION, RAJASTHAN (INDIA)

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ABSTRACT

The Shekhawati region is a part of Great Indian Desert and located in the North-East part of Rajasthan lies in between $27^0$24' to $29^0$02' N latitude and $73^0$4' to$76^0$5' East longitude. The region is not only a vast stretch of sand dunes, but also with the mountain range of Aravalli, interspersed with low hills and gravel plains. Beer conservation reserve or Beer Jhunjhunu area lies in Jhunjhunu district. It covers 1047.48 hectares area and declared as protected forest area in 1969. In 2012, this protected area was established as Conservation Reserve.

A total 116 species of 95 genera were reported from Beer Jhunjhunu during the period of investigation. Dicotyledons contributed 100 species of 81 genera and monocotyledons by 16 species of 14 genera in Beer Jhunjhunu Family Poaceae was represented by maximum 13 species belonging to 12 genera followed by Fabaceae (8 species of 7 genera), Amaranthaceae (7 species of 6 genera) and Mimisaceae (6 species of 4 genera). Out of 116 species, 62 species belongs to herbaceous nature, 23 species to shrub, 18 to trees and 13 species belongs to grass habits.

OZONE – A NATURAL SHIELD FOR INSECT BIODIVERSITY

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ABSTRACT

Earth's stratosphere contain high amount of ozone as compare to the other parts. Ozone layer protects organisms from the exposure of dangerous UV-rays coming from the sun. Human's activities affect the nature in many different ways. Depletion of ozone layer is one of them. The gradual thinning of earth's ozone layer that is present in the upper atmosphere is refers to as Ozone Depletion. The CFC and Halogens used by human are the strongest ozone depletors. In the whole animal kingdom, insects are belonging from the class Insecta of Arthropoda phylum. Insects are unique arthropods that are found in almost all ecological niches such as – aerial, terrestrial, aquatic, etc. So the biodiversity of insects is rich. Ozone depletion affects insect diversity indirectly. It alters insect performance to do modification in secondary metabolites present in plants. Ozone alters the foliar phytochemistry in plants thereby impeding insect oviposition. This research addressed that ozone layer works as a natural shield for insects so the numbers of insects are decreases as the ozone depletion is increases. Ozone layer depletion can be reduced by environmental protection, more plantations, avoiding the use of CFC, Halogens, etc.

PASTURE AND FORAGE RESOURCES SUPPORTING ARID ECOLOGY AND LIVESTOCK PRODUCTIVITY

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ABSTRACT

Great Indian Thar desert in western Rajasthan is characterized by harsh environment and limited water resources; however it is unique for plant and animal biodiversity. Climate affects biomass yield and composition of vegetation in the grazing lands. India has 3.81 lakh km2 (10.16%) land under arid zone and 9.56 km2 (30.5%) under semi arid zone. These areas support a variety of trees, shrubs, forbs, grasses which are perennial; it also support nearly 682 species which are monsoonal, however some 60 species appear dominantly during monsoon. Species composition of ephemerals varies with different habitats and precipitation pattern (Kumar, 2005). Livestock rearing and crop husbandry are two important components of mixed farming system which influence agricultural economy and sustainability of arid ecosystem. Climate and soil environment are the prime determinants for adaptation and potential growth of pasture species. Climatic conditions of hot semi-arid and arid region is characterized by short spell of monsoon, fast vegetative growth, early flowering and fruiting followed by rapid withering with onset of dry season. Animal wealth of the farmer is on hooves and mobile, hence migration of farmers is common to overcome shortage of food and water is a compulsion rather than a voluntary option. More than 40% of the land area is dependent upon monsoon and practices rain fed agriculture. Arid tropics are characterized by low and erratic rainfall, and these often lead to high production risk and low productivity (Nkoynya et al., 2007). Arid zone experiences extremes of temperature (0 to 4oC in winter and 45-48oC in summer), low precipitation pattern ranging from 450mm to 100mm, low humidity, high wind velocity, and high evapo-transpiration. Soils are sandy, poor in nutrient with low water holding capacity and prone to erosion by wind and water. Natural vegetation in such climatic conditions is edapho climatic conditions is sparse and stunted, predominantly spiny belonging to grass cover type Dichanthium-Cenchr us-Lasiur us-type and very small area having Sehima-Dichanthium type (Dabadghao and Shankarnarayan, 1973). The animals are healthy when pasture herbage availability of fodder resources is sufficient enough. Quantitative and qualitative availability of fodder resources is major cause affecting animal productivity. The problem is more where they are solely dependent on grazing only spurt in the pasture resources during monsoon season could be used to consume during the lean season. Regulating grazing in tune with the capacities and harvesting of monsoon herbage during their abundance would help to mitigate demand and supply of feed resources. These resources can be classified as trees, bushes/shrubs/forbs, grasses and monsoon herbages. Production potential of different ephemerals estimation in a large variety of places indicates grazing pressures on the land under different rangeland conditions. Monsoon herbage has immense potential not only as feed resource but also in augmenting productivity of livestock of thee region.

PERSPECTIVE OF SILICON ON REMEDIATING SALT AFFECTED SOILS OF INDIA

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ABSTRACT

Increasing area of salt affected soils (SAS) impose serious threat to national food security. The nature of salt affection in these regions is either saline or sodic. Nearly 75% SAS in the country exist in the states like Gujarat, Uttar Pradesh, Maharashtra, West Bengal, Rajasthan. Excess salt accumulation in the root zone deteriorates the soil properties like physical, chemical and biological which adversely affect the crop production. Silicon, due to its unique characteristics enhances salinity remediating potential of plants. The effect of Si on response of different plants (like rice, maize, tomato, pea, cucumber, coriander, pepper etc.) under salinity stress was evaluated. Si application through soil and foliar application improved the response of plants growth and yield under salinity. Si improved relative water content, membrane stability index, gaseous exchange characteristics and activates antioxidant enzymes like superoxide dismutase (SOD), peroxidase (POD), ascorbate peroxidase (APX) and Catalase (CAT). Moreover, Si reduced Na^+/K^+ ratio, Na^+ ion uptake at the surface of plant root, translocation in plant tissue and thereby significantly reduced Na^+ ion accumulation.

POTENTIAL OF BGA IN IMPROVING SOIL QUALITY

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ABSTRACT

Along with population growth and industrial expansion, the need of food supply has created pressure for increasing crop yield. For this need farmers extensively apply chemical fertilizers to crop lands to meet the nutrient requirement of crop plants. But due to its injudicious use, culturable lands have been gradually contaminated with heavy metals and other pollutants in most countries. Irrigation water for crop production is also at times contaminated by waste discharges from industrial areas or livestock wastewater. During the past two decades, this trend had significantly degraded the quality of soil as well as crops affecting human health and quality of environment. Blue Green algae also known as cyanobacteria is well known for its nitrogen fixing and soil improving quality. The soil that has lost its nutrients through continuous exploitation can be replenished with the supplementation of fertilizers with cyanobacteria. The necessary nutrients can be returned to the soil through the application of these bacteria containing biofertilizers. Prominent cyanobacteria are *Nostoc, Anabaena, Aulosira, Tolypothrix,* Cylindrospermum and *Stigonema*. Cyanobacteria improve soil quality by adding organic matter as well as extra nitrogen to the soil and producing variety of substances, like amino acids, polypeptides, vitamins and antibacterial/antifungal compounds. Furthermore, BGA are able to solubilize the insoluble phosphate enhancing its availability to the plants. The capability of these BGA to grow in highly polluted habitat is also used to treat sewage and polluted effluents of various industries.

In the present study the effect of blue green algae in plant growth and improvement of soil quality was studied.

TAMING THE THAR-ECOFRIENDLY RESILIENT STRATEGIES FOR RAJASTHAN'S ARID REGION

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ABSTRACT

The north western part of India represents the Thar Desert region as well as a major part of country's hot arid zone, especially in the state of Rajasthan (61% area). The region is known for its vulnerability to climatic variability and deser tification. However, today's Thar has a different climatic and anthropogenic environment. Modern technologies, including innovative irrigation systems, improved agricultural practices and infrastructural developments have made this desert region, a more hospitable and liveable place. Land management strategies like effective year-round groundwater resource use, efficient management of two major canals, and construction of innovative water conservation structures suggest people's crucial precautionary measures against the region's perpetual problems of drought and desertification. The present study cites some of the examples that would indicate region's fast changing geo-environmental landscape in western Rajasthan.

IMPACT OF ECTOPARASITES ON HAEMATO-BIOCHEMICAL INDICES OF SNAKE HEADED FISHES

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ABSTRACT

The present investigation was carried out to study the effect of parasitic infection on the haematological and biochemical parameters of fishes. For this study total 110 fishes of *Channa punctatus* and *Chana striatus* were examined for parasires. The parasites recovered were protozoans (*Trichodina* sp., *Ichthyoptherius* sp., and *Myxobolus* sp.) and crustaceans (*Ergasilus* sp., *Lernea* sp., *Lamproglena* sp. and *Argulus* sp.) with a total prevalence of 64.54 % and mean intensity of 4.47. The result of present investigation showed that RBC, PCV and Hb% were decreased where as WBC increased significantly in infected fish. The result also showed that aspartate aminotransaminase (AST) and alanine aminotransferase (ALT) enzyme activities as well as creatinine and urea levels were increased in the infected fishes. However serum glucose level was decreased in parasitic infected fishes. Thus the result of the present study reveals that infected fishes suffers from anemia and tissue damages caused by parasitic invasion.

QUANTITATIVE ANALYSIS OF AMBIENT AIR FOR O3, NO2 AND CO2 LEVELS IN DEVI-PATAN DIVISION

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ABSTRACT

Devi-Patan division is an agricultural area having very poor economic index. Air pollution is the introduction of chemicals, particulates, biological materials, or other harmful materials into Earth's atmosphere, possibly causing disease, death to humans, damage to other living organisms such as food crops, or to the natural or built environment.

Being one of the most backward divisions of India, the Devi-Patan division lacks the industries at large, however sugar mills, Brick Kilns, diesel sets (Electric generators due to poor power supply by government, and pump sets for irrigation) and automobiles are the main source of pollutants. During primary survey and evaluation of ambient air using electrochemical sensors, it was found that most areas are having very high levels of CO2, NO2 and Ozone. Other pollutants such as SO2, Mercury, Lead, CO were found around permissible limits however HF was found very high near Brick Kilns. Therefore, the three gases were taken for further large scale estimation and evaluation of their effect over ecosystems of Devi-Patan division.

Current study aims to evaluate the ambient concentrations of major air pollutant at different par ts of the division. 64 sites of all the four districts of Devi-Patan division viz. Balrampur, Gonda, Bahraich and Shrawasti were analyzed and evaluated for ambient air quality especially regarding CO2, O3 and NO2 levels. The impact over crops and vegetation were also extensively analyzed. The highest polluted area was Bhagwatiganj of District Balrampur among all the 64 areas. The possible reason behind this result is the industrial air pollution caused by Balrampur Sugar Mills (Two Units in close vicinity), BCM Alcohol factory, BCM Power Plant, Dal and Rice mill, Paper mill and some small industries in a circle of two kilometers of area. All the mills are using some type of Boilers and furnaces which needs Cellulosic fuel. This burring of fuel produces high amount of CO2 and NO2. When NO2 reacts with the O2 in presence of sunlight, it forms NO and O3. This Ozone is very harmful to flora and fauna

ENVIRONMENTAL EDUCATION

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ABSTRACT

A person can gain knowledge and boost their confidence by participating in environmental education throughout their lives. It is very important for both our personal and professional development. It enables us to distinguish between good and negative things. It enables students to build a framework for their world knowledge and look for knowledge they can use to their daily life. Lear ning about the environment gives students the ability to take part in a sustainable future. Environmental education is a process that allows individuals to explore environmental issues, engage in problem solving, and take action to improve the environment. As a result, individuals develop a deeper understanding of environmental issues and have the skills to make informed and responsible decisions. Therefore, environmental education refers to concerted attempts to spread knowledge about how natural environments work, especially how people may control their behaviour and ecosystems to lead sustainably.

RICE RESIDUE BURNING EFFECT ON SOIL MICROBIAL PROPERTIES

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ABSTRACT

Paddy straw has been used for composting, packaging, roof thatching, animal feed, and other purposes. Due to the traditional uses of straw being abandoned, farmers face significant difficulties in disposing of and removing it from the current field. Due to the short window between rice harvesting and wheat sowing, a significant amount of residue is burned in paddy fields every October and November to prepare the area for conventional wheat sowing. Because of this, the burning of crop leftovers is increasing. Burning rice residue has been identified as a major obstacle to the long-term maintenance of soil health. The study was carried out to asses the consequences of crop residues burning on microbial properties of soil. Soil samples were collected from paddy fields at a depth of, 0-5cm, 5-15cm and 15-30cm at the harvesting time from two sites. The first sampling was done from the burning sites of Panipat district (villages- Waisari and Jatal) of Haryana and second sampling from Karnal district (villages- Trawadi and Tikhana) of Haryana. For the microbial properties, fresh soil samples were used for analysis. The activity of dehydrogenases varied from 0.72-1.99μg TPF g^{-1} h^{-1} before burning and 0.71-1.64 μg TPF g^{-1} h^{-1} after burning at Panipat and Karnal from 0.75-1.87 μg TPF g^{-1} h^{-1} before burning and 0.75-1.62 μg TPF g^{-1} h^{-1} after burning. At Panipat, Ureases activity was ranged from 15.63-63.49 mg NH_4^+-N g^{-1} h^{-1} before burning and 14.97-53.77 mg NH_4^+-N g^{-1} h^{-1} after burning and at Karnal, 15.31-58.62 mg NH_4^+-N g^{-1} h^{-1} before burning and 14.58-56.08 mg NH_4^+-N g^{-1} h^{-1} after burning. The MBC (microbial biomass carbon) decreased from 137 to 91μg C/g after burning in 0-5cm soil depth at both sites. The bacterial and fungal population, enzymatic activities and MBC were drastically reduced after burning. According to the study, burning rice residues is bad for the soil's health, thus farmers should use the right technology and procedures to manage their rice residues rather than burning them.

ASSESSMENT OF FOOD WASTE AND LEFTOVER FROM THALI IN THE GIRLS HOSTELS OF UNIVERSITY OF RAJASTHAN, JAIPUR

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ABSTRACT

"Food waste" refers to items that are fit for human consumption but thrown away by the consumer, it is one of the most significant problems faced globally, that contributes to social, environmental, and economic problems. It leads to higher rates of food insecurity, causes atmospheric pollution, results in a lot of capital wasted on inputs. Throwing away food can also mean that resources such as water and energy it used to produce it have been wasted. In the University and college hostels contribute to food wastage in a humongous scale on daily basis. Recently, the Food and Agriculture Organization (FAO) of the United Nations Environment Programme (UNEP) released the Food Waste Index Report 2021. It revealed that 17% of all food available at consumer level (11% in households, 5% in food service and 2% in retail) was wasted in 2019 and around 690 million people had to go hungry. The two main objectives of study were To assess the food waste produced by girls hostel and develop a strategy on institutional food waste management.

Locale of the study was two out of seven girls hostels of Rajasthan University namely Mahi and Savitri hostel were selected randomly with the help of random number table. Total number of respondents were 500. Observation method was used to collect data on daily basis by the researchers. In which 41 days of food was audited from Mahi Girls Hostel and 29 days from Savitri Girls Hostel. The study revealed that the majority of leftover from thali in the breakfast of mahi hostel 61.00 per cent as well as Savitri hostel 75.90 per cent in the range of 1.0 to 3.0 kg. Whereas the study also concluded that the majority of leftover from thali in the lunch of mahi hostel 39.00 per cent and from Savitri hostel 89.70 per cent in the range of 3.1 to 6.0 kg and 1.0 to 3.0 kg respectively. In the context of dinner majority of leftover from thali in mahi hostel 46.3 per cent and Savitri hostel 51.70 per cent in the range of 3.1 to 6.0 kg was found on the basis of the results. It can be concluded that a lot of food is wasted in each hostel per day. It is a serious issue but less talked about. To combat this problem, we can make both the staff and the students aware about the issues and also make them realize the outcomes of food wastage.

IMPACT OF TREMATODE IN THE LIFE OF FISHES

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ABSTRACT

Trematodes effect the life of fishes in various ways. They causes serious damage in various parts of body. Adult stage of trematode are flattened, oval body with a smooth, spiny surface both suckers are used for attachment and locomotion.

Eggs of gut dwelling digeneas are releared via de faecation. Adult worms and trapped eggs can physically obstract the passage of blood. Causing necrosis while escape of miracidia through the gill epithelium causes loss of blood and may lead to anemia.

Nodular foci have been demonstrated in the heart, head, kidney and spleen.

Trematodes of the digestive track are very common and also numerous. Meta cercaria infections were found in fish in all studied inland water bodies in Africa and near east.

Mostly all the off larval stages miracidia stage is most infective stage.

Most trematode are hermaphrodite containing both male and Female organ if they are located in tissue or closed internal cavities they can be liberated following death of host.

The anthropogenic impact on the distribution of tropically transmitted highly prevalent parasites likely result in strong effect on food web.

SALINITY STRESS ON PROTEIN CONTENT IN BRASSICA JUNCEA

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ABSTRACT

Plant cells are continuously exposed to various biotic and abiotic stresses which lead to the increased production of reactive oxygen species (ROS). Salt stress increases the production of reactive oxygen species (ROS) which deleterious effect by oxidation of nucleic acids, lipids and proteins inducing severe dysfunctions and even cell death. In salinity stress *B. juncea* plant absorbs many other toxic ions which disturb cellular metabolic process. Salinity stress directly affects the translocation of nutrient and water content from root to shoot through alteration in osmotic potential and viscosity of root cells. When Brassica juncea grown in salinity having soil concentration 0mM, 30mM, 60mM, 90mM, 120mM and 180mM the soluble protein concentration in plant tissue found 9.37% increase then decrease 1.17%, 9.12%, 23.11% and 26.93% respectively after 30 days of salinity stress. When B. juncea grow under same salinity concentration soil soluble protein content first increased by 6.29% then decreased by 3.125, 10.32%, 19.81% and 26.34% respectively after 45 days. It is established that a number of antioxidants compounds are produced to scavenge ROS synthesized in plant. These compounds are merely constituted by micro/macro molecules of proteins. These synthesized compounds are activated by different types of enzymes. The concentration of soluble protein in cellular gap also decreased due to retard synthesis of carbohydrates in *B. juncea* plant. Sodium salt accumulated in different part of tissue which hampers protein synthesis in salinity soil conditions. *Brassica juncea* have several acids essential for oil production, which also interact with soluble proteins.

EFFECT OF SHEEP BASED ORGANIC WASTE AND INORGANIC FERTILIZERS ON NUTRIENT CONTENT AND UPTAKE OF TOMATO (*SOLANUM LYCOPERSICUM*)

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ABSTRACT

A shade net house experiment was conducted at PFDC farm, Agricultural Research Station, Swami Keshwanand Rajasthan Agricultural University, Bikaner during *Rabi*, 2020-21. The experiment was laid out in factorial randomized block design (FRBD) with three replication and 16 treatment combinations comprising of four levels of sheep byproducts (control, sheep manure, wool waste and sheep manure + wool waste) and fertilizer levels (0, 50, 100 and 125% RDF). The results indicated that application of wool waste @ 20 ton ha^{-1} significantly highest content nitrogen (2.32%), phosphorus (0.30%), potassium (1.54%), Sulphur (0.34%), Iron (22.74 ppm), Zinc (24.64 ppm), manganese (23.28 ppm) and copper (5.29 ppm). Result further revealed that 125% RDF significantly highest content nitrogen (2.35%), phosphorus (0.31%), potassium (1.56%), Sulphur (0.35%), Iron (21.92 ppm), Zinc (23.70ppm), manganese (22.25 ppm) and copper (4.93 ppm). The results indicated that application of wool waste @ 20 ton ha^{-1} significantly highest uptake in nitrogen (47.91 g $plant^{-1}$), phosphorus (6.32 g $plant^{-1}$), potassium (31.90 g $plant^{-1}$), Sulphur (7.11 g $plant^{-1}$), Iron (46.69 mg $plant^{-1}$), Zinc (49.53 mg $plant^{-1}$), manganese (47.82 mg $plant^{-1}$) and copper (10.87 mg $plant^{-1}$). Result further indicated that 125% RDF significantly highest uptake in nitrogen (49.08 g $plant^{-1}$), phosphorus (6.53 g $plant^{-1}$), potassium (32.67 g $plant^{-1}$), Sulphur (7.25 g $plant^{-1}$), Iron (45.60 mg $plant^{-1}$), Zinc (49.36 mg $plant^{-1}$), manganese (46.36 mg $plant^{-1}$) and copper (10.31 mg $plant^{-1}$).

ANALYZING AND MEASURING AIR POLLUTION TOLERANCE INDEX IN SIRONJA REGION OF SAUGOR (M.P)

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ABSTRACT

The air pollution tolerance index (APTI) of Sironja region in Saugor (M.P) has declined due to vehicular emissions and deforestation, which had a significant impact on environment as well as health of living organisms. The present study has been done with the objective to develop green cover , by plantation of tolerant plant species belonging to the family Apocynaceae, that can mitigate air pollution to a certain level. Selective plant species were planted whose air pollution tolerance index was higher to have a comparative study before and after monsoon. The APTI of samples collected in triplets were analyzed for pH determination, relative water content (R), total chlorophyll content (T) and Ascorbic acid content (A) respectively. The study reveals that different plants respond differently towards air pollution. Before plantation, plant species should be properly screened on the basis of their tolerance level to pollution load by the air pollution tolerance index (APTI) and anticipated performance index (API). Plants with high APTI and API values can be used as bio-accumulators and best performers while plants with low APTI and API values can act as bio-indicators of vehicular pollution. Plants having higher APTI can be planted in areas with high pollution load. The present study can be used for better understanding and management of air quality and also provides a guide for selection of suitable plant species on the basis of APTI and API score. The APTI and API results are recommended for the cultivation and should be promoted in the highly polluted areas of Saugor city.

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