Global Conference
OUR BIODIVERSITY, OUR FOOD & OUR HEALTH
GCBD-2019
21st & 22nd May, 2019
Botanical Survey of India (BSI), Prayagraj, U.P., India

SOUVENIR & ABSTRACTS

Organizers:
Blue Planet Society (BPS), Prayagraj, U.P., India
Glocal Environment & Social Association (GESA), New Delhi
Botanical Survey of India (BSI), CRC, Prayagraj
(Ministry of Environment, Forests & Climate Change, Govt. of India)
Department of Zoology, Government PG College, Saidabad - Prayagraj, U.P., India
International Academy of Science and Research, Kolkata, W.B., India
The Indian sarus crane, *Grus antigone antigone* (State Bird of Uttar Pradesh): An eternal symbol of unconditional love, devotion and good fortune with high degree of marital fidelity.
GLOBAL CONFERENCE
ON
OUR BIODIVERSITY, OUR FOOD & OUR HEALTH
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Botanical Survey of India (BSI), Prayagraj, India

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Jointly organized by:
Blue Planet Society (BPS), Prayagraj, U.P., India
Glocal Environment & Social Association (GESA), New Delhi
Botanical Survey of India (BSI), CRC, Prayagraj
(Ministry of Environment, Forests & Climate Change, Govt. of India)
Department of Zoology, Government PG College, Saidabad - Prayagraj, U.P., India
International Academy of Science and Research, Kolkata, W.B., India
I am delighted to know that Deen Dayal Upadhyay Government P.G. College, Saidabad, Prayagraj (U.P.) is going to organise an International Conference on “Our Biodiversity, Our Food and Our Health (GCBF-2019)” scheduled on 21st -22nd May, 2019.

Notably, environmental issues are one of most important and frequently debated subjects. At present, environment as a source of life requires more attention and interest than any other topic. Biodiversity, food and health security, global warming, environmental pollution, climate change, natural resource management and sustainable development require a very focussed attention from the general public as well as from all sensitive and informed minds, including academia and scientists.

I am sure that the discourses on the focal theme of the said seminar would pave the way of galvanising the minds of participants and discussants to contribute meaningfully to the scientific reservoir of knowledge and expertise on the focal theme and their quest for the foreseeable future.

As enunciated in Srimad Bhagwad Geeta, “न हि खानेन सदृशं पवित्रमिथि विवधे”, I wish that the sacred threads between human awareness and scientific knowledge would be interwoven during this seminar by the contributions made by learned participants and discussants, particularly the young students.

I wish this International Conference to be a grand success.

(Prof. Rajendra Prasad)
I am delighted to learn that on the occasion of International Day For Biological Diversity, a Global Conference on Our Biodiversity, Our Food and Our Health is being jointly organised by Blue Planet Society (BPS), Prayagraj, Global Environment & Social Association (GESA), New Delhi, Botanical Survey of India (BSI), CRC, Prayagraj, Department of Zoology, Government P.G. College, Saidabad, Prayagraj and International Academy of Science and Research (IASR), Kolkata on 21st-22nd May, 2019.

We are well aware of the importance of biological diversity in sustaining our lives on this planet. Human beings derive their supplies of food, medicines, energy, and many more industrial products from the vast reservoir of this biodiversity.

I am glad to note that the theme of the Conference aims to leverage knowledge and spread awareness of the dependency of our food systems, nutrition, and health on biodiversity and healthy ecosystems and celebrates the diversity provided by our natural systems for human existence and well-being on Earth, while contributing to other sustainable developmental goals, including climate change mitigation and adaptation, ecosystems restoration, cleaner water and zero hunger, among others. I am confident that renowned scientists from all over the world will take this opportunity to deliberate and discuss contemporary issues pertaining to classical as well as modern areas of Biological research and challenges ahead. It has now become a need of the time to update and upgrade the current tools and techniques for modern research. The Global Conference on Our Biodiversity, Our Food and Our Health will definitely ignite the young researchers towards cutting edge research on biodiversity and health. The innovative ideas, research findings and technical skills of reputed academicians, researchers and scientists will definitely provide a sumptuous scientific feast to be relished by the scientific community at large.

It is indeed a proud moment for the organizing team of GCBD-2019 and I extend my blessings and warm wishes to all who are associated with the Conference. Please accept my good wishes for the success of the event.

Prof. Neelima Gupta
Vice-Chancellor
Message

It gives me immense pleasure that on the occasion of International Day for Biological Diversity, “A Global Conference on our Biodiversity, Our Food & Our Health” is jointly organised by BPS, GESA, BSI (CRC), Govt. P. G. College Saidabad, Prayagraj and IASR Kolkata on May 21-22, 2019. The conference will provide a platform to motivate the younger generations for dealing with the problems related with our food and health and to find out their solutions.

I hope that the deliberations during conference would address diversified field of Biodiversity and other related areas in consonance with our Global need.

I wish all success for Conference.

Prof. R. K. P. Singh
I am delighted to know that a Global Conference on “Our Biodiversity, Our Food and Our Heath” is being jointly organized by Botanical Survey of India (BSI), Central Regional Centre, Prayagraj, Blue Planet Society, Prayagraj, Glocal Environment and Social Association (GESA) New Delhi, Department of Zoology, Government P.G. College Saidabad, Prayagraj and International Academy of Science & Research (IASR), Kolkata, W.B. on 21-22 May, 2019.

Biodiversity is vital to social and economic development and indeed fundamental to the survival of humanity. Its invaluable and irreplaceable ecosystem survives due to air that we breath, to water that we drink. These are the very foundation on which viable long term fundamental rests. Conservation of biodiversity and its sustainable use are the key pillars for sustainable development of nation. We need to develop innovation and scientifically validated technologies and solutions to help conservatory and sustainable utilization of biological and genetic resources in India.

I am sure that the deliberations of the conference would initiate needful interactions and facilitate new vistas into latest trends in research on the theme/subject area.

I wish the organisers of the conference a grand success.

Dr. (Preeti Gautam)
Director - Higher Education, U.P.
Prayagraj
It's delighting moment and a matter of great pleasure for me to welcome the delegates and dignitaries in the premises of Botanical Survey of India (BSI), Central Regional Centre, Allahabad on the occasion of two days Global Conference on International Day for Biological Diversity (GCBD – 2019) to address the issues; Our Biodiversity, Our Food, Our Health. Since biodiversity is the very basic factor for our food and health that plays a key role for transforming food systems and improving human health, therefore the theme for this year's celebration of IBD is rather crucial in the changing scenario of the world's climate and mindset.

This century is most critical in terms of indiscriminate developmental activities posing undue pressure on nature and natural resources, resulting into environmental pollution, loss of habitat and biodiversity. I am sure that the delegates and speakers will get a forum for exchange of their ideas and come to the concrete conclusion for future developmental planning and conservation of nature and natural resources.

I feel overwhelmed to extend my greetings and best wishes to the Convener Dr. H.P. Pandey, President, Blue Planet Society, Allahabad and Organizing Secretary Dr. A.K. Verma who have given me this opportunity to host the occasion in this premise.

With warm welcome of delegates, I wish the Conference a grand success in its objective and mission.

(Dr. G.P. Sinha)
Scientist – E & Head of the Office
It is a matter of immense pleasure the that Department of Zoology, DDU Govt. P. G. College Saidabad Prayagraj, Blue Planet Society (BPS) Prayagraj, Botanical Survey of India (BSI) CRC Prayagraj, Glocal Environment & Social Association (GESA) New Delhi and International Academy of Science & Research Kolkata (W.B.) are jointly organizing a Global Conference entitled "OUR BIODIVERSITY, OUR FOOD AND OUR HEALTH" (GCBD 2019) on 21st & 22nd May 2019 at BSI auditorium, Prayagraj.

The theme of the Conference is quite pertinent in contemporary scenario of the world in general and India in particular. Our Biodiversity, our food and our Health are the issues which need to be addressed sincerely in order to achieve Sustainable Development Goals (SDGs) and to avoid conflicts. Hunger, malnutrition, poor health and loss of biodiversity are such severe challenges which humanity and Mother Nature are going to face in the coming future. These challenges are the bottle marks in the process of human development as well.

This conference will provide a platform for the researches 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. It would also provide a forum for policy makers, programme managers, service providers, NGOs and activists working in this field of research and innovation to exchange their views, visions and ideas.

I congratulate the Organizing Secretary Dr. A. K. Verma, Convener Dr. H. P. Pandey and the entire team for taking up this challenging but momentous initiative. I am, therefore, confident that the two day conference would witness intense academic discourse and discussions which in turn would throw up tentative solutions to the issues in consideration.

I wish the conference a grand success.

(Prof. Ashish Joshi)
Principal/Patron
GCBD 2019
I feel immensely pleased to know that the Blue Planet Society is going to organize a Global Conference to celebrate the International Day for Biological Diversity (GCBD-2019) in collaboration with the Botanical Survey of India (BSI), CRC, Allahabad, GESA, New Delhi and Govt. PG College, Saidabad on 21-22 May 2019.

The theme of the Conference “Our Biodiversity, Our Food, Our Health”, is most relevant, timely and as per the Traditions of Indian civilization and culture. The aim to spread awareness of the dependency of our food systems, nutrition, and health on biodiversity and healthy ecosystems is inevitable in current situations. Development is although necessary to meet the current demands, however; the logical and sustainable use of nature and natural resources is also a need of time to cater the requirements of the future. In this scenario the conference organized at the holy city of Prayagraj shall offer a forum for intellectuals and scientists to discuss the issue for fruitful strategy of better future of humanity and planet earth.

I extend my greetings to the organizing committee of GCBD-2019 with the hope that this global intellectual gathering will certainly bring about some fruitful solutions on the burning issue. Further, I congratulate Dr. H.P. Pandey; President, Blue Planet Society as Convener and Dr. A.K. Verma as Organizing Secretary to take this bold step in Prayagraj.

This a matter of great pleasure that Glocal Environment and Social Association (GESA) New Delhi is going to organize a Global Conference on "Our Biodiversity, Our Food and Our Health" on May 21 & 22, 2019 at BSI auditorium Prayagraj, U.P., India. This conference is, in fact, being jointly organized by Blue Planet Society (BPS) Prayagraj, Botanical Survey of India (BSI) Prayagraj, Department of Zoology, Government P.G. College Saidabad Prayagraj and International Academy of Science & Research (IASR) Kolkata (W.B.).

Biodiversity needs its sustainable use falling of which it will perpetuate in equitable and unsustainable, deeper poverty, new and more rampant illnesses, continued loss of species degraded environment which are less healthy for we people. The theme and sub-themes of conference are absolutely relevant in modern context as it includes all possible aspects of biodiversity, food and health.

I personally feel that learned speakers and participants in this conference will definitely discuss the biodiversity, food and health from scientific, technological, cultural, social, physiological, spiritual, religious, economical, philosophical point of views. Biodiversity is more or less related with food and ample availability of food is directly related with health of entire biota including humans. In each and every conditions, ecological balance must be maintained, which is essential for survival of all living creatures including humans.

I am sure that outcomes of this global conference on various issues on the subject will generate a new concept in order to conserve the biodiversity, availability of food and health. We should think globally with local action. This the key point of GESA i.e. think global, act local.

I impart my best wishes to the organisers for the organizing the global conference and welcome the delegates. I hope that this conference will attain a new height of success and add some more feathers in the cap of conference history.

(Dr. Sunita Arya)  
Secretary  
GESAs, New Delhi
It's my pleasure to express my views on the occasion of **GLOBAL CONFERENCE ON OUR BIODIVERSITY, OUR FOOD & OUR HEALTH (GCBD 2019)** jointly organized by Blue Planet Society (BPS), Prayagraj, U. P., India in association with Department of Zoology, Govt. PG College, Saidabad-Prayagraj, Glocal Environment & Social Association (GES), New Delhi, Botanical Survey of India (BSI), CRC, Prayagraj and International Academy of Science and Research (IASR), Kolkata, West Bengal on 21st and 22nd May, 2019 at Botanical Survey of India (BSI) Auditorium, Chetham Lines, Prayagraj, U.P. India.

I believe that participants succeed when they are willing to assume responsibility for their own learning. All researchers are assessed at the beginning of subjects in order to establish the minimum standard of achievement. They learn in ways which suit their individual strengths and participate in an extensive program of enrichment activities. I am honored to strengthen the legacy of our continued success. The excellence of our friends proves itself in the number of champions and winners that we have produced both in academics and innovations. I am also sure that this conference will provide a right platform for the researchers and academicians across the country to exchange their ideas and views with the intellectual community for strengthening their knowledge.

I congratulate the organizing committee for this timely initiative and convey my best wishes for the grand success of this event.

Prof. S. N. Labh
For the conservation and sustainable use of biological diversity, United Nations Convention on Biological Diversity (CBD) was negotiated and adopted on 22nd May 1992, and India is a party to the CBD. Thus to commemorate the adoption of the Convention, the United Nation has proclaimed May 22nd as the International Day for Biological Diversity (IBD) for increasing understanding and awareness of biodiversity issues. Celebrating IBD every year affirms our resolution and reflects our responsibility to safeguard the precious heritage of bio-resources for future generations. This year’s celebrations of the International Day for Biological Diversity, on 22nd May 2019, focus on “Our Biodiversity, Our Food, Our Health”, because biodiversity is the foundation for our food and health and a key catalyst for transforming food systems and improving human health. In the last 100 years, more than 90 percent of crop varieties and 50 percent breeds of domestic animals have disappeared. Locally-varied food production systems are under threat, including related indigenous, traditional and local knowledge. With this decline, agro-biodiversity is disappearing, and also essential knowledge of traditional medicine and local foods.

In this background, the Blue Planet Society (BPS), Allahabad in association with the Botanical Survey of India (BSI), Allahabad, and GESA, New Delhi has taken initiative to organize a Global Conference on International Day for Biological Diversity (GCBD – 2019) to address the issues and their solution possibilities for the better future of Nature and Humanity.

On this occasion, on behalf of the Blue Planet Society and on my own behalf I warmly welcome the delegates and dignitaries at BSI auditorium. I am sure that the deliberations during this Conference will certainly be memorable and milestone in the well being of the nature and humanity.

Once again I extend my cordial welcome to dignitaries, delegates, resource persons, awardees of BPS/GESA and Organizing committee of GCBD-2019 to make the event a grand success.

(Dr. H.P. Pandey)
President
Blue Planet Society
Today, the world has assumed the form of a 'global village' due to metaphoric shrinkage of the geo-political boundaries of nation-states through the use of information and communication technology. Science, technology and communication have taken rapid strides in the last few decades. Ironically, our biodiversity, our food and our health are gradually depleting. Actually, the problems arise at local that gradually become global.

In order to enhance the mass awareness about biodiversity conservation and clean environment, global problem of food and health, we are going to organize this Global Conference entitled "OUR BIODIVERSITY, OUR FOOD AND OUR HEALTH" (GCBD 2019) on 21st & 22nd May 2019 at BSI auditorium, Prayagraj. The GCBD is being jointly organized by Department of Zoology, DDU Govt. P. G. College Saidabad Prayagraj, Blue Planet Society (BPS) Prayagraj, Botanical Survey of India (BSI) CRC Prayagraj, Glocal Environment & Social Association (GESA) New Delhi and International Academy of Science & Research Kolkata (W.B.).

The aim of this conference is to invite resource persons; those who have done excellent work in the specified field, to open up new vistas of research and to generate innovative and inclusive ideas for sustainable development. Its one objective is also to develop potential environmental and social activists to sensitize the society about conservation of biodiversity and natural resources for the larger benefits of entire biotic components of nature including human beings with food and health sustainability. The conference will also provide a platform for local researchers of relevant field to present their papers and to interact with fellow researchers and resource persons of international repute.

I hope all attending delegates will take advantage of this wonderful occasion to analyze, discuss and reach at a pragmatic conclusion beneficial to all living creatures including human beings.

With huge eco-friendly best wishes.

(Dr A.K. Verma)
Organizing Secretary
GCBD 2019
BLUE PLANET SOCIETY

Our mother planet earth is also heralded with an alternative name the Blue Planet, as it seems blue when watched from the space due to the presence of 3/4th part of water on it. There are so many uniquely interwoven natural forces and factors which enabled this planet to sustain a beautiful spectrum of life forms, conclusively referred as biodiversity. But, alas! The earth and different life forms inhabiting thereon are in peril; in this regard, to do our own bit the idea of constitution of Blue Planet Society (BPS) was conceived and the plans were nailed down in a formal meeting on 24th March, 2004 under the stewardship of Dr. H.P. Pandey and six other assonant members having scientific temperament and common vision of global welfare. The society was registered on 31th March, 2004 under the Society Registration Act -1860 (Section-21) of Government of India vide Registration No. 1463/2003-04. The current head office of the society is located at: 22-B/2, Katra Road, Allahabad - 211002 (U.P.), India. Hence the Blue Planet Society legally came into existence as a non-profit organization to accomplish multifaceted activities in the domains of health, education, environment, and biodiversity conservation to serve the nature and humanity with the underlying objective: “Sarve bhavantu sukhinah Sarve santu niramyah” i.e. May all be happy May all be healthy.

2. Activities

2.1 National Symposia Organized

The society regularly organizes National and International Seminars/Symposia and workshops to provide a forum for the discussion of the current issues of science, society, and environment.

2.2 Healthcare Camps

With the help of members, physicians of different systems of medicines and other donors (medical stores/agencies), regular healthcare camps are organized in different backward localities of rural and urban (slum) areas in U.P. for health checkups and distribution of medicines to the needy persons unable to afford the cost of their treatment.

2.3 Awareness Programs

Regular awareness programs on environmental and health related issues, including rallies and invited lectures are organized by the volunteers of the society, academicians, environmentalists, research scientists and physicians on world environment day (5th June) and foundation day of the society (24th March) every year.
2.4 Researches
Several independent research projects are being run by the scientists and academicians associated to the society. The society is also planning to establish a separate research wing with the help of funding agencies of the Government of India and abroad.

2.5 Honours and awards
The Society recognizes worthy contributions of scholars and institutions in the field of science, society, environment and human welfare to confer national felicitations on them by following categories of the awards and honours:

1. Lifetime Achievement Award (Above 50 years of age)
2. Hon. Fellowship/Fellowship (FBPS)
3. Dr. APJ Abdul Kalam Green Environment Award
4. Biodiversity Conservation Award
5. Innovative/Excellent Faculty Award
6. Social Environmentalist Award
7. Paryavaran Mitra Puraskar
8. Young Scientist Award (Below 35 years of age)
9. Blue Planet Scholar Award (For Ph.D. scholars)
10. Best Paper/Poster Presentation Awards
11. Blue Planet Ambassador (BPA) (Children below 15 years of age)

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GLOCAL ENVIRONMENT & SOCIAL ASSOCIATION (GESA)

Think Global Act Local

The last century has been spectator of climax of an anthropogenic orchestra that started some ten thousand years ago after the climatic stability of the earth, where a single human species has been actor and director as well. It displayed radical economic growth, material comforts, technological revolutions and social reforms that have never ever been achieved by human species in the past since his descent. This landmark success brought a paradigm shift in existing technology, healthcare, life expectancy, and even the mindset of the people in the modern Era. This tendency compelled indiscriminate developmental activities that put a sign of interrogation before the nature and humanity to realize that our destiny and destination is likely to end into blind. Mapping the facts and circumstances, it was realized that the problems arise at local and encompass to grab the whole being by and by to become global. Therefore to serve a bit the nature and society for better future; the Glocal Environment & Social Association (GESA) is framed (www.gesa.org.in) with following objectives:
1. To develop and promote ‘global thought and local action’ ideology about environmental and social issues.
2. To campaign the global and local environmental issues and their future impacts for awareness.
3. To organize seminars, symposia, workshops, brainstorming sessions, lectures, and summer schools to aware and educate the people on blazing environmental and social issues.
4. To publish magazines, journals, periodicals and leaflets to maintain rational dialogue among experts as well as to provide forum to the researchers and intellectuals for wide dissemination of their research findings and ideas.
5. To felicitate the persons and organizations for their outstanding services rendered in various fields of agriculture, arts, biodiversity conservation, commerce, culture, education, environment, healthcare, humanities, literature, mass communication, music, patriotism, peace and harmony, science, sports, technological innovations and other social services.
6. To promote the inclusive development of villages, farmers and agriculture.
7. To prepare the plan for sustainable development of urban societies with good social, moral and spiritual environment.
8. To collaborate with National and International Institutions, Government and Non Government organizations, Schools, Colleges, Universities, Private and Public sector Industries to achieve the objectives of the association (GESA).
9. To take financial assistance from Central and State Governments of India and other concerned bodies, public and private sector organizations to achieve the objectives of the Association.
10. To conduct all other activities in achieving the objectives stated in this Article and to undertake such other desirable activities as the Management Committee ascertains from time to time.

**GES A AWARDS**

The Glocal Environment & Social Association (GESA) recognizes commendable contributions of eminent persons/scholars in the various fields of agriculture, arts, biodiversity conservation, commerce, culture, education, environment, healthcare, humanities, literature, mass communication, music, patriotism, peace and harmony, science, sports, technological innovations and other social services. The GESA confers following categories of awards and honours of national repute through search and nominations:

1. **LIFE TIME ACHIEVEMENT AWARD (ABOVE 55 YEARS OF AGE)**
2. **HON. FELLOWSHIP/ FELLOWSHIP (FGESA)**
3. **DR. APJ ABDUL KALAM GREEN ENVIRONMENT PROMOTION AWARD**
4. **DR. SARVEPALLI RADHAKRISHNAN EDUCATION PROMOTION AWARD**
5. **CHAUDHARY CHARAN SINGH AWARD FOR AGRICULTURAL INNOVATIONS**
6. **SARDAR PATEL GLOCAL AWARD FOR SOCIAL AWARENESS**
7. **LAL BAHADUR SHASTRI GLOCAL AWARD FOR BIODIVERSITY**
The Botanical Survey of India (BSI) is the apex research organization under the Ministry of Environment and Forests, Govt. of India for carrying out taxonomic and floristic studies on wild plant resources of the country. It was established on 13th February, 1890 with the basic objective to explore the plant resources of the country and to identify the plants species with economic virtues. The Botanical Survey of India has the nine regional circles situated at different regions of the country. The following are the activities being carried out by the BSI:

**PRIMARY**

- Exploration, inventorying and documentation of phytodiversity in general and protected areas, hotspots and fragile ecosystems in particular; publication of National, State and District Floras.
- Identification of threatened/red list species and species rich areas needing conservation; ex-situ conservation of critically threatened species in botanical gardens.
- Survey and documentation of traditional knowledge (ethno-botany) associated with plants.
- Develop a National database of Indian plants, including herbarium and live specimens, botanical paintings/illustrations, etc.

**SECONDARY**

- Revisionary/Monographic studies on selected plant groups.
- Qualitative analysis of nutritive value of ethno-food plants and other economically useful species.
- Capacity building in plant taxonomy through refresher courses and post M.Sc. certificate course.
- Environment Impact Assessment of areas assigned by the ministry.
- Develop and maintain Botanical Gardens, Museums and Herbaria.
- Preparation of Seed, Pollen and Spore Atlas of Indian Plants.

Central Regional Centre, **Allahabad**. Center. Established on 31st July 1962 with jurisdiction of Uttar Pradesh, Madhya Pradesh and Chhattisgarh, encompassing two biogeographic zones viz., Upper Gangetic Plain and Central Indian zone along with Satpura and Vindhyan Plateaus. The administrative office of the Centre is located at 10 Chatham Lines, Allahabad.

The rich herbarium holds more than 100,000 plants and the library includes 10,000 books and journals meeting requirements of the scientists, academicians and research scholars. The botanical garden of the BSI, Allahabad is one of the richest treasures and conservatory of plants.

Established on 31st July 1962 with jurisdiction of Uttar Pradesh, Madhya Pradesh and Chhattisgarh, encompassing two biogeographic zones viz., Upper Gangetic Plain and Centre Indian zone along with Satpura and Vindhyan Plateaus. The administrative office of the Centre is located at 10 Chatham lines, Allahabad.

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**D.D.U GOVERNMENT POST GRADUATE COLLEGE**

**SAIDABAD-PRAYAGRAJ**

Deen Dayal Upadhyay Government Post Graduate College Saidabad-Prayagraj (U.P.) was established in 1999 and is currently affiliated with Prof. Rajendra Singh (Rajju Bhaiya) University, Prayagraj. The college is situated in Saidabad at a distance of about 31 km from Prayagraj city. The college offers undergraduate (B.A., B.Sc. and B. Com.) and post graduate (M.A. and M.Sc.) courses. The science faculty is one of the most prestigious faculties of the region offering Zoology, Botany, Physics, Chemistry and Maths at PG level. The faculty includes some of the most renowned figures in the academic world.
International Academy of Science and Research (IASR) has been established on the auspicious occasion of the National Science Day on 28th February 2015 based on its incorporation as a Charity under the Central Act II of 1882, Government of India in Kolkata with the main objective of locating avenues for alternative employment creation besides designing a neological as well as neocratic approach to research and entrepreneurship in the field of Science and research among the younger generation all over the world in general and India in particular with a view to bringing peace on earth in the third millennium by having country wise appropriate solutions for the burning problems like peacelessness, poverty, greed, unemployment, faulty educational, training and research methodologies, religious intolerance, etc., The International Academy of Science and Research (IASR) has decided to design a master plan paradigm (2016-2025) for a new world order.

The activities of IASR will include the strategies for creating more researchers besides transfer of appropriate technologies among the globe for ensuring a balanced and a sustainable growth in all countries of the world by using clean as well as cleaning-up technologies through new and emerging techniques for climate change management, environmental and disaster education, geriatric care, waste management, green business and technologies besides strengthening of diplomatic relations among nations for protecting our Mother Earth.

The idea is also to promote entrepreneurial educational leadership among the school and the college going boys and girls by “Catching Them Young” and for designing appropriate messages for the educators to see that they produce a greater number of job givers rather than job seekers. This will be possible as IASR has the qualified inventory of experts for establishing universities, colleges, institutions, schools and other training enterprises in different countries with the latest equipment and infrastructure for conducting formal, informal, nonformal, open, distance, online, internet and webbased employment-centric programmes in all countries of the world.
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COMMERCIAL OSTRICH (STRUTHIO CAMELUS LINNAEUS, 1758) FARMING ENHANCES SOCIO-ECONOMIC STATUS OF FARMERS AND AGRITAINMENT IN RUPANDEHI, NEPAL

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ABSTRACT

Agritourism are “agritainment” which involves any agriculturally based operation or activity that brings visitors to a farm or ranch. Agritourism is a form of niche tourism that is considered a growth industry in many parts of the world, including Australia, Canada, The United States, and Philippines. In Nepal, commercial agriculture is flourishing in Rupandehi district and has boosted the potentiality of agritourism in the district. Rupandehi is the country’s largest farming & research center for Ostrich. Currently, there are 6,000 ostriches in the farm. Every day, approximately 1,000 domestic and foreign tourists visit the Ostrich farm located at Gangoliya of Tilottama Municipality. The farm, Ostrich Nepal Pvt Ltd, is earning Rs 5 to Rs 6 million every year. Almost 50 percent domestic tourists coming to visit Lumbini also go to the ostrich farm while 15 to 20 percent of foreign tourists visit the farm. Ostrich is the largest living bird in the world. The common ostrich shares the order Struthioniformes with the kiwis, emus, rheas, and cassowaries. Ostrich meat is very popular due to its healthy nature and rich in Omega 3 fatty acid so its demand is increasing globally. Therefore, to study the general behaviour of ostrich and agritainment a study has been made on ostrich farming at Ostrich Nepal Pvt Ltd.
EVALUATION AND PRODUCTION OF CHIKUNGUNYA VIRUS E2 RECOMBINANT PROTEIN FOR SERODIAGNOSIS

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ABSTRACT

Disease caused by Chikungunya virus (CHIKV) is clinically characterized by sudden onset of fever and severe arthralgia, which may persist for weeks, months, or years after acute phase of the infection. CHIKV is globally spreading, in India first appeared in the 1960s followed by a quiescent period and then a full-blown remergence in 2006 and sporadic persistence since then. Despite a large number of commercially available diagnostic kits for CHIKV, a clinical preparedness and diagnostics suffer from sub-optimal assays. An international diagnostic laboratory survey suggested that there is a critical need for improving CHIKV diagnostics especially in the early acute phases of illness. With the recent studies indicating that a vast majority of human humoral response in CHIKV infection is directed against E2 protein, there is great interest to develop CHIKV E2 based serological tests. However, methods to produce large amounts of CHIKV protein are limited. Here we report cloning, expression and purification method for obtaining a truncated 37KDa Chikungunya E2 protein at a high yield of 65-70 mg/l. We evaluated the potential of this purified protein for serological detection of PCR and IgM ELISA confirmed CHIKV patient sera and found that this protein can be used to reliably detect CHIKV specific antibodies by ELISA as well as western blot. Thus, using this protocol, laboratories can make large quantities of purified protein that can be potentially used in CHIKV serological analysis.
BIODIVERSITY CONSERVATION IN PRAGMATIC BUDDHISM

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ABSTRACT

The Buddhist traditions hold that Siddhartha Gautama was born to a royal family in Northern India. A prophesier predicted that he would become either a great king or a great religious leader. His father tried to infuse the former and ensured all forms of unsatisfactoriness away from his son's life. However, Siddhartha's curiosity compelled him to climb beyond the palace and discover the condition of average human beings. In his adulthood he encountered four human conditions; a dead person, a dying person, a decrepit person, and an impoverished person which challenged his understanding of his world. Having been ignorant to such human conditions, the question of human unsatisfactoriness and a solution for its alleviation preoccupied his adult life. Thus he renounced his grandeur and wealth, and set out on a course that would lead to answers. Lord Buddha says that life is permeated with suffering caused by desire, the suffering ceases when desire ceases, and enlightenment obtained through right conduct, wisdom and meditation releases one from desire, suffering and rebirth. The Buddhist vision for society evolved as the religion expanded; it was not part of the Buddha's original philosophy under the Bodhi tree. Buddha established rules of appropriate behavior. He also urged his lay followers to respect and have compassion for all beings. The Buddha did not attempt to gain political control, but he did have ideas about how rulers should govern. He taught that they had an obligation to the people they ruled. He taught that in the ideal society rulers would be fair and obey their own laws, and would freely provide grants to their subjects so that they could set up businesses. Thus the ideal of Buddhism is an amalgam of essence (theory) and existence (practice) which teaches the path of renunciation on one hand and the social business on the other.
DIVERSITY, DISTRIBUTION AND STATUS OF FISH FAUNA IN AND AROUND CHITWAN DISTRICT OF NEPAL

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ABSTRACT

Chitwan district is endowed with varied aquatic resources which harbor diverse fish species in central Nepal. A total of 111 fish species were collected from different sampling sites of several tributaries of Trisuli, Rapti and Narayani river systems in Chitwan district and adjacent areas from August 2015 to April 2019. These species belong to 9 orders, 27 families and 72 genera. Among the orders, Cypriniformes had the highest number of species (49%) followed by Siluriformes (30%), Perciformes (12%), Synbranchiformes (3%), Osteoglossiformes (2%) while Anguilliformes, Beloniformes, Clupeiformes and Tetraodontiformes represented each by about 1%. Cyprinidae has the highest number of species (40%) among the families followed by Sisoridae (12%), Bagridae (7%), Cobitidae (5.4%), Schilbeidae (4.5%), Channidae (3.6%), Balitoridae (2.7%), Mastacembelidae (2.7%), Siluridae (2.7%), Notopteridae (1.8%), Ambassidae (1.8%), Nandidae (1.8%) and Mugilidae (1.8%). Other families accounted for about 1% were Anguillidae, Belonidae, Clupeidae, Psilorhynchidae, Anabantidae, Gobiidae, Belontidae, Synbranchidae, Amblycipitidae, Pangasidae, Claridae, Heteropneustidae, Chacidae and Tetraodontidae. The *Botia geto* was reported for the first time from Rapti river of Chitwan and adjacent area. Different fish species are naturally maintained in aquatic systems and support livelihoods of the people. Catches of major food fishes are declining due to overexploitation of resources, therefore, appropriate measures are needed at once to maintain and conserve the indigenous stock.
VARIATION IN BLOOD CONSTITUENTS OF *CLARIAS BATRACHUS* DURING STARVATION

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ABSTRACT

The present study was carried out to study the changes in biochemical constituents during starvation in the blood of freshwater catfish, *Clarias batrachus*. The experiment involved 240 individuals of *Clarias batrachus* collected from local fish pond at Darbhanga. At the end of the experimental period, the blood was collected separately from control and starved fishes for biochemical analysis. *Clarias batrachus* adapted well to starvation stress and survived all throughout the experimental period. Blood samples were collected from both the male and female Clarias in each treatment at the initial and the end of fasting. Blood samples were collected from the caudal vasculature vein using plastic syringes containing EDTA as an anticoagulant. Results showed that the females had higher values of blood cholesterol both in normal and starved conditions. Starving resulted in decrease in all biochemical contents in fish. However, Plasma protein seemed to resist starvation stress as it did not show significant depletion even after 30 days of starvation. The blood glucose level decreased gradually while the blood cholesterol showed sharp depletion due to starvation. After 40 days of starvation, the decrease in blood glucose level was 63% in the male and 69% in the female; the decrease in blood cholesterol was 88% in male & 76% in female; and the decrease in plasma protein was 11% in male and only 4.88% in female than that of the normal value.
PERSONALITY STATUS AND DISTRIBUTION SURVEY OF SNOW LEOPARD (*PANTHERA UNGRIA*) IN NEPAL

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ABSTRACT

The snow leopard (*Panthera uncia* Schreber, 1775) native to Central Asia and the Himalayan mountain range is one of the world's most elusive cats. The snow leopard is categorized as vulnerable and endangered in the 2009 IUCN Red List and is estimated that the total number of *P. uncia* is less than 10,000 mature individuals and decline about 10% in the next 23 years. As of 2016, the global population was estimated at 4,678 to 8,745 mature individuals. The snow leopard inhabits alpine and subalpine zones at elevations from 3,000 to 4,500 m (9,800 to 14,800 ft), ranging from eastern Afghanistan to Mongolia and western China including Nepal. The total potential snow leopard estimates vary significantly but it is thought there might be as few as 4,000 snow leopards remaining in the wild condition and its habitat is about 1,835,000 km² among in 12 snow leopard range countries. In addition, some 600-700 animals survive in zoos around the world. Taxonomically, the snow leopard was initially classified in the monotypic genus Uncia. Since 2008, it is considered a member of the genus Panthera based on results of genetic studies. Due to extensive hunting, the wild fauna of Pakistan has declined considerably. Decline in populations of prey species has a direct impact on the feeding habits of snow leopards, leading to predation on domestic livestock, resulting in increased conflicts between snow leopard and local people. According to recent scientific studies, the high altitude region of the Eastern Himalayas is among the most vulnerable to global climate change. This means that the large cats are more vulnerable to extinction in this region and thus, the urgency to conserve the leopards here. According to WWF, the impact of climate change could result in a loss of up to 30% of the snow leopard habitat in the Himalayas. Bold and transformative actions for the long-term protection of snow leopards are needed.
ABSTRACT

*Nigella sativa* (Black Cumin) is a medicinal spice that appears to be active in the dose used to season food products. It has a potent bioactive known as thymoquinone which shows promise in treating epilepsy, allergies, and boosting the immune system. Thus a 12 week study was conducted to determine the effects of varied water temperature on growth performance, protein profile in liver of indigenous major carp rohu *Labeo rohita* fed *Nigella sativa* during intensive aquaculture at the laboratory of Fisheries Development and Training Center, Janakpurdham, Nepal. Altogether 18 aquaria for six (6 x 3 replicates) treatments (T1, T2, T3, T4, T5 and T6) of varied temperature as 18-20°C, 20-22°C, 22-24°C, 24-26°C, 26-28°C and 28-30°C were fixed respectively with the help of aquarium thermometer. Cent per cent survival rate was recorded in the fish reared in water temperature having T4 (24-26°C) and weight gain percentage was twofold higher than the beginning of the carp treated with T1 group. Specific growth rate (SGR) was 53.42 higher in T4 treated group. Similarly significant (P<0.05) results were observed in protein profiles, however, total protein in liver was 18.05±0.46 g higher in T4 group than T1 (6.44±0.98) group. Higher albumin (8.21±0.16) and globulin (9.84±0.40) was recorded in rohu treated with water temperature T4 group. Thus, it has been concluded that water temperature ranging from 24-26°C found to be the most effective for rearing of *Labeo rohita* and has been proved for better growth and healthy carp. Aquafarmers can be benefitted by using this technique.
ANIMAL BASED TRADITIONAL MEDICINES USED NEAR THE CHITWAN NATIONAL PARK AND ADJOINING AREAS IN NEPAL

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ABSTRACT

Human beings and animals are closely related with one another from the ancient times almost since the time of their origin. They are interdependent with one another in many respects. The present article describes the traditional medicines of local communities on ethnozoology by the people living near the Chitwan National Park and the adjoining areas in Nepal. The field study was conducted from November 2014 to February 2017 by different methods like frequent field visit, interview with the local people through structured questionnaires from the different age groups including female and male gender, involving 22 informants (12 male and 10 female), by the direct observation of local healing practice who were the experienced and popular in local healing practices and also by the help of focus group discussion. Through structured questionnaire survey a total of 194 respondents from 29 villages were interviewed across different communities and socio-economic strata of the sampled villages. Respondents listed 34 animal and bird species, including 28 wild and 6 domestic, which are used in primary health care needs of human beings and livestock and for other purposes also. Blood and flesh are most commonly used animal products to treat diseases such as asthma, cough, rheumatism and healing of external injuries. The findings are more important in view of the fact that if the remedial measures, for which these animals are used, are not proved scientifically, the common man should be made aware of this, which in future will significantly help in conservation of rare and endangered animals. Using animals and their parts and products for healing different types of ailments and gaining the sufficient knowledge in this field has been the trend from the very beginning. This ethnozoological experience has been found to be transferred to the generation through parental heritage and has been proved effective in the traditional healing and curing the different types of diseases. The present study describes the traditional knowledge of using the different animals, their parts and products in the form of medicines by the people inhabiting in the Chitwan National park and the adjoining areas. The field survey may be helpful as the source of knowledge not only for medicinal field but also help a lot in the conservation and management of the bio-diversity.
GLYPTOTHORAX ALAKNANDI (TILAK, 1969) A RARE SPECIES REPORTED IN THE SUN KOSHI RIVER OF HIMALAYAN KINGDOM, NEPAL

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ABSTRACT

Glyptothorax alaknandi was described as a subspecies of G. brevipinnis by Tilak (1969). It has variously been considered a synonym of G. pectinopterus (e.g. Menon 1999), G. brevipinnis (e.g. Ng 2005) or more recently, a valid species (Edds and Ng 2007). There is insufficient material from throughout its purported range in museums and more material is badly needed to fully ascertain its taxonomic status. Glyptothorax alaknandi is known from the Ganges River drainage in India (Uttaranchal) and Nepal (Mahakali River in the Terai of the far western and the Kali Gandaki River in the hills of western Nepal. Whilst the species is likely to be threatened across parts of its range in future if the proposed Kotli Bhel dam on the Alaknanda River dam is built, it appears likely that the species may be present in other drainages between its known locations in Nepal and it is assessed as Least Concern at present pending further information on threats and distribution. The species is considered as Threatened Species by IUCN Red List of 2010. Sun Koshi River is one of the most important river for important hill stream fishes of mid hill region of Karvepalanchowk district, Bagmati zone, Nepal. The present investigation was done during October 2017 to April 2018. The sampling station was visited three times covering October 2017, January 2018 and April 2018. Various fishing gears were used in the collection of fish such as scoop net, cast net, etc. Along with various hill stream fishes such Schizothorax Sp.,
FECUNDITY (F) AND GONADOSOMATIC INDEX (GSI) OF DARK MAHSEER BARBUS CHILINOIDES GÜNTER, 1868 FROM INDRA SAROBAR RESERVOIR (ISR), KULEKHANI, NEPAL

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ABSTRACT

Gonado-somatic index (GSI) is one of the important parameters of the fish biology, which gives a detailed idea regarding the fish reproduction, reproductive status of the fish species and help in ascertaining breeding period of fish while Fecundity of any fish is related to egg size, gonad size, and length weight of the female fish. Indra Sarobar is the largest man-made lake in Nepal constructed at the deep gorge between Markhu and Kulekhani Village development committee. It was built by the Kulekhani Hydro Project and it is 7km long lake is just 40 Km from Balkhu, Kathmandu. B. chilinoides is a game fish found in hill stream and abundantly found in Indra Sarobar reservoir (ISR). Thus, fish specimens of Puntius Barbus chilinoides from Indra Sarobar Reservoir were collected to estimate the Gonado-somatic Index (GSI) and fecundity during January to December 2017. GSI was found highest in May and lowest in August with a single spawning peak. A rapid increase in mean GSI value was recorded from February (3.85) reaching to its peak value in May (7.96). There was a gradual decrease in GSI from June (6.70) to August (1.75) indicating the onset of Spawning. Fecundity ranged from 3950 to 22440 with a mean of 9092 having an average total length of 220 mm to 435 mm. A perfect linear relation was found between gonad weight and fecundity with a significant correlation coefficient (r=0.525, p=0.01). However the relationships between the fecundity and the total length (TL), (r=0.412, p=0.01) was low due to great amount of variability in the egg count among the fish of similar sizes. The regression equation indicated that the every unit increase in fish length enhance the increment of egg number by 2.27. Correlation coefficient between fecundity and body weight (BW) (r=0.308, p=0.01), was not found significant. None of the specimen examined in December and January were found with mature ova. Not until mid April did the upper range of GSI equals the average value of May. Consequently it was determined that B. chilinoides breeds once in a year. The available water temperature record showed a maximum level in June and July, corresponding to spawning activity, indicating temperature influence on the ripening of gonad.
RESPONSE TO PROLONGED STARVATION OF ASCORBIC ACID CONTENT IN A FRESHWATER CATFISH, *CLARIAS BATRACHUS*

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ABSTRACT

In the present investigation, the common air-breathing freshwater teleost, *Clarias batrachus* were used. The level of ascorbic acid has been estimated in liver, muscles, gonads and the brain of both the sexes of *Clarias batrachus*, which were subjected to starvation for 40 days. Ascorbic acid is a naturally occurring organic compound with antioxidant properties and is one form of vitamin C. Starvation causes a marked degree of change in ascorbic acid level in the fish body. The method adopted for the extraction and estimation of ascorbic acid was the same as that of Kanungo and Patnaik (1964).

*Clarias batrachus* adapted well to starvation stress and survived all throughout the experimental period. The ascorbic acid content was higher in males than in females in all the tissues investigated. The ascorbic acid content was high in the brain and low in the gonads and muscles. In males, the brain showed higher value of ascorbic acid in normal condition (43.24mg/100gm) in comparison to that of females (40.65mg/100gm). During starvation, the gradual decrease in ascorbic acid level has been noticed in both the sexes of the fish. After 40 days of starvation in female, the highest depletion of ascorbic acid was observed in muscles (about 84%) and lowest depletion in the brain (about 48%) of *C. batrachus*. This shows substantial decline in aerobic and biosynthetic capacity of the fish during starvation period. However, after 40 days of starvation, the approximate ascorbic acid lost by various organs and tissues of the body were as follows:

- **Liver**: 73% in male & 78% in female
- **Muscle**: 81% in male & 84% in female
- **Gonad**: 52% in male & 53% in female
- **Brain**: 57% in male & 48% in female
ABSTRACT

The Indian sarus crane, *Grus antigone antigone* (State Bird of Uttar Pradesh) is the only resident breeding crane of Indian subcontinent, prefers open habitat like marsh areas, abundantly irrigated paddy fields, grass land and wetland. It has been categorised globally as ‘vulnerable’ by *International Union for Conservation of Nature* in its Red List because of its rapid population decline, which is projected to continue, as a result of widespread reductions in its wetland habitats. The cranes are well known for their faithfulness and living togetherness. The ecological balance is a stable state between all plants and animals in an ecosystem and destabilization of this stable state is ecological imbalance that in turn exerts serious threats to widespread nature of biodiversity. The ecological balance is sustained by the cyclic flow of materials from abiotic environment to the biosphere and then back to the abiotic environment and upholding the equilibrium of interaction inside food webs. Both these processes must be maintained in the ecosystem and any interference with these cycles disrupts and affects the ecological balance. The ecological balance is currently a necessity to maintain the rich and varied diversity of animals, plants and microbial life, which is essential for mutual survival and existence of all living beings including human. Author observed a positive correlation among sarus crane population, ecological balance and the widespread biodiversity.
ADAPTIVE MANAGEMENT OF LANTANA CAMERA

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ABSTRACT

*Lantana camara* is a significant invasive weed nominated among 100 of the 'world's worst' invaders of which some 650 varieties are spread in over 60 countries of the globe. It is of tropical origin and exhibits greatest diversity in Central and northern South America and the Caribbean. But now established and expanding in several regions of the world, often as escape from gardens to over the lands cleared of forest for timber or agriculture. The plants can grow individually in clumps or as dense thickets, crowding out more desirable species. It impacts severely on agriculture as well as on natural ecosystems. In disturbed native forests it can become the dominant under-storey species, disrupting succession and decreasing biodiversity. At some sites, infestations have been so persistent that they have completely perished the regeneration of forest species existing from several decades. Its allelopathic qualities can reduce vigour of nearby plant species and reduce productivity in orchards. *L. camara* has been the focus of biological control attempts for a century, yet still poses major problems in many regions. The species is a major threat to the environmental biosafety and native biodiversity of not only India but also in other parts of the world. Now however, the vision of conservationists is changing regarding the nativity of invasive species towards their adaptive management rather than their eradication. This article reviews a journey of eradication of Lantana to its adaptive management with special reference to India.
Utilization of biodiversity conservation and agricultural sustainability

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ABSTRACT

Agricultural biodiversity is a term that includes all components of biodiversity at genetic, species and ecosystem levels that are relevant to food and agriculture and that support the ecosystems in which agriculture occurs. Plant genetic resources, including crops, wild plants harvested and managed for food, trees on farms, pasture and rangeland species, Animal genetic resources, including domesticated animals, wild animals hunted for food, wild and farmed fish and other aquatic organisms, Microbial and fungal genetic resources. This includes the crop and livestock species, and the varieties and breeds within these, and also includes those components that support agricultural production. Components at the species level that support ecosystem services include earthworms and fungi that contribute to availability and cycling of plant nutrients through the breakdown and decomposition of organic material. Examples of agricultural biodiversity, at each level of biodiversity Modern animal husbandry rely on production systems adapted to the type of land available. Subsistence farming is being superseded by intensive animal farming in the more developed parts of the world, where for example beef cattle are kept in high density feedlots, and thousands of chickens may be raised in broiler houses or battery. On poorer soil such as in uplands, animals are often kept more extensively, and may be allowed to roam widely, foraging for themselves. Most livestock are herbivores, except for pigs and chickens which are omnivores. Ruminants like cattle and sheep are adapted to feed on grass; they can forage outdoors, or may be fed entirely or in part on rations richer in energy and protein, such as pelleted cereals. The diversity of plants and animals used in agriculture resulted from human management of biodiversity for food, nutrition and medicinal purposes. For example, domesticated livestock include cattle, sheep, chickens, and goats. Examples of crop species include wheat, banana, cabbage, sweet potato, and ground nuts.
From the time immemorial, even before the language for communication originated, our hunter gatherer ancestors relished the divine fruit what we call Mango. After the advent of means of communication they started to describe the celestial taste and related with several myths and legends that appeared in our ancient scriptures. As the time lapsed, several paradigms of the mango became part and parcel of Indian society and culture. Finally it has been granted a prestigious position in India, and now referred as “king of the fruits”. Scientifically it is known as *Mangifera indica*, a tree native to southern Asia, particularly India Bangladesh and Myanmar. Originating in India, travelled and naturalized across the borders of different continents of the world with monks, travelers, explorers, traders etc. Today there are over 1000 different Mango varieties grown throughout the world and India alone stands first in the rank of mango production accounting about 50% of the total world's mango production. Other major Mango producing countries include China, Thailand, Mexico, Pakistan, Philippines, Indonesia, Brazil, Nigeria and Egypt. India is richest in mango cultivars including its wild cousins, still found in the north-eastern part of India and Myanmar. This article intends to highlight the historical, sociological, traditional and scientific paradigms of the mango.
In current scenario, value addition and product development from locally available medicinal plants can provide an alternate source of livelihood for the local people living mostly in under-developed village areas. The medicinal plants not only form an integral part of the culture and traditions of the indigenous communities but also contribute largely for the livelihood to the sustenance of these communities. The identification of the active components in plant species used as ethnobotany by the local people can provide an important leads for the development of new drugs and medicine. Since time immemorial, humans are coming using large varieties of wild fruits, vegetables, fodder and medicinal plants for meeting their day-to-day requirements. Considering the above facts in mind, the present investigation was conducted in Atraulia block, Burhanpur tehsil (latitude: 26°15’16.74''N, longitude: 83°01’21.83''E, elevation: 271 feet AMSL) of district Azamgarh where populations constitutes mixed group of people inhabiting various remote villages. The climate of the place is tropical where hot and humid summer followed by heavy rains and dry winter. While preliminary survey, total of 173 plant species belonging to 94 genera and 39 families were collected as floristic composition of the area and of these 73 species observed to have ethnobotanical uses by the local people. It includes 13 % tree sp., 21 % shrub sp., 61 % herb sp. and 5 % liana sp. The leaves, roots and fruits were the most commonly used plant parts in the various preparations by local herbal hakims and medical practioners. The highest number of plants was recorded from the family leguminasae followed by poaceae, cyperaceae and asteraceae. On the basis of use value (UV), the most important plants in the study area were Croton bonplandianum Baill, Euphorbia hirta L., Mallotus philippinensis Muell-Arg., Cyperus rotundus L., Achyranthus aspera L., Centella asiatica (L.) Urb., Phyla nodiflora (L.) Greene and Rumex dentatus L. Lots of local herbal preparations are made to cure local seasonal diseases such as cold, malaria, fever, applied on cuts, burns and wounds. Thus, we can say that these local communities are a rich depository of various ethnobotanical uses of plants and can be conclude as the guardians of indigenous traditional knowledge associated with surrounding biological resources which they are coming using from the past generations in their day-to-day life. There is need to put emphasis on conservation of these medicinal plants before they get depleted along long loss of traditional knowledge.
Abstract No. 17

ENVIRONMENTALLY BENIGN OXIDATIVE ACETYLATION OF PRIMARY AROMATIC AMINES ON THE PLATINUM ANODE IN THE ACETIC ACID

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ABSTRACT

Platinum electrode induced synthesis of anilides from primary aromatic amines in the acetic acid solvent was carried out at controlled potential for the investigation of a new ecofriendly synthetic method. The reaction is an example of oxidation of amines with substitution. Electrochemical reactions are now being used as an important tool in the field of organic synthesis. The important aspect of electroorganic synthesis is that it is carried out by using a very small amount of electricity and also without using hazardous chemicals. Electroorganic synthesis has attracted much attention owing to several advantages such as rapid reaction rates and higher yield of pure products with nonpolluting nature of the reactant. The controlled potential electrolysis were performed at room temperature in conventional three electrode cell assembly containing platinum as working as well as counter electrode and saturated calomel electrode (SCE) as reference electrode. Magnetic stirrer was used for the proper mixing of reaction mixture. The current potential data was recorded with the help of potentiostat.
STATUS OF AGROFORESTRY PRACTICES IN VARANASI DISTRICT OF EASTERN PLAIN REGION OF U.P., INDIA

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ABSTRACT

The study was conducted in selected villages (1%) of Varanasi District of Eastern plain region of Uttar Pradesh in India during the year 2018 to record the crop combinations with tree species and their stratified arrangement to identify agroforestry practices. The socio-economic studies based on general village profile, land holding, land use pattern, tree species planting pattern and demand supply gap of existing species were performed with 120 respondents in 12 villages representing eight blocks to collect the data with structured questionnaire and Participatory Rural Appraisal (PRA) tools. The results demonstrated that a total of nine different agroforestry practices, silvi-horticulture, agri-silviculture, agri-horticulture, aqua-silviculture, agri-silvi-horticulture, agri-silvi-pastoral, silvi-pastoral, silvi-medicinal and homestead existed in different villages. Out of different categories, timber, fruits, medicinal, agriculture, flower and other plant species were recorded. The different Agroforestry combinations were recorded namely: mango-marigold, eucalyptus-wheat, eucalyptus-mustard, teak-vegetables, eucalyptus-pigeon pea, teak-marigold, eucalyptus-marigold in Pindra block, mango- wheat / mustard, teak-vegetables, Eucalyptus-vegetables, neem-vegetables, eucalyptus-mango in Harahua block, teak-mustard, mango-wheat, eucalyptus-vegetable, eucalyptus-pigeon pea, teak-maize-vegetables in Sevapuri block, mango-mustard, mango-mustard, eucalyptus-pea, teak-aquaculture and eucalyptus-wheat/mustard in Arajiline block, teak-wheat/mustard, eucalyptus-vegetables, eucalyptus-guava, eucalyptus-pigeon pea, teak-millet/paddy/fodder crops in Badagaon block of the district Varanasi. It was recorded that out of existing agroforestry practices, scattered near farms and around homestead was found most common (about 45.0 %). The benefits from agroforestry practices in the villages was also assessed and ranked in their order of preferences in respective blocks of district. The different benefits as shade, fruits/vegetables, timber, protection, firewood, soil erosion, medicinal and fodder were scored from 1 to 8. It was concluded from the results that status of agroforestry in the studied zonal area of the region is in developing stage and needs to be improved by imparting technical knowledge about planting material, methods and sale of end produces of trees to the farmers and tree growers.
ROLE OF EARTHWORM DIVERSITY IN SUSTAINABLE MANAGEMENT OF AGROECOSYSTEMS

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ABSTRACT

Having prolonged sustainable agro-ecosystem productivity through judicious use of natural resources is one of the most important points of concern and it needs a broad understanding of soil biodiversity and ecological functioning. Soil biodiversity impacts on soil quality such as nutrient availability, modification of physical structures and improving water holding capacity could be one of the features in improving the resilience of any agro-ecosystem. Due to the prospective role of earthworms in enhancing the soil fertility it becomes pertinent to consider them in management decisions of agro-ecosystems, and they could thus improve sustainability of land use in natural, degraded and agro-ecosystem. Due to their role in nutrient cycling and providing suitable substrate to microbes the dependence on inorganic fertilizer input in agro-ecosystems could be reduced. This would ensure protecting the soil habitat towards sustainable management of its biological properties and thus determining its long-term quality and productivity.
ABSTRACT

The practice of renewing and restoring degraded, damaged, or destroyed ecosystems and habitats in the environment by active human intervention and action. However, the effectiveness of restoration actions in increasing provision of both biodiversity and ecosystem services have not been evaluated systematically. A meta-analysis of 20 restoration assessments in a wide range of ecosystem types across the globe indicates that ecological restoration increased provision of biodiversity and ecosystem services by 44 and 25%, respectively. However, values of both remained lower in restored versus intact reference ecosystems. Increases in biodiversity and ecosystem service measures after restoration were positively correlated. Results indicate that restoration actions focused on enhancing biodiversity should support increased provision of ecosystem services, particularly in tropical terrestrial biomes. Studies indicate that we have entered into a phase of mass extinctions and have altered roughly half of the habitable surface of the earth, impairing and destroying several ecosystems.
IMPACT OF POPULATION GROWTH ON AGRICULTURAL LAND AND FOOD SUPPLY: A CASE STUDY OF KARACHANA TEHSIL, ALLAHABAD DISTRICT, UTTAR PRADESH

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ABSTRACT

As the population continues to grow geometrically, great pressure is being placed on agricultural land to provide an inadequate supply of food while maintaining the integrity of our ecosystem. Today due to high rate of growing population, agricultural land is decreasing and it’s being occupied by the urban population, which has a negative impact on agricultural production and food supply. This paper describes the impact of Population Growth on Agricultural land and Food Supply of Karachana Tehsil, Allahabad district. The study area Karachana lies between the parallels of 25°0'08"53'and 25°25'46"North latitude and 82°47'30"and 81°5*36" East longitude. Total area of the district is 656.79km². The main objective of the paper is to study the impact of population growth on decreasing agricultural land and food supply. This study is based on secondary data and analysis further follows statistical methods, interpretation of maps, tables and diagrams.
Abstract No. 22

OYSTER MUSHROOM GROWTH PROMOTING BACTERIA (MGPB) ISOLATED FROM RHIZOSPHERIC SOIL AMARANTHUS CAUDATUS

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ABSTRACT

The biological qualities of mushrooms including Oyster (Pleurotus) mushroom are decreasing due to higher uses of the chemical additives during cultivation of mushroom crops that severely affects the consumer’s metabolism and health. Thus the use of living and potent microbial inoculant is harmless alternatives for improved production of fruiting bodies without affecting their biological quality. For the isolation and detection of mushroom growth promoting bacteria from different agricultural soil sample were collected from different districts of Eastern Uttar Pradesh In present study, total 897 bacterial isolates were screened for mushroom growth promoting activity; out of these, only one has shown positive effect on white-rot fungi Pleurotus florida. Based on the observations of redial growth test, resulted maximum growth rate was (10.54mm/d), whereas, control showed comparatively lower growth rate (7.43mm/d).The bacterial isolate was also characterized based onnumerous biochemical activities viz., indole production, siderophore production, nitrogenase activity, ACC activity and phosphate solubilization activity. Further trials with the potent bacterial isolate indicated effective mycelial growth promotion of mushroom Pleurotus florida, which may be exploited for a sustainable mushroom crop management under large scale cultivation condition or production at industrial level.
DESIGN AND DEVELOPMENT OF PLANT - TAPE

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ABSTRACT

Many crops such as Lettuce, Spinach, Broccoli, Cabbage, Cauliflower, Tobacco, Eggplant, Herbs, Pepper, Tomato, Watermelon, Onion, Garlic and Sweet Potatoes, are best grown by growing seeds in a controlled environment and then transplanting seedlings to the field. Transplanting methods have dramatically improved in recent years, but are still very labor-intensive. The feeding of the seedlings into a transplanting machine resisted mechanization for a long time due to the lack of uniformity in size and shape of seedlings and problems in spacing the seedlings. The spacing of the planted seedlings often determines the yield of the crop. Even today, many transplanting methods rely on human labour to place seedlings directly into planting mechanism and to determine the correct spacing. There exists a need for a high-speed transplanter which can feed the seedlings to the transplanting unit and transplant the seedlings at uniform predefined spacing. Plant tape could be the solution to the above discussed problems, seedlings loaded onto a tape that is relatively simple to operate with low labour costs. Preferably, the tape should be biodegradable. Design that depends on principle of pulling a tape already anchored in the ground. It requires a tape material which can withstand significant tensile stress, especially at high speeds of planting. Thus, a need exists for a feeding system which can be feed into high-speed transplanter designed to exert low tensile stress on the tape. Biodegradable tapes tend to have high tensile strength. This project would enables the farmers to plant the seed/plant tape manually/mechanically and to do so rapidly, thereby quickly disposing the seed/seedlings at precise depth, properly oriented and at correctly spaced intervals. It involves the steps of unwinding the plant tape from a spool or core, putting it in furrow in the ground, and pressing it firmly in place. Plant tape would save around 50% of the cost of transplantation, saves 80% of transplantation cost by transplanting at six times faster speed than traditional methods.
PHYTOCHEMICAL EVALUATION OF ACTIVE METABOLITES AND ANTIOXIDANT ACTIVITY OF SEED EXTRACT OF NELUMBO NUCIFERA

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ABSTRACT

*Nelumbo nucifera* is a perennial aquatic plant and also known as sacred lotus. Extracts of different parts have shown curative properties against various diseases. The purpose of this study was to screen phytochemicals and to study the antioxidant activity of the seed extract. The phytochemical screening of hydroethanolic extract of the lotus seeds indicated the presence of flavonoids, phenols, carbohydrates, alkaloids, steroids, triterpenoids, flavonoids, glycosides and polyphenols. The proximate analysis of the seed of *Nelumbo nucifera* showed 2.22 % moisture content and 3.56 % total ash content. The extract were prepared in different solvents i.e. benzene, chloroform, ethyl acetate, n-butanol and aqueous. The antioxidant activity of seeds was evaluated by DPPH (2, 2-diphenyl 1-picryl hydrazine hydrate) and FRAPS (Ferric reducing antioxidant power assay). The extract exhibited high free radical scavenging activity in ethyl acetate. The results show significant antioxidant nature of seed extract of *Nelumbo nucifera*. 
ANTAGONISTIC EFFECT OF BACTERIA ON CYANOBACTERIA: AN ADVANCED STUDY TO PREVENT VARIOUS ENVIRONMENTAL ISSUES

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ABSTRACT

Cyanobacteria have received much attention for industrial exploitation but their interaction with bacteria is often considered as contamination during industrial commercialization. The cyanobacteria isolated from were eutrophic fresh water sample and was identified as Phormidium sp. Here the cyanobacteria were found to be associated with two heterotrophic bacteria named as s1b1 and s1b2. Interaction of cyanobacteria and bacteria was studied separately by taking their axenic culture and co culture (3:1 ratio of cyanobacteria and bacteria) under both phototrophic and mixotrophic condition with 0.2% and 0.4% acetate. Growth, phycocyanin, chlorophyll, carotenoid content were studied in 3 days of interval and it was observed that the presence of both bacteria reduce the growth of cyanobacteria. To know the reason behind the reduction different types of qualitative and quantitative tests were performed and it was observed that the reduction might be due to increase in dissolved oxygen, phenol, tannin, alkaloid, urease production and change in pH. The maximum reduction in growth in cyanobacteria was found to be reduced by 138% in presence of bacteria s1b1 from that of its axenic culture (0.068g/ml) where as s1b2 was reduced by 107% than that of axenic culture. To keep our environment clean and green these interactions play important role as various studies like algal bloom control, water treatment, pollutant removal, bio plastic production, bio fuel production were done by these bacterial effect on growth of cyanobacteria. Various environmental issues like water pollution by harmful algal blooms, global warming, soil and rock pollution, plastic pollutants can be solved by this antagonistic effect of bacteria on cyanobacterial growth. Bio remediation, bio refining, waste water management, water purification, pond water treatment are the main application of this negative interaction.
ABSTRACT

The present investigation show that seasonal (spring, summer, autumn and winter) changes in haematological parameters in the blood variation cause immunological impairments in *Catla catla* (surface dweller) *Labeo rohita* (column dweller) *Heteropneustes fossilis* (bottom dweller) The significant effect of temperature variation on haemoglobin % is observed in surface dweller (*Catla catla*) during April, August, December and January Hb % 5.7±0.56, 3.3±0.70, 6.3±0.34, 5.9±0.81, column dweller (*L. rohita*) 2.3±0.98, 4.1±0.62, 5.8±0.55, 6.2±0.51 and bottom dweller (*H. fossilis*) 2.70±0.62, 4.50±0.11, 5.40±0.33, 5.70±0.55 respectively, which suggests that the haematological parameters change to counter temperature variation. If the biotic factor viz., temperature reaches extreme limits that result in serve physiological problems, ultimately leading to the death of fish.
DATA ASSESSMENT OF AVIFAUNA IN TEMPERATE AND SUBTROPICAL FOREST OF PIR PANCHAL RANGE OF MIDDLE HIMALAYAN CHAIN OF DODA, J&K

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ABSTRACT

Birds are one of the significant fauna which are directly or indirectly related with the human beings. Therefore avian diversity and its conservation is regarded as one of the major issue to enable sustainable use of natural resources. It is necessary and need of the hour to conserve the avian diversity in their natural habitat. The present paper deals with the survey carried out in temperate and sub tropical forest in Pir Panchal range of Middle Himalayan chain of North West Himalayas of erstwhile District Doda. The study area lies between 32°-53” and 34°-21” North Latitude and 75°-1” and 76°-47” East Longitude with an elevation ranging between 700m to 4500m and with varied climatic conditions. The present study documents 71 species of birds (belonging to 9 orders, 12 sub orders and 27 families) along with their residential and migratory nature. Altitudinal variation and substrate preference for feeding were also taken into consideration during the course of study.
EFFECT OF FOOD RHYTHMICITY ON REPRODUCTION IN CONSECUTIVE GENERATIONS IN LADYBIRD, *PROPYLEA DISSECTA*

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ABSTRACT

The temporal feeding behaviour included feeding and non-feeding periods in *Propylea dissecta* (Mulsant) were investigated. Diet was manipulated during the larval development and performance was assessed during two consecutive generations. Depressed response was found in intermittent diet even when their preceding generation was provided abundant food supply in parental generation. Progeny of abundant parents reared on intermittent diet showed reduce fecundity and % egg viability than the kin of same abundant diet parent.
IMPAIRMENT OF CHEMICAL COMMUNICATIONS IN FISHES DUE TO AQUATIC POLLUTANTS

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ABSTRACT

Most of the vital activities of fish like alarm communication, individual identification, group cohesion, parent-offspring recognition; territorial markings, sex attraction as well as synchronization of the reproductive processes and migration are shaped by semiochemicals. The pheromones of aquatic species appear to be larger in size (high molecular weight) and soluble in water. Four groups of chemicals such as (i) amino acids, (ii) steroids, (iii) prostaglandins and (iv) bile acids (and their derivatives) have been found to be detected by the fish even at minute (10^{-13} - 10^{-15} M) concentration and each group of chemicals have different receptors in olfactory system. The detergents even at the concentration of 0.5 ppm (much lower value that inflict lethal damage) impaired functioning of the receptor by causing erosion in the chemosensory organ. Sublethal (0.5 ppm) exposure of zinc affected the behaviour related to the sexual aggregating pheromones in zebrafish. Linear alkylbenzene sulphate (LAS) significantly depressed chemoattraction of water conditioned by conspecifics to juvenile Salvelinus fontinalis. The freshwater spawning migration of salmons appears to get impaired by acidification of rivers. Electrophysiological recordings of olfactory epithelium of adult male Salmo salar to testosterone and urine of the ovulated females significantly reduced at pH 5.5-4.5 and abolished at pH 3.5. Exposures to sublethal concentrations of diazinon and carbofuran significantly reduced ability of mature Atlantic salmon parr to priming pheromone of ovulated females. The pernicious effects of an anionic detergent (sodium lauryl sulphate), pH, mercury (Hg), silver (Ag), cadmium (Cd), copper (Cu), nickle (Ni) and zinc (Zn) on the olfactory system are well established. By calculating IC_{50} value (concentration which inhibits electroolfactographic response by 50%), it has been found Ag, Hg, Cu and Cd to have most depressive effects on the chemoreception in salmonids. The whitefish (Coregonus clupeaformis) and rainbow trout (O. mykiss) exposed to 2.4 m copper sulphate (CuSO4) solution for two weeks exhibited loss in phospholipid stainable granules in receptor neurones of olfactory mucosa, however, recovery in the granules were observed when the fishes were transferred to freshwater for 12 weeks. Phospholipids have been reported to be involved in the electrophysiological (electroolfactogram, EOG) activities of the olfactory epithelium. Humic acid and other chemicals present in municipal wastes interfere with the chemical communication in the fishes. There are reports that olfactory epithelial cytochrome P-450 and monoxygenase (mixed function oxidase, MFO) gets activated by hydrocarbons and heavy metals. It is assumed that chemically polluted environment may interfere with the success of parent care in fishes.
Abstract No. 30

ALGAE AND HUMAN WELFARE

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ABSTRACT

Algae are emerging to be one of the most promising long-term, sustainable sources of biomass and oils for fuel, food, feed, and other co-products. These plants have evolved over billions of years to produce and store energy in the form of oil, and they do this more efficiently than any other known natural or engineered plant. What makes them so attractive are the large number and wide variety of benefits associated with how and where they grow. Algae can double their numbers every few hours, can be harvested daily, and have the potential to produce a volume of biomass and biofuel many times greater than that of our most productive crops. Algae store energy in the form of oils and carbohydrates, which, combined with their high productivity, means they can produce biofuels. For high productivity, algae require more CO2, which can be supplied by other plant, algae, when grown using sunlight, consume or absorb carbon dioxide (CO2) as they grow, releasing oxygen (O2) for the rest of us to emissions sources such as power plants, ethanol facilities, and other sources.
HISTOPATHOLOGICAL CHANGES IN THE TESTIS AND LIVER OF THE STINGING CATFISH UNDER THE EXPOSURE OF ORGANOCHLORINE: PENTACHLOROPHENOL

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ABSTRACT

Pentachlorophenol (PCP) is a well-known organochlorine compound, widely used as a biocide to control termites, pesticide, algaeicide, defoliant germicide, fungicide and molluskacide, wood preservative, herbicide, and insecticide all over the world. The effects of PCP on the testis and liver organ were investigated in the catfish Heteropneustes fossilis during pre-vitellogenic phase of the reproductive cycle. Sexually mature male catfish were exposed to sublethal concentration of PCP (4µg/L and 8µg/L) for 30 days. Our study showed that exposure of PCP had significant effects on GSI and HSI in dose dependent manner leads to decrease it. It has significant effects on alteration of testis and liver tissue by inducing significant histopathological changes in dose dependent manner. Higher dose (8µg/L) acted as a potent endocrine disruptor by altering oxidative stress enzymes and apoptotic parameters. The histopathological effects of pentachlorophenol in liver are characterized by blood congestion, vacuolation, increase in number of kuffer cell, binucleated nuclei, pycnotic cells. On the other hand, histopathological effects of pentachlorophenol in testis is characterised by hyperplasia of the interlobular tissue components, decrease in spermatocytes or spermatogonia, reduced testis mass, degeneration of the testes, and normal lobular arrangements were difficult to locate or absent resulted in an altered testicular structure. In the present study, damage to the fish tissue increases proportionally with the increase of PCP concentration. PCP exposure altered expression of oxidative stress enzymes (SOD and catalase). Levels of both SOD and catalase increases dose dependently. Our results showed the disrupting potential of PCP evidenced by increased formation of micronuclei and nuclear buds under PCP exposure in a dose dependent manner. The use of fluorescence made it possible to measure the aneugenic potential of the substance, probably due to its impairment of mitotic spindle formation and our result verifies this by increasing the number of apoptosis cell as the dose increases. Thus, it is concluded that PCP can act as a potent tissue disrupter and can induce apoptotic changes in tissue resulting in impairment of aquatic animal health.
Abstract No. 32

AN ASSESSMENT OF PHYTOPLANKTON POPULATION IN GOMATI RIVER AT JAUNPUR WITH REFERENCE TO POLLUTION

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ABSTRACT

In present studies the phytoplankton population in the water of Gomati River at Jaunpur was made to assess the pollution of water from January 2018 to December 2018. The qualitative and quantitative evaluation of the variation in river water showed high quantity of phytoplankton population throughout the study period. The present study revealed that the water of river Gomati is highly polluted by direct contamination of sewage and other industrial effluents.
To meet the increasing energy needs of the country and to provide Energy Security, a National Policy on Biofuels was made by Ministry of New and Renewable Energy during the year 2009. The major goals of the policy are development and utilization of indigenous non-food feed stocks raised on degraded or waste lands, thrust on research and development on cultivation, processing and production of biofuels and a blending mandate of 20% Ethanol and Bio-diesel by 2017. According to National Policy, 2018 biofuels as "Basic Biofuels" viz. First Generation (1G) bioethanol & biodiesel and "Advanced Biofuels"-Second Generation (2G) ethanol, Municipal Solid Waste (MSW) to drop-in fuels, Third Generation (3G) biofuels, bio-CNG etc. to enable extension of appropriate financial and fiscal incentives under each category. Globally, biofuels have caught the attention in last decade and it is imperative to keep up with the pace of developments in the field of biofuels. Biofuels in India are of strategic importance as it augers well with the ongoing initiatives of the Government such as Make in India, Swachh Bharat Abhiyan, Skill Development and offers great opportunity to integrate with the ambitious targets of doubling of Farmers Income, Import Reduction, Employment Generation, Waste to Wealth Creation. Biofuels programme in India has been largely impacted due to the sustained and quantum non-availability of domestic feedstock for biofuel production which needs to be addressed.
EFFECT OF COBALT ON GERMINATION AND SEEDLING ATTRIBUTES OF GREENGRAM (VIGNA RADIATA L.)

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ABSTRACT

Green gram or moong (Vigna radiata L.) is one of the most important pulse crops of India being cultivated in almost all parts of the country. It is primary crop of kharif season and spring season. It has high protein content in and is a good source of iron and fibre in the human diet. Cobalt is solid compound and exhibits magnetic properties. For plants, Co$^+$ ion is a micronutrient and is required for proper growth in trace amounts (<50 ppm). Higher amount of cobalt ions in soil (>100 ppm) results in a negative impact on growth parameters including germination, root length, shoot length, fresh weight and the total biomass content in plants. The experiment was conducted in vitro with two varieties of green gram, viz. TARM-1 and COGG-912. The seeds were germinated in distilled water (10ml) in 12 different Petri plates. To these plates CoCl$_2$ was added in varying concentrations (50, 100, 150, 200 and 250 ppm) Plates with 0 ppm of the salt were maintained which served as control. It was observed that the rate of germination decreased with increasing concentration of Co$^{2+}$ (observed after 24 h of incubation). The length of shoot first increased with increasing the concentration of CoCl$_2$ (50 ppm) and then gradually decreased for concentrations >50 ppm (observed after one week). The root length decreased with increasing amount of CoCl$_2$, (after one week) and gradually showed inhibition of root growth. The high concentration of CoCl$_2$ was shown to have a negative impact on other seedling attributes. The fresh weight and dry matter content decreased with increasing concentration of CoCl$_2$. 
Abstract No. 35

ESTIMATION OF ABOVE-AND BELOW-GROUND BIOMASS & CARBON STOCK IN GOLA GOKARAN NATH FOREST SITES OF LAKHIMPUR KHERI DISTRICTS OF UTTAR PRADESH

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ABSTRACT

The research was aimed to estimate above- and below-ground carbon stock in Lakhimpur Kheri natural Gola gokaran nath forest of Uttar Pradesh. A systematic sampling method was used to identify each sampling point through Global Positioning System (GPS). Loss on ignition and wet oxidation method were used to estimate biomass and soil carbon stock, respectively. Results revealed that the total carbon stock of the forest was 240.60 t·ha−1 whereas trees produce 80.40 t·ha−1, undergrowth (shrubs, herbs and grass) 0.40 t·ha−1, litter fall 3.1 t·ha−1 and soil 140.11 t·ha−1 (up to 1m depth). The forest in the study area is a reservoir of carbon, as it has a good capacity to stock carbon from the atmosphere. To realize the forest sector potentiality in Lakhimpur Kheri, the carbon sequestration should be integrated with the Clean Development Mechanism (CDM) carbon trading system of the Kyoto Protocol. Studies of carbon amounts by natural forest a great deal of attention has been focused on forest system. Forest Biomass energy has a great potential to be alternative fossil fuel. Carbon storage of vegetation, soils and litter in forest and compares the carbon fixation of forest Ecosystem. Carbon Sequestration is a term used to describe a group of large woody grasses. Recently a Natural Forest is complective Bio-energy crop However, carbon accumulation and absorption of Natural Forest are decrease under stood. Global cycle of carbon Natural forest is large carbon sink. The rate of carbon sequestration depends on the growth characteristics of the tree. Carbon storage Carbon sequestration through plantations is one of the important mitigation measures for rising levels of carbon dioxide and other green house gases in the atmosphere. This study aimed to assess Co2 stocks and their sequestration rate, and to develop models for estimation of vegetation, Soil and litter in forest and compares the carbon fixation of forest Ecosystem. The rate of carbon sequestration depends on the growth characteristics of the Forest Diversity. An issue of global concern today is the rapidly increasing level of carbon dioxide (CO2) in the atmosphere and its potential to change the world climate.
India is one of the world’s most biologically and culturally diverse countries. It is ranked ninth in the world in terms of higher plant species richness. It also contains two of the world’s 25 biodiversity hotspots, because of their extraordinarily high level of species-richness, endemicity and threatened status. India has extremely rich biodiversity and hotspots. It contains over 7 per cent of the world’s biodiversity on 2.5 per cent of the Earth’s surface. This diversity can be attributed to the vast variety of landforms and climate resulting in habitats ranging from tropical to temperate, and from alpine to desert. As a consequence of both the diversity of these conditions and of the various ethnic populations living in India, the country has become an important centre of diversity of a great many domesticated species, including various cereals, millets, legumes, vegetables, temperate and tropical fruits, fibre crops, medicinal and aromatic plants.

In the present scenario, the best way of making people aware of science is to get them to practice it. An excellent opportunity of taking the practice of science right down to the grass-roots has recently opened up with the passage of the Biological Diversity Act. This Act provides for the establishment of Biodiversity Management Committees (BMCs) in all local bodies, whether Panchayats or Municipalities throughout the country. It stipulates that “the main function of the BMC is to prepare People’s Biodiversity Register in consultation with local people. The Register shall contain comprehensive information on availability and knowledge of local biological resources, their medicinal or any other use or any other traditional knowledge associated with them.” Preparation of “People’s Biodiversity Registers (PBR)” will be a rather unusual scientific activity. This paper communicates the efforts carried out to document the PBR of village Laxmipur in Maharajganj district, which would not only help to inventorize and document the local biological, but also to conserve and sustainably use the bio-cultural diversity for rewarding income generation and create awareness about Biodiversity and its conservation.
INDIGENOUS FRESH WATER EDIBLE FISHES AND BIODIVERSITY

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ABSTRACT

Small indigenous fishes of rural areas are very good source of animal protein, vitamins and of other nutritious values. These creatures are also playing a very prominent role in biodiversity maintenance and its conservation. Fish farming creates livelihood opportunities for a number of people, many of whom living below the poverty level as it second vital food. The cultivation of these fishes also requires water of a 7-9 PH with minerals and feed materials. Fish farming is a technical and time consuming process which can be decrease by using some home grown materials. Several feed materials are commercially available with a sophisticated and high price. This price and time can be lowered by using aforesaid homemade feeding materials. The present experiment was a trial on very famous Indian major carp of the area of concern and found very excellent results in the form of quality and quantity in the light different water parameters.
INVASIVE ALIEN SPECIES OF PARVATI ARANGA WILDLIFE SANCTUARY AND ADJACENT TIKRI FOREST AREA, GONDA DISTRICT, UTTAR PRADESH, INDIA

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ABSTRACT

Convention of Biological Diversity (1992) visualizes that “biological invasion of alien species as the second worst threat after habitat destruction”. The loss caused by these species may soon surpass the damage done by other anthropogenic activities. According to IUCN, Alien Invasive Species are those alien species which become established in natural or semi-natural ecosystems or habitats, outside their natural distributional range and act as an agent of change causing threats to native biological diversity. The opportunity of inadvertent introductions will may become more with rapidly increasing global trade.

During the course of floristic exploration of the Parvati Aranga Wildlife Sanctuary and adjacent Tikri Forest Area, Gonda district, Uttar Pradesh, the author has recorded 358 species of flowering plants; out of these 64 species belonging to 31 families analyzed as invasive alien species. The species with American nativity (Tropical America, Central America and South America) were most dominant alien invasive, followed by African, Asian, European and Mediterranean species which hold the probability of their introduction through other agents along with the food grains, mainly by human beings. Further, the family Asteraceae dominated over all others with 09 taxa followed by Convolvulaceae, with 05 taxa, Euphorbiaceae and Papilionaceae with 04 taxa each. Invasive alien species of the area and their impact on the wetland ecosystem have been also discussed. A better planning is needed for early forecasting and reporting of infestation of spread of these invasive weeds by creating plant detection network by collaborative links between taxonomist, ecologist and other stakeholders related to this field.
MEDICINAL AND AROMATIC PLANTS BIODIVERSITY IN INDIA

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ABSTRACT

India is rich in medicinal and aromatic plants covering an extensive area with different environmental conditions. The geographical position of India, its geomorphology, the presence of flora of past geological eras and the coexistence and interplay of biotic and non-biotic factors have defined it as a region of high plant diversity and endemism, a fact that also impacts the category of medicinal and aromatic plants (MAPs). Man found that a plant which is astringent in taste will arrest diarrhea, a plant which is acid to taste will control vomiting and a plant which is aromatic will control nausea. In the olden days indigenous medicine had attained a very high standard, and we have stalwarts in Ayurveda, Siddha, Unani, Allopathy and Homeopathy. After some decades there is a shift within many developing countries from subsistence to commercial usage. In India, MAP’s play an important role in the country’s agricultural profile due to quantitative and qualitative advantages. MAPs cultivation can help small-scale farmers to strengthen their livelihoods and as a result, greater access to a wider range of assets can be achieved, and a capacity to build these into successful and sustainable activities.
ABSTRACT

Medicinal value of *Eclipta, Emblica, Euphorbia, Ficus, Gymnema* five plants named as *Eclipta prostrata* (family Asteraceae) *Emblica officinalis* (family Euphorbiaceae) *Euphorbia hirta* (family Euphorbiaceae) *Ficus benghalensis* (family Moraceae) *Gymnema sylvestris* (family Asclepiadaceae) obtained from Barabar hills of Jehanabad District of Bihar. Local name has been also mentioned. Name of the plants part used in various diseases has been described. Leaf juice of *Eclipta prostrata* is used to cure callous, ulcer of mouth. It also uses in checking bleeding. *Embleca officinalis* is used to purify the blood, reduce cough. Seeds are useful in asthma. *Euphorbia hirta* is used to curing wounds and cracks due to anti-bacterial property. Its root are used in stop vomiting. *Ficus benghalensis* is used to curing toothache, ear troubles, leucorrhoea and skin diseases. Its bark is also uses in dysentery diarrhea and diabetes. Leaves of *Gymnema sylvestris* is used to curing diabetes, cough, and asthma. We selected our topic on the basis of ecological, historical and medicinal importance of barabar hills of Jehanabad District of Bihar.
ABSTRACT

Developing countries including India practice family farming as a tradition, and hence, a comprehensive understanding of family farming in the changing scenario can play major role in uplifting the economy for majority of the population which still has farming as its principal means of subsistence. In order to understand the scenario and impact of major hurdles in a vicinity implementing farming as a family business, a study was undertaken in the rainfed Vindhyan Zone of Mirzapur district of Eastern Uttar Pradesh. In the contemporary India, rural youths are facing disconcertment largely on the front of employment, and most interestingly, the majority is not yet ready for making a career in farming as a family business as against only 11.3% in the area of study who are practicing it in absence of any other occupation or means of livelihood. Among several reasons to this kind of reluctance, the principal ones have been found to be lower risk taking capacity of rural youth in the wake of various biotic/mesobiotic and abiotic (mainly climatic) challenges and uncertainty in the predictability of the profit (34.6%). Secondly, a large population (32.0%) was unaware about the capital flow in the business and farm economics. As the third important cause, 22.4% of the rural youth unable to determine the price of their perishable agricultural commodity and remaining was associated to other factors (7.2%). The study reveals plant diseases and pests posing a major threat to the overall gains from the crop which has been found to be one of the major constraints for young population to adopt farming as a family business. It was found to be a matter of wide agreement that improved control over various crop health related issues, including awareness on diseases and pests, with efficient forecasting systems will help in reducing the associated risk. Similarly, development of postharvest management skill and storage facilities at village level will reduce the market related constraints to the greatest extent. The options to manage farm health, and adopted innovative approaches by the farm holders are discussed.
FERTILIZER RECOMMENDATION BASED ON SOIL TESTING FOR ACHIEVING TARGETED CROP YIELD

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ABSTRACT

Soil testing is a judicious tool for fertilizer recommendation for a given crop. It is an important practice in the process of crop cultivation across the world. It gives us important leads on balanced use of fertilizers to ensure plant nutrition with utmost economy. In recent years a number of investigations carried out in different parts of India which help in formulating fertilizer recommendation based on soil testing for achieving the targeted yield of a specific crop. Soil testing is essential and is the first step in obtaining high yields and maximum returns from the money invested in fertilizers. It has been accepted as a unique tool for practical recommendations in fertilizer application in the process of crop production. A fertilizers recommendation approach from a soil testing laboratory is based on carefully conducted soil analyses and the results of research on the crop. It is therefore, more precise a practice being based on scientific information available for fertilizer application in the field crop obtained after careful analyses. It helps assess the soil fertility status and recommend suitable and economic nutrient dosage through the combination of chemical fertilizer and organic manure for different crops and cropping systems. The use of plant nutrients based on the knowledge of nutrient supply power of the soil and efficiency of the relevant fertilizer is mostly erroneous. Fertilizer recommendations based on soil testing in order to achieve targeted yields have been evolved for many crops using soil test value.
IMPACT OF IRON AND MANGANESE ON GERMINATION AND SEEDLING GROWTH OF GREEN GRAM (VIGNA RADIATA L.)

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ABSTRACT

Green gram or moong (Vigna radiata L.) is a plant species in the legume family. It is a short duration crop and being leguminous, it has the innate property to enrich soil nitrogen content through biological nitrogen fixation. In India, it can be cultivated in two seasons, viz. kharif as well as summer (Jayad) crop. Most of the modern varieties are tolerant to the dreaded yellow mosaic virus. Iron and manganese are essential nutrients for plant growth specifically vital for enzyme regulation and metabolic activities and manganese plays a role in water splitting system of photosystem-II (which supplies electron for photosynthesis). Iron could be responsible for changes in plant morphology including stunted shoot growth, browning & die back of leaves and lack of branching. In leguminous plants, iron is required for the synthesis of leghaemoglobin. However, excess amount of iron and manganese causes inhibition of plant growth. Manganese and Iron cause degradation of chlorophyll and carotenoid content. High iron content leads to potassium deficiency in plants. The experiment was conducted on two varieties of green gram, viz. Pusa Vishal and Pusa-0672. The seeds were germinated in 15ml of half MS medium contained in 28 different Petriplates. To these plates the test metals of iron (FeSO4.7H2O) and manganese (MnSO4.H2O) were aided in varying concentrations (50, 100, 200, 300, 500, and 1000ppm). Plates with 0ppm of metal metals were treated as control and two separate controls for each of the metals were maintained side by side. It was observed that the rate of germination decreased with increasing concentration of either of the test metals. The observation was taken after 7 days of incubation in growth chamber. The result confirmed that iron and manganese in the concentration of 100ppm favour seed germination (100%) in test plant species because both are essential heavy metals are vital for plant growth. The concentration of 500ppm to 1000ppm showed maximum inhibition in shoots and root growth. Fresh weight and dry weight of shoot and root was found highest in the low concentration of test metals. Numbers of leaves are constant from control to 200ppm and this was found to decrease in the treatments with metal concentration from 300 to 1000ppm.
THE IMPACT OF CLIMATE CHANGE ON AGRICULTURE:
A CASE STUDY OF UTTARAKHAND

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ABSTRACT

This paper focuses on the economic impact of climate change on agriculture. Climate is the primary important factor for agricultural production. The climatic change could affect agriculture in several ways such as quantity and quality of crops in terms of productivity, growth rates etc. Climate change is likely to directly impact food production across the globe. Concerning the potential effects of climatic change on agriculture has motivated important change of research during the last decade. The topics concentrate possible physical effects of climatic change on agriculture, such as changes in crop and livestock yields as well as the economic consequences of these potential yield changes. This study reviews the effects of climate change on agriculture. The main interests are findings concerning the role of human adaptations in responding to climate change, possible regional impacts to agricultural systems and potential changes in patterns of food production and prices.
ROLE OF AGROFORESTRY IN CLIMATE CHANGE MITIGATION

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ABSTRACT

India is a large developing country with a nearly 700 million rural population directly depending on climate sensitive sectors (like agriculture, forests and fisheries) and natural resources (such as water, biodiversity, mangroves, coastal zones, grasslands) for their subsistence and livelihoods. Climate change is likely to impact all the natural ecosystems as well as socio-economic systems as per the National Communications Report of India to the UNFCCC. Global climate change caused by increasing levels of carbon dioxide (CO₂) and other greenhouse gases (GHG) is recognized as a severe environmental issue of the 21st century. Climate change may be due to natural internal processes or external forcing such as modulations of the solar cycles, volcanic epidemics, and continuous anthropogenic changes in the composition of the atmosphere or in land use types. Agroforestry practice is the purposeful growing of trees with the agricultural crops in interacting combinations. Agroforestry for solving problems related to deterioration of family farms, increased soil erosion, surface and ground water pollution, and decreased biodiversity was recognized in the manufacturing nations too. Thus, agroforestry is now helps increasing attention as a sustainable land-management option the world over because of its ecological, economic and social attributes. The agroforestry trees shade provided by the trees helps in moderating microclimate and reducing crops and livestock stress and helps to improve crop yields. The agroforestry practices in sequestering carbon for climate change mitigation are promising while providing enormous environmental, economical, and social benefits worldwide. Mitigation and adaptation are the two main strategies that are used effectively to address climate change. Mitigation is an intervention to reduce the sources of emissions or enhance the GHG sinks whereas adaptation is an adjustment in natural or human systems in response to actual or expected climatic stimuli, which moderates harm or exploits beneficial opportunities. AFS can contribute toward “climate-smart agriculture” that can increase sustainable productivity, carbon sequestration and support food security.
Abstract No. 46

HYDROLOGY AND ZOOPLANKTON STUDIES OF CHITTAURA JHEEL OF DISTRICT BAHRAICH (U.P.), INDIA

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ABSTRACT

In the present study, several physico-chemical parameters such as temperature (14.2-21.2°C), pH (7.0-7.9), DO (8.1-17.2ppm), FCO₂ (3.1-4.9 ppm), carbonate alkalinity (34–69ppm) total alkalinity (64-259 ppm) nitrate (0.06 - 0.029 ppm), Phosphate (0.016-0.070ppm) total organic matter(2.6-10.4ppm) And total nitrogen (1.22-3.4ppm) were studied. Variation in zooplankton from the selected fields was examined by calculating 14 species of four taxa - Rotifers, Crustacean, Dipteran larvae and Coleopteran larvae. In study, Anopheles sp. larvae and Culex sp. larvae were the most dominant species which indicated dirty water of Chittaura Jheel.
GENOME WIDE IDENTIFICATION, CLASSIFICATION AND EXPRESSION OF WUSCHEL-RELATED HOMEBOX (WOX) GENE FAMILY IN THE MOST IMPORTANT CEREAL OF THE COUNTRY INDIA: TRITICUM AESTIVUM

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ABSTRACT

In India wheat is consumed by large section of the population. *Triticum aestivum* L. has been under went through duplication and diversification in many folds in its evolutionary history and hence quiet tough to study its huge genome. Even thoughat present it is holding status of one of the key crop out of three global crops. Since post genome sequencing era studies are going on to understand how genes are regulating major pathways of the plant for their better performance. There are many types of gene families responsible for maintenance of plant system. Nevertheless, very less work has been done for wuschel-related homeobox (WOX) genes present in *Triticum aestivum*. In the present study we identified and characterised 43 genes belonging to WOX genes in wheat, where total genes comprised of 94000 to 96000. WOX genes are a type of homeobox box genes, mainly directs stem cell maintenance and embryonal development. They are plant specific. If any mutation takes place in these, developmental disorders are resulted. However, WOX genes are highly conserved in plants since their emergence from green algae but number has increased in seed plants. They can be divided into three clades: ancient, intermediate and modern or wus clade. Further, our study would help to understand about its expression and function in wheat and to achieve better variety of such important crops.
ABSTRACT

The physico-chemical and biological parameters play a vital role in the wetland ecosystem. Semara taal is a seasonal and permanently wetland located at Shohratgarh, Siddharth Nager U.P. It is one of the large water body of that area. The total water area of Semara Taal is 466.66 acre. The various physico-chemical parameters of water of Semara taal like water temperature ranges between 12.8-35.4°C, transparency ranges between 28.6-38.8 cm, dissolved oxygen ranges between 6.1-9.4 ppm, free carbondioxide ranges between 15.0-28.0 ppm, pH ranges between 7.1-9.8, total alkalinity ranges between 137.0-296.0 ppm, total solids ranges between 34-116 ppm, nitrate ranges between 1.08-1.41 ppm and phosphate ranges between 1.02-1.08 ppm were during the study period, April 2018 to March 2019 on monthly bases. There is a seasonal fluctuation in the physico-chemical and biological condition of the water. It is due to rain fall, water coming from Banganga river and in flow of agricultural water in water body and change in the temperature as season changes. The physico-chemical and biological conditions were suitable for fish culture.
ABSTRACT

Sagra talab is a major fresh water body situated in Gonda city. Besides physico-chemical condition of this talab was studies from April 2018 to March 2019. The phytoplankton population were dominated by Chlorophyceae, Basillariophyceae and Cyanophyceae. The zooplankton population includes Rotifers, Cladocerans, Copepodes and Protozoans. The various physico-chemical parameters of water of Sagra talab like water temperature ranges between 19.55-32.27 °C, pH ranges between 7.07-8.16, dissolved oxygen ranges between 4.92-7.58 ppm, carbon dioxide ranges between 1.58-5.00 ppm, Hardness ranges between 99.0-126.0 ppm, total alkalinity ranges between 96.5-129.0 ppm, nitrate ranges between 3.20-4.38 ppm and phosphate ranges between 10.75-14.25 ppm. The water bodies are not suitable for domestic and drinking purposes but suitable for fish culture.
ABSTRACT

Grafting and budding are routinely used in many horticultural crops for large scale production of plantlets. Interestingly, these techniques can be very well utilized for germplasm conservation. As biodiversity is presently poising great threats due to land limitation and population explosion, we can use this approach for conservation of large number of germplasms in a small space. In a single plant (Stock), we have to graft a number of germplasms (Scions) for their easy survival without requiring another piece of land. Plants belonging to same families can only be used for grafting and budding. The different branches of a single plant will serve as stock and different genotypes or species form same families can be used as scions for grafting. This way several species and genotypes can be accommodated in a single plant and land will not be limiting factor for this. In the same way the budding technique can also be used. This will be applicable only for the species which are asexually propagated and are compatible for grafting and budding. The different mango and cashew germplasms can be grafted on a single mango or cashew plant, as both belongs to same Anacardiaceae family. Rose and citrus plants are routinely used for budding; hence the budding technique can also be very well successfully used in such types of plants. These methods are economically feasible as less space and inputs are required to conserve large number of germplasms.
Abstract No. 51

WATER QUALITY OF VILLAGE POND
FOR AQUACULTURE DEVELOPMENT

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ABSTRACT

Water is most important natural and precious resource for every living organism on the earth. Unplanned urbanization, rapid industrialization and indiscriminate use of artificial chemicals cause heavy and varied pollution in aquatic environments leading to deterioration of water quality and depletion of aquatic fauna including fish. A healthy aquatic environment is one which supports a rich and varied community of organisms and protects public health. Study was conducted from Rangauli village pond of Pratapgarh District in Uttar Pradesh. Present study deals with the assessment of physico-chemical characteristics of a village pond located at Rangauli. Temperature, pH, total dissolved solids (TDS), total hardness (TH), calcium hardness, magnesium hardness, total alkalinity, dissolved oxygen (DO), biological oxygen demand (BOD), chloride, phosphate, silicate, nitrate, nitrite and ammonium nitrogen were analyzed for aquaculture to determine the potential of the pond for aquaculture development. The values of these physicochemical parameters during the study period were observed as temperature (21-30°C), pH (8.2-8.7), total dissolved solid (193-580 mg/L), total hardness (82-130 mg/L), calcium (14.42-29.65 mg/L), magnesium (8.28-15.1 mg/L), total alkalinity (96-160 mg/L), dissolved oxygen (1.62-8.91 mg/L), biochemical oxygen demand (0.81-24.3 mg/L), chloride (71-142mg/L), phosphate (0.083-0.581mg/L), silicate (0.044-0.383 mg/L), nitrate (2.468-7.701mg/L), nitrite (0.009-0.255 mg/L), and ammonium nitrogen (Nil-0.161 mg/L). Results obtained suggested that pond could be used for aquaculture activity.
EFFECTS ON NITROGEN CONTENTS IN SESAMUM INDICUM UNDER DIFFERENT CONCENTRATIONS OF ARSENIC

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ABSTRACT

There are various oil seed crop cultivated in almost every part of the world. Sesames (Sesamum indicum L) seeds are an important source of oil, used to manufactures sweets, pickles and as well as eaten whole. The nutty seeds taste of the sesames makes it delicious on mild roasting and it contains gaujacol and furaneol, vitamins, protein unsaturated fatty acids, minerals, and folic acid etc. The plants growth is affected by the presence of heavy metals in the soil containing arsenic. The impact of the arsenic stress can be monitored by studying the physiology of a crop. Present work is designed to observe the effect of arsenic on the growth of sesame by observing its nitrogen accumulation. The total nitrogen contents will be compared with in control (without arsenic) and experimental (with arsenic) plants. The utilization of nitrogen and its assimilation will also be studied using various parameters. This will help to the crop management and to find out the strategies to overcome the effects of arsenic so that farmers will cultivates the sesame profitably in soil containing toxic amount of arsenic.
PHYTOTOXIC EFFECTS OF *ANTIGONON LEPTOPUSON* 
THE GROWTH OF NATIVE FLORA

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**ABSTRACT**

Alien plant species invades and cause major threat to the native plant diversity. Large number of invasive plants interacts negatively with the native plants leading to the habitat loss of most valuable plants. Balrampur district is situated in the east-west and south sides respectively and Nepal State is situated in its northern side and very rich in biodiversity. There are introduction of certain invasive plant species especially *Antigonon leptopus*, commonly known as Mexican creeper is a species belongs to the family, Polygonaceae. It grows quickly over other vegetation and spreading beyond its area of introduction. It is once established and difficult to eradicate because it produces many tuberous roots that can propagate vegetatively. Its fruits are buoyant, allowing for successful seed dispersal in water. It is growing along the roadside and destroyed the other plants in Balrampur thereby threatens local diversity, changing community structures and altering ecological functions. The plant can be eradicated by removing manually or chemically to save the biodiversity.
In the present study, several physico-chemical parameters such as temperature (16.6-23.2°C), pH (7.8-8.2), DO (8.6-19.7 PPM), FCO2 (3.2-5.5 PPM), carbonate alkalinity (97-190 PPM), total alkalinity (69-269 PPM), nitrate (0.08-0.32 PPM), calcium (94-199 PPM), chloride (9.6-72 PPM), phosphate (0.020-0.072 PPM), total organic matter (2.8-11.0 PPM) and total nitrogen (1.22-3.03 PPM), were studied. Variation in zooplankton from the selected field where examined by calculating 16 species of four taxa protozoans, rotifers, crustacean and meroplanktonic organisms were found in the Semra taal. Anopheles sp. larvae and Eristalis sp. larvae were the most dominant species which indicate dirty water of Semra taal district Siddharthnagar.
DIVERSITY OF CYANOPROKARYOTES AND ALGAE ON FEATHER OF BIRD - SNOW PETREL (PAGODROMA NIVEA FORSTER) IN BROKNES PENINSULA OF LARSEMANN HILLS, EAST ANTARCTICA: FIRST REPORT

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ABSTRACT

Antarctica is the coldest, driest place and fifth largest continent on this earth. The Larsemann Hills area is located approximately halfway between Vestfold Hills and Amery Ice Shelf on South-eastern coast of Prydz Bay which includes two main peninsulas, the western named Stornes and the eastern named Broknes. Human activities in this area is promoted by the coastal location, ice free landscape, the further scientific research and the potential for tourist visits may affect the cyanoprokaryotes (cyanobacterial) and algal diversity. The Antarctic environment is highly sensitive and susceptible to the impacts of human activities and has much less natural ability to recover from disturbance than the environment of other continents. These changes ultimately affect the growth and diversity of cyanoprokaryotes and algae. During survey it is very interesting to observe that cyanoprokaryotes and algal samples found growing on feather of bird - Snow petrel (Pagodroma nivea Forster) in Broknes Peninsula of Larsemann Hills, east Antarctica. The snow petrel is the only member of the genus Pagodroma. It is one of only three birds that breed exclusively in Antarctica and has been seen at the Geographic South Pole. Snow petrels are almost entirely restricted to cold Antarctic waters. Samples were sampled from feather of bird - Snow petrel (Pagodroma nivea Forster). Altogether 16 species of cyanoprokaryotes and algae belongs to 09 genera were recorded. This is the first study report of cyanoprokaryotes and algae from feather of bird - Snow Petrel (Pagodroma nivea Forster) from Broknes Peninsula of Larsemann Hills, East Antarctica. All the species reported for the first time as new record.
WATER QUALITY PARAMETERS AND ICHTHYOFANAL DIVERSITY OF TWO RIVERS OF EASTERN HIMALAYA IN WEST BENGAL, INDIA

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ABSTRACT

A study of the water quality parameters and ichthyofaunal diversity of two rivers, Teesta, a glacier-fed of Darjeeling Himalaya and Kaljani, a hill stream-fed of Cooch Behar in the northern part of West Bengal, India was executed each for a period of two years. The ichthyofaunal study of large, torrential glacier-fed river Teesta revealed, that out of the 3585 fishes examined, 65 species were of rheophilic cold water and belonged to 39 genera and 10 families having ornamental, food and sport value, and of these 11 species were ubiquitously found. Fishes of family Cyprinidae were found to be dominant followed by Sisoridae and Balitoridae. 5 species of fish were abundant (62.9%) as such in the stretch of river designated as “Barilius-Mahseer-Snow trout Stream”. Most of the fish species were found very rare in the river, which may be due to various anthropogenic pressures. 36 species (55%) were included in the Threatened category and 10 species to be Endemic to India. The hill stream fed river Kaljani of Cooch Behar, originating from GabaurBachhra forest lying in the borders of Bhutan and West Bengal, on the other hand had 138 indigenous fish species belonging to 31 families. It was reported, 1 (0.72%) species was Critically Endangered, 13 (9.42%) species as Endangered, 41 (29.71%) species as Vulnerable, 35 (25.36%) species as Lower Risk Least Concerned, 4 (2.8%) species as Data Deficient and 3 (2.1%) as Not Evaluated. Here again, various anthropogenic factors contributed to the vulnerability of the fish diversity. Major water quality parameters like water temperature, pH, Dissolved Oxygen and the Nitrogen groups in the two rivers of the Eastern Himalaya did not differ much. The parameters were congenial for the overall diversity of the fishes. It is concluded, the study provides baseline data which may be helpful for conservation and management of the fish species and also formulating new fishery policy in the two potential rivers of Eastern Himalaya.
Effect of Gamma Ray Treatment on Production and Morphological Attributes of Tomato Plant

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Abstract

The purpose of this study is to evaluate the effect of Gamma radiation on morphological changes and productivity of Tomato (Lycopersicum esculentum Mill. family Solanaceae). The fruit is used as vegetable all over the world. Besides its use in cooking it has got some medicinal properties also. It is a very rich source of vitamin C, Potassium, foliate and vitamin K. It is supposed to help in developing immune system of the body. Tomatoes are the major dietary source of the antioxidant lycopen, which has been linked to many health benefits.

Keeping the above points under consideration, two cultivars named as S-22 and Navoday of Tomato available in Gaya town has been deliberately chosen for mutational studies. The mentioned cultivars have been treated with different doses of gamma rays (a physical mutagen) such as 10kr, 15kr, 20kr, 25kr and 30kr. Low doses of radiation treatment stimulate significant changes in the morphological characters and productivity of the plant were noted such as plant length, fruit numbers, fruit size, seeds per fruit and seeds per plant showed considerable deviation from the normal type. The 15kr and 20kr plants showed many interesting deviations like maximum changes in fruit size, number of fruits per plant and number of seeds per plant. This was true for R1 and R2 generation. However, the intensity of changes was less in R2 than R1 generation. Colour of the fruit was also affected at some doses it became dark red while at other doses it became pale red. Finally, it can be said that plant breeders can change the genetic architecture of cultivated plant by using mutagen and even a single mutagen can be of great advantage to the agricultural science.
ELECTROMAGNETIC POLLUTION: A TECHNOLOGY BASED CAUSE OF MALE INFERTILITY

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ABSTRACT

A growing concern for possible adverse effects of mobile phones on human reproductive health evokes a flurry of scientific activity to evaluate this dilemma. An initial study suggested that the use of cell phones adversely affects semen quality which might contribute to infertility. Possible reasons might be that RF-EMW can trigger uncontrolled cell proliferation by its action on various plasma membrane enzymes and receptors. RF-EMW can lead to OS (Oxidative stress) which is related to abnormal sperm morphology such as presence of cytoplasmic droplet on the immature spermatozoa making them non-functional with reduced sperm motility. The elevation of frequency of sperm head abnormalities in exposed mice indicate that RF radiations may have caused damage to the spermatogenesis. Radiation can disrupt Leydig cells or abnormality of the seminiferous tubules leading hormonal imbalance, which might directly affect spermatogenesis. But there has no sufficient data been collected to compare the level of male reproductive hormone, with significant sample size, between mobile users and non-users. Radiation may harm sperm by damaging DNA but the direct experimental evidences of the extent of DNA damage is yet to be discovered. Besides this, the damage caused due to RF-EMW to the intracellular organelles has not been investigated extensively. So, more work is needed on the use of cell phone and fertility with better study designed.
VERMITECHNOLOGY: A METHOD OF CONVERSION OF ORGANIC WASTE INTO VERMICOMPOST

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ABSTRACT

The trend of using inorganic fertilizers is on a boom amongst agricultural society, farmers are magnetized towards the short term advantages privileged by inorganic fertilizers, but they are unable to understand the ill effects these fertilizers on human health and soil fertility. This has necessitated looking for traditional fertilizers like vermi-compost. The basic aim of vermi-technology is to bring about decomposition of organic solid wastes without loss of nutrients and the production of end product rich in plant nutrients, which are used for agricultural and horticultural uses. Thus vermicomposting is the formation of compost which is the best approach to shift form synthetic fertilizers to organic manures. Earthworm participation enhances natural biodegradation and decomposition of solid waste from 60 to 80% , thus significantly reducing the composting time by several weeks. A laboratory experiment was carried using an indigenous earthworm *Metaphire posthuma* for converting solid waste into valuable vermicompost. The action of worms accelerated the decomposition of selected wastes. Analysis of waste from experimental container after 15 days interval for physical and biochemical activities revealed that worm is capable of recycling of solid waste into useful nutrients. During this process organic matter, pH and C:N ratio revealed negative trend, however total nitrogen, phosphorous and potassium content expressed positive trend of increment with vermicomposting up to 60 days, clearly indicating the potential of earthworm biotechnology in conversion of waste, in the form of nutrient enrichment i.e. vermicompost.
Biodiversity is very important and vital to maintain the ecosystem on our entire planet. Biodiversity is the variety of all living things, different plants, animals and microorganism. Biodiversity is a key component of the environmental health and human health. Human depend for their sustenance, health, well being and all natural, physical and cultural growth on nature. Biodiversity not only includes fundamental necessities of our health like good food products, fruits, seeds, medicines, many types of roots and fibers, and fresh water and air which is very important maintaining our personal health and social lives. Human beings depend directly or indirectly on biodiversity for their existence, survival and well beings. During last few decades the human activities exert a variety of stresses on biodiversity. Biodiversity is affected by changing climate, increasing huge population and industrialization led to shifting of seasons. Continuous stress and disturbance have resulted in loosening the original state of biodiversity due to overexploitation of natural resources environmental degradation and deforestation. Biodiversity is now reached under serious threat and being lost a rate many times higher than that of natural extinction. In this paper we include biodiversity and classification of biodiversity and how we can protect and conserve it, and how it is related to human food and health.
OUR BIODIVERSITY AND NEED FOR CONSERVATION

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ABSTRACT

Today, the species are being driven to extinction at a rate higher than any time in the past. Rate of extinction as estimated today is 10,000 times higher than natural extinction rate of 1-10 species per year. The major threats to biodiversity are from habitat loss, habitat fragmentation, environmental pollution, introduction of exotic species, genetic pollution, hybridization, genetic anomalies, GMOs, spread of diseases, overexploitation, shifting cultivation, poaching, acid rain, climate changes etc. A changing climate endangers whole ecosystem and entire species. Thus there is urgent need for conserving our biodiversity. This can be brought by both in situ and ex situ conservation. In situ conservation includes conservation of species in its natural habitat in protected areas like biosphere reserves, national parks and sanctuaries etc. Ex situ conservation involves maintenance and breeding of endangered species under partially or wholly controlled conditions, in botanical gardens, seed banks, gene banks etc. It also includes tissue culture, cryopreservation etc. Rich biodiversity is an indicator of the health of a particular habitat/biogeographic area and its potential to sustain life. For conservation and protection of biodiversity, biodiversity rich areas are declared as national parks, wildlife sanctuaries, biosphere reserve, ecologically fragile and sensitive areas. Other strategies include offloading pressure from reserve forest by alternative measures of fuel wood and fodder need by a forestation of degraded areas and wetlands and certain ex-situ conservation facilities such as gene bank. In Indian constitution also provide protection of biodiversity under article 48a and 51a (g). Under this article Central as well as State government enforced several laws relevant to biodiversity include Forest Act, 1927, Wildlife (Protection) Act, 1972, Forest (conservation) Act, 1980, and Environment (Protection) Act, 1986. The various central Acts are supported by number of state laws and statutes concerning forests and other natural resources. For the protection and conservation purpose new and aggressive projects will be launched by Government and NGO’s. Biodiversity conservation awareness program at school level will also gives fruitful effects in due course of time.
ABSTRACT

Biodiversity is the basis of human survival, and economic development for societies as it provides, a large number of goods, and services, that sustain our lives. It is the combination, of life forms and their interactions with one another and with the rest of the environment. Bio (life) and diversity (variety) so biodiversity or biological diversity is the incredible variety of living things in nature and how they interact with each other. Each organisms contribute to the diversity, beauty and functioning of the earth. India has a rich and varied heritage of biodiversity which covering ten biogeographically zones such as Trans-Himalayan, Himalayan, Indian desert, Semi-arid zone, Western Ghats, Deccan Peninsula, Gengetic Plain, North-East India, islands and coasts. Biodiversity is a very complex and is often explained as the variety and variability of genes, species, and ecosystems on the earth planets. India is rich at all levels of biodiversity and is one of the 17 megadiversity countries in the world. India’s wide range of climatic and topographical features has resulted in a high level of ecosystem diversity encompassing forests, wetlands, grasslands, deserts, coastal and marine ecosystems, each with a unique assemblage of species. Human activities cause major role in the sustainable development of the biodiversity. It has been reported, that, valuable and, productive biological resources, are crucial, for sustainable economic development. The rural people have always known and realized the biodiversity is meant for their survival and protecting. Biodiversity is in our own self-interest. Industries such as cosmetics, pharmaceuticals, pulp and paper, Horticulture, Construction, Waste treatment, and agro-industries are dependent, on biological resources which damaging different species of plants and animals. Biodiversity generates economic value in different ways and it has been a source of revenue from extractable products obtained from individual species. The use of compounds genes and species is essential to meet, the industrial needs. For the conservation of human societies on the earth it needs to conserve earth biodiversity.
MEDICINAL PLANTS AND THEIR DIFFERENT ACTIVE COMPONENTS USED AS ANTHELMINTIC ACTIVITY

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ABSTRACT

The various species of helminths parasitize in cattalos, sheep and human which cause fascioliasis and result in considerable pathogenesis and economic losses. Fasciola gigantica is endemic fascioliasis in the cattle population of eastern Uttar Pradesh, India. The world health organization (WHO) has been reported that 51 different countries from 5 continents are infected by the human fascioliasis. Fascioliasis are ranks as major causes of morbidity and mortality both man and live-stock and contribute to socioeconomic problem. Human fascioliasis infection commonly acquired by eating encysted form of metacercaria larvae on aquatic leaves which eaten as vegetables and contaminated drinking water. The problem to control these infections is further complicated due to the emergence of anthelmintic resistance against the various drugs/chemical. Local medicinal plants were the potent source of many pharmacological activities. Among that the plants of anthelmintic action has attained a great interest due the capability of the plant and its compound to treat various disease that causes major economic loss and reduced livestock production to the livestock holders. The pathogenic infection causes the severe effect of mortality and other problems that were uncontrolled due to the anthelmintic resistance that is developed in the host organism. However, many synthetic drugs were cause more side effect in the host body. Traditionally different medicinal plants are uses in control of different parasitic disease and these plants and their product has been identified throughout the world. The life cycles of Fasciola gigantica are completed in the fresh water host snail and vertebrates host body. The different larval stages of Fasciola can be control by the use of local medicinal plants.
EFFICACY OF CRUDE LEAF EXTRACTS OF *ANNONA SQUAMOSA* AGAINST FIRE ANTS *SOLENOPSIS SPP.*

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**ABSTRACT**

The fire ants (*Solenopsis* spp.) are a major agricultural and urban pest, destroying crops and invading residential areas both outdoors and indoors. *Solenopsis* has a very distinctive two-segment antennal club, which is most visible in the front view of the female reproductive ant. Aqueous extracts of varying concentrations (100%, 75%, 50%, 25%, 10%, 5%, 1%, and 0.1%) of fresh leaves of *Annona squamosa* were sprayed over workers of *Solenopsis* spp. The dilution calculated by the formula weight per volume, with the solvent RO Water. While mortality is defined as dead / number of subjects x 100%. We used positive control group that was exposed with the insecticide Chlorpyriphos 0.2% and a negative control group which is exposed by RO Water. The leaves extract from *Annona squamosa* with Extract leaves 25%, 50%, 75% and 100% (w/v) concentration *Annona squamosa* showed effectively kill *Solenopsis spp.*, but less effective if compared to the positive control insecticide Chlorpyriphos 0.2% while extract leaves 0.1%, 5%, and 10% ineffective, while, LD50 of the extract was very high (61.30%).
Abstract No. 65

EFFECTS OF GREEN SYNTHESIZED SILVER NANOPARTICLES EXPOSURE ON EARLY GROWTH AND METABOLISM OF SOLANUM LYPERSICUM

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ABSTRACT

Silver nanoparticles (AgNPs) have been used in a diverse variety of consumer products but its impact on plants needs further investigation. Till date, there have been very less studies reported dealing with the effects of AgNPs on plants. This study investigated the impact of Green synthesized AgNPs on seed germination, seedling growth, antioxidant enzyme activity and chlorophyll content of Solanum lycopersicum. The AgNPs showed negative effect and AgNO3 had no significant effects on seed germination of Solanum lycopersicum. Growth i.e root length and root fresh weight significantly reduced when exposed to 40 mg/L AgNPs. It showed that the toxicity of AgNPs on Solanum lycopersicum seedling growth is different from AgNO3. AgNPs 40 mg/L concentration significantly increased the activities of antioxidant enzymes in the test plant but AgNO3 had no effect on enzyme activity of the plant. Solanum lycopersicum bioassays employed in our experiments provided valuable information concerning the effects of AgNPs on plants and decreased biophysical and biochemical parameters in dose dependent manner.
Food chain is the transformation of energy from autotrophs to heterotrophs in an ecological region. Food web is a system of interconnected food chains. In this study, three species food web with intraspecific competition for limited environmental resources and the classical Lotka - Volterra interaction of one species on the other has been considered. Equilibrium points obtained from the assumption of no prey exists, no predator exists, no intermediate no predator exists and no top predator exists has been discussed. The conditions of the coexistence of the species in the environment have also been investigated. Taking the assumptions into account, the complete dynamics of the model is investigated qualitatively and the results obtained, has also been supported by computer simulation.
MATHEMATICAL ANALYSIS OF THREE SPECIES FOOD CHAIN WITH FIXED FUNCTIONAL RESPONSE

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ABSTRACT

In this paper, we study mathematical model of ecology with a tritrophic food chain composed of a classical Lotka-Volterra functional response for prey and predator, and a Holling type-III functional response for predator and super predator. There are two equilibrium points of the system. In the parameter space, there are passages from instability to stability, which are called Hopf bifurcation points. For the first equilibrium point, it is possible to find bifurcation points analytically and to prove that the system has periodic solutions around these points. Furthermore the dynamical behaviors of this model are investigated. Models for biologically reasonable parameter values, exhibits stable, unstable periodic and limit cycles. The dynamical behavior is found to be very sensitive to parameter values as well as the parameters of the practical life. Computer simulations are carried out to explain the analytical findings.
In this paper, we have proposed and analyzed a mathematical model of ecology with a tritrophic food chain composed of a classical Lotka-Volterra functional response for prey and predator, and a Holling type functional response for predator and super predator. There are two equilibrium points of the system. In the parameter space, there are passages from instability to stability, which are called Hopf bifurcation points. For the first equilibrium point, it is possible to find bifurcation points analytically and to prove that the system has periodic solutions around these points. Furthermore the dynamical behaviors of this model are investigated. Models for biologically reasonable parameter values, exhibits stable, unstable periodic and limit cycles. The dynamical behavior is found to be very sensitive to parameter values as well as the parameters of the practical life. Computer simulations are carried out to explain the analytical findings.
STUDIES OF VARIOUS ETHNOMEDICINAL HERBAL PLANTS USED BY INDIGENOUS COMMUNITIES AND ITS PROSPECTS FOR PRODUCTION OF MEDICINALLY IMPORTANT PHYTO-CONSTITUENTS

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ABSTRACT

In recent years various Indian medicinal plant species have been overexploited for therapeutic uses and have subsequently been placed today in rare and endangered categories. As per report of Red data List of threatened species approximately 44 plant species are critically endangered, 113 endangered and 87 vulnerable. Out of these many traditional medicinal plants are also at critical risk because of their over harvesting and destruction of their natural habitat. The traditional utilization techniques of the communities inhabiting the study area not only utilize the plants for domestic consumption but at the same time express high conservation ethos. Ecological management techniques practiced by certain tribes are far superior to so-called modern means of conservation. The concept of conservation of biodiversity is inbuilt and interwoven in the traditional and religious belief of the ethnic communities. This is an area of research that presents a variety of opportunities for conservation, sustainable development and health-care. Enhanced market demands have posed threats to Phyto resources due to unscrupulous mode of collections. Therefore, the management of traditional medicinal plant resources has become a matter of urgency.

The pharmacological evaluation of substances from plants in the present scenario is an established method for the identification of constituents which leads to the development of novel and safe medicinal agents. Based on the ethnopharmacological literature, several species of medicinal plants are used in traditional medicine in various parts of Rajasthan. The importance of ethno botany has been seriously felt in recent years due to vast plant resources of the country and a number of pharmaceutical uses of plant extracts. Therefore, now a day's screening of medicinal herbs as potential sources of new bioactive compounds of therapeutic value has increased.
Abstract No. 70

BIOTECHNOLOGICAL STRATEGIES FOR CONSERVATION OF ENDANGERED ETHNOMEDICINAL PLANTS OF RAJASTHAN AND EVALUATION OF THEIR POSSIBLE THERAPEUTIC APPLICATIONS

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ABSTRACT

In medicinal plant research, botanical documentation plays a vital role since without correctly identified material and properly documented voucher specimens the results are at best suspect and at worst useless. Population growth, urbanization and the unrestricted collection of medicinal plants from the wild is resulting in an over-exploitation of natural resources. Therefore, the management practice of traditional medicinal plant resources are the need of hour and has become a matter of urgency. Therefore, now a day's screening of medicinal herbs as potent source of new bioactive compounds of therapeutic value has increased. The pharmacological evaluation of substances from plants is an established method for the identification of compounds which leads to the development of novel and safe medicinal agents. Based on the ethnopharmacological literature, several species of medicinal plants used in traditional medicine in district Jaipur, Rajasthan were collected and were subjected to in vitro cultures. Tissue culture technology is potent and has opened extensive areas of research for biodiversity conservation. Such facts make it imperative to document the overall factual position of in vitro culture of medicinal plants bringing out the advancement mode along with the short falls, in this important area of proposed study.

The present paper in the present scenario deals with the futuristic view on the said subject restricted to the important endangered ethnomedicinal plants. This could help in creating awareness regarding the need for mass conservation of such plants facing threat and also in the promotion of ethno-medico-botanical knowledge within the region besides contributing to the preservation and enrichment of the gene bank of such economically important species before they are lost forever. Efforts will further be made to isolate the active constituents of these potent medicinal plants which are facing the danger of extinction and their biological activity will be tested in vivo.
MOLECULAR PERSPECTIVE ON CONSERVATION OF BIODIVERSITY

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ABSTRACT

The protection of biodiversity has been incorporated into national and international legislation. Molecular biology tools have been used to guide conservation programmes. Recent advances in molecular technology also have opened a new chapter in species conservation efforts. The main goal of molecular techniques is to detect the variation in DNA sequences based on the differential mobility of proteins and DNA fragments respectively in an electrophoretic field. Hybridization between a labeled DNA fragment or probe and a target DNA is the principle involved in many other techniques. Some important techniques are: (a) DNA sequencing, (b) MHC (major histo-compatibility complex), (c) Minisatellite DNA, (d) Microsatellite DNA, (e) Random amplified polymorphic DNA (RAPD), (f) Restriction Fragment Length Polymorphism (RFLP), (g) Allozymes, (h) DNA Fingerprinting, (i) Biomolecule Sequencing, (j) Single Strand Conformation Polymorphism (SSCP), (k) Denaturing Gradient Gel Electrophoresis (DGGE) and Temperature Gradient Gel Electrophoresis (TGGE), (l) Amplified Fragment Length Polymorphism (AFLP), (m) DNA or Micro array technology, (n) Minisequencing, (o) Quantitative PCR, (p) Short Interspersed Elements (SINEs), (q) Heteroduplex analysis, (r) Mitochondrial DNA (mtDNA) sequencing and (s) Chromosomal Conformation Capture (3C) technique for prokaryotic biodiversity. The principles and applications of these methods have been given in the paper.
PHYSIOLOGICAL STUDIES OF SOME AQUATIC FUNGI OF BETWA RIVER HAMIRPUR (U.P.), INDIA

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ABSTRACT

The present study was conducted in Betwa River along a stretch of 40 km from its origin to downstream of the river near old Betwa Ghat Area to assess the presence of fungi in the river water. The study reveals the physiological growth of the aquatic fungi with respect to the Hydrogen Ion concentration, Light and Nutrient. Ecological studies on aquatic fungi in river Betwa at Hamirpur were taken up for the first time during the course of present studies. It appears that such studies will be of great help in assessing the water quality of the river. Hydrogen ion concentration of all the stations ranged between 7.0 to 9.0, which fell under neutrally alkaline and constantly alkaline group. All the recorded species were growing in alkaline water and did not show any significant relation with the occurrence of fungi. 6.5 was the optimum pH for growth and spolulation of Achlya sp. and Saprolegnia sp. But growth can occur at all pH treatment from 3.5 to 9.5 thus providing a wide pH range tolerance from highly acidic to highly alkaline. Light favour various growth activities of fungi. Most favourable was green light for vegetative growth and sporangial formation. Diffused light, fluorescent light, complete darkness and red light did not stop the growth but they are not very stimulating also for fungal growth and reproduction.
NUTRITION INTERVENTION IN ADOLESCENTS

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ABSTRACT

WHO defines adolescence as the segment of life between the ages of 10-19 years. Adolescents are an in between group, with some nutrition problem commonalities with children and some with adults. Over nutrition under nutrition play a role in morbidity and mortality of adolescent girls. In addition, there are adolescent-specific issues that call for specific strategies and interventions. Diet is one of the most important and modifiable life style determinants of human health. Therefore nutritional interventions are needed to reduce problems through dietary change. The purpose of a nutrition intervention is to resolve or improve the nutrition diagnosis or nutrition problem by provision of advice, education, or delivery of the food component of a specific diet or meal plan tailored according to the need of the adolescent girl. Nutrition intervention strategies are selected to change nutritional intake, nutrition-related knowledge or behaviour, environmental conditions, or access to supportive care and services. All opportunities for contact with adolescents for health and nutrition promotion have to be taken advantage of, and some also have to be created, in keeping with an ecological approach to nutrition.
SUSTAINABLE MUNICIPAL WASTE MANAGEMENT IN INDIA: CHALLENGES AND OPPORTUNITIES

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ABSTRACT

Municipal solid waste management in India traditionally has been a neglected area of development and often accounted for severe health problems in the past. Solid waste management is one of the basic essential services provided by municipal authorities in the country to keep area clean. However, it is the most poorly developed services in the basket. The system applied in the cities is outdated, unscientific and insufficient. The population coverage of such system is low and the poor are marginalized. In India 7.2 million tons of hazardous waste and 150 million tons of high volume low hazard waste generated every year. Waste is littered all over leading to insanitary living conditions. Municipal solid waste contains approximate 28.5% paper and paperboard, 13.9% food scrap, 13.4%-yard trimming, 12.4% plastic, 9% metals, 8.45% rubber and leather, 6.4% wood, 4.6% glass and 3.4% others. Laws implemented by Municipal Corporation do not have sufficient provisions to deal effectively with the problem of solid waste management. Due to rapid rate of urbanization, the situation is becoming critical. The urban population has grown fivefold in the last six decades. Safe and effective solid waste management programs performed well in this direction. They based on the theme of reduce, reuse and recycle. Various economic and environmental costs associated with ISWM will take into consideration while developing action plan for waste management. Management strategies should be eco-friendly, cost effective and implemented with active and continuous involvement and participation of the public.
HYDROLOGY AND ZOOPLANKTON STUDIES OF CHITTAURA JHEEL OF DISTRICT BAHRICAHI (U.P.), INDIA

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ABSTRACT

In the present study, several physico-chemical parameters such as temperature (14.2-21.2°C), pH (7.0-7.9), DO (8.1-17.2ppm), FCO₂ (3.1-4.9 ppm), carbonate alkalinity (34–69ppm) total alkalinity (64-259 ppm) nitrate (0.06-0.029 ppm), phosphate (0.016-0.070ppm) total organic matter(2.6 -10.4ppm) and total nitrogen (1.22-3.4ppm) were studied. Variation in zooplankton from the selected fields was examined by calculating 14 species of four taxa – Rotifers, Crustacean, Dipteran larvae and Coleopteran larvae. In study, Anopheles sp. larvae and Culex sp. larvae were the most dominant species which indicated dirty water of Chittaura Jheel.
Abstract No. 76

CUMULATIVE EFFECT OF SULPHUR AND CALCIUM MODULATE ARSENIC INDUCED TOXICITY BY REGULATING PHOTOSYNTHETIC ACTIVITY AND DIFFERENT METABOLITES OF BRASSICA JUNCEA L. SEEDLINGS

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ABSTRACT

Sulphur (S) and calcium (Ca) are the essential mineral elements known for their profound role in plant growth and development. Therefore, in the present study, we assessed the protective role of S (60 mg S kg⁻¹ sand) and Ca (250 mg Ca kg⁻¹ sand) alone and simultaneously against arsenic (As: As₁; 15 mg As kg⁻¹ sand and As₂; 30 mg As kg⁻¹ sand) induced toxicity in Brassica juncea L. seedlings. Arsenic induced toxicity has negative effect on plant growth and photosynthetic performance while exogenous application of S and Ca and their cumulative effect i.e. S+Ca restored the above referred traits. Arsenic increased the contents of different metabolites i.e. total phenolics (TPs), flavonoids and anthocyanins thereby increasing the activity of phenylalanine ammonium-lyase enzyme, while on exogenous application of S, Ca and S+Ca either alone or to As-stressed Brassica seedlings, a further rise in above captioned traits was noticed. Conclusively, exogenous addition of S, Ca and S+Ca could be advantageous against As toxicity especially cumulative effect of S and Ca in As stressed Brassica seedlings.
PHOTO EFFECT ON EPIDERMAL FEATURES OF PTERIDOPHYTES

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ABSTRACT

The paper deals an illustrated account of effect of light on the epidermal features of pteridophytic plants. The epidermal details like stomatal structure, frequency and sinuosity of upper and lower epidermis has been discussed in great details. The author has collected two species of *Adiantum* viz; *Adiantum caudatum* and *Adiantum capillus-veneris*, one species of *Marsilea minuta* and one of Christella dentata. All the specimens have been collected from different localities of Nepal and Uttarakhand. The collected specimens were dried and treated with mercuric chloride. The specimens were duly numbered. For the identification help has been taken from BSI (Central circle Allahabad) and from Duthie Herbarium of Botany Department, University of Allahabad. For the study of cuticle, stomata and epidermal details, small pieces of mature pinnules were fixed in FAA. The usual technique employed by Pant school, has been employed. Epidermal peels were taken out by treating the material with Shulze's techniques of maceration. Venation pattern has been studied by making preparations of transparency using Foster's technique. Lastly it is mounted in euparol. After formation of stomatal slides and transparencies, the no. of stomata, frequency of stomata, sinuosity of epidermal cells and depositions were studied with the help of high resolution microscopes with grid systems. All these specimens are compared with the different collection of specimens with effect of the light intensity.

The aim of this study was to evaluate the effect of light on different pteridophytic plants of the forest concerned. Measurement of light intensity on leaf surfaces was noted. Various types of foliar anomalies, both microscopic and macroscopic, were detected externally. Changes in the epidermal structures and details were also noted. Site wise and season wise variations of almost all data were found to be statistically significant. Comparison of light intensity and epidermal parameters are recorded along with study of spatial significance of sites at Nepal.
GC-MS PROFILING OF METHONOLIC EXTRACTS OF CHENOPDIUM ALBUM (L.) LEAF FOR IDENTIFICATION OF DIFFERENT PHYTOCHEMICALS

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ABSTRACT

Chenopodium album L., (family Chenopodiaceae) commonly known as Bathua. It is a very common weedy herb. The plants have many medicinal properties being used for the treatment of many diseases like rheumatism, arthritis, burns, dysentery, bleeding piles, splenic disorders etc. Hence the present study deals with the determination of different phytochemical constituents in the methanolic extract of Chenopodium album leaf using the GCMS technique. GCMS analysis of methanolic extract of C. album leaf reveals the presence of many phytochemicals. Main bioactive compounds are n-Hexadecanoic acid, L-Proline, 5-oxo-, methyl ester, Pidolic Acid, l-Phenylalanine, N-butyryl-, methyl ester, 3,7,11,15-Tetramethyl-2-hexadecen-1-ol, Hexadecanoic acid, methyl ester, 2-Diacetylamino-3-(1H-indol-3-yl)-propionic acid, methyl ester, etc. The present study revealed the presence of many pharmacologically and therapeutically active compounds in the plant which justify the use of the plant in the treatment of many disorders by the traditional practitioners.
HIGH-DENSITY PLANTATION MANAGEMENT FOR INDUSTRIAL WOOD PRODUCTION

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ABSTRACT

Planting high value agricultural crops is not feasible on degraded community and private lands due to soil moisture and fertility constraints. Establishing high-density woody plantation followed by intensive management serve as the key to utilizing such lands productively. This also helps in meeting the needs of the rural communities, especially in degraded land where Smallwood and fuel wood are in short supply. Several fast-growing tree species can be used in such plantations. High-density plantations are not raised and managed on a significant scale for production of wood in north India. However, in Southern and Western India and in Europe and North America such plantations are commercially used for production of biomass for pulp and paper industry as well as for bioenergy. They are cut at short intervals of about four years and the wood is supplied to the industry. Wood chips are made for bioenergy production. The woodlots in India are not managed in this way and hence their productivity is quite low. This practice can be used in Northern India too for production of wood for making pulp, particle board, medium-density fiberboard and as fuel wood. Establishing high-density plantation and their intensive management can be a key for utilizing degraded land productively besides meeting needs of the rural communities; especially in degraded land and hills where wood is in short supply. Several fast-growing tree species viz. Eucalyptus, Casuarina junghuniana, Gmelina arborea & Melia composita etc. can be used in such effort with a three types of spacing viz. 1m x 1m (will have 100 plants/plot), 1.2 m x 1.2 m (will have 64 plants/plot), 1.5 m x 1.5 m (will have 36 plants/plot). The present study seeks to establish high-density plantations of mentioned species according to site, study their initial performance and develop guidelines for future maintenance. The study funded by Indian Council of Forestry Research and Education (ICFRE) also aims to develop technique for producing industrial wood and fuel wood with this method.
EFFECT OF OYSTER MUSHROOM ON GROWTH PERFORMANCE AND HAEMATOLOGICAL PARAMETERS OF CLARIAS BATRACHUS FINGERLINGS

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ABSTRACT

Oyster mushroom is commercially grown as food and medicine in many countries. *Pleurotus opuntiae* is a popular type of edible mushroom due to nutritional value and biological functions and its production has greatly increased during last few decades. Several studies on *P. opuntiae* have revealed a number of therapeutic functions such as immunostimulatory, antitumor, antioxidative, antimicrobial and antiviral activities. The results of a study revealed that the dietary supplementation of *P. opuntiae* stimulated growth, immunity and disease resistance of the catfish. *Clarias batrachus* is the most popular edible Indian fresh water cat fish consumed by people throughout the country. The aim of present study is to evaluate the effects of edible mushroom powder, *Pleurotus opuntiae* (PO), for 60 days on growth performance haematological parameters, the serum immune responses, of *Clarias batrachus* fingerlings. Fish were divided into five groups and each group was fed with dietary (PO) with five graded levels (0, 0.5, 1, 1.5 and 2%). The results showed a significant dose-dependent increase of Ht, Hb, MCV and MCH levels in fish fed dietary PO (P < 0.05). The highest levels of WBCs, lymphocytes and monocytes were measured in fish fed 1.5% and 2% of dietary PO (P < 0.05). The growth performance of fish fed 1.5% of dietary PO improved compared to control group (P < 0.05). The results revealed that feeding catfish fish with dietary supplementation of PO (1.5 and 2%) improved the selected humoral innate immune responses, and growth performance of catfish.
Abstract No. 81

PHYSICO-CHEMICAL CHARACTERISTICS OF HASHIM PARA TAAL, A WETLAND WITH ZOOPLANKTON, PHYTOPLANKTON AND FISH CULTURE

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ABSTRACT

Hashim Para taal is a major fresh water body situated near Utraula in Balrampur district. It is a seasonal and permanent wetland. Besides physico-chemical condition of this taal was studies from April 2018 to March 2019. The various physico-chemical parameters of water of this taal like water pH ranges between 6.5-8.5, Electrical conductivity ranges between 91-123 ppm, total dissolved solids ranges between 77-122 ppm, dissolved oxygen ranges between 5.2-9.5 ppm, temperature ranges between 15.9-33.2°C, Hardness ranges between 87-124 ppm, and potassium ranges between 0.02-0.12 ppm, chloride ranges between 10-74ppm, calcium ranges between 49-69 ppm, magnesium ranges between 32-55 ppm, total alkalinity ranges between 70-120 ppm. The phytoplankton population was dominated by Chlorophyceae, Basillariophyceae, Cyanophyceae, Dimorophus, Navicula, and Pinnularia. The zooplankton population includes Rotifers, Cladocerans, Copepodes, Brachinous, Daphnia, Mesocyclops and Protozoans. The water body is suitable for drinking purposes and for fish culture.
VITAMIN AND SHORT-CHAIN FATTY ACID PRODUCTION FROM YEAST STRAINS ISOLATED FROM THE ETHNIC FERMENTED FOODS OF MEGHALAYA, INDIA

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ABSTRACT

Microorganisms with rich probiotic potentiality exerts many health benefits to the human due to their inherent characteristics, among them the production of essential vitamins like riboflavin, folate, cobalamin and short chain fatty acids (SCFAs) have many valuable impacts on health. These vitamins are essential for cellular and metabolic growth of body. While SCFAs, majorly acetic acid, propionic acid and butyric acid and lactic acid exerts effect as anti-obesity, anti-diabetics, antimicrobial and other chronic diseases prevention. Being considering above facts the study was conducted for vitamin and organic acid production potential of five yeast isolates viz, WTS1A (S. cerevisiae), WKF2B (S. cerevisiae), KGL4A (Pichiakudriavzevii), WBS2A (S. cerevisiae), NGL1B (S. cerevisiae) from the indigenous fermented foods of Meghalaya, North-East India. WTS1A had shown high B2 production (0.5µg/ml) and WKF2B showcased with maximum B12 production (0.06 µg/ml) after 36 h followed by highest folate production (0.10 µg/ml) after 12 h. Moreover, WTS1A reported with 0.0183 gm/l acetic acid and 0.002 gm/l butyric acid production respectively. Furthermore, these vitamin and short chain fatty acid producing strains of yeasts could be a worthwhile substitution to fortification programmes and prove beneficial for elaboration of novel vitamin-enriched fermented food products.
GLOBAL ENVIRONMENTAL ISSUE: AN INTRODUCTION

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ABSTRACT

Global Environmental Issues display a vast and stimulating introduction to the key environmental issues presently threatening our global environment. The rapidly growing demographic structure and globalization are leading to a number of environmental issues because of the uncontrolled combustion of fossil fuels, emission from agriculture, land use changes that accompany the destruction, clearance and burning of forests which cause emissions to the atmosphere of large amounts of 'greenhouse gases', of which the most important is carbon dioxide, technological development rapidly, increasing human population dramatic, increase in resource and energy consumption, utilitarian attitudes towards the environment, short term patterns of decision making is now regarded as one of the major global environmental issues. Climates change already has observable ecological and social effects, and its projected impacts could potentially result in profound changes in global mean the world's major environmental concerns, including the effect on and of human activity, issues covered include atmospheric ozone depletion, emissions of greenhouse gases, surface temperature, sea level, ocean circulation, precipitation patterns, climatic zones, species distribution , acid rain, water resources, pollution, nuclear technology, energy resources and production, natural hazards and ecosystem function on the Earth's surface. Human civilization and globalization are the leading culprits of regular change in the global environment now days. Almost all these processes are the result of the use of natural resources in unsustainable manner, Current environmental issues go ahead to disaster and tragedies now, will also be the reason of casualties in future. Our responsible authorities/nations take urgent step to frame suitable laws to beat these issues and also by making people attentive to use natural resources in sustainable behavior.
India is a land of diversity as river diversity state diversity language diversity cast diversity genes diversity and climate. One of the biggest challenges is that all living on this earth facing today climate change. With increasing industrialization and urbanization, various forms through their modern living style that are unforeseen for even the nature and it have any mechanism to copy with them hence they remain in environment, and create unbalancing and adverse effect to the environment one among them is climate change, since the realization of the menace, step have taken at various levels to reduce emission of such substance to the environment in or country. The parliament from the very beginning has been enacting various levels have set many regulation and standards for auto mobiles and industries to reduce carbon dioxide emission that contribution most of the climate changes. Also government is switching its focus for energy from conventional energy resources which limit large quantity of environment polluting substances to non conventional and renewable resources like solar energy power and wind equality. Globally a efforts are being mate to reduce carbon emission, from Kyoto, Doha, bail protocol to Paris climate change accord the word is playing more than more attention to climate issue though effort are on but be will to be more serious in balancing development and environment.
WILD LIFE CONSERVATION EDUCATION AND INTERNATIONAL PROGRAMMES

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ABSTRACT

Wild life and habitat conservation has become increasingly important in the 21st century. Destruction and loss of habitat, illegal use of wild life, overexploitation of resources, and lack of conservation awareness, have a negative impact on biodiversity and ecosystem. The unforeseeable expection by 2050 is that few large marine species will remain and majority of coral reefs, mangrove swamps and salt marshes will be degraded. The wild life carrying capacity in many protected areas will significantly reduce due to global warming, pollution, invasive species and illegal hunting one of the concerns is the rapidly increasing human population on the planet with 6.4 billion individuals in 2005. For global conservation a sustainable approach means that strict legislation and ethics have to be developed together with regulation human attitude. Conservation education and outreach techniques including learning and thinking developing skills and undertaking activities are described. The responsibility of zoos to teaching their visitor by effective ducation about the causes and types of threats, their decline and measures for conservation is more holistic. International educational programmes are chiefly targeted towards poverty alleviation and play an important role in delivering sustainable outputs.
BIOSYSTEMATICS STUDY OF INDIAN LYCOPODS: SELAGINELLA

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ABSTRACT

The Present Study mainly focus on the biosystematics study of Indian Lycopods: Selaginella. The altitudinal distribution and ecological groupings of 30 species of Selaginella in different forest types in eastern India together with key for the identification have been given, of these systematic accounts of 12 interesting Species are furnished with dissection of vegetative and reproductive parts. Selaginella minutifolia spring, Selaginella pubescens, Selaginella wallichii spring are reported as new records for India, Selaginella miniatospora, Selaginella radiata spring, Selaginella wightii, Selaginella intermedia for eastern India, Selaginella kurzii for Madhya Pradesh and Uttar Pradesh and finally, Selaginella ciliaris for Madhya Pradesh only. Selaginella willdenwii is a new record for the main land of India.
ABSTRACT

The cestode Oochoristica sp. is a very specific parasite in the intestine of Hemidactylus flaviviridis (Ruppel). The Relative density of the cestode in the lizard was studied in monthwise, seasonwise and annual basis. Monthwise relative density of Oochoristica sp. in the male lizard is zero in May, August and September and low in October, November, December, March, April, June and July. In female lizard it is zero in December, March, April, May and September but low in October, November, June, July and August. Seasonal Relative density of the cestode in male lizard is low in winter and rainy season. In female lizard it is zero in summer and low in winter and rainy season. The Annual Relative density is low in both male and female lizards but it is higher in males than in females. The host could not be examined during the month of January and February due to their dormant condition.
Abstract No. 88

HYPOGLYCEMIC AND HYPOLIPIDEMIC OF WITHANIA COAGULANS (DUNAL) FLOWER EXTRACT IN STREPTOZOTOCIN INDUCED DIABETIC RATS

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ABSTRACT

Abnormal glucose metabolism results in many metabolic diseases such as diabetes, hypertension, obesity and hyperlipidemia. Inspite of introduction of newer hypoglycemic agent diabetes and hyperlipidemia remains a major clinical problem. The aim of this study was to investigate antidiabetic, antihyperlipidemic properties of Withania coagulans (Dunal) flower extract in streptozotocin induced diabetic rats. Experimental diabetes was induced by 60 mg/kg b.w intraperitoneal injection of streptozotocin Wistar rats. The animals were divided in groups' diabetic control (untreated), Vehicle (normal control), glibenclamide (0.6 mg/kg), WCDF extract (200 mg/kg), WCDF extract (100 mg/kg) co-administered with glibenclamide (0.6 mg/kg) and atorvastatin (7.2 mg/kg/day). Fasting and postprandial blood glucose levels were measured every week for 4 weeks and body weights of rats were recorded at 0, 5, 10, and 15 days of oral treatment. At the end of treatment animals were sacrificed and blood sample were collected for the measurement of total cholesterol (TC), triglycerides (TG), very low density lipoprotein (VLDL), low density lipoprotein (LDL), high density lipoprotein (HDL), SGOT, and CK-MB. Analysis of content of liver glycogen andendocrine pancreas histopathology was carried out. After 4 weeks of WCDF extract oral administration increased survival rate and expressed significant reduction in blood glucose and lipid profile in diabetic rats. The WCDF treatment significantly reduced SGOT and CK-MB levels and restored liver glycogen content when compared to diabetic control and showed significant improvement in normal cellular population size of islets. WCDF extract produced a synergistic antidiabetic and antihypelipimic effect as well as improvement in pancreatic histopathology. Moreover, hydro alcoholic extract of WCDF was effective and comparable to glibenclamide and atorvastatin in controlling the high blood glucose and cholesterol in diabetic rats.
SUSCEPTIBILITY OF SOME CHICKPEA VARIETIES TO *CALLOSOBRUCHUS MACULATUS* FAB. AND INFLUENCE OF TEMPERATURE ON ITS' BIOLOGY

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**ABSTRACT**

Chickpea grains during the time of storage suffer from great damage due to the attack of pulse beetle, *Callosobruchus maculatus* Fab. The suitability of six common species of chickpea (RSG-44, KPM-236, KPM-248, KGD-1247, KGD-1168 and SLR-21) to infestation by pulse beetles was investigated. The investigation was based on the reproductive biology of the beetle. The influence of different temperature regimes on its development was also studied. Results showed that susceptibility of tested chickpea varieties were variable against pulse beetle *Callosobruchus maculatus* Fab. KPM-236 was most susceptible, while KPM-248 showed high degree resistance even under heavy infestation of the pulse beetle. The fecundity was maximum (79.63 eggs per female) for KPM-236 and minimum (46.33 eggs per female) recorded on KPM-248. Longevity of male and female adults was also longest (5.84 days and 6.74 days respectively) on the variety KPM-236, while it was shortest (4.46 and 5.13 days respectively) on the variety KPM-248. Pulse beetle, *Callosobruchus maculatus* Fab. did not complete its life cycle at the temperature of 40°C and above. The developmental period was maximum at lowest tested temperature (20°C.) and minimum at 35°C.
EFFECT OF SEROTONIN ON ISOLATED SCALE OF MELANOPHORES OF *RASBORA DANICONIUS* (HAM.)

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ABSTRACT

Effect of serotonin was examined on the isolated scale of melanophores of *Rasbora daniconius*. Serotonin elicited dispersion in melanophores of dorso-lateral region and in band region melanophores induced dispersion as well as aggregation during summer season. The melanophore size index (MSI) was employed as a recording parameter for the responses of melanophores to serotonin.
BIODIVERSITY OF FOOD FISHES IN THE RIVER GANGA AT KANPUR

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ABSTRACT

Kanpur is a large city in the state of U.P. located on the west bank of the Ganges River situated at 26.46 N° latitude and 80.35° longitude at an elevated of 126 meters from the sea limit. There are many Ghaats such as Bithoor, Bhairav Mascar Gola Koyla Siddhnath Ghaats (Lavkush) Ganga Barradge in the Kanpur River Ganga Fishes are important role play in the Aqatic ecosystem there are many biodiversity of Zooplankton, cyanobacterial, algae, crustaceans, Reptelian, mammalian, Seemed in River Ganga. The present study of structure of fresh water fishes at Kanpur Ganges Ghaats shows Variance for fish species (102) 67% to 37% the environmental relation. Cypriniformes are most rich families are seemed total Hardness of water, Dissolved oxygen, alkalinity were responded for the present Labeo, Rita, Catla and separated while Labeo, Cyprinus carpio And Cyprinus mrigala preferred nitrate phosphate and total dissolved oxygen Solid for their abidance. Higher Biological oxygen demand and lead, zinc and Sulphate were responsible for abundance of Labeo for conservation point of Cyprinus carpio.
Abstract No. 92

**ESTIMATION OF BIOMASS STORED BY TREES IN FORESTS OF PRAYAGRAJ BY USING NON-DESTRUCTIVE METHOD**

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**ABSTRACT**

Abstract: The present study deals with the estimation of tree biomass by non-destructive method in tropical deciduous forest (DDF) in 0.1 ha permanent plots, established at four sites in Prayagraj district of Uttar Pradesh in India. The biomass of each species was estimated taking tree volume and species specific gravity. Tree volume was calculated using volume equation. The relationship between basal area and above ground biomass showed positive correlation for all sites and forest types. Significantly higher basal area (m² ha⁻¹) was recorded for the forest of Dewghat (47.55). Highest above ground biomass (t ha⁻¹) was also recorded for the forest of Dewghat (286.1). Biomass of trees contributes major proportion in total biomass of a forest ecosystem. Estimation of above ground tree biomass in the present study provides data for tropical deciduous forests covering a large part of state for further use.
ETHNOBOTANICAL STUDY OF SOME HERBAL PLANTS OF SULTANPUR DISTRICT OF U. P., INDIA

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ABSTRACT

The present paper deals with the “Ethno botanical study of some herbal plants of Sultanpur district, U P, India” During 2016-18. To document the medicinal and other utility of plants with traditional uses of 05 plants species along with correct botanical identification, local names, past used and mode of administration in respect to different applications. The documented ethno medicinal plants are mostly used to cure hair loss, diabetes, treats cough, respiratory health, urine retention, Improves digestion, blood pressure, cold, cough, flu and asthma, Relives menstrual pains and digestive distress.
The literature on plant allelopathy has been mainly responsible for the evolution of allelopathy as an independent branch of chemical/physiological interaction in ecology. The research on plant allelopathic during the last four decades drew attention to scientists for an understanding of the role of allelopathy under different habitat conditions. In view of this, we have reviewed and worked the existing information on allelopathic interactions in aquatic habitats with special reference to algal allelopathy such as allelopathic interactions in algae, algal toxins, bioassays, and implications of algal allelopathy. Although there were reports of toxins from cyanobacteria and other algae, no appreciable attempt was made to implicate algal toxins in allelopathy under field conditions. Knowledge of chemistry and biology of allelochemical can help in their potential use in controlling plant diseases, plant growth and weeds. Algal allelopathy is a manifold ecological/physiological phenomenon that involve chemicals contributed by the alga can affect (1) other algae in its vicinity, (2) its own growth (i.e., autotoxicity), (3) microbes associated with it, (4) higher plants in its vicinity, and (5) accumulation and availability of nutrient ions which can influence the distribution, growth and establishment of other algae, microorganisms, and plants. However, to establish algal allelopathy of ecological relevance, it is necessary to demonstrate the involvement of allelopathy under field conditions other than lab. Further, comments should be made on biological active concentration of allelochemical, and its variation, if any, with season, site, habitat, and environmental factors. The allelochemicals seem to have enhanced nutrient uptake vis-à-vis photosynthetic and enzyme activity in the target plant leading to the enhanced growth and development.
Abstract No. 95

TRADITIONAL APPROACH OF BIODIVERSITY CONSERVATION

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ABSTRACT

Early men were very close to nature and natural resources. Indian continent was known for its ecological assets and rich biodiversity. Historical records state that measures to conserve biodiversity are being taken in India since ancient time. Ancient documents revealed that the trees like Peepal and Banyan were referred pious and widely protected in our culture. Water was considered as the symbol of purity and compared with living beings and creator which reflects the environmental concerns. Many ancient Indian texts, including Arthasastra, Sathapatha Bhramanas, Vedas etc. reflect the concepts of forest ecology and biodiversity conservation. The book Arthasastra revealed the concern for wildlife protection as punishments were stated for harming domestic or wild animals and trees. For conserving the natural environment, i.e. for the protection of biodiversity ascribed as Chara (movable living world) and Achara (immovable: plant kingdom) was prescribed in Manusmruti. Natural vegetations have been documented in Caraka-Samhita and Susruta-Samhita for medicinal as well as ecological and environmental perspectives. Protection, conservation and sustainable use of natural resources were recommended in the Vedas. Concept of habitat protection came into existence for the safety and shelter of all the living organisms. Plants were given the status of mother and god and thus the concept of afforestation was developed. The environmental issues and laws described in the Indian historical documents are much relevant in the modern world. This article reflects the belief and perspective for environment, natural resources and biodiversity conservation in Indian culture and tradition which may be useful for environment protection and conservation programs and policies.
CONSERVATION GENETICS: A RESTORATIVE APPROACH

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ABSTRACT

Our mother earth is blessed with variety of life forms. These varied forms of flora and fauna constitute biodiversity of any place. India has been rich in biodiversity but in recent times due to continuous anthropogenic activities the biodiversity is facing threat towards loss of many life forms. Many steps are being taken to protect and conserve the valuable life and one of these approaches includes conservation genetics. Conservation genetics is an interdisciplinary approach which applies the use of genetic methods for conservation as well as restoration of biodiversity. It also involves the action of population genetics, molecular ecology, evolutionary biology and systematics. Hence, conservation genetics utilizes the genetics as a tool to solve the issues related to conservation biology. To understand conservation measures it is essential to go through the concept of genetic diversity. Genetic diversity affects or determines the fitness of a population as well as longevity of life span. Low genetic diversity has been often correlated with high extinction risk of a population. Therefore, the knowledge of genetic variability can help in conservation of a population.
Biodiversity is the variability among Organisms and the ecological complexes to which they are part, including diversity within species (Genetic diversity), between species and to ecosystems. A description to each to these three levels of Biodiversity in provided. Biodiversity provides both the Basis of agriculture the species and genetic variation of crop and livestock-and, through its role in ecosystem function and services, the underpinning of production. Agricultural Biodiversity is a term that includes all components levels. That are relevant to food and agricultural and that support the ecosystem in which Agriculture occurs (Agro systems). This includes the crop and livestock species, and the varieties and breeds within these, and also includes those components that support agricultural production. Components at the species level that support ecosystem services include earth worms and fungi that contribute to availability and cycling of plant nutrients through the break down and decomposition of organic material.

Animal husbandry is closely linked to environmental and climatic condition, Highly productive arable land is preferred for the cultivation of food crops, Grazing animals after use grassland, areas with low productivity, or areas remote from the market. Feeding regimes for animals also depend on the arability of the food processing by products and the Low quality function of food crops. Activity intake by domestic animals with feed is very much affected by Local condition. The intake of radionuclides by animals is dependent on the animal species, their mass, age, productivity level and growth rate, and the digestibility of their feed. Furthermore, the use of feeds for animal nutrition depends on the season and the agricultural conditions and practices within and specific region.
FEEDING PREFERENCE OF TERMITES ON THE SIX DOMINANT TREE SPECIES IN THE DISTRICT SULTANPUR OF U. P., INDIA

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ABSTRACT

The present paper deals with feeding preferences of termites on the six dominant tree species in addjoinig area of district Sultanpur. The preferences of termites were determined by their occurrence on standard-sized wood pieces and their behaviour during the first attack. Two fungus growing termites, Ancistrotermes and Microtermes were frequently encountered on wood pieces, whereas wood feeders were absent. The two genera have different preferences, and they do not compete for the same food. Wood density and water content did not explain termite preference. Holes in the bark seem to facilitate termite entry into pieces of wood, whereas the action of fire on wood apparently makes it less attractive to termites. In the field, the decision by termites to forage on a given tree species seems to be more driven by habitat and accessibility differences than real food quality differences.
ABSTRACT

The present paper deals with Physico chemical analysis of ground water quality of five different areas of Kadipur block and its adjoining area i.e. Aalapur (S1), Baksara (S2), Baramadpur (S3), Chandipur (S4) and Kadipur (S5). The groundwater parameters such as, pH, temperature, alkalinity, calcium, magnesium, phosphate, total hardness, dissolved oxygen, biochemical oxygen demand, sulphate, arsenic, iron, chloride and fluoride were estimated in the samples to evaluate their quality. The data of physico chemical parameters are compared with WHO (1992) and IS: 10500 standards for drinking water. Our result revealed that concentration of DO, BOD, Total hardness, Calcium, magnesium, sulphate, turbidity, alkalinity, phosphate, iron and chloride are within permissible limits and Iron, phosphate are negligible in comparison to permissible limits whereas the concentration of nitrate is higher at sampling areas S3, S4 and S5. The proper treatment is necessary before the use for drinking purposes and irrigation purposes. Finally it can be suggested that an intensive study may be carried out before the domestic consumption.
TRADITIONAL KNOWLEDGE AND GASTROINTESTINAL DISORDERS: A SURVEY REPORT

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ABSTRACT

Traditional knowledge is very ancient. Plants are an important resource of conventional medicines used against different ailments. Medicinal plants have their importance in the healthcare system of local communities, as the main source of medicine. Medicinal plants have proved to be effective for prevention and cure of various diseases and are used widely. The valuable knowledge of the medicinal uses of plants might disappear due to modernization, destruction of forests, lack of awareness etc. However in recent past years public awareness is enhanced towards the protection of traditional knowledge. Some of the gastrointestinal disorders are loss of appetite, abdominal pain, constipation, diarrhea & dysentery, intestinal worms, jaundice, gastritis, vomiting and nausea etc. Gastrointestinal disorders cause morbidity and if severe, they can lead to mortality. Among the communities, a wealth of traditional knowledge is available for the treatment of wide range of gastrointestinal disorders. These medicines are safe and environmental friendly, many a times cheap and affordable also. Utilization and maintenance of biodiversity on long term basis without destroying nature is needed.
The relationship of plant with people exists from time immemorial. Indigenous communities dependent on plants for their basic health care needs and economic support. The plant group Zingiberaceae has many ethnobotanical values such as, being practiced in the day to day life as sources of food, fodder, shelter, clothing, medicine for treatment of diseases. Besides, these plants are also used in religious ceremonies, cultural activities, ornamental and decorative purposes. There are only reports on Zingiberaceae in Odisha but there is no work regarding checklists, monographs and distribution and their ethnobotanical values. The present study of twenty one Zingiberaceae species was collected and their ethnobotanical uses are discussed in the Southern districts of Odisha. There are ten administrative districts in Southern Odisha and are namely Malkangiri, Koraput, Rayagada, Nuapada, Nabarangpur, Kalahandi, Kandhamal, Boudh, Ganjam and Gajapati. This area comes under subtropical climate and includes mountains, forests, rivers, waterfalls and low to high altitude lands. Further these regions are filled with rich cultural heritage and the local people possess traditional knowledge regarding the use of plants. This may provide the opportunity to conserve these plants for sustainable use and bioprospecting in future.
Abstract No. 102

DEVELOPMENT AND CLIMATE CHANGE: AN INDIAN PERSPECTIVE IN GLOBAL CONTEXT

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ABSTRACT

Economic development has now become a compulsion and it has come to command a central place in state policies of different countries in their quest for transforming lives of poor and downtrodden sections of society. Economic development has taken form of such a race in no countries of the world want to be left behind and so over-exploitation of natural resources has been causing severe damage to natural environment due to excessive emission of greenhouse gases. Developed countries have already taken a lead in this economic development race and now they are putting pressure on developing countries to cut down their carbon emission and greenhouse gases. Developing countries have the argument that since developed countries are main contributors to this menace and so they should compensate by way of extending financial support to them to help them adapt to green technologies in years to come. There has been multifold increase in cost of living index attributable to increased level of pollution and climate change. This increased cost of living has very adverse effect on living conditions of poor and downtrodden people since they cannot afford to bear cost of latest appliances to safeguard themselves against adverse effect of climate change in form of natural calamities. It is to be noted that economic development is the cause as well as remedy for protecting against climate change and so there needs to a judicious development policy which incorporates climate change perspective without compromising on achieving high rate of economic growth. This paper attempts to investigate into models of economic development to be adopted by India to minimize damage to natural environment. Also, it aims at studying various kinds of disaster management mechanisms required to be put in place to protect against any natural disaster caused by climate change in Indian perspective.
FROZEN ZOO: A PRESERVATION TECHNIQUE

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ABSTRACT

Frozen zoo is a method of preservation which provides storage facility of genetic material at low temperatures. The cryopreserved materials stored in frozen zoo are used for various technologies viz: in vitro fertilization, embryo transfer technique, cloning etc. Such method provides the futuristic opportunity to continue the endangered species of plants and animals. Some of the frozen zoo usually fertilize eggs and cryopreserve the embryos. For a condition where sperms, eggs or embryos are not available, the use of induced pluripotent stem cells (IPS) can result in production of sperms and eggs. Such technique provides path for creation of new life of the species which are almost extinct or at the verge of extinction. The very first frozen zoo was established at San Diego, USA which at present has a collection of approximately 8400 samples of nearly 800 species and subspecies. Frozen zoo is one of the biggest hopes to save endangered species as their primary aim is to prevent and stop species extinction.
BIOCHEMICAL STUDIES OF SOME PLANTS AFFECTED BY AIR POLLUTION IN SULTANPUR, U.P., INDIA

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ABSTRACT

The present paper deals with biochemical studies of some plants affected by air pollution in Sultanpur, UP, India. Air pollution is a mix of particles and gases that can reach harmful concentrations both outside and indoors. Its effects can range from higher disease risks to rising temperatures. The present investigation is to evaluate the impact of vehicular emission on some biochemical parameters of two tree species such as Polyalthia longifolia and Azadirachta indica growing along the roadside in different anthropogenic locations of Kadipur area at Sultanpur, India. The biochemical parameters that were taken into consideration were total chlorophyll content, total carbohydrate content and total ascorbic acid content. Plant species differ in their response to air pollutants. Some act as sink while other act as load. The total chlorophyll content, total carbohydrate content and ascorbic acid content in Polyalthia longifolia was higher in residential area as compared to the industrial and commercial areas. Similar result was seen in Azadirachta indica with an exceptional increase in the total carbohydrate content in the industrial and commercial areas as compared to the residential area. This work suggests that air pollutants emitted from automobiles and industries adversely affect the biochemical properties of the plants. It further suggests that plants can be used as cost effective biomonitoring tool to assess the quality of air we breathe in. this study is a pioneer in such an important industrial city of the country.
THE ECONOMIC AND SOCIAL ASPECTS OF BIODIVERSITY

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ABSTRACT

Human activity has always had an impact on biodiversity, but in recent centuries this impact has intensified to a position where we are in danger of undermining the primary functions of natural systems and to an extent that could ultimately threaten our own future. Losses of biodiversity have resulted from the destruction of natural habitats, over-exploitation of resources, pollution and changes in the composition of ecosystems due, for example, to the accidental or deliberate introduction of non-native species. Loss of biodiversity is our loss. The incentive to protect biodiversity does not simply arise from benevolence towards the natural world. Rather, a high level of biodiversity also ensures that we are supplied with the 'ecosystem services' that are essential to the sustainability of our standard of living and to our survival. In agriculture, these include the maintenance of soil structure and the supply of nutrients, pollination and pest control. For water supply, it includes the filtering and purification of rivers and lakes, including the decomposition of our own pollutants and waste. In the marine sector, there is the obvious direct benefit of a fish catch, but this harvest itself depends on food chains and habitats provided by a robust functioning level of biodiversity. For practical purposes, what matters knows the approximate marginal value of key ecosystem services at the present time. That is, the value of biodiversity in terms of the incremental benefits or goods to which it contributes. Even in this respect, valuation is a challenging exercise in that we need some understanding of the proportion of these benefits or goods for which ecosystem services are responsible.
Abstract No. 106

BIODIVERSITY AND HUMAN HEALTH

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ABSTRACT

Biodiversity and health are mutually correlated. Generally speaking, the greater the decline in biodiversity, the higher is the risks to human health over the long time. Guiding the health transition towards an era of sustainable health, demands an integrated policy that embraces social, economic and ecological elements recognizing the complex relationships between them and seeing further than a typically over a period of time.
EFFECT OF DIFFERENT LEVELS OF TULSI 
(OCIMUM BASILICUM L.) LEAVES EXTRACT ON BASUNDI - 
A HERBAL DAIRY FOOD PRODUCT

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ABSTRACT

Basundi is a traditional dairy delicacy popular in western part of India mainly 
Maharashtra and Gujarat and few parts of Karnataka and Andhra Pradesh. 
Conventionally, it is prepared by partial desiccation of milk in a karahi or steam 
jacketed kettle until a required consistency is reached. Since Basundi is an emerging 
traditional milk delicacy in Indian market, considerable attention has been received 
by the researchers. Now a days society is very much concerned about their health and 
are increasingly incorporating more and more herbal dairy products in their diet. One 
such herb used is Tulsi or Basil (Ocimum basilicum L.) which is an annual spicy herb, 
indigenous to India which has been cultivated for several millennia for its aromatic 
and medical uses. In the present study, 0%, 2.5%, 5% and 7.5% Basil Leaves extract was 
taken along with 5% sugar for the preparation of basundi and analysed for Total 
Solids%, Moisture%, Fat%, Protein% and Carbohydrates% ranging from 46-49%, 50-53%, 
13-15%, 8-8.5% and 22-24.5% respectively.
Indian traditional milk products including plays a significant role in the economical, social, religious and nutritional well being of people. Milk burfi is one of the most popular milk based sweets in India. Holy basil (Tulsi) is mostly known for its powerful healing qualities. Population is greatly inclining towards healthy herbal organic food products. So the investigation was carried out to prepare the burfi with addition of tulsi leaves extract in sweetened khoa with 15% sugar to obtain herbal burfi. The tulsi burfi was prepared by varying the rate of tulsi leaves extract addition and was tested for moisture, titratable acidity and fat percent. The data of product composition and quantified properties were analyzed by RSM (Response Surface Methodology) after optimization techniques. On the basis of response like moisture %, acidity %, overall acceptability, preparation variables were optimized by RSM in realistic vicinity to locate the true optimal value of multiple compositional variables. Optimum variables for burfi production were predicted as 7% tulsi extract and 35% moisture of khoa among all combinations. Using RSM the predicted value of moisture content %, acidity %, hardness, and overall acceptability was respectively 17.74% (wb.) 0.32% LA, 326.4g, 7.89.
Ribosomal genes have been studied intensively due their critical role in protein assembly. As a result of their universal occurrence, abundance, sequence and structural conservation, they have been used for phylogenetic studies. Sequencing of 16S rRNA gene has been used as marker to unravel genetic relatedness among the three calliphorid species viz., Hemipyrellia pulchra (Weidemann), Lucilia cuprina (Weidemann) and Chrysomya megacephala (Fabricius). 554 bp long 16S rRNA gene was amplified, sequenced and the sequences were submitted to Genbank. Sequences were aligned with Clustal X software. Nucleotide ratio, variable and parsimony informative sites and nucleotide pairwise distances were calculated by MEGA 5 software. The gene sequence of 16S rRNA amplicons revealed 61 variable and 31 parsimony informative sites. The average nucleotide composition was T=40, C=11, A=34 and G=15 and the transition bias was 0.45. Average nucleotide pairwise distance ranges from 0.022 to 0.085. The phylogenetic relationships derived from Neighbour Joining (NJ) and Maximum Parsimony (MP) methods, using D. yakuba as an out group indicated close genetic relationships among the three calliphorid species. H. pulchra and L. cuprina formed a separate cluster depicting their origin from a common ancestor whereas C. megacephala form another lineage of calliphorids. The present study indicates the utility of 16S rRNA gene to unravel phylogenetic relationships among calliphorids.
The present investigation the phytochemical analysis of *Desmodium gangeticum* was carried out as these plants have been proved to be one of the important medicines for treatment of stones in the gall bladder, kidneys or bladder. The phytochemical analysis was carried out for the different parts of the plant extracted with methanol and ethanol solvents. The qualitative analysis showed that alkaloids were mainly seen in most of the samples except methanolic extract of stem and fruit. Tannins, proteins, carbohydrate and phenol were present in all the 4 samples extracted by both methanol and ethanol. Flavonoids were seen only in leaf samples where as cardiac glycosides were seen only in stem samples extracted with methanol. Saponins were mainly present in the samples extracted from methanolic solvent. The qualitative analysis carried out for the determination of phenols, carbohydrates, tannins, alkaloids and proteins. Tannins were seen mainly in leaf samples of both the extracts, ethanol extract of the fruit shown the maximum amount of phenol and proteins. The leaf samples extracted by the solvents possessed contained high carbohydrate content. The presence of high amount of phytochemical compounds suggest that the *Desmodium gangeticum* plant has higher medicinal value and can be extensively studied to extract the natural compounds which are beneficial to human beings and that could be commercialized for higher production than using synthetic drugs with side effects.
The present study mainly focuses on the diversity and distribution of pteridophytes in North-East India. North-East India has richest reservoir of plant diversity in India and supporting about 50% of India's Biodiversity. North-East India has 173297 km² of forest area accounting for 66.098% of the total geographic area of region. The diversity has distribution along different ecological gradients of 500 genera and 1012 species of Pteridophytes in North-East India were studied.
MICRONUTRIENTS DEFICIENCIES AND CHALLENGE FOR THE FUTURE

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ABSTRACT

The problems of Micronutrients deficiencies and co-existing obesity and related degenerative diseases are causing major challenge for the future. The development of Agriculture biodiversity is an approach that entails greater use of local diversity. There are various examples of food where analysis of Nutrient and Non-nutrient composition reveals important traits to mark the problems of chronic diseases on the Basis of Comparative approach we suggest a combines research to assess and document Nutrition and Heart full problems of traditional foods. In summary, evidence supporting healthy dietary patterns provides the foundation for the development of dietary guidelines. Further reference to individual foods and nutrients follows from the foundation of healthy dietary patterns.
SECONDARY METABOLITES PRODUCTION FROM THE BIOCONTROL AGENT TRICHODERMA HARZIANUM AND THEIR EFFICACY AGAINST PHYTOPATHOGENS

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ABSTRACT

*Trichoderma harzianum* is commonly used as biopesticide and biofertilizers in field and greenhouse crops. This study involves the isolation and characterization of the secondary metabolites obtained from culture filtrates of *Trichoderma harzianum*. Antagonistic activity clearly shows that *Trichoderma harzianum* (Th Azad) is effective against all the tested plant pathogens (*Colletotrichum* sp, *Alternaria* sp, *S. sclerotiorum*, *R. solani*, *Pythium*, *Phytophthora*, *Pestalotiopsis*, *Rhizoctonia bataticila*, *Fusarium* spp., *Sclerotium rolfsii*) Ultramicroscopic studies showed that the *T. harzianum* (Th Azad) coiled around the hyphae of all the tested phytopathogens and produce biomass and spores, which adhered onto the hyphae of the pathogen causing hyphal depression. GC-MS analysis of *Trichoderma harzianum* (Th Azad) yields 30 volatile compounds such as normal saturated hydrocarbons, cyclohexane, cyclopentane, fatty acids, alcohols, esters, sulfur-containing compounds, and simple pyrane and benzene derivatives have been identified. Out of the different compounds obtained 6PP discovered in this study is the representative metabolite of *Trichoderma genus*. This study also confirms the cyclosporine production capability of *Trichoderma harzianum* (Th Azad). The method used here for the isolation of secondary metabolites from the cultures of *Trichoderma harzianum* is very simple and convenient.
EVALUATE THE EFFECT OF ROOT EXTRACTS OF WITHANIA SOMNIFERA ON A POLYPHAGOUS PEST, PERICALLIA RICINI UNDER LABORATORY CONDITIONS

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ABSTRACT

*Pericallia ricini* (Fabricius, 1775) (Lepidoptera: Arctiidae) is a serious polyphagous pest causing economic damage to agricultural crops. The indiscriminate use of chemical pesticides for management of various insect pests has resulted in severe problems of environmental pollution, reduced biodiversity, disrupted the food web in the community, declined non-target organisms and development of pest resistance. Considering these harmful effects caused by chemical pesticides, suitable, safe and alternative methods must be developed. For instance, botanicals pesticides which are eco-friendly, biodegradable, target specific and negligible development of pest resistance and suitable for integrated pest management programs.

The objective of the present study was to assess the effects of root extracts from the medicinal plant, Indian ginseng (*Withania somnifera*) on seventh instar larvae of *P. ricini*. Topical administration of root extracts of *W. somnifera* to last instar larvae of *P. ricini* resulted into disruption of development, moulting and metamorphosis and leading to several morphological abnormalities included prolongation of larval-pupal and pupal-adult ecydis duration; production of non-viable larval-pupal, pupal-adult and larval-pupal-adult mosaics/chimeras; ecdysial failure; reduced pupation percent and adult emergence and formation of abnormal pupae and adultoids. These effects clearly demonstrate that the medicinal plant, *W. somnifera* acts as a potential insect growth regulator in a manner similar to those found as a result of administration of juvenoids which cause interference with the normal hormonal regulation controlling the moulting and metamorphosis. The plant extracts from *W. somnifera* may be safely and judiciously employed for the control of *P. ricini* under field conditions along with other bio approaches for insect pest management programs.
The present study was conducted to investigate the genotoxic effect of UV-B radiation on morphological, biochemical and cytological parameters of *Cuminum cyminum* L. The germinated roots of Cumin were exposed to UV-B radiation at different intervals viz., 20 min, 40 min, and 60 min respectively and some treated seeds were sown on pots for morphological and biochemical observation. Chromosomal studies divulged that UV-B radiation has substantial impact on Active Mitotic Index (AMI %). On increasing UV-B radiation dose, the chromosomal aberration rate is elevated thus AMI % moderately decreases and Total Abnormality percentage (TAB %) gradually increases. Different types of chromosomal abnormalities were ascertained, among which scattering was more prominent. The morphological observation shows that survival percentage and plant height decreased at elevated dose of UV-B. Biochemical results indicate that chlorophyll a, chlorophyll b and carotenoid contents were decreased in comparison to control, but proline contents show significant increment at higher doses of UV-B. The observation elucidates that UV-B causes chromosomal aberrations during cell division and acts as a potent genotoxic agent for roots. Thus, it can be concluded from the above experiment that UV-B rays promote plant growth at lower doses but subsequently suppress plant growth at the higher doses by damaging important constituents of plant cell.
HORMETIC RESPONSE OF GAMMA IRRADIATION AT LOWER DOSE IN BUCKWHEAT (FAGOPYRUM ESCULENTUM MOENCH.)

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ABSTRACT

The present study was conducted to evaluate the effect of different doses of Gamma radiations viz. 100, 200, 300 and 400 Gy along with a control set on buckwheat plant. Gamma rays belong to ionizing radiation and interact with atoms or molecules to produce free radicals in cells. These radicals can damage or modify important components of plant cells and have been reported to affect the morphology; biochemistry and physiology of plants differentially depending on the irradiation level. These effects include changes in the cellular structure and metabolism of the plants. The chromosomal variation was found to increase with increasing the doses of gamma rays in Fagopyrum esculentum Moench. Gamma radiations showed lowest mutation frequency at lower doses but when the exposure increases at dose 300 and 400 Gy, highest mutation frequency and different types of chromosomal variations observed. The greatest share of anomalies was identified viz. multivalent association followed by laggards and bridges. The viable mutants/variants have been observed with respect to height, leaf and seeds. The lower dose of the Gamma rays was found to be beneficial for the enhancement of the biochemical as well as phytochemical constituents. This mutagen is not only beneficial to create genetic variability in a crop species but also found to be successful in inducing useful mutations for plant breeding.
EFFECT OF EMS ON MICROSPOROGENIC CELL SYSTEM AND BIOCHEMICAL CHARACTERISTICS IN CYAMOPSIS TETRAGONOLOBA (L.) TAUB.

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ABSTRACT

Ethyl methane sulphonate is a known alkylating agent which causes random point mutations in the bases. Alkylating agents are very significant in the field of mutagenesis for creating variations at genetic and biochemical level, which has been instrumental in food sciences and agricultural technology. Present study has been planned to study the effect of EMS on chromosomal behaviour and to establish influence of chemical mutagen on photosynthetic content. For this, seeds were treated with graded concentration (viz. 0.1%, 0.3% and 0.5% v/v) of EMS. Microsporogenetic studies in young floral buds displayed the chromosomal number in meiotic stage, n=7. Germination, survival and plant height were considerably affected due to mutagenic action of EMS. Germination percentage was severely reduced at 0.5% EMS concentration. Chromosomal morphology was normal in the control set unlike the treated sets where various array of aberrations were encountered such as stickiness, unorientation, laggards, bridges, disturbed polarity among others. Chlorophyll variants were observed which can be regarded as morphological markers for assessing mutagenic potentialities of the chemical mutagen. Therefore, the influences of EMS on chlorophyll constituents, photosynthetic pigments were also estimated. The aforesaid study elucidates that EMS is an efficient mutagen in introducing genetic variability. It also has substantial effect on the biochemical processes which is phenotypically expressed morphologically.
EVALUATION OF BIOSORPTION POTENTIAL OF NICKEL BY FILAMENTOUS FUNGI ISOLATED FROM SEWAGE WATER IRRIGATED AGRICULTURAL SOIL

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ABSTRACT

Heavy metal pollution has become a serious environmental issue in the last few decades. There is a need to develop potential technology that can remove toxic heavy metals found in polluted environments. In this context, microorganisms play a significant role in removal of heavy metal from polluted soil and wastewater. Biosorption potential of filamentous fungi (*Penicillium* sp., *Trichoderma* sp., *Aspergillus niger* and *Aspergillus terreus*) was investigated at constant pH (5), temperature (30 ºC) and at different concentrations of Ni ions (50 ppm, 100 ppm, 150 ppm, 200 ppm and 250 ppm). The results of the present study showed that the maximum biosorption value exhibited by *Trichoderma* sp. 1 followed by *Penicillium* sp., *Aspergillus niger* and *Aspergillus terreus* at 50ppm Ni ions concentration. The results of the present study also shows that biosorption potential of filamentous fungi was decreased as the initial metal ions concentration was increase and it also affect the growth of the fungi.
APPLICATION ON CYANOBACTERIAL BIODIVERSITY
IMPROVE OUR FOOD AND HEALTH

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ABSTRACT

Cyanobacteria are one of the oldest groups of known organisms, are photosynthetic prokaryotes. Their unique ability, the ability to fix nitrogen and carry out oxygen-evolving photosynthesis and oxygen-labile nitrogen fixation within the same organisms, has always fascinated researchers. Cyanobacteria are the source of biofertilizer is one of the routes for alternative energy. Besides fixing nitrogen, cyanobacteria excrete Vit B12, auxins and ascorbic acid which may also contribute to the growth of rice plants. This can reduce farmer’s dependence on chemical fertilizer as well as reduce the environmental hazards. Cyanobacteria may become beneficial in the interest of farmers and public health. Biofertilizer such as cyanobacteria increase the soil fertility which is necessary for maintenance of biodiversity and cyanobacterial biofertilizer also increase the protein contents in the grains which ultimately use as basic food throughout the world.
Abstract No. 120

STATE AUTHORITY, CORRUPTION AND BIODIVERSITY CONSERVATION: A CONCEPTUAL ANALYSIS

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ABSTRACT

The State apparatus has been broadly considered the protector of the nature and natural resources since it came into existence. As it is acknowledged that the state was constituted by the people to facilitate the life, citizens trusted the state viz. a viz allocation and conservation of the available natural resources as well. However, it has been witnessed, since time immemorial, that the nature of the state has often been bias towards particular sections of the society and sovereign states often neither enunciated appropriate legislations nor implemented, if constituted, in letter and spirit. Consequently, biodiversity reached at the stage of gradual decline world-wide and species of some flora and fauna either became or subsequently becoming the part of Red Data Book. It can be argued that the countries of developing and underdeveloped world are marred by rampant corruption in the political establishment. The all-pervasive corruption in the establishment leads to the mindless exploitation of the Mother Nature threatening the system of biodiversity. For instance; even after so much demonstrations and activism of environmentalists, builders are more often able to get all papers cleared from the state agencies to begin constructions in hilly areas. Therefore; this proposed paper is based upon the hypothesis that; Corrupt practices in the state administration speed up the process of the decline of the biodiversity. Quantitative as well as qualitative methods will be applied to analyze data. The source of data will be basically government reports, NGO reports, newspaper clippings etc. Efforts will also be made to interview the experts of this field.
NUTRITIONAL AND THERAPEUTIC PROPERTIES OF BEE POLLEN

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ABSTRACT

Pollen are the tiny particles formed in the male reproductive part of the seed plants. It is required for the fertilization of the plant. Bee pollen is a ball of field gathered flower pollen packed by worker honeybees, and used as the primary food source for the hive. Bee pollen derives from the joining of flower pollens with nectar and salivary substances of the honeybees. Bee pollen constitutes one of nature's most complete and nutritious foods because it gathers almost all nutrients necessary for humans. The pollens collected by the bees are rich in proteins, free amino acids, carbohydrates, lipids, vitamins (including B-complex and folic acid) and minerals. Bee pollen is said to be the “only perfectly complete food”, because it comprises all the essential amino acids that the human body necessitates. Bee pollen can be seen as a healthy foodstuff with an extensive variety of therapeutic properties. Some of the therapeutic properties of bee pollen that were already confirmed by modern science includes antifungal, antimicrobial, antioxidant, chemo-preventive, anticancer, hepatoprotective and anti-inflammatory activities. The present work reviews the nutritional and health benefits of bee pollen.
Aquatic organisms are inevitably exposed to multiple types of pesticides which are widely used in agriculture and household applications. This study focuses on estimation of LC50 value of mixture of dimethoate and deltamethrin and their toxicological affect on behavior of exposed fish *Heteropneustes fossilis*. For determination of LC50 a mixture of technical grade pesticides in equal quantity was taken. Healthy fishes were exposed to varying concentration of the mixture pesticides (1.50, 2.00, 2.50, 3.00, 3.50, 4.00, 4.50, 5.00, 5.50 and 6.00)
Abstract No. 123

RECENT CONCEPT OF GHEE AND GHEE RESIDUE FLAVOUR

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ABSTRACT

Ghee is indigenous fat rich dairy products. Ghee contains higher fat (99-99.5%). Ghee occupies a unique position among edible fat because of its pleasing caramelized flavour and granular texture. Milk fat is the basic source of majority of the flavour compounds occurring in milk products. Protein and lactose are contributed to the flavour of milk products. Carbonyl, free fatty acid and lactones are major groups of compounds contributing to ghee flavour. There are various sources of ghee flavour such as carbonyls (50%), lactones (44%) and free fatty acid (16%). Carbonyl content of fresh desi cow ghee is higher than that of buffalo ghee. Cow ghee and buffalo ghee contains FFA (mg/g) is 5.02-12.4 and 5.9-7.6 respectively. Similarly, buffalo ghee (35.5) has higher lactones (ppm) level than cow ghee (30.4). Ghee residue (GR) is the byproduct of ghee. Ghee residue is rich in fat, protein and minerals and it has a natural antioxidant. Ghee residue is also rich and natural source of flavour compounds like free fatty acid, lactones and carbonyls. The level of free fatty acid, carbonyls and lactones in ghee residue are 11, 10 and 132 respectively higher than ghee.
ABSTRACT

Arsenic (As) is a potent carcinogenic element and elevated As concentrations in agricultural soil, irrigated water and even drinking water have posed potential threats to human health through food chains. This study has been conducted to assess ameliorating effects of *Pteris vittata* on the arsenic content and physiochemical characteristics of soil contaminated with As collected from Lakhimpur kheri, U.P. (India). For this purpose the soil has been assayed both before and after soil treatment with *Pteris vittata*. *Pteris vittata* increased the pH, Bulk density, Particle density, EC, CEC of the treated soil. However texture of soil was not significantly affected. It enhanced available N while decreased P and K in the soil. *Pteris vittata* augmented organic content in the soil while porosity of soil decreased. *Pteris vittata* extracted As from the contaminated soil and renders the soil less toxic. About 27% As was removed from the contaminated soil by phytoremediation with *Pteris vittata*. The capacity to improve physico-chemical characteristics of soil as well as phytoextraction of As evident that Pteris vittata could be considered as hyperaccumulator and might be utilized as promising tool for phytoremediation of As contaminated soil.
Abstract No. 125

INTER-POPULATION VARIATIONS IN REPRODUCTIVE TRAITS OF
PUNTIUS SOPHORE (SWAMP BARB) FROM TWO
GEOGRAPHICALLY ISOLATED HABITATS

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ABSTRACT

It has been hypothesized that population of a fish species thriving in geographically isolated habitats may show variations in some of their reproductive traits. To test the hypothesis swamp barb (P. sophore) species have been collected from two isolated habitats (Gomti river and pakka pond) of Lucknow, Uttar Pradesh. Samples were collected monthly from both the habitats over a period of 12 months (May, 2016- April, 2017). On the basis of the monthly samples reproductive traits analyzed were sex ratio, length at first maturity, maximum total length, ovary oocyte distribution, the gonado-somatic index (GSI), fecundity and spawning season. Results demonstrated that sex ratios were significantly different between isolated habitats (P<0.05). Specimen obtained from river exhibit higher maximum total length. Sizes at 50% maturity of female P. sophore were the largest in pond and the smallest in the Gomti. Further, males and females reached 50% sexual maturity at different lengths. During the maturity phase, the oocyte distribution was homogenous within the ovary but fluctuations were observed within two different populations. GSI values were significantly different between populations (P<0.05). Fecundities were significantly higher for populations in the Gomti river than for those in the pond (P<0.05). Spawning activities of P. sophore took place for short duration (July to early August). Most of the reproductive traits studied in the present study significantly varied across habitat types. Results suggest intra-specific variations across some reproductive traits of P. sophore are associated with habitat types. The findings of the present study will be helpful for selective breeding programme, sustainable fishery management and conservation of P. sophore.
ROLE OF MEDICINAL PLANTS AGAINST CANCER

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ABSTRACT

Cancer is one of the leading causes of death all over the world. Much advancement in the treatment of cancer progression has been made but still improvement is needed. Chemotherapy and radiotherapy are widely used to treat the cancer which has several undesirable side effects. In order to reduce these side effects natural plant extracts may be used to treat the cancer. Many medicinal plants are available that have promising anti-cancerous properties which have been identified in vitro but still study needs to evaluate them for treating the cancer with these compounds. Approximately 35000 plant species has been screened by National Cancer Institute that has potential anti-cancerous activity. These plants produce different secondary metabolites like polyphenols, alkaloids etc. which have anti-cancerous property. Tinospora cordifolia (known as giloy in Hindi) is a climbing deciduous shrub which is commonly found in India, Sri Lanka and China. It has been found that HeLa cells were effectively killed by the treatment of T. cordifolia in vitro and suggesting its anti-cancerous property. Ziziphus nummularia (also known as harbor in Hindi) is a thorny bush that releases two compounds named Betulin and Betulinic acid from its bark and stem which are known to have anti-tumor activity. The extract of Phyllanthus amarus has been reported to have reduced tumor size in mice. Withania sominifera (known as ashwagandha in Sanskrit) produces a chemical compound Withaferin that causes apoptosis in cancer cells.

There are many more medicinal plants which are rich sources of herbal properties that can contribute to the discovery of new drugs without toxic effects on the individual which is being treated. Thus in the present scenario Ayurveda is attaining a great significant scope in areas of prevention and cure of cancer. Moreover rural people can be effectively treated by the use of herbal drugs. The enormous biodiversity of our country is a big help in this endeavour.
Abstract No. 127

PRODUCTION OF ANTIMICROBIAL SACHET UTILIZING MEDICINAL PLANTS FOR WASTE WATER TREATMENT

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ABSTRACT

Water scarcity is not just a concept to many; however it's the stark reality as a result of myriad political, economic, environmental, and social forces. Freshwater counts fraction of water on the planet whereas nearly 70% of the world is covered by water. The dilemma states that only 2.5% is fresh water. Even then, just 1% of our freshwater is easily available or accessible, with plenty trapped in glaciers and snowfields. In this era, purification of water is a must for different purposes like drinking, in the medical, pharmacological, chemical and industrial field. Minimum Inhibitory Concentrations are defined as the lowest concentration of an antimicrobial that inhibit the visible growth of microorganisms (like fungus, bacteria). In our study, we take five different leaves (mint, tulsi, drumstick, neem, lemon leaf) extract incorporated with contaminated water and bacterial and fungal media. Thus, leaves extract to inhibit the growth of microorganisms with different rates. This Experiment proved that Minimal inhibitory concentration of tulsi in case of fungus and Drum stick in case of bacteria showed a maximum zone of clearance out of all 5 medicinal plants. It can be further used for combinational impact on water treatment and diseases or illness can be irradiated out of it. This study can be further used to prepare the water clearing balls, sachet or cubes.
PHYSIOLOGICAL BASIS OF HEAT AND DROUGHT TOLERANCE IN CROPS

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ABSTRACT

When the expected pattern of the average weather of a region is changed for the long term and result in the generation of new weather, the condition is known as climate change that creates several abiotic stresses. Heat stress and drought stress are abiotic stress among them that can affect the photosynthetic activity of the crops. Along with several factors such as edaphic and agronomic factors mainly heat and drought stress contribute to a decrease in the productivity of crops such as wheat, pulses, cereals and oilseeds. About 50% of the yield of the pulses like chickpea and pigeon pea is lost because of the drought and heat. Thus the improvement of heat and drought tolerance in crops is the most important challenge in the present time. Osmotic adjustment, water uptake associated with better root characteristics, membrane stability, superior water use efficiency (WUE) in biomass production and water conservation are some of the drought tolerance traits among crops. There are many physiological tools available for identifying large numbers of crops for heat and drought tolerance in crossing programme. Among the many physiological traits, photosynthetic efficiency quantified by chlorophyll fluorescence, osmotic adjustment and membrane stability can be used for the assessment of the relative heat and drought tolerance in different crops including cultivated and wild species.
EFFICACY OF PLANT OIL FROM A MEDICINAL PLANT, *SYZYGIUM AROMATICUM* (FAMILY: MYRTACEAE) ON PENULTIMATE AND ULTIMATE LARVAL INSTARS OF *PERICALLIA RICINI* (LEPIDOPTERA: ARCTIIDAE)

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ABSTRACT

*Pericallia ricini*, commonly known as wooly bear, is a polyphagous pest of several crops. It destroys the agricultural as well as ornamental plants. Various conventional chemical pesticides have been used to prevent damages caused by *P. ricini* which resulted into adverse effects on the environment, beneficial insects, humans and also development of insect pests resistance against chemical insecticides. Therefore, botanical insecticides are used as a method for management and control of insect pests due to its certain attributes such as eco-friendly in nature and easily biodegradable.

The present study implies to evaluate the effect of plant oil of *Syzygium aromaticum* in different larval instars of *P. ricini*. Freshly ecdysed penultimate and ultimate larval instars of *P. ricini* were topically treated with different doses of plant oil of *S. aromaticum* which produced several developmental and morphological deformities such as delay in larval-larval, larval-pupal and pupal-adult ecdysis duration, larval mortality, ecdysial failure, formation of larval-pupal, larval-adult mosaics and abnormal adults, reduced pupation and adult emergence. Penultimate instar larvae of *P. ricini* were more sensitive to administration of plant oil of *S. aromaticum* as compared to ultimate instar larvae of *P. ricini* on the basis of number of significance. These effects suggest that plant oil of *S. aromaticum* disrupted the normal development, moulting and metamorphosis of *P. ricini* and can be used as successful control measures to management and control of *P. ricini* along with integrated pest management programs.
Biodiversity is the incredible variety of living things in nature and how they interact with each other. It is one of the most precious treasures. Biodiversity is very complex and is often explained as the variety and variability of genes, species, and ecosystems. But, with the increased dependence on agriculture and industrialization, the emphasis on biodiversity has decreased. Indeed, the biodiversity, in wild and domesticated forms, is estimated that the current rate of species the source for most of humanity, food, medicine, clothing and housing, much of the cultural diversity and most of the intellectual and spiritual inspiration. However, a quarter of the earth's total biological diversity amounting to 1.7 million species, which might be useful to mankind in one way or other, would be in serious risk of existence over the next 2-3 decades and with the increased dependence on agriculture and industrialization, the emphasis on biodiversity has decreased. The growth of human populations, consumption levels, and mobility is the root of most of the serious threats to biodiversity today. On realization erosion of biodiversity may threaten the very existence of life has awakened man to take steps to conserve it. It might be too late to save some species from extinction, but it's not too late to take actions to save others. Together we can make big difference, and getting informed and motivated is a great way to start.
ABSTRACT

Hortibiodiversity (horticultural biodiversity) - a component of the traditional lifestyles and is one of the components of intellectual property of local populations. Therefore, to conserve the gene pool of local fruit crops it is important to consider farmers' right to act as an equal party in benefit sharing, including the right of farmers to participate in decision making on the issues of access to plant genetic resources which are used in food production and farming. The basis of farmers' rights is a traditional knowledge that is made up directly from the knowledge of farmers and their ancestors with regard to the cultivation of ancient fruit crop varieties and their wild relatives; this knowledge is transferred across generations. As it is commonly known, the demand for certain varieties and their properties depends on market development, variety characteristics and cultivation and storage specifics. The vitality of every variety is determined by the integrity of its local gene pool, i.e. characters that identify this particular variety. Ancient or improved new varieties are the intellectual property Conservation and sustainable use of biodiversity of fruit crops and wild fruit species of local populations, a part of their traditional knowledge. The increasing rate of importation to the markets of our country of foreign seeds of genetically-modified vegetable plants such as tomatoes, cucumber, garden radish, bell pepper and eggplant as well as apple, pear and plum fruits and gladiolus, rose, carnation, marigold and chrysanthemum has significantly forced out ancient varieties of Indian origin from local markets. Therefore, legal support to farm enterprise development is required to conserve the gene pool of fruit crop wild relatives and to enable farmers to make decisions about the maintenance of the genetic diversity of traditional local fruit crop varieties. These grants will allow the enhancement of market-based incentives and assist in conserving local varieties. Legal support to farmers will be aimed at conserving plant resources gene pools in the country.
SOCIO ECONOMIC AND AESTHETIC PARADIGMS OF LADY BUGS DIVERSITY

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ABSTRACT

Biodiversity in the recent years has been variously defined, understood and interpreted but seldom with holistic approach. The environment being a part of the great biosphere in combination with varieties of flora and fauna plays pivotal role in the formation of holistic concept of biodiversity. Socio economic and aesthetic approach of dealing biodiversity is one of the important contemporary dimensions which may further create the functional model or paradigms for understanding the environmental role of this component. Biodiversity of predaceous coccinellids representing the lady bugs and their role as bioindicators in agro-ecosystem has pioneering role in the development of strategies for biological pest control having immense practical and scientific interest. The species of lady bugs- *Coccinella septumpunctata*, *Epilachna vigintioctopunctata* and *Rodolia amabilis* found in agro ecosystem in terms of biodiversity can be recruited as bioindicators due to their climatic and trophic characteristics. These beetles were abundantly found and sampled from two types of agro ecosystem of Ranchi- crop & forest area. The statistical computations of sampled data of the bugs have been found to be of significant value as bioindicator pronouncing the role in socioeconomic and aesthetic paradigms. These profiles of biodiversity are judging parameters of socio economic conditions of farmers along with the attractive and beautiful aesthetic scenario created by the colorful beetles wriggling on the leaves of the host plants.
Abstract No. 133

CAGE CULTURE OF FRESHWATER FISH

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ABSTRACT

Cage culture is an aquaculture production system where fish are held in floating net pens. Cage culture of fish utilizes existing water resources but encloses the fish in a cage or basket which allows water to pass freely between the fish and the pond permitting water exchange and waste removal into the surrounding water. Cages are used to culture several types of shell fish and finfish species in fresh, brackish and marine waters. Cages in freshwaters are used for food fish culture and for fry to fingerling rearing. The origins of cage culture are a little unclear. It can be assumed that at the beginning fishermen may have used the cages as holding structures to store the captured fish until they are sent to the market. The first cages which were used for producing fish were developed in Southeast Asia around the end of the 19th century. Wood or bamboos were used to construct these ancient cages and the fish were fed by trash fish and food scraps. In 1950s modern cage culture began with the initiation of production of synthetic materials for cage construction. Fish production in cages became highly popular among the small or limited resource farmers who are looking for alternatives to traditional agricultural crops in compression to other any type of culture. The advantageous character of cage culture is due to its easy installation, flexibility of management, effective use of fish feeds, less man power requirement, better control of fish population etc.
REDUCING SALT (NaCl): A CHALLENGE FOR THE FISH PROCESSING INDUSTRY

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ABSTRACT

World Health Organization recommends reducing salt intake by 30% by 2025. South Africa became the first country to implement mandatory salt targets for staple foods. Fishes are perishable by nature and require protection from spoilage during their preparation, storage, and distribution to reach final consumers as safe and high-quality products. Although improvement of the technologies applied for preservation has stimulated the industry, traditional methods such as salting alone or in combination are still applied and have a large impact in sensory and quality properties of fresh fish and seafood. As an alternative or in addition to those techniques, fish products can be reformulated by the incorporation of active ingredients, as additives, coatings or as part of the packaging of the fish product. Natural ingredients are a rich source of active components and have been studied to compensate for salt reduction at least in a laboratory or small industrial scale. A large concentration of alternative ingredient can produce changes in the colour, texture, taste, and flavour of the fish, affecting the quality of the final product. The most recommended salt to replace NaCl is KCl. Also, only a few studies study the synergies or antagonistic effects among different ingredients with the food matrix.
ROLE OF CLEAN DEVELOPMENT MECHANISM'S (CDM) IN SUSTAINABLE DEVELOPMENT OF INDIA

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ABSTRACT

The challenges of how to respond to climate change and ensure sustainable development are burning issues among the world’s leading nations. The Clean Development Mechanism (CDM) is a part of the global carbon market, developing rapidly as a result of the Kyoto response towards mitigation of global warming. One of the aims of the CDM is to achieve sustainable development in developing countries, but uncertainty prevails as to whether the CDM is doing what it promises to do. Many studies on the CDM have been carried out since 1997 including peer-reviewed articles and reports from the available literature. However, no overview of the different debates and key issues in the CDM exists. This paper attempts to assess the state of knowledge on how the CDM contributes towards sustainable development (SD) in India.
Abstract No. 136

A STUDY ON FAMILY WELFARE PLANNING SERVICES IN RURAL AREA: A CASE STUDY OF MAUAIMA BLOCK (ALLAHABAD DISTRICT)

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ABSTRACT

All living organism reproduces in order to continue its kind on earth. However, food chains and food webs control uncontrolled growth in the population of living organisms. But the uncontrolled growth of human population cannot be controlled by nature alone. For this, couple adopts family planning methods. These methods are adopted by couples in order to control the numbers of children they desire to have and also the gap (in years) between two children. India launched the National Family Welfare Programme in 1951 with the objective of reducing the birth rate to the extent necessary to stabilize the population at a level consistent with the requirement of the National economy. The present study based on the study of Family Welfare Planning Services in rural area.
STUDY OF AIR POLLUTION TOLERANCE OF SOME COMMON ROADSIDE PLANT SPECIES CULTIVATED AT GAJRAULA, UTTAR PRADESH

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ABSTRACT

Industrialization and vehicular exhaust are the main cause of urban air pollution. Roadside plants are under direct exposure of air borne pollutants. They are supposed to be the main acceptor of air pollution. Present study evaluates Air Pollution Tolerance Index (APTI) of ten roadside grown plant species. The data has been procured with the help of control plant species grown far from Gajraula city where there is no air pollution. APTI is used to select plant species tolerant to air pollution. Four physiological and biochemical parameters viz. ascorbic acid (AA) content, total leaf chlorophyll (TCh), leaf relative water content (RWC), and leaf extract pH were used to calculate the value of APTI for a particular plant species. The present studies have been carried for ten common plant species recommended as roadside vegetation, these include, *Alstonia scholaris* (Saptparni), *Anthocephalus kadamba* (Kadamba), *Bauhinia variegata* (Kachanar), *Cassia fistula* (Amaltas), *Tectona grandis* (Sagaun), *Ficus rumphii* (Pakhar), *Mangifera indica* (Aam), *Polyalthia longifolia* (Ashoka), *Pongamia pinnata* (Papri) and *Saraca indica* (Seeta Ashoka). Out of these *Saraca indica* represented the highest APTI (50.13) whereas Tectona grandis showed lowest (11.8) APTI. *Saraca indica, Alstonia scholaris* and *Ficus rumphii* on the other hand have been found to be tolerant against pollution (APTI >30). *Mangifera indica, Polyalthia longifolia* and *Cassia fistula* are however sensitive to air pollution (APTI <16). Pollution tolerant species can be recommended to plant along the road sides for green belt development. They can be used to reduce the ambient air pollution while pollution sensitive species can be used as bio-indicator for air pollution.
REPRODUCTIVE PHENOLOGY OF WOODY SPECIES IN THE TROPICAL MONTANE FORESTS (SHOLAS) OF THE NILGIRIS, SOUTHERN INDIA

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ABSTRACT

Reproductive phenology in tropical forests has been potentially influenced by climatic cues, biotic interactions and phylogenetic constraints at the community level. Studies on this relationship in the tropical montane evergreen forest of south India is rather lacking. First we studied the relationship between climatic variables (such as rainfall and temperature) and number of flowering and fruiting events. Next, we investigated seasonal patterns of reproductive phenology and its relationship with biotic factors (such as pollination mode, fruit types and dispersal mode). Third, we examined the relationship of reproductive phenology with phylogeny. We carried out our study in the tropical montane evergreen forests of Korakundah reserve forest in the upper Nilgiri Mountains of southern India. We made reproductive phonological observations on 497 individuals falling under 66 species, in 52 genera and 31 families, at weekly intervals for a period of three years from January 2002 to December 2004 in our long term study plot (permanent plot of 1.08 ha) established in the area. Out of the total 31 species belonging to 6 dominant families were phylogenetically closer, considered as a close group. At the community level, most of the woody species had annual rhythm and showed regular seasonal reproductive cycle. Among the climatic variables temperature showed significant positive relationship with flowering but showed negative relationship with fruiting. Rainfall had a significant negative relationship with flowering but positive relationship with fruiting. Seasonal patterns were significantly associated with biotic factors that showed peak flowering in dry season, which in turn influenced the pollinator activity. Peak fruiting in wet season had a positive influence in seed dispersal by resident animals and birds. The reproductive phenology of closely related species was significantly influenced by climate variables and highly synchronized during dry season followed by first wet season. Moreover, we found that closely related species of flowering and fruiting showed similar in times at climatic seasonality. Therefore the study suggests that community level reproductive phenology was influenced by climatic variables, biotic interaction and evolutionary perspectives.
In the present study to extract bioactive compounds from mackerel (Rastrelliger kanagurta) such as fatty acids (EPA and DHA) and polyunsaturated fatty acid (PUFA) concentrate were analysed. In present paper only focused on seasonal variation of PUFA concentration in mackerel. About 17 major fatty acids were found in oil extracted from mackerel and the major fatty acids were C14:0, C16:0, C16:1, C18:1 (n-9), C20:5 (n-3) and C22:6 (n-3). The most abundant fatty acids found in mackerel were C16:1, C18:1 and C20:5 which constitute about 28.93 %, 21.46 % and 20.65 % respectively. The nutritionally important PUFA was 32.61 % of the total fatty acid in which, n-3 fatty acids (EPA and DHA) were found in noticeable quantity i.e. 32.57 % of the total fatty acid. There was significant difference ($\alpha = 0.05$) in fatty acids PUFA with respect to seasons i.e. monsoon, post-monsoon and pre-monsoon. It can be concluded from the present study that mackerel can be a prospective source of bioactive compounds. In conclusion, the overall research findings of the present study indicated that the chromatographic analysis revealed that mackerel oils had high levels of monounsaturated fatty acid and polyunsaturated long chain fatty acid. EPA and DHA were the main omega-3 fatty acid present with large amounts in the mackerel oil.
Abstract No. 140

AGRICULTURAL ECONOMICS AND RURAL DEVELOPMENT - REALITIES AND PERSPECTIVES FOR INDIA

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ABSTRACT

The role of small-scale family farms in development is the subject of long-standing debate. Despite predictions on the likely evolution of small farms, as urban and industrial sectors account for larger shares of economic activity, the agricultural landscape in the developing world continues to be dominated by family-operated smallholdings. Consequently, discussions continue over the extent to which market failures faced by smallholders can be overcome at acceptable public cost, though increasing involvement of private actors in providing required goods and services, as well as a range of institutional innovations, have shown scope to reduce the problem. Most international organizations and donors generally advocate for the role that smallholders can play in increasing food production if suitable innovations are used to address market failures, though the attitude of governments is more mixed. Asian governments have generally supported smallholders, with favorable public policy facilitating access to extension, inputs and financial products. In Latin America, confidence in the contribution of smallholders has not been as strong, with support generally being connected to welfare concerns. Traditionally, agriculture is the prime sector of rural economy and rural employment. The transition in composition of output and occupation from agriculture to more productive non-farm sectors is considered as an important source of economic growth and transformation in rural and total economy. However, no serious attempt has been made to analyze and understand the transition in India's rural economy. Economic studies on rural India have focused mainly on changes in rural employment, by gender and at broad sectoral aggregation between agriculture and non agriculture. The present study examines long term changes in (i) sectoral composition of rural output and employment, (ii) their relationships and implications for output growth and employment and (iii) income inequalities across sectors and between rural and urban sectors. The findings of the study are used to suggest strategy for future development of India’s rural economy.
THREATS TO FAUNA BIODIVERSITY IN THE RIVER GANGA: CONSEQUENCES OF CHANGING HABITATS AND ALTERING DIVERSITY PATTERNS

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ABSTRACT

The River Ganga is the largest river in India that supports high level of biodiversity including globally endangered species such as Country’s National aquatic animal, the Gangetic Dolphin (Plantanista gangetica) three species of Otters (Lutrogale perspicillata, Lutra lutra, Anonyx cinereus) the critically endangered Gharial (Gavialis gangeticus) Indian crocodile (Crocodylus palustris), atleast 12 species of fresh water Turtles within the Ganga River System. A total of 143 different freshwater fish species (Cyprinidae was the dominant family; 133 species were native to River Ganga and remaining 10 were exotics) have been reported which is about 20% of total population of fresh water fishes recorded. Invasion of exotic species are also threatening the fish diversity in Ganga as many as 29 species are listed under threatened category. The Ganga river fauna is threatened by anthropogenic activities and resulting accumulation of heavy metals, eutrophication, alterations and river flow regulation and water pollution. For decades, the level of pollutants in the Ganga has been well above the permissible value leading large decline in dissolved Oxygen in water. A few critical aspects associated with threatening to biodiversity in River Ganga are lack of water, Capital dredging, Barrages, Vessel traffic and Pollution etc.
Injudicious human activities are continuously increasing the air pollution in ambient atmosphere leading to toxic impact on plant growth, development and biodiversity. The present studies have been conducted to evaluate the impact of air pollution on various plant species growing in industrial area of brass city. The air pollution tolerance index (APTI) of five tree species i.e. *Ficus bengalensis*, *Alstonia scholaris*, *Mangifera indica*, *Tectona grandis* and *Saraca indica* growing at industrially polluted sites along and some unpolluted sites situated far from the city, were calculated. To ameliorate the industrial air pollution, the only alternative way is to grow some pollution tolerant plant species along the road sides. It is also necessary to develop a green-belt around the industrial area. For the purpose, five important tree species have been chosen to grow along the road sides and also in the green belt around the industries. To determine the APTI, the same species have also been grown as control i.e. far from the industrial areas where the pollution level is zero or close to zero. Physiological and biochemical parameters like leaf pH contents, relative humidity, ascorbic acid and chlorophyll contents of the plants have also been studied to calculate the value of APTI. The results of the present study reveal that having higher APTI, *Ficus bengalensis* (39.75) and *Alstonia scholaris* (29.32) are the most pollution tolerant species, whereas the low APTI trees, *Saraca indica* (21.32), *Mangifera indica* (17.23) and *Tectona grandis* (15.12) are less pollution tolerant species. *Ficus bengalensis* and *Alstonia scholaris* are therefore recommended to be grown in green belts so as to reduce and control ambient air pollution. *Saraca indica*, *Mangifera indica* and *Tectona grandis* on the other hand are used as bio-indicator to study the rate of air pollution in a particular area. APTI values also determine a change in the biodiversity of a high mutable area.
ABSTRACT

India is one of the total 17 mega Hot spot of the worlds. India has only 2.4% of the world’s land area. It share of the global species diversity is an impressive 8.1% Nearly 45,000 Species of plants & twice as many as species of animals have been recorded from India. Some groups like amphibians appear to be more vulnerable to extinction due to effect of climate change. Global warming, Habitat loss worldwide (more then) 15,500 species are facing the threat of extinction. Loss of Biodiversity in a region may lead to decline in plant productivity lowered resistance to environmental perturbance such as drought & increased variability in certain ecosystem Processes such as water use pest & disease cycle, Resistances, ground water recharge. IPBES (Inter governmental Science Policy Platform on biodiversity & Ecosystem services. IPBES estimates is that the global rate of Species extinction is at least 10 to 100 times higher today than the average role our the past 10 million years. Plastic pollution has increased 10 fold since 1980 affecting at least 267 species. Biodiversity condition has been deteriorating in our day to day life it will ultimately lead loss of entire civilization.
ABSTRACT

Agricultural biodiversity has up to this point been esteemed only as a wellspring of characteristics that can be utilized in logical rearing projects to improve the efficiency of harvest assortments and domesticated animal breeds. We contend that it can make a far more prominent commitment to expanded profitability. Specifically, a more extensive sending of horticultural biodiversity is a fundamental part in the manageable conveyance of a progressively secure sustenance supply. Assorted variety of kingdoms, species and gene pools can build the efficiency of cultivating frameworks in a scope of developing conditions, and increasingly differing cultivating frameworks are likewise commonly stronger even with annoyances, along these lines improving nourishment security. Assorted variety can keep up and increment soil ripeness and relieve the effect of nuisances and infections. Decent variety of eating regimen, established on differing cultivating frameworks, conveys better nourishment and more prominent wellbeing, with extra advantages for human efficiency and vocations. Horticultural biodiversity will likewise be significant to adapt to the anticipated effects of environmental change, not just as a wellspring of qualities but rather as the underpinnings of stronger homestead biological systems. Huge numbers of the advantages of agrarian biodiversity are showed at various natural and human scales, and cut crosswise over political divisions, requiring a cross-sectoral way to deal with reassess the job of rural biodiversity in manageable and secure sustenance creation.
Abstract No. 145

MICRONUCLEI AND THEIR EFFECTS ON THE FATE OF CELLS UNDER INFLUENCE OF COMBINED TREATMENT IN CORIANDRUM SATIVUM L.

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ABSTRACT

Nucleus serves as a complex assembly of genetic information comprising of highly extended nucleoprotein fibres in the form of chromosomes. To maintain this integrity, several unique mechanisms have been involved including cell cycle. Considering the importance of nucleus, present study has been planned to study the influence of combination treatment of gamma rays and ethyl methane sulphonate (EMS) on the Pollen Mother Cells (PMCs) of Coriandrum sativum L. Gamma rays as well as EMS in combination have a polarized effect on PMCs of C. sativum. The combination treatment induces micronuclei (MN) at different stages of meiotic cycle however the MN frequencies were higher at anaphase I/II and telophase I/II. As the treatment dose enhances, the MN and microcells were induced subsequently via nuclear bud formation. The phenomenon of nuclear polymorphism is linearly correlated with bridges and laggards formed at anaphase I/II. The present study also assesses the different types of chromosomal aberrations induced in response to combination treatment. The MN formed may either culminate into tetrad stage or is eliminated in form of microcells leading to inviable pollen grains thereby hampering pollen fertility. The pollen fertility was examined to rule out the influence of combination treatment and MN induction on the frequency of pollen fertility. The results showed a dose dependent decrease in rate of pollen fertility. MN formation could be used as a marker of genetic damage and employed in breeding programmes for the production of aneuploid lines.
QUALITATIVE PHYTOCHEMICAL ANALYSIS OF
FOUR MEDICINAL PLANTS OF FAMILY VERBENACEAE
WITH SPECIAL REFERENCE TO QUININE

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ABSTRACT

Present study deals with the qualitative phytochemical analysis of leaves extract of four therapeutic plants belonging to family Verbenaceae i.e. Clerodendron infortunatum Gaertn. Lantana camara L. Tectona grandis L.f. and Vitex negundo L. with special reference to quinine. Plants leaves were collected during flowering and fruiting period from Kolhan University, Chaibasa campus and Tata College, Chaibasa campus in the month of July, 2018. Plant leaves were air dried in shed for 3 to 4 days at room temperature and then it was kept in hot air oven at 40°C for 30 min until all the water molecules evaporated and plant became well dried for grinding and four types of solvent were used i.e. double distilled water (DDW), Ethanol, methanol and n-butanol for preparation of leaves extracts. (Ram & Sinha 2017) Standard protocols (Ahmad and Beg 1998, Kassa et.al. 2014, Sofowra 1993, Harborne 1973) were adopted for detection of major classes of phytochemicals in the plant leaves extract. Our result confirmed the presence of major classes of Phytochemicals i.e., Quinine, Protein, Carbohydrate, Phenol, Tannin, Flavonoids, Saponins, Glycosides, Steroid, Alkaloids, and Terpenoids in the leaf extracts. Quinine was detected in all leaf extracts and it is well established that quinine is it is potent antimalarial drug, Hence these plants may be used as antimalarial drugs instated of Synthetic drug.
CLIMATE CHANGE MITIGATION AND ADAPTATION

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ABSTRACT

Climatic change is one of the most complex issues we are facing today. It involves many dimensions such as science, economics, society, politics, morality and ethics. Climate change involves two possible approaches i.e. reducing and stabilizing the levels of heat trapping greenhouse gases in the atmosphere known as mitigation while adaptation are based on reducing vulnerability to the effect of climate change. There are some mitigation measures that can be taken to avoid the increase of pollutant emission such as; Use of renewable energy, Use of electricity for industrial processes, efficient means of transport implementation. The goal of mitigation is to avoid significant human interference with the climate system and reduce the greenhouse gas levels in a timeframe sufficient to allow ecosystems to adopt naturally. There are several activities that help in reducing the effect of the consequences of climate change which are; to regain ecological integrity and reforestation, flexible and diverse cultivation to be prepared for natural disaster, prevention and precautionary measures, health issues, etc. Adaptation is necessary to decrease the potential risks of the unavoidable residual climate change now and in coming decades. New ways to adapt to climate change are; share valuable and informative farming tips, listen to regional and local communities, take advantage of social media but in limits, policy makers should plan long term beneficial policies.

Prevention is of course better than cure in the case of climate change. Climate change is already occurring in harmful ways all over the world. So it is important to develop strategies to conserve the species and habitats that are unable to change. According to Noss 2001 large, healthy, and intact ecosystems are best able to withstand climate change. Public policies and legislation play an important role in facilitating adaptation to climate change.
IMPACT OF CLIMATE CHANGE ON VEGETABLE CULTIVATION - A REVIEW

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ABSTRACT

Vegetables are an important component of human diet as they are the only source of nutrients, vitamins and minerals. They are also good remunerative to the farmer as they fetch higher price in the market. Likewise other crops, they are also being hit by the consequences of climate change such as global warming, changes in seasonal and monsoon pattern and biotic and abiotic factors. Under changing climatic situations crop failures, shortage of yields, reduction in quality and increasing pest and disease problems are common and they render the vegetable cultivation unprofitable. As many physiological processes and enzymatic activities are temperature dependent, they are going to be largely effected. Drought and salinity are the two important consequences of increase in temperature worsening vegetable cultivation. Increase in CO2 may increase crop yields due to increased CO2 fertilization, but decreases after some extent. Anthropogenic air pollutants such as CO2, CH4 and CFC’s are contributing to the global warming and dioxides of nitrogen and sulphur are causing depletion of ozone layer and permitting the entry of harmful UV rays. These affects of climate change also influence the pest and disease occurrences, host-pathogen interactions, distribution and ecology of insects, time of appearance, migration to new places and their overwintering capacity, there by becoming major setback to vegetable cultivation. Potato, among the all vegetables, is most vulnerable to climate change due to its exact climatic requirement for various physiological processes.
Abstract No. 149

CLIMATE CHANGE ADAPTATION IN LEH THROUGH ARTIFICIAL GLACIER TECHNOLOGY

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ABSTRACT

Social-dimension of climate change is no longer peripheral to science, technology and innovation (STI). Indeed, STI is being mobilized to address small farmers’ vulnerability and adaptation to climate change. The experiences from cold desert of Leh (Ladakh) in north-west Himalaya illustrate the potential of STI to address challenges of climate change and vulnerability of small farmers through use of artificial glacier techniques. Small farmers had innovated a unique technique of water harvesting to augment irrigation, called “artificial glaciers” - an intricate network of water channels and dams along upper slope of a valley located closer to villages and at lower altitude than natural glaciers and starts to melt much earlier and supplement with additional irrigation for addressing small farmers’ vulnerability and adaptation to climate change and improving their livelihoods and for a host of other purposes. Therefore, the issue of vulnerability, adaptive capacity and adaptation strategy need to be understood in local context and the communities and regions where people live. Leh (Ladakh) in north-west Himalaya provides a case study for exploring the ways in which adaptation to climate change is taking place at community scale using artificial glacier technology by adaptive and resilient communities. With above backdrop, an attempt had been made to analyze the rural poor households’ vulnerability and adaptation practices to climate change using artificial glacier technology, and to draw lessons focusing on vulnerability-livelihood interactions in the cold desert of Leh (Ladakh) in north-west Himalaya, India.
The chemical industry is under increasing pressure to make chemical production eco-friendly, reduce its reliance on fossil resources, and eliminate environmentally damaging production processes and formation of toxic byproducts and waste. The sustainability of the chemical industry requires an integrated strategy which takes into account safety, health and environmental benefits, with technological and economical objectives. The production of chemicals using biotechnology is often able to meet several of the green chemistry principles particularly reduced energy consumption and waste generation, selective catalysis and biodegradable products. Furthermore, it can replace multistep chemical synthesis with a single step involving low energy and less material input and even enables the synthesis of products that are not possible to synthesise chemically. Reactions using biological molecules work best at ambient temperatures under 100°F atmospheric pressure and water-based solutions. Therefore, manufacturing processes that use biological molecules can lower the amount of energy needed to drive reactions. This places white or industrial biotechnology among the key technologies for sustainable industrial production.

Present paper deals with the comparative study of chemical and bioprocess for acrylamide production from acrylonitrile in an aqueous solution with a Nitrile Hydratase (NHase) producing microorganism in the presence of a saccharide. This synthesis helps for reducing the amount of acrylic acid generation, reducing the reaction time and increasing the reaction rate of acrylonitrile into acrylamide. Acrylamide is then polymerised to the conventional plastic polyacrylamide used in waste water treatment as flocculating agent. The enzymatic process has clear advantages with respect to the chemical alternative. The efficiency of enzymatic conversion leads to less waste, higher yields and significantly lower energy consumption with consequently reduced CO₂ production.
Abstract No. 151

BIODIVERSITY OF CYPERACEAE FAMILY IN CHITRAKOOT DHAM MANDAL (U.P.), INDIA

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ABSTRACT

The present study aimed to investigate and document on studies on Cyperaceae family refers to the biological diversity of a particular region. During the Taxonomic and medicinal survey of Chitrakoot Dham Mandal in 2015-2017 the plant species were collected and the review was carried out in local communities, especially by ethnic group Sahriya, Kols, Nath, Kabootra, Lodh and Sapera) who are in good number in the Chitrakoot Dham Mandal. The study was conducted in Chitrakoot Dham Mandal (U.P.) which comprises these districts- Banda, Mahoba, Hamirpur and Chitrakoot. The paper present 16 species of Cyperaceae.
ECONOMIC BENEFITS OF BIODIVERSITY CONSERVATIONAL TOOLS DEMYSTIFYING THE CHANGES IN BUSINESS MODEL OF INDIAN BANKS WITH THE SPECIAL REFERENCE TO STATE BANK OF INDIA

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ABSTRACT

Huge corporate failures are not due to inefficient products or services but due to business models the organization follow as they often fail to respond to environment dynamics. Successful organization from time immemorial has banked upon the strategic changes in its Business models - the way business functions to create value proposition for the customer. The Indian banking currently undergoing a phase of development of new business models as a result of banking reforms and power of Internet of Things to unleash the market prospective tapping the huge unbanked resource. The technological revaluation combined with the massive penetration of smart phones termed with increasing usability of internet has set the balls rolling in financial arena. This has led to evolution of new business models banking upon the technological revolution and reforms for selling efficient low cost services bringing the structural and functional changes. The entry of non banking financial institutions (payments banks) along with Digitalization has posed unlimited opportunities and challenges for financial integration with digital technology and customer preferences. However any visionary change that is distinguishable and cost friendly is based upon the elementary pillars of supportive reformatory environment, leveraging technology, conducive infrastructure and large customer base to hold the massive transitions and bring stability.
Abstract No. 153

DIABETES MELLITUS: AN OVERVIEW ON ITS HERBAL TREATMENT

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ABSTRACT

Diabetes mellitus is an epidemic disease that occurs due to flawed insulin secretion, resistance to insulin activity or a combination of both. It is characterized by persistent hyperglycemia that also alters lipid metabolism and liver enzyme level. Generally, the current medication (insulin and oral hypoglycemic agents) controls hyperglycemia through one pathway which encounters a number of adverse effects. Traditional medicinal plants provide effective, eco-friendly, and cheap remedy of diabetes mellitus with less adverse effects. WHO has also reported the applications of ayurvedic plants for the primary health care needs mostly in developing countries. Many drugs like artimisin, digitalis, resperine, morphine, atropine etc. have been developed from plant source to combat diabetes. These herbal medicines have been prepared using the different parts of the plant such as leaves, flowers, seeds, roots, fruits, berries and bark. Moreover, traditional phytomedicines may be used either as in combination or as an alternate to conventional allopathic medication. However, the herb selection depends on several factors including stage of progression of diabetes, availability, affordability, safety profile of herb and type of comorbidities that the patient are having.
Dichotomosyphon is poorly known genes of the family Vaucheriaceae Xanthophyceae sensu Fritsch 1935 probably due to its restricted distribution. The genes were established as early as 1902 by Ernst and its single fresh water seccrecies Viz. D. tuberosus in known till today. In India, it was first reported by Randhawa (1942) from Agra and Allahabad. Later it was reported by Sharma and Moghe (1957) from Indore and by Singh and Choudhary (1973) from Udaipur and Dehradun. Present author has collected this specimen which resembles very much with D. tuberosus but differs in certain respects. Therefore pending further observations it is tentively placed as a new forma of D. tuberosus. The present Algea was collected from a slow moving stream of river Bagmati and pond KSDU and LNMU campus at Darbhanga (Bihar). During the month of December it grew attached to the rocks and on the submerged twigs of Impomea Corniculata in association with Cladophora and Rhizoclonium. The algae were also found as a floating mass of entangled filaments over the surface of water.
POLLUTION OF GOMTI RIVER DUE TO MODERN SOCIAL INACTIVITY

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ABSTRACT

Gomti river is full of water in Jaunpur district, A substantial progress made by human being and management of water resources in ancient time. Due to high yield of crops human being are used requiring high doses of fertilizers increased, that cause High concentration of nitrates, potassium and phosphate in ground as well as surface water level. A huge amount of urban waste water gets producible everyday in Nagar Palika Parishad in Jaunpur city. The sewage effluent discharge from near temple of Kerarveer, Achla Ghat, Hanuman Ghat etc. That is too much entrophic in nature and deteriorating aesthetic value of Gomti river water. The discharge of effluent containing organic matter to the freshwater bodies increases the BOD of water causing depletion of oxygen in water resulting to the death of fauna and flora. Gomti River can be investigated by analyzing either the water or the sediments. Our study of the sediments play important role as they have larger residential time, therefore sediments sources for their assessment due man made cause contamination in river. This is too alarming level of pollution in Gomti river due to anthropogenic discharges.
ABSTRACT

Khadi and Village Industries form a part of rural Industries and are based on socioeconomic and cultural fabric of life. These industries constitute an important segment of the decentralized sector of our economy and provide employment mostly to the weaker of the society of which women constitute a substantial part of the work force. Khadi and Village Industries Commission (KVIC) established under the Khadi and Village Industries Commission Act, 1956, is a statutory organization under the aegis of the Ministry Of MSME, engaged in promoting and developing Khadi and village industries across India. The functions of KVIC as prescribed under the KVIC Act, 1956 includes: (A) to encourage and assist in the creation of common service facilities for the processing of raw materials or semi-finished goods and otherwise facilitate production and marketing of Khadi or products of village industries; (B) to promote the sale and marketing of Khadi or products of village industries or handicrafts and for this purpose create links with established marketing agencies wherever necessary and feasible. This paper focuses on understanding the role played by KVIC in promoting Khadi as a brand in India. This paper is based on content analysis after collecting secondary data from various websites including Government and Non-government websites.
PHENOLOGICAL STUDIES OF THREATENED SPECIES UNDER EX-SITU CONSERVATION

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ABSTRACT

As per requirement of 1st Convention on Biological Diversity, 1992, approximately 618 plants species including native and threatened plants of the country with special reference to 3 territorial regions i.e. Chhatisgarh, Madhya Pradesh and Uttar Pradesh have been conserved under ex-situ conservation in Botanic Garden of Central Regional Centre, Botanical Survey of India at Allahabad. During the period, from Nov. 2017 to Oct. 2018, altogether 236 plant species were studied phenologically (flowering in 38 species, fruiting in species 27 and seed formation in species 24), out of which 40 species belonged to 5 threatened categories comprising Data Deficient (6), Least Concern (28), Near Threatened (2), Vulnerable (3) and Endangered (1). Frequency wise, 6 species showed phenological characteristics for 5 months; 5 species for 10 and 1 month; 4 species each for 12, 6 and 2 months; 3 species for 8 and 3 months; 2 species for 7 and 4 months while 1 species each for 11 and 9 months. Season-wise variation in incidence of phenological characteristics also recorded.
Abstract No. 158

ECOSYSTEM HEALTH TO IMPROVE HUMAN HEALTH AND WELL-BEING: PHYSICIANS AND RESTORATION ECOLOGISTS UNITE IN COMMON CAUSES

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ABSTRACT

The health and integrity of terrestrial, coastal, and marine ecosystems directly affect human health in many ways, thus providing a powerful incentive for restoration. The recognition of the importance of biodiversity and ecosystem health in the daily lives of individuals is becoming more widespread, at least among scientists and policy makers, as is the drive to achieve widespread endorsement and participation at landscape/seascape, national, international, and planetary scales. However, to accelerate the process, the general public must be better informed and committed to participation. When discussing restoration, the language of clinical medicine provides strong metaphors that may be useful for communication, education, research, lobbying, and outreach. Because of the links between ecosystem health and human health, physicians and healthcare workers in general have an important role to play alongside restoration scientists and practitioners. Furthermore, insight from the fields of clinical medical practice, research, and public health could also provide lessons for ecosystem restoration practitioners. Together, the two groups could form a potent interdisciplinary team. At some point in their lives, many humans suffer a trauma or an illness too serious for them to recover from on their own, and a medical intervention becomes necessary. In some cases, correcting or removing the stressing factor will be enough (setting a broken leg, eliminating infectious agents, etc.); in others, physicians will replace what has been lost or degraded (blood transfusion, organ transplant, etc.). This current research connects potential impacts from tourism in parks and protected areas to the health and well-being aspect of cultural ecosystem services. We used an MTurk sample to record affective responses across a range of resource conditions. Results demonstrate that as tourism-related ecological impacts increased, positive affect decreased. Decreases in positive affect were more severe for park and protected area scenes featuring informal and/or undesignated social trails when compared to scenes with increasing levels of trampling/vegetation loss. Collectively, the results show that managing tourism in parks and protected areas in a manner that reduces impact is essential to providing beneficial cultural ecosystem services related to human health and well-being.
Abstract No. 159

EFFECTS OF FOOD ADDITIVES ON HUMAN HEALTH

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ABSTRACT

In market the foodstuffs are available readymade condition. These foodstuffs are prepared by many branded and local companies and are supplied to the market for consumers. The said companies used some chemicals in the food and other materials for long term use of food stuffs. Those chemicals which are added to foods, keeping them fresh or to enhance their color, flavor and texture are called food additives. Except flavors most of the food additives are listed on the product label, along with other ingredients in a descending order by weight. Sometimes the food additive is spelt out in full. At other times, it is represented by a code number also. For example Sodium Sulphite may be shown as preservative (221). Many of the food additives used by the food industries also occur naturally within foods that people eat every day. As MSG is found naturally in parmesan cheese, sardines and tomato in significantly greater quantities than the MSG is present as a food additive. Some people have allergies and intolerances to chemicals found naturally in certain foods like nuts and shellfish. There are so many types of food additives which provide freshness to the foods as Emulsifiers stop fat from clotting together, Antioxidants prevent food from oxidizing, Artificial sweeteners increase the sweetness, Preservatives stop microbes from spoiling the food and Glazing agents improves the appearance and can protect food etc.
ESTIMATION OF LARVAL DENSITY OF MOSQUITOES IN THE CITY OF SANGAM, THE PRAYAGRAJ

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ABSTRACT

Prayagraj located at 25.45°N 81.84°E, crowned in ancient scriptures as 'Prayag' or 'Teerthraj' is considered one among the holiest pilgrimage centre of India. Recently during the ‘Aardh Kumbh’ the city witnessed gathering of millions of pilgrims. A large number of people suffer from mosquito borne diseases in the city and the number is increasing every year. Improper drainage system, construction sites, artificial tanks, cesspools, septic tanks and others such mosquitogenic sites had led to the abundance of larval population of mosquitoes. Hence, the prevalence of immature stages of mosquitoes belonging to the three major vector genera Culex, Aedes and Anopheles in Prayagraj were studied during this investigation. The mosquito larvae were collected using hand net from various mosquito breeding sites of the city i.e., central region, northern region, southern region, western region and eastern region periodically and the observation were done regularly during the study period. Incidences of larval collection were recorded and the larval density was calculated as the average number of immature stages per dip collected from each habitat. Samples of larvae were brought to the laboratory, identified and reared using standard method.

Results showed that the mosquitoes belonging to the genera Culex were the most in majority of samples followed by Aedes and then Anopheles. It was observed that the larvae of both the Culex and Aedes mosquitoes were found inhabiting one mosquitogenic site while the Anopheles was the least among all and was mostly found living sedentary in habitats. The high larval index of mosquito during the study, coincides with the incidence of Dengue, Chikungunya, Malaria and other such mosquito borne disease prevailing in the city. Systematic water management, use of integrated control methods and organizing literacy campaign for the control of mosquitoes can be the remedy to check the breeding of this dreadful insect in the city.
The present study deals with the Ethnobotanical investigation of family Asteraceae in the district Udham Singh Nagar. The study area lies in Tarai region of Uttarakhand and occupies 3055 Km² area. Generally, two types of tribal communities i.e. Tharu and Bhoksa live in the study area. They depend mostly on plants for their daily requirements such as food, fodder, fuel, fruit, medicine etc. Some people of tribal communities are very educated but some are found to be illiterate but they have vast knowledge of traditional medicinal system by using plants. Asteraceae Berchtold & J.Presl is worldwide in distribution and represents the largest dicot family in the world. The family is well known for large number of ornamental plants e.g. Aster, Helianthus, Chrysanthemum, Dahlia, Calendula and Tagetes, etc. This family is also important from Ethnobotanical point of view. Several Asteraceal plants are used by tribal communities for different purposes. Due to urbanization, traditional knowledge of plants are vanishing day by day. There is urgent need to survey, record and conserve tribal knowledge. Therefore the present study has been undertaken to record Ethnobotanical uses of Asteraceae. During study detailed questionnaire was prepared and intensive and extensive field trips were conducted to collect the plants species as well as their Ethnobotanical information. The paper includes Ethnobotanical uses recorded during field study as well as from available literature. In this present study, a total of 24 plants species were recorded which are used for medicines, food, making household item and as ornamentals.
EXPLOITATION OF MARINE MICROALGAE FOR PRODUCTION OF BIODIESEL AND VALUABLE COMPOUNDS: A SUSTAINABLE APPROACH

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ABSTRACT

Progressive exhaustion of fossil-based fuels and global warning has raised a global concern to search for renewable and environment friendly alternative of traditional fossil fuel. In last decades, microalgae have received great attention for biodiesel production as a most sustainable and eco-friendly source of biodiesel production. They offer several benefits over terrestrial plant because of rapid growth rate, high productivity, and high Co2 mitigation ability. In addition, it produces clean fuel, do not competition for arable land and fresh water and solve the serious problem of fuel vs food and fuel vs forest associated with first generation and second generation of fuel feedstock's respectively. Despite these advantages they are in their infancy for commercial production due to high cost of production. Hence to promote economical sustainable production of biodiesel from microalgae biorefinery approach has being implemented. This is a novel approach for production of biodiesel and value products such as, polysaccharides, essential amino acid, vitamins, minerals and wide range of bioactive compounds. The aim of present study is to provide comprehensive information regarding the extraction of different valuable products, advantage of microalgae over other feedstock's, challenges in the path of its commercialization and strategies would be adopted for economical feasibility.
Abstract No. 163

EXPLOITATION OF MICROBIAL POLYSACCHARIDES IN BIODEGRADABLE PACKAGING MATERIAL THROUGH MODIFICATION AND NONOMATERIAL INTERVENTION

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ABSTRACT

The over consumption of synthetic non-biodegradable plastic packaging in the last few decade have lead to some serious global environmental problems, as their recycling and energy recovery are not very much effective. To avoid the bad consequences of them, many efforts have been carried out by researchers around the world to enhance the use of biodegradable biopolymers from different renewable resources as food packaging materials. Nevertheless, with increasing attention and research on this field, many of the microbial polysaccharides are studied for sustainable alternative. However, these polysaccharides are generally not available in the quality needed or their rheological properties do not meet the requirement of food hydrocolloids. Therefore, most microbial polysaccharides used are modified to extend their functional properties. They also lack mechanical strength and are permeable to water and gases. These disadvantages are prevailed over by nanotechnology incorporated packaging material made of natural or synthetic nanoparticles having properties like bio-degradable, renewable resources having high mechanical strength. They also have additional novel properties like sensors, antibacterial action and as biocatalysts. This review summarizes the use of polysaccharides derived from microorganisms in food packaging applications.
FRUIT PEELS: A STRONG NATURAL SOURCE OF PREBIOTICS

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ABSTRACT

Historically fruits have been recommended as a significant necessity of human diet and are extensively recommended for their health-promoting benefits. Worldwide, India is the second largest consumer and producer of fruits and generates million tons of fruit waste per year affecting as a solid waste. The aim of the study was to evaluate the nutritional, anti-nutritional, antioxidant, antimicrobial and prebiotic activity in peels of four selected fruits (apple, sweet lime, papaya and banana) commonly consumed in India. The nutritional and anti-nutritional constituents along with antioxidant activities were determined. Anti-bacterial activity and prebiotic potential of selected fruit peels was also estimated. Results indicate that all the selected fruit peels exhibit a good nutritional value along with acceptable level of anti-nutritional factors. The highest values of antioxidant activity, total phenolics and flavonoids were recorded in peels of banana and apple. It can be concluded that peels of different fruits can be regarded as natural plant source of antioxidants with high prebiotic potential.
Abstract No. 165

AN APPRAISAL OF INSECT PESTS ASSOCIATED WITH DIFFERENT TEMPERATE FRUIT TREES OF KUMAUN REGION, WESTERN HIMALAYA, INDIA

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ABSTRACT

The surveillance of insect pests of fruit crops was conducted in different orchards of Kumaun Himalaya, Uttarakhand at regular interval during 2017-18. The aim of the study was to determine species composition, diversity and occurrence of insect pests on different fruit crops during the present study. A total of 40 species under 38 genera of insect pests were recorded corresponds to three orders and 16 families, respectively. Of these, Coleoptera was found to be the most dominant order of insect pests comprising 18 species, followed by Hemiptera with 15 species and Lepidoptera constituting seven species of insect pests infesting different fruit crops. Among the total insect pests studied, Woolly apple aphid was examined as one of the most serious pest of apple crop infesting all parts of the plant and occurred throughout the year. Data was analyzed by using descriptive statistics by employing SPSS software version 20, Biodiversity Pro Version 2 and Past Version 3. The diversity and relative abundance were recorded maximum in the months of summer season followed by spring and autumn season and dropped to the minimum in the months of winter. Therefore, this study recommended that there is an urgent need to entail different management practices in the study area to conserve biodiversity.
ASSESSMENT ON THE WATER QUALITY CHARACTERISTICS OF RIVER GANGA AT VARANASI REGION, INDIA USING WATER QUALITY INDEX AND ANN SIMULATION METHOD

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ABSTRACT

A rapid disappearance of forests, coastal mangrove forests and wetlands is increasingly lacking in natural purification of polluted waters. The present study of Water Quality Index (WQI) is based on the analysis of samples of water collected from Ganga River from various locations in Varanasi city, India. The water quality parameters are analysed using linear correlation coefficient statistical technique and artificial neural network is used to model Water Quality Index. The results show that Water Quality Index mainly changes depending on the location and seasonal variation and artificial neural network able to simulate the experimental Water Quality Index satisfactorily, although the river Ganga is viewed as a figure of purification not only by Hindus but by other religious denominations, Indians persist in dumping the ashes of their dead into it The present paper thus helps to understand the various pollution problems which can be a useful in improving the water quality of River Ganga.
Rheumatoid arthritis which has approximately 350 million patients all over the world, is an autoimmune disorder associated with chronic joint inflammation, swelling and stiffness. The medications given for rheumatoid arthritis do not treat it but only give symptomatic relief with several side effects like anaemia, stomach ulcer, blood clots, heart attack and stroke by its non-steroidal anti-inflammatory medicines and elevated blood fats, increased blood sugar levels, bone loss by corticosteroid drugs. Sulfasalazine is also one of the medicine used causing hypersensitivity reactions which are less common but life-threatening. A skin rash, extensive mucocutaneous reaction, lymphodenopathy, eosinophilia and organ involvement like DRESS syndrome (Drug Rash with Eosinophilia and Systemic Symptoms) which can be difficult to distinguish from malignant lymphoma can be the worst side effect leading to estimated death rate as high as 10%. The approach for medication of the most common and yet untreated diseases by the plants of biodiversity with the targeted and no side effect therapy is done by replacing the synthetic drugs with same effect causing phytochemicals. The plant like Toonaciliata, Bougainvillaspectabilisleaves can be used as analgesics for pain reduction, Zingiberofficinale at high doses can significantly lowered PGE2 levels and inhibiting production of cytokines IL-1 and IL-6 indicating anti-inflammatory action, Tanacetumparthenium has Tanetinin the leaf and flower that blocks prostaglandin synthesis which specifically bind to and inhibitIκB kinase complex IKKβ which has a role in pro-inflammatory cytokine-mediated signalling as well as immunosuppressant. Green tea, Turmeric has curcumin reduces inflammation whereas menthol and capsaicin can block the pain signals.
Abstract No. 168

ENHANCED ULTRAVIOLET-B SOARS ARSENIC INDUCED OXYGEN TOXICITY: AN ADJUSTMENT THROUGH ASC-GSH CYCLE ENZYMES

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ABSTRACT

The current study was undertaken to elucidate the impact of two levels of enhanced UV-B (1.2 kJ m⁻²d⁻¹, UV-B1; and 3.6 kJ m⁻²d⁻¹, UV-B2) on the extent of two levels of arsenic (6 mg kg⁻¹ soil, As1; and 12 mg kg⁻¹ soil, As2) toxicity in Helianthus annuus L. plants and consequent fine-tune made by ascorbate-glutathione cycle (AsA-GSH Cycle) enzymes was investigated. The AsA-GSH cycle consisting of four enzymatic antioxidants, viz. ascorbate peroxidase (APX), dehydroascorbate reductase (DHAR) monodehydroascorbate reductase (MDHAR) and glutathione reductase (GR) and non-enzymatic antioxidant metabolites, viz. ascorbate, glutathione and NADPH successfully controls upon hydrogen peroxide (H₂O₂) production which was produced through superoxide radical (SOR, O₂⁻) up to the certain extent but fails when the bigger dose of As was combined with higher dose of UV-B. Due to better functioning and orchestration of all the enzymes and metabolites of the AsA-GSH cycle under the influence of lower doses of As and UV-B and their combinations the Helianthus plants could not experience damaging environment corroborated by better fresh mass and other morphological results.
IMPACT OF RISE IN SEA LEVELS ON SUNDARBAN AND ROYAL BENGAL TIGER

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ABSTRACT

Sundarban, inscribed as World heritage by UNESCO in 1987, is the world's largest evergreen forest. This Mangrove forest between the delta created by Ganga, Bramhaputra and Meghna rivers, spread in about 10000 square kilometers, is famous for its geographical structure, botanical diversity and Royal Bengal tiger. This is the only dwelling of Royal Bengal Tiger. At present, human encroachment, illegal hunting, poaching and smuggling, construction of new roads, growing tourism in Sundarban area etc. are creating problems for Royal Bengal Tigers. Global warming and increasing sea levels are among other reasons that are creating problems for the existence of Sundarban and Royal Bengal Tigers. This condition is also worth concern because a number of low land areas of Sundarban have drowned due to the rise in sea level. This is also worth mentioning and worrying that most of the islands of Sundarban are only 9-10 ft. high. Due to this, even a little rise in sea level might affect the habitat of tigers adversely. According to an assumption, due to rising sea level, most parts of Sundarban will get drowned which will cause huge damage to the evergreen forests and biodiversity of Sundarban along with the habitat of tigers. This paper deals with the problems caused due to global warming on Sundarban and Royal Bengal tiger and its suggests solutions for this problem.
IMPACT OF PESTICIDES ON ENVIRONMENT AND THEIR ECO-FRIENDLY SOLUTIONS

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ABSTRACT

Chemical substances used for controlling pests to minimize their harmful effects are known as Pesticides. The small insects that grow in fields and reduce crop yield are called pests. They destroy habitats of other organisms as well as resources which lead to reduction in water quality, increase in soil erosion, reduced growth and development of native plants which provide food and shelter. A number of pesticides are used in agricultural fields to check pest infestation in crops. Chloropyrifos, Methyl parathion, Monocrotophos, Malathion, Deltamethrin etc. are among such widely used and popular pesticides. Though pesticides help reduce the damage caused by pests, they pose harmful effects on human health due to their residues that reach in food materials and ground water via leaching, percolation and bioaccumulation. Heavy and uncontrolled use of insecticides creates environmental problems and a great threat to functional diversity of the soil microbiota. This results in loss of soil fertility and plant growth. Some bacterial strains like Pseudomonas sp., Alcaligens sp., Acidomonas sp., Micrococcus sp. etc. have been reported in pesticide infected fields in agricultural lands of Kanpur and adjacent areas. This paper deals with the adverse effects of usage of pesticides in agriculture along with its effects on environment and possible biodegradation in Kanpur Nagar and other districts nearby.
INTEGRATED MANAGEMENT OF MELOIDOGYNE INCognITA AND ROTYLENCHULUS RENIFORMIS WITH BIO-CONTROL FUNGI (PURPUREOCILLIUM LILACINUM, POCHONIA CHLAMYDOSPORIa) AND CHEMICALS (CARBOFURAN AND PHORATE)

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ABSTRACT

An experiment was conducted to management of Meloidogyne incognita & Rotylenchulus reniformis present singly or concomitantly on pea plant through an and integrated approach with inclusion of Bio-control fungi (Purpureocillium lilacinus & Pochonia chlamydospora) and chemical nematicides (Carbofuran & Phorate) components. Individual application of the management components was effective in reducing the nematode population. Bio-control fungi P. Lilacinus & P. Chlamydospora were found to be highly effective in their ability to reduce reproduction rate of M. Incognita and R. reniformis in all the treatment significantly over control. Effects of Carbofuran and Phorate against Meloidogyne incognita were similar as well as to par to each other, while, Phorate was significantly more effective than carbofuran against R. reniformis.
The present paper deals with the systematic account of some freshwater algae under \textit{Centritractus belanophorus}, \textit{Ceratium hirundinella}, \textit{Ophiocytium capitatum}, \textit{Peridinium cinctum} belonging to \textit{Xanthophyceae}, \textit{Chrynophyceae} and \textit{Dinophyceae} found in the university campus of dharbhanga. Four taxa namely \textit{Ceratium hirundinella}, \textit{Ophiocytium capitatum} were dominant in all sides in campus but \textit{Peridinium cinctum} was found in northern and southern sides of the campus. They were new additions in the algal flora of university campus.
ABSTRACT

The main objective of this study was to define the most accuracy for aboveground biomass estimation. In this study the estimation of above ground biomass (AGB) using non-destructive allometric equations method in tropical dry deciduous forest in 0.1 ha sample plots, allocated in Baghelkhand region of Vindhyan mountain in twenty sites. The volume of tree was calculated using site specific local or regional volume equation. The biomass of each species was estimated taking tree volume and species specific gravity. The relationship between basal area and above ground biomass showed positive correlation for all sites and forest types. In study site many tree species was founded in which majorly Acacia catechu, Accacia nilotica, Bute amonosperma, Ziziphus species, Madhuca indica and Diospyrus melonoxylon etc. Field measurements for different density classes, basal area and biomass across the all different study sites. This study concludes that tropical deciduous forests of the studied area in Madhya Pradesh are having strong potential for carbon sequestration. Estimation of above ground tree biomass in the present study provides data for tropical dry deciduous forest covering a large part of state.
ETHNOBOTANICAL STUDY OF KOL TRIBE IN BAHIL PURVA VILLAGE, CHITRAKOOT DISTRICT OF UTTAR PRADESH, INDIA

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ABSTRACT

An ethnobotanical survey was conducted to collect the ethnobotanical knowledge from Kol tribe recently in 2019 in a Bahil Purva village, Karwi tehsil of Chitrakoot district, Uttar Pradesh, India. The total geographical area of village is 489 hectares with seventy houses and 375 populations. The most of the population living in the village is Kol and Mawasi tribe. Very few populations have agriculture land otherwise all are depend on forest resources for their livelihood. They collect Non Timber Forest Produce (NTFP) like Mahua flowers and seeds, tendu leaves and fuelwood and sell in market for their livelihood. The firsthand information regarding traditional use of plants for fuelwood, implements, food, and medicine with local name of plant, plant part used, mode of preparation (medicinal use), dose and application was recorded from elderly person by using prescribed performa. Senjh, tendu and mahua are the tree species which play important role in tribal economy. The wood of Senjh (*Lagerstromia parvifolia*) is used in making frames for cots and thatches, *harsh* for making plough, leaves are used for thatching, bark and leaves for cough and cold. Tendu (*Diospyros melanoxylon*) is priced for its wood and valuable leaves used for making *bidi* whereas, the wood of mahua (*Mdhuca latifolia*) used as timber and fuelwood and flowers for making local drinks and seeds for edible seeds. There are 37 plant species covering 35 genera and 25 families were recorded to used in various purposes like construction of huts, making agriculture implements, food, fodder, dye and in treatment of fever, cough, cold, stomachache, scorpion sting and snake bite.
ABSTRACT

There has been tremendous pressure on land due to the increase of population and livestock in various parts of the country. The utilization of waste/degraded land may play a vital role in reducing the crop pressure and economic strengthening of rural masses. The Cymbopogon citratus (Lemon grass) is an important aromatic plant of multiple importance and being utilized by many industries. In recent years, the demand of lemon grass is increasing day-by-day. During the last few years, cultivation of lemon grass attracted the attention of many farmers who gained high return from the vacant unused degraded land. Planting of Lemon grass on degraded lands can exerts bio-ameliorative effects for their reclamation, in addition to regreening the area and preventing water loss through run-off and soil erosion besides improving the micro-climate of that area. Due to huge gap between demand and supply in India, reclaiming the degraded land will benefit the farmers, flavor and fragrance industry for large scale production of quality lemon grass oil. To reclaim such degraded lands there is a need to develop a cultivation and marketing package with help of C. citrates. Therefore in this study for improving land, green cover degraded land will be reclaim by developing a suitable cultivation and marketing package of lemon grass besides meeting needs of the rural communities.
ABSTRACT

The site in which study was carried out has altitudinal gradients and accordingly vegetation diversity occurred. Due to higher species richness, irregular stem densities and stem cover, multi-storied canopy and microclimate Indian tropical deciduous forest offers dynamism to the understanding of the spatial patterns in aboveground biomass (AGB) and carbon (AGBC) within different plant functional types (PFTs) and found increasing amount of above ground biomass with respect of increasing altitude. Field-based AGB and AGBC estimates are vital for carbon cycle study and provide inputs for data-deficit regional and global carbon. In this paper we generated the primary baseline data on tree composition, species richness (SR), AGB and AGBC gathered from 10,000 m² long-term ecological research (LTER) plots in three distinct PFTs dry mixed, Acacia catechu, Butea monosperma, Diospyros melonoxylon, Boswellia serrata and Accacia nilotica within an Indian tropical deciduous forest along vindhyan foothills. The functional relationship of PFT structural attributes i.e. SR, density, basal cover; leaf area index and litter fall on AGB was investigated. PCA was applied to study the relationship between PFT microclimate, structural attributes and diversity vs. AGB. A total of 22, 22 and 5 tree species were found in DM, AM and TP PFT, respectively. Shannon’s diversity index was highest in DM, whereas Simpson’s dominance index was maximum in BM. AGB observed strong positive correlation with tree density and cover. PCA revealed humidity and air temperature as the major microclimatic variables, leading to higher AGB.
EFFECT OF LEAF EXTRACT OF ROYLEA CINEREA D DON AGAINST MULTI DRUG RESISTANT BACTERIA

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ABSTRACT

_Roylea cinerea_ (D.Don) Bail. (Fam- Lamiaceae), commonly known as Ashy Royleais, and locally karru. _R. cinerea_ is widespread in the Himalaya from Kashmir to Nepal. This shrub is commonly known for its curative properties and has been utilized as antidiabetic and antioxidant property. A wide range of chemical compounds including alkaloids, flavonoids, triterpenes and their glycosides have been isolated from this species. Secondary metabolites present in the extracts have been known to possess pharmacological properties. The present study is about antibacterial potential of aerial part extracts in solvent like Ethanol, Acetone and Petroleum ether. The antibacterial studies were done by Broth microdilution recommended by CLSI protocol against human pathogenic MDR bacteria _Klebsiella pneumoniae_ (MTCC- 4032).

Streptomycin was taken as standard. Among the three solvents Ethanolic extract was found to be most effective against these MDR bacteria. Hence leaf extract of _R. cinerea_ exhibit great potential for the development of eco-friendly, non-toxic, cost effective and herbal antibiotic formulations.
EFFECTIVENESS OF IEC STRATEGIES IN PROMOTING SANITATION AND HYGIENE AMONG RURAL HOUSEHOLDS IN DISTRICT NAINITAL, UTTARAKHAND

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ABSTRACT

Safe sanitation and hygiene practices are prerequisite for maintaining family health and protecting the environment. Swachh Bharat Mission (Gramin), the rechristened version of Nirmal Bharat Abhiyan, was launched in October 2014, aiming to make rural India open defecation free. The rural sanitation drive rides heavily on the Information, Education and Communication (IEC) component to promote sanitation goals through mass media, interpersonal communication and capacity building activities. Majority of the studies on sanitation have covered health, environmental and economic concerns, social and psychological factors, and religious, political and administrative barriers. However, the analysis of role of communication strategies in increasing awareness, changing attitude and enhancing participation of the rural communities, has largely remained unexplored. The present study has attempted to fill in this void through an assessment of the effectiveness of the communication strategies. The present study was carried out in the hilly belt of district Nainital in Uttarakhand. A sample size of 400 respondents was drawn from two gram panchayats, namely, Parwada (Block Dhari) and Pura (Block Ramgarh) using random sampling. Structured interview schedule was used to collect responses. In addition, observation of the routine sanitation and hygiene practices of the sample households was also carried out. The secondary source material mainly comprised of online sanitation records, policy documents, research journals and books. The results revealed a high level of awareness among the respondents about safe sanitation and hygiene practices except environmental hazards linked to open defecation. The overall attitude was positive, except towards the role of sanitation motivators. The participation in terms of implementation of the sanitation and hygiene goals was satisfactory. The findings also established a strong positive correlation among awareness, attitude and participation. The study recommends an increase in the IEC budget and more involvement of local women as sanitation motivators.
ABSTRACT

Jammu & Kashmir State, due to its unique geographical position and varied topography, has very rich and much diverse floristic composition. Present study is based on the study of herbarium specimens deposited in various herbaria, viz., FRI, Dehradun Herbarium (DD); BSI, NRC Herbarium (BSD); RRL, Jammu Herbarium (RRLH); and Kashmir University Herbarium (KASH). Besides, some taxa are included here based on earlier published literature, including those of Stewart (1937, 1945, 1951, 1972); Javied (1965); Kapur & Sarin (1977); Dhir (1980); Dixit (1984); Kapur (1985); Khullar (1994, 2000); Chandra (2000); Kiran (2000); Kirn & Kapahi (2001); Singh & Pande (2002); Fraser-Jenkins (2008); and Wani, et al. (2012). Nomenclature of all the taxa has been updated. The families and genera are arranged as per classification suggested by Fraser-Jenkins (2008, 2010). Brief ecological notes and distribution in the State are appended with each species.

The present paper enumerates 187 pteridophytic taxa, belonging to 43 genera under 19 families, which include 175 ferns and 12 fern-allies. Among ferns the largest families are Dryopteridaceae (with 42 species in 4 genera) followed by Pteridaceae (35 : 8), Woodsiaceae (33 : 7), Aspleniaceae (20 : 1), Thelypteridaceae (15 : 1) and Polypodiaceae (13 : 6); while Ophioglossaceae (4 : 2), Dennstaedtiaceae (4 : 3) and Osmundaceae (2 : 1) are the smaller families. The larger families among fern-allies are Selaginellaceae (7 : 1) and Equisetaceae (4 : 1), while Lycophodaceae is a monotypic family. Families Schizaeaceae, Marsileaceae Oleandraceae, Davalliaceae, Blechnaceae, Azollaceae, Salviniaeae are monotypic, i.e. have a single representative type (each), indicating narrow genetic base of these families. In addition, about 27 doubtful species reported by earlier workers are also provided.
Abstract No. 180

ANTIBACTERIAL POTENTIALS OF THREE DIFFERENT EXTRACTS OF THUJA OCCIDENTALIS L. AGAINST PSEUDOMONAS AERUGINOSA

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ABSTRACT

This study was carried out with an objective to investigate the antibacterial potentials of leaves of Thuja occidentalis L. In the present study, the antibacterial activity of acetone, ethanolic and ether extracts of leaves of Thuja occidentalis (an ethnomedicinal plant) was evaluated for potential antibacterial activity against medically important Pseudomonas aeruginosa (MTCC-424). The efficacy of extracts obtained was analysed against urinary tract infection (UTI) causing bacteria P. aeruginosa using broth micro-dilution method recommended by Clinical Laboratory Standards Institute (CLSI). The Inhibition Concentration i.e. IC50 and Minimum Inhibition concentrations (MIC) using SpectramaxPlus384 Molecular Devices were recorded. Streptomycin as standard was taken. The IC50 value of acetone extract, ethanol extract and ether extract were shown to be 0.610, 0.302 and 0.432 mg/ml respectively. The ethanolic extract was found to be most effective with their MIC 0.510 mg/ml while acetone extract was found to be least effective with their MIC 1.006 mg/ml against Pseudomonas aeruginosa. The phytochemical analyses of the plant were carried out. The microbial activity of the Thuja occidentalis was due to the presence of various secondary metabolites. Hence, these plants can be used to discover bioactive natural products that may serve as leads in the development of new pharmaceuticals research activities.
ROLE OF AGRICULTURE EXTENSION IN BIODIVERSITY CONSERVATION AND FOOD SECURITY

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ABSTRACT

World is developing in every aspect still facing the problem of food security. While food security is an issue of concern throughout the world, it is of particular concern in populated and developing countries, where food insecurity is severe. There are two simultaneous problems developing together, decrease in agriculture land and biodiversity loss. Biodiversity is important for the regulation of ecosystem processes and delivery of ecosystem services. Farming approaches can be tailored to benefit wildlife and biodiversity, which in turn can increase ecosystem stability in the face of environmental change, without reducing the potential for agricultural yield. Maintenance of this biodiversity is essential for the sustainable production of food and other agricultural products and the benefits these provide to humanity, including food security, nutrition and livelihoods. It ensures the sustainable productivity of soils and provides the genetic resources for all crops. Present study deals with various means by which agricultural extension can help address innovation, development, and adoption of sustainable agricultural practices among rural landholders. Its chief instruments of linkages, local knowledge facilitation, social capital and education are effective means of addressing food security challenges simultaneously with biodiversity conservation.
CLIMATE CHANGE AND AGRICULTURE: A REVIEW ARTICLE

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ABSTRACT

This paper provides an overview of climate change and its impact on agriculture, while paying some specific attention to the food security in India. Climate change has emerged a major challenge for sustainable human settlement. It has adverse impact on wild life, agriculture, incidence of diseases, local weather, rise in sea level, more heat waves etc. India is highly vulnerable to climate change as its economy is heavily depends on climate sensitive sector like agriculture. People in India, especially the poorest, are vulnerable to the impact of climate change because the nation's economy is so closely tied to natural resources. More than 56 per cent of workers are engaged in agriculture and allied sectors. Most of India's poorest people live in rural areas, almost totally reliant on natural resources for their food, shelter and incomes. Climate change affects agriculture in complex ways. The climate change will affect crop yields and cropping pattern due to direct effects of changes in atmospheric concentrations of green house gases in general and Co2 in particular. It affects food production directly through changes in agro-ecological conditions and indirectly by affecting growth and distribution of incomes, and thus demand for agricultural produce. Agricultural outcomes are determined by complex interactions among people, policies and nature. However, uncertainties about where climate change will take place and how farmer will respond make it difficult to move forward on policies to combat the effects of climate change. If humanity along with the other flora and fauna has to survive on this planet, all nations (developed and developing) must make sincere efforts to mitigate the effects of climate change. Today it is the poor who experience the deathly impact of climate change. Tomorrow it will be humanity as a whole who have to face consequences of climate change.
STUDY OF CONSERVATION OF RELIGIOUS PLANT PRACTICES IN BUDDHISM

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ABSTRACT

The present paper deals with conservation of religious plant practices in Buddhism, because various events of Buddha’s life are interconnected and interwoven with these plants viz Ashoka, Banyan, Bel, Jamun, Kush, Pipal, Sal, Bamboo, and Mango trees. Buddha got first knowledge about life under the Jamun (Syzygium cumunii) tree. The four events i.e., the worth of enlightenment, the spreading out of enlightenment and mahaparinirvana (salvation) in Buddha’s life took place under the Ashoka, Banyan, Bel, Jamun, Kush, Pipal, Sal, Bamboo, and Mango trees symbolically meaningful in their religious life.
SYMPTMATOLOGY AND ETIOLOGY OF *ALTERNARIA* SPP. ASSOCIATED WITH SOLANACEOUS MEDICINAL PLANTS

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ABSTRACT

The medicinal value of drug plants is due to the presence in plant tissues some of chemical substances that produce a definite physiological action on the human body. The most important of these substances are alkaloids (Husain, 1993). The drugs are obtained from roots, stems, fruits and all parts of plants. Some solanaceous medicinal plants have been observed to be affected from *Alternaria* spp. of various natures. *Alternaria solani* is the species restricted only infect the host plants of family Solanaceae prove true to cause the leaf spot diseases in *Sarpagandha* (*Rauwolfia serpentina*), *tomatiolo* (*Solanum khasianum*) and *Ashwagandha* (*Withania somnifera*). *A tenuissima* was found associated with four medicinal hosts.
THE EFFECTS ON EDAPHIC FACTOR BY THE NODULATION IN GRAM PLANT OF TWO DIFFERENT ZONES OF ALLAHABAD

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ABSTRACT

Edaphic factors include the structure and composition of soil along with its physical and chemical characteristics. Soil instead of being one thing, is in fact a complex made up of several components. The nature of each of the component makes the soil complex. Soil is one of the most important ecological factors. Plants depend for their nutrients, water supply, and anchorage upon the soil. As per this experiment study of two different zones of Allahabad-Singarpur (Trans-gangetic) and Karchanna (Trans-yamunatic). This study based on three bases- To analyses morphological and physical characteristics of plant and plot. Study of edaphic factors of sampled soil. Evaluate microbiological quality of soil with respect to Rhizobia count. In morphological analysis structure of plant, types, height, size of pods, leaf size and count of nodules per plant. In soil fertility is the capacity of a soil to supply plant nutrients in adequate amounts to facilitate optimum growth and obtaining the yield potential of a crop. In this soil testing the parameters are pH, EC, N, P, K is used. In microbiological analysis, culture of rhizobium bacteria is done YEMA Media where we conclude on the basis presence or absence of bacteria and counting of bacteria. By this analysis we came on this understanding that plot having Nitrogen fixing bacteria became cause for good fertility. Because this reasoning we can ensure food security of Nation.
ABSTRACT

Histories of aquaculture suggest that aquaculture is a natural part of human development throughout history and those innovative techniques. The concept of sustainable aquaculture is increasingly recognized to incorporate both spatial and temporal aspects of environmental, socio-economic parameters. Aquaculturists have discovered that sustainable aquaculture must not only maximize benefits, but also minimize accumulation of negative reasons, as well as other types of negative impacts on natural and social environment. Eco-aquaculture, the cultivation of essential aquatic proteins vital to human health, longevity, and community sustainability, is an integral part of our common planetary judgment and cultural heritage, an essential part of our past, and a vital part of our future evolution as a sophisticated species living in peace with the biodiversity invaluable, complex aquatic ecosystems. Biodiversity intensification is a new concept in aquaculture that addresses the double challenge of maintaining a level of production sufficient to support needs of human populations and respecting the environment in order to conserve the biodiversity, natural world and human quality of life.
Abstract No. 187

DIVERSIFICATION OF AQUACULTURE THROUGH IMPROVE THE EARLY STAGE GROWTH AND SURVIVAL OF CLARIAS MAGUR (HAMILTON, 1822)

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ABSTRACT

Aquaculture is the fastest growing industries, contributing to the national foreign exchange, nutritional security & livelihood. Over the last two decades the Indian Aquaculture has scaled up by six fold. Worldwide millions of people directly depend on fish for their primary source of animal protein. In terms of fish growth benefits, it has been excellent nutritional profile. It is a good source of protein, fatty acids, vitamins, minerals and essential micronutrients in a diet. The Clarias magur (Hamilton, 1822) popularly known as Magur, is an air-breathing indigenous catfish. Clarias magur, one of the representative species of catfish species, is a coveted fish with high market demand deserving its potential culture under aquaculture policies of the country. These are highly suitable for the deoxygenated deselected water bodies and even permit high densities and highly compatible with other species. The supply of quality fish seed is a key factor to the expansion of aquaculture industry. The growth and survival of fry are the critical aspects in the production of this fish. However, the influence of brood stock physiology, especially in the processes of nutrient transfer to their egg yolk and larvae development, remains unknown. The improvement of early stage of magur to produces the larvae production and diversifies the magur farming in India.
Abstract No. 188

THREATS OF INVASIVE ALIEN SPECIES TO NATIVE BIODIVERSITY

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ABSTRACT

The many exotic species introduction has been causing chaos in biological world as they turned into Invasive species by making. Inter specific competition stronger mentioned by Darwin theory of Natural Selection. Effect of *Parthenium* spp. of Plants and croton spp. in India has been one of the problems in the same terms. In the present study we have noted the effect of exotic species *Parthenium* spp. & Croton spp. on lands soil, agricultural field, fertility Productivity reducing in day to day life.
TRADITIONAL PLANTS FOR HAIR CARE

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ABSTRACT

Indigenous traditional knowledge is vital for sustainability of natural resources. They silently conserve the natural resources and maintained a symbiotic relationship between natural resources and their cultural belief. Many indigenous plant species are grown and conserved in the home orchard of villages and cities. Present studies revealed the occurrence of ten genus native to India are used in hair care. Plant species viz. *Eclipta prostrate* (Bhringraja), *Sapindus mucorassi* (Reetha), *Lawsonia inermis* (Mehendi), *Hibiscus rosasinesis* (Gurhal), *Aloe Vera* (Ghritkumari), *Sesamum indicum* (Til), *Sida acuta* (Baraira), *Phyllanthus emblica* (Amla), *Cissampelos pareira* (Patha), *Cymbopogon sps* (*Nimbu ghass*) are used in hair care. Mostly leaves and flowers/fruits of these therapeutic plants are brought into application for hair care.
IMPACT OF CLIMATIC CHANGES ON HOUSE SPARROW (*PASSER DOMESTICUS*)

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ABSTRACT

In present investigation the fall in sparrow (*Passer domesticus*) population is observed 60 ± 5% in Balrampur urban region with a gradually decline during the last 100 years. Causes for the rapid decline of sparrow population particularly in urban and sub urban areas constitute a combination of poor diet and air pollution induced physical stress on house sparrow leading to reduced reproductive success.
ABSTRACT

Mangoes are juicy stone fruit (drupe) from numerous species of tropical trees belonging to the flowering plant genus Mangifera, cultivated mostly for their edible fruit. The ripe fruit varies in size, shape, colour, sweetness, and eating quality. Cultivars are variously yellow, orange, red, or green, and carry a single flat, oblong pit that can be fibrous or hairy on the surface, and which does not separate easily from the pulp. Uttar Pradesh known for producing Dussehra, Langda and Chausa varieties of the saccharine fruit may witness up to 73 per cent decline in production due to adverse weather conditions. “There was bumper production of about 30 lakh tonnes mangoes last year. But this year production is likely to go down by one-third. We are expecting about eight to Ten lakh tonnes of mango production this year. The mango belts in Uttar Pradesh, which include Lucknow (Lucknow, Malihabad, Bakshi-ka-Talaab), Saharanpur and Sambhal-Amroha-Muzaffarnagar districts have registered poor flowering this season due to different climate change. Cultivars that excel in one climate may fail elsewhere. For example, Indian cultivars such as ‘Julie’, a prolific cultivar in Jamaica require annual fungicide treatments to escape the lethal fungal disease anthracnose in Florida. Asian mangoes are resistant to anthracnose. The Lucknow belt, which produces world famous Dashehari mangoes besides Langra and Chausa, alone comprises 30-40 per cent of the State’s annual mango production.
DETECTION OF ANTHOCYANINS OF FLOWER EXTRACTS OF MELILOTUS ALBA

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ABSTRACT

The present paper deals with the detection of anthocyanins of flower extract of *Melilotus alba* (L). Anthocyanins are glycosidic pigments usually found as essential constituents of flower petals or coloured leaves. They are antioxidant, antiviral and antimutagenicity and play important role in biological system. 2.00 g of flower petals of *Desmodium gangeticum* (L) DC were dissolved in 2M Hcl in a test tube and heated 1000 C for 5 mts. The solution was cooled and washed with ethyl acetate to remove the flavonoids followed by filtration. The filtrate was further heated with amyl alcohol at 800C for 5 mts followed by filtration. The filtrate contained anthocyanin so the filtrate was spotted on Whatman’s filter no 1 and was placed in the chromatographic jar for separation of anthocyanins by using the solvents: 1. Forestall conc - HCl.CH3COOH.H2O - 3:6:1, 2. Formic acid conc - Hcl.HCOOH.H2O - 2:5:3. The coloured spots appeared on the chromatogram indicated anthocyanin. From the colour of the individual spot, anthocyanins were differentiated and detected. The Rf value of the marked spots was noted and different anthocyanins were confirmed by comparing the respective Rf value. The results confirmed three types of anthocyanin namely cyanidin, peonidin and petunidin.
The present communication deals with the role of ladybird beetle as a biological control agent against aphids. Ladybird beetles are the member of class insecta and belong to family Coccinellidae. As all other insects, beetles have an outer skeleton known as exoskeleton. Beetles act as biocontrol agent that feed very rapidly on aphids. When there is fine excess of aphids fed to beetles they always lay little or vast bunches of eggs. The insects of Coccinellidae family are very gracious and valuable. These are predators of many other insects that help farmers in controlling the crop damaging insects below threshold level. Fully matured ladybird beetles and aphids were collected from the willow trees. These natural enemies were reared on the aphids for the collection of larvae of ladybird beetles. The results show that there was significant control of Chaitophorus spp. by the ladybird beetles. The role of ladybeetle from 1st to 3rd instars against Chaitophorus spp. was tested during the whole experiment. The immature stage of the beetles instars when feed on aphids have more survival rate and grows very fast. So the efficacy of ladybird beetle against the Chaitophorus species is very good. Plants can be saved from the attack of aphid by using the ladybird beetles.
IMPORTANCE OF LOCALISED INVENTORY OF ENVIRONMENTAL PARAMETERS FOR BETTER UNDERSTANDING OF FACTORS AFFECTING THE MICROENVIRONMENT AND REDUCING THE BURDEN OF DISEASES

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ABSTRACT

Data on Global burden of diseases has been a guiding resource for understanding of the threats to human health and planning the resources for increasing the longevity of human life. Trends from recent year's shows air pollution is among top five ranking risk factor for deaths globally. Ten percent of all deaths during the year 2013 were from air pollution. The most contributing factors were ischemic heart diseases, strokes, chronic obstructive pulmonary diseases, lower respiratory tract infections and lung cancer. However, the challenging global data set needs to be monitored at local levels to develop the understanding of threats to local populations. Analysis of data shows that sixty-four percent of ambient air pollution related deaths were in Asia. Further, China and India accounted for fifty-eight percent of global deaths due to air pollution. This is not very surprising as less than one percent of population from China and India lives in areas meeting WHO guidelines. Inventories are available for particulate matter and other criteria pollutants at different Indian cities. However, the parameters like bioaerosols in ambient air need to be monitored locally. High variation in bioaerosol concentrations due to non calibrated instruments and non-uniform protocol has been a major challenge to assess the comparative bioaerosol loads at different locations. Yearlong study was performed using bioaerosol sampler developed at IIT Kanpur at five different microenvironments. This study shows that microclimatic conditions and local source of bioaerosols plays crucial role in defining the concentration of bioaerosols. Bioaerosols concentration varies from 78 ± 21 CFU/m3 at planned and maintained township to 4916 ± 106 CFU/m3 at solid waste management dump site. These numbers show the huge variation in exposure of bioaerosols to local population. A better understanding will lead to reduced exposure and burden of diseases.
Plants and animals are dependent on others to live and keep the natural surroundings in a balanced state. For example, human beings are dependent on various plants and animals for their food, shelter, safety, clothes etc. Similarly, every living species is dependent on some other species. It is, therefore, important to preserve biodiversity in our planet in order to maintain the ecological balance. The growing population, industrialization, technology, etc., all are impacting biodiversity. The increased human activities have been reducing the natural area for plants, animals and other living things. A number of plants and animals have gone extinct because of increased deforestation and other factors. Growing pollution, causing global warming and climate change, is a big threat to biodiversity. The decline in biodiversity would in turn lead to imbalance in the ecosystem and would become a threat to the human race as well as other living organisms. Biodiversity and its beautiful richness ensure that the earth is fit enough for the survival of each and every one of the organism living on the earth. It is not possible for the human to live all alone on the Earth. Various other life forms are equally important and play their roles in the mutual survival of the various species on the Earth. Each one of species has its own set of contribution for the environment. Already many species have become extinct as they were not able to survive in the changing weather conditions. Hence it is our duty to ensure that our activities do not affect the other flora and fauna on the planet. Although there are a number of steps taken by the government so as to preserve the various life forms, we should also contribute individually towards this cause. If we do not act today, we may yet again witness the extinction of the vulnerable biodiversity which may further disturb the balance of nature.
CLEAN DRINKING WATER: BASIS OF LIFE

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ABSTRACT

Water is essential for all kinds of life. When polluted, it is very much toxic for all organisms and may cause even death. According to United Nations Organization, 95% of the world natural epidemics are caused due to polluted water. 80% of deaths occur due to water pollution caused by chemicals used in agriculture, heavy metal contamination and domestic filth and sewer flows. About 25-30% part of pesticides, insecticides and chemical fertilizers contaminates surface and underground water resources. Hence, contaminated toxic water causes several ailments such as cancer, blood and skin diseases along with sicknesses related to kidney, liver and nervous system. Heavy metals such as Mercury, Arsenic, Iron, Chromium, Fluoride, Cadmium that contaminate water due to industrial activities, cause diseases related to circulatory, digestive and nervous system along with diseases of liver and kidney, blood cancer and orthopedic disabilities. According to a data provided by Indian government, about 20 million people in India are consuming water contaminated by arsenic and fluoride while 70 million people are consuming water with severe concentrations of several heavy metals. This paper deals with water borne diseases and their consequences. Providing access to clean drinking water for everyone must be at first priority for the government and the society. We have to keep in mind that there is no alternative to water. Making drinking water available for all is possible if sufficient steps are taken within the time limit. Lack of spirit in the government and irresponsiveness of the society has brought the crisis of clean drinking water to a severe intensity. However, if we work towards the problem within sufficient time, it can be solved.
CLIMATE CHANGE MITIGATION AND ADAPTATION

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ABSTRACT

Management decisions both at the field and off-site has the potential to contribute to climate change mitigation and adaptation. Climate change threatens to increase the potential for soil erosion, reduce soil quality, lower agricultural productivity and negatively impact food security and global sustainability, making it one of the most severe challenges we will face in the 21st century. Potential of management to help us, not only mitigate climate change, but also help us adapt to a changing climate. Different aspects of carbon management, nitrogen management, manure management, management in low-input systems (sustainable agriculture), and grazing land management are discussed as examples. Management decisions regarding conservation practices, such as no-till, conservation agriculture, and returning crop residue to the field to increase nutrient cycling, can contribute to carbon sequestration and help us to mitigate and adapt to climate change. Additionally, management of grasslands, restoration of degraded/decertified lands, nitrogen management to reduce greenhouse gas emissions, precision conservation management at a field or watershed level, and other management alternatives can also help us mitigate and adapt to climate change. Management for climate change mitigation and adaptation is key for environmental conservation, sustainability of cropping systems, soil and water quality, and food security.
FOOD AND MEDICINAL VALUES OF MULBERRY

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ABSTRACT

*Morus alba* (Mulberry) is a valuable economically important plant belonging to the Moraceae family. The sericigenous insect, mulberry silkworm (*Bombyx mori*, L.) feeds on mulberry leaves and produce cocoons. Apart from silk rearing, this species and few related variety like *Morus rubra* (Red mulberry) have been used as food and medicines since long time. Plants parts i.e., leaf extracts, leaf powder, fruits, bark juice, root saps are used as medicine in many countries of world. In China, mulberry used as herbal medicine for centuries to treat heart diseases, diabetes, anemia and arthritis. *M alba* fruit evinces interest as a natural therapy for high cholesterol, weight loss and diabetes prevention. The dried mulberry leaf and fruit can lower blood sugar level and benefit of our health. The ripe berry and root bark are used to make medicine. Mulberry fruits can be prepared as jelly, jam, pickles with delicious flavor and taste and tender leaves used with meat curry or dry fry. In north eastern Indian states, mulberry leaves used as fodder also.
GLOBAL AND LOCAL ENVIRONMENTAL ISSUES

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ABSTRACT

With the growth of population, people need more space and resources to meet all their requirements in food and shelter. People started to cut down forests to increase area for pastures and agricultural fields. Forests are the main lungs of the Earth and the main environment for a great variety of animals, birds and insects. A lot of forest species are in danger due to human activities and deforestation. The developing countries skim off their natural resources and do not care about nature protection. Meantime developed countries pollute environment with urban pollution and industrial wastes. Overpopulation is a great concern in many countries. We exploit natural resources on the consume basis and do not think of future outcomes that may occur in the nearest future. Overpopulation results in gender imbalance, nature pollution, overproduction and urban sprawling. Countries try to cope with this problem on the governmental level but such policies seem to be ineffective in such countries as India and China. Landfill sites become bigger and bigger that pollute air, soil and water. Recycling of rubbish is the main concern of big cities. Landfills attract rats and crowns that influence in their population growth. Big plants and factories throw down their wastes into rivers and ocean thus polluting water we are going to drink. Unfortunately, people forget that we are the integral part of nature. We must live in balance with environment and care for it. Though we produce many environments issues humans try to redeem resources used. We must reconsider our consuming attitude to nature. People must be aware that nature is at the edge of the catastrophe. People realize that they are not the ultimate users of nature and build environmentally friendly houses. We must share this world with plants and animals.
Abstract No. 200

EFFECT OF INSECTICIDES ON FRESHWATER ECOSYSTEMS

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ABSTRACT

Insecticides can enter surface waters via different routes, among which driven by precipitation or agricultural runoff is the most important in terms of peak concentrations. The exposure can cause direct effects on all levels of biological organization, while the toxicant mode of action largely determines which group of organisms (primary producers, microorganisms, invertebrates or fish) is affected. The duration of effects depends on the recovery potential of the affected organisms, which is determined by several key factors. In the final section, we elucidate the different approaches to predict effects of insecticides on freshwater ecosystems. Various techniques and approaches from the individual level to the ecosystem level are available. When used complementary they allow for a relatively accurate prediction of effects on a broad scale, though the predictive strength is rather limited when it comes to the local scale.
“The world population is expected to grow to almost 10 billion by 2050. With 3.4 billion more mouths to feed...global demand for food could increase by between 59 and 98 percent,” according to Columbia University. “This means that agriculture around the world needs to step up production and increase yields. “But scientists say that the impacts of climate change—higher temperatures, extreme weather, drought, increasing levels of carbon dioxide, and sea level rise—threaten to decrease the quantity and jeopardize the quality of our food supplies.” Climate change is a threat multiplier, particularly when it comes to food security and nutrition. Its impacts on agriculture, nutrition and health will be particularly felt by the most vulnerable segments of the world population and who appear to contribute the less to the root causes of climate change. Fighting this injustice requires ambitious climate action, based on transparency and the participation of empowered social movements both at national and international levels. According to the UN Food and Agriculture Organization (FAO) 795 million people suffered from food insecurity in 2016 (FAO 2017: vii). This means that one out of nine people in the world are food insecure when the global agricultural output could meet the energy requirements of twelve billion people (Ziegler 2008). This statistic reveals a major malfunctioning of our food system- we can produce more food at a lower cost but major segments of the world population are still excluded. Indeed, food security is not only about food production - it has much to do with poverty and inequalities.
ABSTRACT

Dioxin and Furan are hidden toxic chemicals which are also known as persistent organic pollutants. They are of high concern due to their highly poisonous nature. They affect our organ and organ system. Most dangerous parts of these chemicals is that they enter in our food chain and bio accumulate there. Dioxin and Furan are not manmade or produced intentionally but they are released in to the environment as by product of industry. The higher an animal is in the food chain, the higher the concentration of Dioxin. Mainly they are accumulated in the fatty tissues of animals. The term Dioxin used for family of structurally and chemically related Polychlorinated DibenzoFurans (PCDFs). Some polychlorinated biphenyls (PCBs) with some toxic properties are also included in this category. Dioxins are unwanted by product of a wide range of manufacturing processes like smelting chlorine bleaching of paper pulp some herbicides and pesticide industry. Incomplete burning of solid waste and hospital waste is the main cause of Dioxin and Furan release in the environment. Dioxins and Furan persist for a long period and have a tendency to bio accumulate which means they built up in predator at the top of the food web. They enter in our food chain through contaminated food and water. In many countries Dioxin content in food is well regulated and measured as toxicity equivalents quantities (TEQs). Dioxin exerts serious effects on human health. Short time exposure may cause skin lesions, patchy darkening of the skin and altered Liver Thymus and Spleen function. Long term exposure may lead to several types of cancers and chromosomal break in animals.
STUDY ON HABITAT AND POPULATION STATUS OF MARSH CROCODILE (*Crocodylus palustris*) AND ITS CONSERVATION PROBLEM IN THE JADHAV SAGAR LAKE, SHIVPURI, MADHYA PRADESH, INDIA

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ABSTRACT

Mugger *Crocodylus palustris* is a hardy species adopted for different habitats including rivers, lakes, reservoirs and other small water bodies. The present study was carried out on Jadhav Sagar Lake in Shivpuri town, which inhabits mugger or marsh *Crocodylus palustris*. A good population of muggers was found in this micro wetland. During 2016 a total of 19 muggers and during 2017 a total of 22 individuals were counted. Successful nesting and hatching were also observed in this lake. For the assessment of water quality the limnological factors of Jadhav Sagar Lake were monitored for the period of one year from January, 2016 to December, 2016. A total of 15 water parameters were analyzed and the result showed that the concentrations of most of the water parameters were exceeded the normal range. In Jadhav Sagar Lake the population of mugger is facing several major threats due to anthropogenic activities. Increasing of temperature, seasonal fluctuation of water level, habitat destruction, food shortage, sedimentation, development of residential colony and other human influences are the principal environmental factors which have a negative impact on the habitat and population of mugger. The present study endeavors to focus attention on ecological status of mugger in polluted water and unsafe habitat.
Abstract No. 204

THE EFFECTS OF ENVIRONMENTAL POLLUTANTS ON COMPLEX FISH BEHAVIOUR: INTEGRATING BEHAVIOURAL AND PHYSIOLOGICAL INDICATORS OF TOXICITY

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ABSTRACT

Environmental pollutants such as metals, Insecticides, and other organics pose serious risks to many aquatic organisms. In contrast, effects of contaminants on fish behaviour are less frequently studied. Because behaviour links physiological function with ecological processes, behavioural indicators of toxicity appear ideal for assessing the effects of aquatic pollutants on fish populations. Here we consider the many toxicants that disrupt complex fish behaviours, such as predator avoidance, reproductive, and social behaviours. Unfortunately, the behavioural toxicity of many xenobiotics is still unknown, warranting their future study. Physiological effects of toxicants in the literature include disruption of sensory, hormonal, neurological, and metabolic systems, which are likely to have profound implications for many fish behaviours. Even less frequently studied are the implications of interrelated changes in behaviour and physiology caused by aquatic pollutants for fish populations.
IMPACT OF INVASIVE FISHES ON THE NATIVE FISH FAUNA OF RIVER YAMUNA AT MATHURA DISTRICT, U.P.

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ABSTRACT

In terms of the status of Invasive fish species significance presence of *Oreochromis niloticus*, *Cyprinus carpio*, *Hypopthalmichthys molitrix* and *Clarias geripineus* is evident in majority of the river stretches. A preliminary record shows that 48-fish species belonging to 13-families were recorded in Mathura waters so far. Species of the family Cyprinidae were most dominant followed by Bagaridae, Schilbeidae, Clupeidae, Ophiocephalidae. As far as concern with the trophic utilization of fishes; carnivorous fishes were dominant followed by herbivorous and omnivorous. Now present condition has changed in terms of native fish fauna are gradually decreasing. It has been recorded that presence of invasive fishes gradually establishing themselves as a breeding population replacing the Indian Native Fish Fauna. Study reveals that the use of Yamuna river water for the purpose of hydal projects, irrigation and drinking purpose and water pollution are the main threats affecting the habitat of native species and has provide a favorable environment for the alien fishes. So, need of the hour is to check the entry of alien fishes in river Yamuna and monitoring the river water in terms if water pollution can be a mile stone in conservation of life and environment as well. In the present study recorded 19 -Species belonging to 16 genera and 9 families, of which reported 4- species as Alien.
Abstract No. 206

PHYSICO-CHEMICAL ANALYSIS OF WATER QUALITY
OF FIVE PRIMARY SCHOOLS, DISTRICT BANDA

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ABSTRACT

Water quality monitoring of five primary schools of Banda city was carried out. This study was designed to monitor the physico-chemical quality of handpump's water of selected primary schools of Banda city. Data and information related to the handpump's water of primary schools were collected. The physico-chemical parameters monitored were colour, temperature, turbidity, pH, electrical conductivity, D.O, Alkalinity, Total hardness, Chloride, Nitrate, Fluoride and Iron. The results were compared with drinking water quality standards prescribed by WHO. The above study will be useful to know the ground water quality and their subsequent fitness or unfitness of water for drinking purpose for school children of five selected primary schools undertaken. The study will be much useful in planning and formulating various water supply schemes and will also be useful for proper maintenance of water supply schemes. Most of the water samples were found to have total hardness and alkalinity values more than their permissible level. The high values of this parameter may have health complications and therefore they need attention.
Abstract No. 207

ANTIMICROBIAL, ANTIOXIDANT AND CYTOTOXIC ACTIVITY OF BIOSYNTHESIZED COPPER NANOPARTICLES OF PARTHENIUM HYSTEROPHORUS

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ABSTRACT

Nanoparticals can act as medicine of future. Various researches in the field of antimicrobial development using nanoparticals are gaining interest as they can be used as an alternative to antibiotic. For the biosynthesis of nanoparticles, plant mediated approach is used now days which is a cost-effective and environmentally friendly alternative to chemical and physical methods. During the present study, antimicrobial and antioxidant activities of the methanolic leaf extracts and green synthesized copper nanoparticles from Parthenium hysterophorus has been assessed. Formation of CuNPs was characterized by change in the color of aqueous leaf extract, which were further confirmed by using UV-Vis spectra analysis. The results of antimicrobial assays indicated that copper nanoparticles have shown significantly high potential when tested against pathogenic infectious bacterial strains (Bacillus subtilis, Staphylococcus aureus) and fungal strains (Candida albicans and Aspergillus flavus) in comparison with methanolic leaf extract. Hence, CuNPs from Parthenium have great potential to be developed as antimicrobial agents. Based on the DPPH assay results, CuNPs found to be good antioxidant when compared to methanolic leaf extract. Furthermore cells viability assay was also done against copper nanoparticles. These results concluded that copper nanoparticles are good source of therapeutic agent and applications of copper nanoparticles based on these findings may lead to valuable discoveries in various fields such as medical devices and antimicrobial systems.
Abstract No. 208

RECENT ADVANCES IN BIODIVERSITY IN INDIA

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ABSTRACT

Biodiversity · comprised the whole life on earth. The word 'biodiversity' is a contraction of biological diversity. Diversity is a concept which refers to the range of variation or differences among some set of entities; biological diversity thus refers to variety within the living world. The term 'biodiversity' is indeed commonly used to describe the variety and variability of living organisms. Even in India, biodiversity is very high in the Eastern Himalayas and the Western Ghats. These two regions are recognized as hot spots rich in biodiversity. About 7000 endemic species are found in India; they do not occur anywhere else in the world. Of these, the Himalayas and the Khasi Hills in Meghalaya account for about 3000 species, and the Deccan Peninsula for about 2000 species the biodiversity in India’s forests, grasslands, wetlands and mountains, deserts and marine ecosystem takes many pressures. One of the major causes of biological diversity in India has been the depletion of vegetative cover in order to expand agriculture. Since most of the biodiversity rich forests also contain the maximum mineral wealth, and are also the best sites for water impoundment, mining and development projects in such areas have often led to destruction of habitats. Poaching and illegal trade of wildlife products too have adversely affected biological diversity the outcome of the study is depicted as the chapters of the book, deals the multidisciplinary approach on biodiversity which will be a useful tool for the effective conservation and management of the unique biological resources of Indian nation.
Abstract No. 209

A STUDY ON THE BIODIVERSITY OF BIRDS AT SHAHEED CHANDER SHEKHAR AZAD SANCTUARY, UTTAR PRADESH, INDIA

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ABSTRACT

The Okhla Bird Sanctuary (OBS) officially known as Shaheed Chander Shekhar Azad Sanctuary is approximately 4km2 in area and is to be found at the doorway of NOIDA (New Okhla Industrial Development Authority) in Gautam Budh Nagar district of Uttar Pradesh. It is located at a junction point where river Yamuna enters in the area of Uttar Pradesh and departing the Union territory of Delhi. It is one among 15 bird sanctuaries in the state Uttar Pradesh. The present survey report highlights the significant information about the threatened bird species of the Okhla bird Sanctuary, Noida, Uttar Pradesh. The Okhla bird sanctuary is one having marshy wetland among the 24 bird sanctuaries in the state Uttar Pradesh. The Sanctuary is declared as reserve area in 1986 but notified as sanctuary by the state Government in the year 1990 and now have attained position in IBAs (Important Bird Areas) and supposed to one among 466 IBAs in India. About 302 birds species are viewed in this sanctuary due to the thorny scrub, grassland and wetland creation because of Okhla barrage and it’s unique positioning. Among 302 species about 131 are local, 121 are aquatic, and 50 are winter visitors. The immense diversity of avifauna consisting 11 threatened birds, among these 4 are vulnerable and 7 are critically endangered. The climatic conditions make the sanctuary a green wetland; thus has potential to support the existing avifauna. The efforts aim to maintain and save the threatened species by the conservation of microhabitat, nesting behaviour, resources utilization and prohibition of man-made activities by the present survey.
Abstract No. 210

BIODIVERSITY OF HETEROCYSTOUS CYANOPROKARYOTES OF INDO-BANGLA REGION OF INDIA

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ABSTRACT

North Eastern region of our country is well known for its Biodiversity richness. Indian cyanoprokaryotes (Blue-green Algae) includes 97 genera, 1100 species and 400 varieties and forma. Present paper deals the Biodiversity of Heterocystous cyanoprokaryotes of Kailashahar and its adjoining area of Unakoti district of Tripura. Soil and water samples containing prominent growth of cyanoprokaryotes were collected from the different habitats including rice-fields of Kailashahar and its adjoining area of Unakoti district of Tripura, India. All the collected samples were observed under the microscope and were identified upto the genus level. The study revealed the occurrence of total 183 strains of 18 genera of heterocystous cyanoprokaryotes including *Anabaena* (28), *Anabaenopsis* (02), *Aulosira* (08), *Calothrix* (22), *Camptylonemopsis* (02), *Chlorogloeopsis* (03), *Cylindrospermum* (08), *Dichothrix* (05), *Hapalosiphon* (05), *Mastigocladus* (02), *Microchaete* (15), *Nostoc* (33), *Nostochopsis* (01), *Scytonema* (21), *Stigonema* (08), *Symphyonemopsis* (02), *Tolypothrix* (12) and *Westiellopsis* (06). On the basis of observation it is concluded that about 33% of total observed genera were dominating forms, 50% were common forms and 16.50% were rare forms in the ecological conditions of the studied area of the Indo-Bangla region of India. Study revealed that *Microchaete* is very common in aquatic conditions and *Stigonema* is common in terrestrial habitats. Detailed observation will be discussed during presentation.
ABSTRACT

In the present study we have focused on the utilization of marine processing waste to screen bioactive compounds and their potential applications. The oceans are probably the earth's most valuable natural resource providing food mainly as fish and shellfish. Because of its phenomenal biodiversity, the marine world is a rich natural resource for many biologically active compounds. Recent studies have identified a number of bioactive compounds from remaining fish muscle proteins, collagen and gelatin, fish oil, fish bone, internal organs and shellfish and crustacean shells. Intake of fish oil, which is an excellent source of omega-3 fatty acids, has been linked to promotion of human health to fight against numerous diseases. EPA and DHA are the main protective components of fish oil that act against certain types of diseases prevention from atherosclerosis, protection against arrhythmias, reduce blood pressure, Beneficial for diabetic patients, fight against manic-depressive illness, reduce symptoms in asthma patients. Nutraceuticals are health-promoting compounds or products that have been isolated or purified from fish waste sources. The growing need for novel substances for the treatment of human diseases such as cancer, microbial infections, and inflammatory processes has increased the exploration for new bioactive compounds. Marine bacteria and fish oils contain great amount of omega-3 fatty acids, EPA and DHA are the main protective components of fish oil that act against certain types of diseases prevention from atherosclerosis, protection against arrhythmias, reduce blood pressure, Beneficial for diabetic patients, fight against manic-depressive illness, reduce symptoms in asthma patients.
The parasitic helminthes are acoelomate flatworms and/or pseudocoelomate, triploblastic, bilaterally symmetrical invertebrates with tissue-organ system grade of body organization. Among these cestodes are exclusively parasitic with degenerate body and lacking the alimentary canal. However, the trematodes and nematodes are the classes including both parasitic and free living life. Thus the helminthes are most parasites diversified members inhabiting in all environment and adverse conditions. Due to the key interest and economic value, these organisms are mostly dealt by taxonomist so that recovered fauna can be placed in proper taxonomic position. The helminthes recovered from various host were processed for morphological observations and specimens were identified using morphological features like shape, size, color and morphometry of body parts using “keys”. The physically or mechanically damaged adults, immature specimens and developing stages sometimes created confusion in identification to conventional taxonomists. In yesteryears a school of Indian Parasitologists invented an advanced numerical tool i.e. Polythetic Divisive Classificatory System based upon comparative account with some earlier described genera and species of same taxonomic group, somehow, resolved the ambiguity in identification. Therefore, validation of morphotaxometric taxa was performed to remove ambiguity in identification of a helminthes by decent and advanced, taxonomic tool based on the conserved gene sequence analysis. The molecular barcoding able to solves these problems even from tiny specimen or tissue. In the present investigation author compiled a conclusive methodology of DNA barcoding for validation of helminthes taxonomy recovered during the period of investigation.
ABSTRACT

A total of 13,662 individuals were collected during the study period 2014-2018 belonging to 75 morphospecies out of which 62 were identified up to species level. They belong to 36 genera and 12 families. Of the total species 11 species were most dominant (58.15% of the population), 10 species were dominant (25.11% of the population), 31 species were less dominant (12.9% of the population), and 23 species were rare (3.8% of the population) and accounted for 58.1, 25.1, 12.9 and 3.8% of the total population, respectively. The most dominant family was Araneidae (31 species) followed by Tetragnathidae (10 species), Salticidae (9 species), Lycosidae (8 species), Thomisidae, Clubionidae and Theridiidae (3 species each), Oxyopidae, Pholcidae and Gnaphosidae (2 species each) and Sparassidae and Hersiliidae (1 species each). Following species were most dominant in occurrence: Tetragnatha javana (Thorell) (6.41%), Oxyopes javanus Thorell (6.40%), Pardosa pseudoannulata (Bösenberg & Strand) (6.35%), Pardosa birmanica Simon (6.06%), Tetragnatha maxillosa Thorell (4.79%), Hippasa partita (O.P.-Cambridge) (4.61%), Araneus ellipticus (Tikader & Bal) (4.37%), Camaricus formosus Thorell (4.36%), and Lycosa mackenziei Gravely (4.09%). Of the total catch, 25.4% were juveniles (3470 individuals) and males were 67%. The family Hersiliidae and Sparassidae are composed of single species each. Family Lycosidae and Tetragnathidae accounted for the largest population of the species of spiders, each representing 28.6% and 26.0% of all the species, respectively, followed by Araneidae (18.3%) and Salticidae (10.1%).
Abstract No. 214

BIODIVERSITY CONSERVATION OF VINDHYAN FOREST FOR FOOD AND HEALTH SECURITY

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ABSTRACT

Forests are one of the most important natural resources of the earth. Approximately 1/3 rd of the earth's total area is covered by forests. Forests vary a great deal in composition and density and are distinct from meadows and pastures. Forests are important to humans. For humans, they have many aesthetics, recreational, economic, historical, cultural and religious values. Forests provide fuel wood, timber, fodder, wildlife, habitat, industrial forest products, climate, medicinal plants etc. It is an integral part of human life. As per the State of forest report 2017, total Geographic Area of India is 3287469 sq km (328.7 m ha). The total forest and tree cover of our country, as per 2017 assessment, is 80.18 million hectare, which is 24.39% of the total geographical area of the country. Highest forest area covered is tropical dry deciduous forest followed by tropical moist deciduous forest. It is estimated that 2/3 of the world's terrestrial biodiversity exists in forests. More than 1.6 billion people worldwide depend on forests for fuel, medicinal plants, and subsistence income from forest products. Due to deforestation, the world's biodiversity is dwindling at an alarming rate. Therefore it is imperative to take measures to conserve forest biodiversity. In present study, various strategies, steps and methodologies to conserve the biodiversity of forest area have been discussed. Major strategies for conserving forest biodiversity are like to provide and protect a variety of habitats for plants and animals; habitat fragmentation should be avoided; Control introduction of any species; Using sustainable harvesting practices and to reduce pollution. To restore the biodiversity, both in situ and ex situ process may be used to address the imperiled nature-society interactions and to create a self-sustaining multifunctional ecosystem capable of supporting biodiversity, performing ecosystem functioning and providing ecosystem services to strengthen livelihoods, both food and health security, of local inhabitants.
ENVIRONMENTAL CHALLENGES IN INDIA IN RELATION TO FOOD AND NUTRITIONAL SECURITY

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ABSTRACT

India is facing major challenges to achieve food security in a sustainable manner, due to limiting land and water resources, increasing load of population and overexploitation of natural resources. The root cause of non-availibity of adequate quantities of nutritious food is poverty. Marginal farmers, landless labours, small scale worker, urban, poor are vulnerable groups of mal-nutrition. Micro-nutrient deficiencies, including iron, vitamin A and Zinc are widespread and very serious public health problems. Sustainability in agriculture will provide sustainability in food production. Role of International organizations like FAO, IMF, World Bank, UNDP, UNICEF, UNDMT can perform as a bridge between developed and developing countries to fight against mal-nutrition. It is the time of Informational Technology which can play very important role in weather forecasts, sustainable cropping, market trend, agricultural technology among growers.
Animal agriculture inefficiency consumes natural resources, contributes to deforestation and produces immense quantities of animal waste, threatening water and air quality and contributing climate change. As the single largest anthropogenic user of land and responsible for an estimated 18% of human induced GHG emissions, the farm animal production sector must be held accountable for its many deleterious impacts and society must achieve changes in animal agricultural practices worldwide. There must be incorporation of environmentally sound and animal welfare friendly practices into daily life, including a reduction in meat, milk and egg consumption can reduce our environmental impact. The production, processing, transportation and preparation of an Indian, non vegetarian meal including mutton collectively emits nearly twice the GHG as that of vegetarian meal that excludes dairy products and eggs.
Abstract No. 217

CLIMATE CHANGE, MITIGATION AND ADAPTATION IN AGRICULTURE

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ABSTRACT

Increase in ambient CO2 concentration is beneficial since it leads to increased photosynthesis in several crops, especially those with C3 mechanism of photosynthesis such as wheat and rice. However, for the past some decades, the gaseous composition of earth’s atmosphere is undergoing a significant change, largely through increased emissions from energy, industry and widespread deforestation as well as fast changes in land use and land management practices. These anthropogenic activities are resulting in an increased emission of radiatively active gases, viz. carbon dioxide (CO2), methane (CH4) and nitrous oxide (N2O), popularly known as the 'greenhouse gases' (GHGs). These GHGs trap the outgoing infrared radiations from the earth's surface and thus raise the temperature of the atmosphere. Rise in the mean temperature above a threshold level will have adverse effect on agricultural production. The yield of major cereal crops, especially wheat are likely to be reduced due to decrease in grain filling duration, increased respiration, and / or reduction in rainfall/irrigation supplies. Increase in extreme weather events such as floods, droughts, cyclones and heat waves will adversely affect agricultural productivity. Quality of fruits, vegetables, tea, coffee, aromatic, and medicinal plants may be affected. Incidence of pest and diseases of crops to be altered because of more enhanced pathogen and vector development, rapid pathogen transmission and increased host susceptibility. Agricultural biodiversity is also threatened due to the decrease in rainfall and increase in temperature, sea level rise, and increased frequency and severity of droughts, cyclones and floods. Therefore, a framework of climate change impact, mitigation and adaptation in agriculture concerted efforts are required to reduce the vulnerability of agriculture to the adverse impacts of climate change and making it more resilient.
Abstract No. 218

DEVELOPMENT OF ANTIOXIDANT RICH BEVERAGE FROM SELECTED MEDICINAL PLANTS

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ABSTRACT

Momordica Charantia, Murraya Koenigii and Withania Coagulans are medicinal plants which have been used over centuries for improving the lifestyle by curing various ailments. The present study is aimed to develop an antioxidant rich beverage having an previously optimized aqueous extract of koenigii 25 ppm, Momordica charantia 16.6 ppm and Withania coagulans 18.4 using the Central Composite Rotatable design (CCRD) by Design expert software 11.0. Apart from the optimized aqueous extract blend, the factors were green tea extract (A) and Tulsi extract (B). The software produced 12 experimental runs having 5 replicates. The response variables for the components were TPC (Y1), DPPH (Y2) and FRAP (Y3) and sensory scores (Y4) which was estimated using standard protocols. The actual and predicted response variables for each formulation were assessed by the percentage of relative standard error. The ANOVA and lack of fit tests showed that the model was significant for all the response variables TPC Y1 (p=0.001), DPPH Y2 (p=0.001) and FRAP (p=0.001). The response surface graphs and equation suggested that all the three response variables exhibited the quadratic relationship. Based on the criteria of maximizing the antioxidant potential and sensorial values, numerical optimization technique selected the blend having 8.75 ml of green tea extract (A) and 3 ml Tulsi extract (B) was optimized. The predicted values and observed values were found to be in good agreement showing that the model was good. Thus, the basic composition of the extracts could be manipulated to be incorporated into an antioxidant rich beverage which apart from having therapeutic benefits could become a nutritious refreshing beverage also.
PHYTOREMEDIATION A GREEN TECHNOLOGY IN REMOVING HEAVY METALS FOR THE CONTAMINATED ENVIRONMENT: A REVIEW

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ABSTRACT

Heavy metals are among the most important contaminant in the environment. Various kind of methods already used to clean up the environment from these kinds of contaminants, but most of them are highly costive and difficult to achieve optimum results. In the present scenario, phytoremediation is an eco-friendly and cost effective technological solution used to extract or remove inactive metals and metal pollutants from contaminated soil and water. The contamination of the environment from heavy metals poses a threat to Man and Biosphere, altering agricultural production and health of the ecosystem. All over the world this problem becomes a serious threat specifically in developing countries. In the developing countries this problem is being addressed and solved to some extent by using green technology involving green metal tolerant plants to clean up the contaminated sites. Phytoremediation (Using green plants for the cleanup of contaminated soil, water and wastewater) an emerging cleanup technology for contaminated soils, groundwater, and wastewater that is eco-sustainable, low-technological and low-cost, is defined as the use of green plants (including grasses, herbs, and woody species) to remove, contain, or restore such environmental contaminants as trace elements, organic compounds, and radioactive compounds in soil or water. This paper aims to compile some information about heavy metals of chromium, lead, and cadmium (Cr, Pb, and Cd) sources, effects and their treatment. It additionally reviews about phytoremediation advancements, including mechanism of the heavy metal uptake and various research studies associated within this field. Furthermore, it describes several sources and the effects of Cr, Pb, and Cd on the environment, the advantages of this kind of technology for reducing them, and also heavy metal uptake mechanisms in phytoremediation technology as well as the factors affecting the uptake mechanisms. Some of the suggested plants which are commonly used in phytoremediation and their capability to reduce the contaminant are also reported.
EFFECT OF SEED TREATMENT ON SEEDLING VIGOUR AND MORTALITY OF CHINESE BER (ZYZYPHUS SP.)

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ABSTRACT

The experiment was conducted at the Department of Horticulture, Kulbhasker Ashram Post Graduate Collage, Allahabad, Uttar Pradesh with a view to standardize suitable stratification duration and hormone concentration for Ber seed treatment. There were seven treatment combinations (T1 to T10) including a control. Different duration of seed stratification i.e., 24 hours, 48 hours and 72 hours were tried along with the 100 ppm, 200 ppm and 300 ppm GA3 seed treatment. Treated seeds were sown in the polythene bags (25x15 cm size, 200 gauge thick) containing soil, sand and FYM mixture (1:1:1). It was interesting to note that the effect of stratification duration and hormone treatment concentration was found to be significant for seed germination, transplanting success, seedling mortality percentage and rate of seed germination. Treatment T6 (48hrs+300ppmGA3) yielded highest percentage, (84.00) of seed germination while the lowest percentage value (37.25) was recorded in T9 (72hrs+300ppmGA3) treatment and the transplanting success was also lowest in T9. The seedling mortality percentage was maximum (79.25) with T9 where as lowest percentage value (22.00) was observed for T6 treatment. It may be concluded that T6 treatment can be recommended for the better stand establishment of Ber nursery.
Cognitive ability is highly complex in nature. It can be measured in many different ways and is affected by numerous factors, not least of which is socioeconomic status. Socioeconomic status is strongly associated with a number of indices of children's cognitive ability, including IQ, achievement tests, grade retention rates, and literacy. Socioeconomic status forms a huge part of this equation. Children raised in poverty rarely choose to behave differently, but they are faced daily with overwhelming challenges that affluent children never have to confront, and their brains have adapted to suboptimal conditions in ways that undermine good school performance. There is a gulf between poor and well-off children's performance on just about every measure of cognitive development. The correlations between socioeconomic status and cognitive ability and performance are typically quite significant and persist throughout the stages of development, from infancy through adolescence and into adulthood, but these are data, not destiny. The good news is that brains are designed to change. If the cognition level of the learner is differing the outcome will be in the form of indiscriminant development but is we are able to fulfill this gap of socioeconomic level the development will be in the form of cognition and an indiscriminant society will be in existence. The paper tries to make a relation between poverty and cognition level of the poor and well off children. This creates a discriminate development of society or this is a big cause of discriminated development of society.
Plants have been used historically for water treatment and there is evidence to suggest that communities in the developing world have used plant based materials as one strategy for purifying drinking water. Therefore, natural coagulants and disinfectants can play a vital role for water sector that is facing challenge today on how to give more people access to clean drinking water by cost effective means, especially the rural poor who cannot afford any water treatment chemicals, without affecting the health of their environment. So, in the present study seeds of *Strychnos potatorum* L. belonging to family Loganiaceae used for the water purification as it is a natural coagulation and disinfectant for the water purification as well as shows the effectiveness against water borne bacterial pathogens. Effect of ethanolic extract was also seen on the water borne bacteria i.e. *Vibrio cholerae*. Its antibacterial property was assayed by using broth micro-dilution method recommended by CLSI. It is found that the extract was highly effective against *Vibrio cholerae*. Inhibition of the pathogen was quantified in the form of MIC and IC\textsubscript{50} value. On the basis of turbidity absorbance was recorded by spectrophotometer model no- Spectra max Plus 384, Molecular Devices, USA. On the basis of encouraging result, it can be depicted that the studied plant can serve as a potential source for the purification of water used for drinking purpose.
Detergent is a cleaning agent and soluble in water. It combines with impurities to make them more soluble. Detergents are surface active agents, which tend to produce stable copious foams in the rivers. The foamy water is unsafe for both humans and fish. Detergent also decreases the surface tension of water which has bad effects on aquatic animals because due to the decrease in the surface tension of water organic chemicals like pesticide and phenols etc. are more easily absorbed by the fish which is harmful. The acute toxicity of detergent was investigated using static bioassays. The 96 h LC 50 values was 20mg/l to *Channa punctatus*. During exposure period, the test fishes exhibited several behavioural changes like restlessness, rapid swimming, loss of equilibrium, and increase in opercular activity etc. in the present study to evaluate the toxicity of detergents the fresh water edible fish, *Channa punctatus* were exposed to sub lethal concentration i.e. 6 mg/l of detergent for 30 days and significant depletion of glycogen, total protein, lipid and cholesterol tissue like muscles, liver, kidney, brain, gills and testis observed. The depletion in the biochemical constituents was found to increase with increasing the duration of exposure. None of these changes was observed in control group.
EFFECTS OF *HIBISCUS ROSA* - SINENSIS FLOWER ON REPRODUCTIVE SYSTEM IN MALE RATS

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ABSTRACT

Animal studies have demonstrated both an inhibitory effect of *Hibiscus sabdariffa* on muscle tone and the anti-fertility effects of *Hibiscus rosa-sinensis*, respectively. The extract of *Hibiscus sabdariffa* has been shown to stimulate contraction of the rat bladder and uterus; the *Hibiscus rosa-sinensis* extract has exhibited contraceptive effects in the form of estrogen activity in rats. The *Hibiscus rosa-sinensis* is also thought to have emmenagogues effects which can stimulate menstruation and, in some women, cause an abortion. Due to the documented adverse effects in animal studies and the reported pharmacological properties, the *Hibiscus sabdariffa* and *Hibiscus rosa-sinensis* are not recommended for use during pregnancy. To evaluate the antifertility effect of flower extract of *Hibiscus rosa sinensis* on male *Rattus rattus*, the extract was orally given to rats by oral gavage needle at the dose of 250 mg/kg body weight for 45 days. The control group of rats was maintained on normal diet for the same duration. The treatment resulted in marked reduction in the weight of testis, epididymes, seminal vesicles and prostrate as compared to controlled stock. Marked reduction in serum level of cholesterol, proteins, glucose and sialic level was also observed. The epididymal sperm count and motility reduced significantly in treated rats. Histopathological study of the testis also depicted marked degenerative changes in testis. The seminiferous tubules also appeared to be reduced in size the results suggested that *Hibiscus rosa-sinensis* potentially has the value of effective male contraceptive agent for population control.
Abstract No. 225

**BIO ACCUMULATION AND BIOCHEMICAL CHANGE IN THE FRESH WATER CAT FISH, \textit{CLARIAS BATRACHUS} (L.) EXPOSED TO THE ZINC SULPHATE**

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**ABSTRACT**

Zinc, one of the twenty three heavy metal toxicant, may be transported to aquatic ecosystems as a result of both natural (weathering and erosion) and anthropogenic (industrial and agricultural) activities. Zinc is taken by the fish through the gills and intestines and transported to other organs via blood and accumulated there or might excrete out. Zinc is an essential trace element that contributes to the surface of more than 300 proteins which play an important role in the growth, reproduction, development and immune system of the fish. The excess amount of zinc was found to interfere with many protein and carbohydrate metabolism by inhibiting the enzymes involved in the processes. In the present study to evaluate the zinc toxicity, edible fish Clarias batrachus were exposed to the sublethal concentration of zinc in tissues such as gills, kidney, liver and muscles and its impact on biochemical constituents like glucose, glycogen, total protein, lipids and cholesterol level in these tissues. The order of zinc accumulation rate was found in these tissues were liver > kidney > muscles. The results showed significant fall in all the biochemical constituents in all the tissues except glucose apparently suggest that organism’s response to the toxicant stress. The accumulation of zinc and significant fall in the level of these biochemical constituents in these tissues was found to increase directly. Also such exposed when consumed as food lead to the deposition of the heavy metal Zinc in the soft tissues of the human body leading to exposure health effects.
Seetadwar lake is the largest lake of Shravasti district. It is utilized for Boro (Coarse paddy) cultivation, irrigation and fishing by poor village farmers, hydrographical features, qualitative and quantitative composition of the diatoms belonging to order Bacillariales of class Bacillariophyceae in the year 2010. These taxa are *Navicula*, *Calonei*es, *Melosiera*, *Gomphonema*, *Gamphonéis*, *Surivella*, *Caloness*, *Nitzichia* and *Pinnularia*. Diatoms showed a positive correlation to temperature and light, a negative correlation to insects density.
Abstract No. 227

EFFECT OF ORGANIC MATTER AND BIOCONTROL AGENTS AGAINST ROOT - GALL NEMATODE (MELOIDOGYNE INCOGNITA) IN TOMATO

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ABSTRACT

Neem cake (organic matter) and two bio-control agents viz. Paeciomyces lilacinus and Beauvaria bassiana were used against root - gall nematode for experimental purpose. The findings showed that Paeciomyces lilacinus was very effective for management of root - gall nematode followed by neem cake and Beauvaria bassiana respectively. Maximum growth parameters viz. shoot length (58.25cm), root length (19.75cm), fresh root weight (15.37g), fresh shoot weight (2.37g) and number of fruits (2.25) were observed in P. lilacinus followed by neem cake viz. shoot length (53.00cm), root length (13.00cm), fresh root weight (11.75g), fresh shoot weight (2.12g) and number of fruits (1.75) and Beauvaria bassiana viz shoot length (49.75cm), root length (8.75cm), fresh root weight (9.25g), fresh shoot weight (1.25g) and number of fruits (1.50) respectively. Minimum number of root - gall was noted in P. lilacinus (17.25) followed by neem cake (18.50) and B. bassiana respectively.
STUDIES ON BIONOMICS OF SHOOT AND FRUIT BORER (LEUCINODUS ORBANOLIS) OF BRINJAL AND THEIR MANAGEMENT BY IPM

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ABSTRACT

Bionomics of insect pests were studied and seared in the laboratory conditions. The observations were recorded in the different developmental stages of the biological factors. They were collected from the field and were kept on Jar at room temperature. They were fed with fresh fruits and leaves daily and the observation on its changes were recorded regularly. For the management of insect pests synthetic insecticides (Malathion, Endosulphon 0.05%), plant originated insecticides (Azadiracta indica 1%, Tamarindus indica 1%, Tabernae montana 1%, Argemone maxilava 1%), and biological insecticides (Bacillus thurigensis) have been used for the management. Growth of 1st instar larva takes 3.83 days and IIInd instar takes 2.33 days. IIIrd, IVth and Vth instar larva takes period of 3.58, 4.58 and 6.33 days respectively. For their growth and development at least it was estimated that total larval period ranged from 8.50, 20.67 days and its pupal periods takes 8.33 days in development. It was found that total life cycle was completed in 33.67 days. Insect showed clear sexual diamorphism. For the management of shoot and fruit borer in brinjal IPM programmme were applied. It was found that borer is much sensitive with the plant extractives. After 24 hours Azadirachta showed 80.25 percent repellency. It was followed by Tabernae (60 percent), Argemone (40.50 per cent) and Tamarindus (30.00 per cent). After 48 hours fruit borer revealed repellency 60.85, 35.30, 40.80 and 30.38 per cent in Ist, IIInd, IIIrd and IVth insecticides respectively. Use of synthetic insecticides, the intensity of shoot and fruit borer on stem was recorded 0.12 hole/fruit in emulsion spray against 0.197 hole/fruit in dust treatment. Endosulphon and fenvalerate emulsion spray at .01 percent concentration exhibited uniform performance but between the dusts, cypermethrin (0.149 hole/fruit) was significantly better than methyl parathion 0.244 hole/fruit.
Biodiversity (Raymond F. Dasmann; 1968) is the degree of variation of life forms within a given ecosystem, biome, or entire planet. These variations are explained as genetic diversity among individual of single species), species diversity (within community) and Ecosystem diversity. It is the measure of health of ecosystem. There are four main reasons why species are being threatened in biodiversity hotspots that are Habitat destruction, resource mismanagement, poaching and climate change. India has four out of thirty four global biodiversity hotspot, which is an indicators of high degree of endemism (of species) in India. Conservation of biological diversity; sustainable case of its components and fair and equitable sharing of the benefit arising from the genetic resources is important to maintain ecological balance.
CLIMATE CHANGE A GLOBAL THREAT

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ABSTRACT

Climate can be defined as “expected weather” when changes in the expected weather occur, we call these climate changes. In the last 100 year or so, the earth surface and lowers part of the atmosphere have warmed up because of liberation of green house gases, which are produced by the burning of fossil fuel, which result in global warming and this causes global climate to change. This climate change affect human health, heat waves cause death of about 1500 in India, spread of infectious diseases, spread of diseases to new region, such as mosquitoes that carry malaria may find hospitable condition in new areas that were once to cold to support them beside human health climate change also effect Agricultural productivity. Rising level of atmospheric CO2 reduces the concentration of protein and essential minerals in most plant species, including wheats soybean and rice. At global level, paris climate deal was made but it is very important to work at our level to combat the climate change, the need of hour is to think about sustainable solution which are not just temporary but also take into account the need of future generation. It must be recognized that natural resources are not unlimited and hence their consumption must be rationed and planned so as to ensure sustainable development. Nature friendly alternatives like wind farms, hydroelectricity, solar power, geothermal and biomass for generation of power need to be explored and adequately implements we should understand that the earth is only planet where we can live and it is our duty to protect our earth.
SPARROWS UNDER THREAT IN INDIA

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ABSTRACT

Sparrow, once the most commonly sighted bird in the country, is gradually losing its presence in the urban landscape. IUCN has declared it endangered and placed it in the Red Data List of endangered species. There are many reasons but the prime reason is the felling of trees due to which they are losing their habitat. Older houses had ventilators, lofts, holes between the walls, spaces in the eaves of the roof, and between roof tiles, for these little birds to nest and breed, free from disturbance. With the changing of urban lifestyles, lower ceilings and apartments meant no nooks and corners for the birds to nest. Speaking of food, sparrows are known to feed on tiny grains like bajra, but modern grocery stores with air-conditioning and plastic packaging take away any chance of finding food grains to feed on. Scientists consider mobile radiation the major culprit for the disappearance of sparrows. Birds navigate by sensing the earth's magnetic fields and mobile radiations are known to disturb them and interfering with bird's ability to move around. Modern agriculture is also an important reason of decline, in modern agriculture insecticide and pesticides are widely used which adversely affect the birds directly and indirectly. The need of the hour is to save this specie since sparrow plays an important role in maintaining ecological balance. Conservation groups should actively participate in conservation attempts in order to protect the bird. Stringent laws should be implemented by the government to protect this chirpy creature.
IMPACT OF URBANISATION ON BIRD DIVERSITY: STUDY ON HOUSE SPARROW POPULATION IN RESIDENTIAL AREA OF SALT LAKE CITY

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ABSTRACT

Presently 33.6 per cent human population live in cities in India, and this will estimated to rise nearly 60 per cent in 2050. Such scale of urbanisation indicates an urgent need to assess and address the ecological footprint of the cities. In urban environment, increasing population density and the fragmentation of large areas of natural habitat including wetlands, forest, shrubs through the construction of roads, houses cause avian diversity decline. Ornithologists in recent years have noted wide disappearance of House sparrow population, the most abundant bird species found near human habitat until few years back across the major cities in India including Kolkata. This study aims to focus only on house sparrow population (Chorui in bengali) in Salt lake city of Kolkata but will provide an insight into the response of local fauna to urban development. Birds were observed for six months in some selected residential sites mainly by quick eye spotting in the morning starting from 7 a.m. to 11 a.m. and from 2.00 p.m. to 5.00 p.m. in the evening on days with no heavy rain. Specific calls are also noted. A questionnaire survey interviewing citizens about house sparrows was done to document the current population of this once common bird found their gardens and backyards. The preliminary findings show negative relationship between urbanization and House Sparrow population in Salt Lake which is a planned urban region. These birds are grain eaters, don’t travel a kilometre or more than two in search of food and usually prefer to build nests in concrete structure such as flats and bungalows. Loss of nesting sites, food sources and increase air pollution may contribute to the gradual disappearance of house sparrow. World Sparrow Day is celebrated on March 20 to attract the attention of common people, scientific community and government agencies for the conservation of the common bird species and urban biodiversity. In addition to create awareness at public domain, individuals small initiatives such as to keep bird feeders outside their houses, place water bowls for bird’s bath also help in preserving bird species which would otherwise may become locally extinct. Finally the study recommends for preparation of urban plan map for each cities taking into account the avian conservation, natural resource preservation, and quality of life maintenance and ecosystem service for sustainable urban development.
ABSTRACT

The seeds contain an amorphous bitter principle and also a crystalline substance, margosopicrin. On boiling; the crushed seeds with water a white non bitter crystalline substance have also been obtained. The objectionable odour of the oil obtained from the seeds is chiefly due to slightly volatile organic sulphur compounds and also due to some fatty acids. A most recent investigation shows that the odoriferous constituent of the oil is a sulphur containing liquid and the bitter principle is aglycoside. A glycoprotein containing carbohydrate and protein in ratio of 19:81 is isolated from Neem gum containing mannose, glucosamine, arabinose, galactose, xylose and glucose in molar ratio of 4:3:3:2:2:1:1. Neem has many types of terpinoids, leminoids, and pentanorterpenoids. Bioactivity of *Azadirachta indica* is investigated in various disorders like - decreased blood sugar level, glucose hyperglycaemia, low blood pressure, and antigastric ulcer.
Abstract No. 234

MANGO (*MANGIFERA INDICA*): A FRUIT OF NUTRITIONAL PAR EXCELLENCE

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ABSTRACT

*Mango* (*Mangifera indica*) has been granted a prestigious position in India, and also referred as “king of the fruits”. It is a tree native to southern Asia, particularly India, Bangladesh and Myanmar. Originating in India, travelled and naturalized across the borders of different continents of the world with monks, travelers, explorers, traders etc. Today there are over 1000 different Mango varieties grown throughout the world and India alone stands first in the rank of mango production accounting about 50% of the total world’s mango production. Other major Mango producing countries include China, Thailand, Mexico, Pakistan, Philippines, Indonesia, Brazil, Nigeria and Egypt. India is richest in mango cultivars including its wild cousins, still found in the north-eastern part of India and Myanmar. This article intends to highlight the traditional, scientific and nutritional values of the mango with special reference to its artificial flavorings. The author has developed soft drinks from mango pulps for its value addition and preservation to relish its natural flavor even in the off seasons and avail its nutritional benefits.
Obesity is a chronic disease, prevalent in both developed and developing countries and affecting both children and adults. In present days obesity is replacing the more traditional public health concerns of under nutrition and infectious disease and is the natural history of lifestyle disease such as diabetes mellitus, coronary heart disease, hypertension, cancer etc. It is the matter of concern before developing countries are going to experience the same high economies have been exhibiting since the last three decades. With the help of a survey schedule a baseline survey of four areas i.e. Sulem Sarai, New Cantt, Civil lines and Bambrauli were conducted and 120 respondents were selected and they were personally interviewed with the help of pretested questionnaire by visiting the study area which included general profile, anthropometric status, dietary intake etc., of the respondents. The dietary intake was calculated by using dietary recall method and compared with RDA. The anthropometric measurements of the respondents related to their height, weight and BMI revealed that the maximum height of the respondents suffering from obesity and related lifestyle diseases were 150 - 160 cm (55.83 %), weight were between 60 - 70 kg (53.33 %) and the maximum BMI of the respondents suffering from obesity and related lifestyle diseases were between 25 - 29.9 (42.5 %) i.e. they were overweight or grade I obese. The dietary assessment and the food consumption frequency of the respondents were unsatisfactory and not up to the mark. The average intake of macronutrients and micronutrients were less than the RDA given by ICMR. Changes in dietary pattern and nutritional modifications were recommended through counseling.
DIVERSITY AND CONSERVATION STATUS OF FISHES INHABITING RAMGARH TAL (GORAKHPUR) AND BAKHIRA LAKE (SANT KABIR NAGAR), EASTERN UTTAR PRADESH, INDIA

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ABSTRACT

In order to record diversity and conservation status of fishes inhabiting Ramgarh Tal (Gorakhpur) and Bakhira Lake (Sant Kabir Nagar) of eastern Uttar Pradesh (India), regular monthly surveys were conducted during March 2013-February 2015. There were 42 native and 5 exotics species of fin fishes (total 47) in Ramgarh Tal belonging to 9 orders, 17 families and 33 genera. Present conservation status of these fishes being 1 DD (Data deficient), 2 Endangered (EN), 37 Least concerned (LC), 5 Lower risk-near threatened (LR-nt), 1 Not evaluated (NE), 01 Vulnerable (VU). This lake receives water from Nepal and discharges excess water to Rapti river during high flood. Fish diversity study of the protected water body, Bakhira Lake, revealed the existence of 54 species belonging to 9 orders, 20 families and 40 genera. None of the exotic species was recorded from Bakhira Lake during the period. It is important to note that Bakhra Lake has good population of murrels (Channa punctatus, C. nama, C. ranga, C. striatus and C. marulius) which have been drastically declined in other freshwater bodies of Uttar Pradesh. Since this lake has been protected by Uttar Pradesh State Forest Department as Bakhira Bird Sanctuary since 1990, there is no outside stocking of the fingerlings of the commercially important fishes. As such, the lake harbours the fish stocks getting access to this water body during high flood.
ENVIRONMENTALISM IN INDIAN TRADITION

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ABSTRACT

Long before the ecology became fashion in the west, our ancient sages promulgated the concept of *Prakriti* and *Purush* (Biosphere and Man) in the east which testifies that human beings are never alone as a species in the Universe but inter-connected with the Earth, Sun, Moon and other planets orbiting in their preconcerted domains. In the ultimate reality, nothing remains unconnected in the cosmos. Aligning one's consciousness in line with the principles of natural law, he can march towards perfection and maximize his efficiency as well as effectiveness. Maintenance of natural order and pristine ecological balance is the prerequisite for ensuring human well-being. The Vedas specify four types of living beings, namely, andaja (born of eggs), *jivaja* (born of womb), *svedaja* (born of moisture) and *udbhija* (born of earth) and declare that these are impelled by *Prajnanam* (consciousness). The Vedas deal exhaustively with the splendors of the cosmos in a wholesome manner. They unravel the mysteries of the vast and unexplored forests, present picturesque, spectacular and diversified range of fauna and flora and urge the human beings to protect, preserve, nurture and nourish the environment and natural habitation in its pristine glorious form.

Hinduism is the most ancient religion of the earth, based on the sum and substances of ancient Vedic principles which emphasizes the coexistence of human being and natural factors, forces and functions. This article attempts to review the ancient wisdom of environmental ethics delivered by great Indian scholars in Indian scriptures and practiced through spirituality of Hinduism.
Alexander Parkes might have never dreamed of the today's drastic environmental menace while demonstrating publicly the first manmade plastic at the 1862 Great International Exhibition in London. He might have had the idea of social welfare and better future for humanity through his discovery, which did happen but soon turned reverse. The discovery of plastics brought about revolutionary changes the world over by introducing an enormous and expanding range of products that replaced many traditional materials such as; wood, stone, horn and bone, leather, paper, metal, glass and ceramic in most of their previous uses. Today plastics have acquired innumerable uses in our daily life such as; food containers, water and milk bottles, packaging and carry bags, pipes, electronic items, frames, electric wiring, toys, furniture, cloths, injection syringes and other several thousands of items. Now plastic is one of the major toxic pollutants of the world because it is a non biodegradable substance, composed of toxic chemicals, which pollutes earth, air and water in several ways. Plastic causes serious damage to environment both during its production and disposal. The major chemicals that go into the manufacturing of plastic as ethylene oxide, benzene and xylenes are highly toxic and pose serious threat to biodiversity on earth. These chemicals can cause an array of maladies ranging from birth defects to cancer, damage the nervous system and the immune system and adversely affect the circulatory and urinogenital systems. During recycling of plastic many toxic and obnoxious gases are emitted that cause air pollution.
WASTE TREATMENT OF FOOD INDUSTRIES FOR THEIR SUSTAINABLE USES

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ABSTRACT

Among the three basic needs (food, clothing and shelter) for human survival food stands first as our basic necessity. It is quite contrary to humanity that on one hand several countries are suffering from food crisis and starvation and on the other hand rest of the countries waste millions of tons every year. According to an estimate 1.3 billion tons of food, about one third of the global food production is lost or wasted annually (Gustavson, 2011). Loss and wastage occurs on all steps in the food supply chain. In low-income countries most loss occurs during production, while in developed countries much food about 100 kilograms (220 lb) per person per year is wasted at the consumption stage. Waste food is food that is discarded or lost uneaten. The United States Environmental Protection Agency defines food waste for the United States as "uneaten food and food preparation wastes from residences and commercial establishments such as grocery stores, restaurants, and produce stands, institutional cafeterias and kitchens, and industrial sources like employee lunchrooms". The states remain free to define food waste differently for their purposes, though many choose not to.

According to a study estimated the total of global food loss and waste to around one third of the edible parts of food produced for human consumption, amounting to about 1.3 billion tons per year. As the Table-1 shows, industrialized and developing countries differ substantially. In the latter, more than 40% of losses occur at the postharvest and processing stages, while in the former; more than 40% of losses occur at the retail and consumer levels. The total food waste by consumers in industrialized countries (222 million tons) is almost equal to the entire food production in sub-Saharan Africa (230 million tons).
Abstract No. 240

ECOLOGICAL DESIGNING FOR ENVIRONMENTAL SUSTAINABILITY AND INTELLIGENT URBANISM

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ABSTRACT

Environmental awareness, population explosion, industrialization, environmental pollution and need of urbanization have led to the questioning of consumer values. It is imperative to search for new building solutions that are environmental friendly and lead to a reduction in the consumption of materials and energy. Ecological design is thus an approach to cast a product with special consideration for the environmental impacts of the product during its whole lifecycle. In a life cycle assessment the life cycle of a product is usually divided into procurement, manufacture, use and disposal. Today Ecological designing is a growing responsibility and understanding of our ecological footprint on the planet.

Ecological design refers to the approach of design that minimizes environmentally destructive impacts by integrating living processes. It is therefore a consolidative discipline of ecologically responsible design, which helps to link scattered efforts in green architecture, sustainable agriculture, ecological engineering, ecological restoration and other fields. By including life cycle models through energy and materials flow, ecological design is related to the new interdisciplinary bailiwick of industrial ecology.
NUCLEAR OR RADIOACTIVE WASTE (R-WASTE) MANAGEMENT: PROBLEMS AND SOLUTIONS

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ABSTRACT

The human species has always been in search of power since his descent and whoever controlled the world's effective power (energy) supplies during a given energy age inevitably dominated the economic, political, and cultural history of that age. Every human activity entails the conversion of energy. Changes in the fundamental sources of energy, and in the use of energy sources, had been a basic dimension of the evolution of society. Our appreciation of the significance of these processes is essential to a fuller understanding of world history. If we look at the role of energy in world history, ranging from human muscle-power in foraging societies and animal-power in traditional farming to preindustrial hydraulic techniques and modern fossil and nuclear fueled civilization. The role played by various means of harnessing energy in different societies provides new insights by explaining the impact and limitations of these fundamental physical inputs; whether it is in the cultivation of crops, smelting of metals, waging of war, or the mass production of goods. While examining the energetic foundations of historical changes, Energy in World History avoids simplistic, deterministic views of energy needs and recognizes the complex interplay of physical and social realities.

Karl Marx wrote of man as economically motivated, and history, therefore, as economically determined. Other philosophers and theoreticians have had theories about other forces as determining factors in the play of the ages. Recent developments put energy squarely at the center of the global stage—where it may have stood from the very beginning. The entire dominating phases of human history based on energy requirement can be parsed into five ages: the foraging, agriculture, coal, oil, and nuclear ages each defined by the dominant source of power. Today the world is passing through the transitional phase of oil and nuclear age.
BIOMEDICAL WASTE MANAGEMENT: PRINCIPLES AND PRACTICES

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ABSTRACT

Biomedical wastes are generated during the diagnosis, treatment, or immunization of human beings or animals or in research activities in these fields or in the production or testing of biologicals. It may include wastes like sharps, soiled waste, disposables, anatomical waste, cultures, discarded medicines, chemical wastes, etc. These are in the form of disposable syringes, swabs, bandages, body fluids, human excreta, etc. This waste is highly infectious and can be a serious threat to human health if not managed in a scientific and discriminate manner. It has been roughly estimated that of the 4 kg of waste generated in a hospital at least 1 kg would be infected. Surveys carried out by various agencies show that the health care establishments in India are not giving due attention to their waste management. After the notification of the Biomedical Waste (Handling and Management) Rules, 1998, these establishments are slowly streamlining the process of waste segregation, collection, treatment, and disposal. Many of the larger hospitals have either installed the treatment facilities or are in the process of doing so. However, most of the hospitals in India do not have proper disposal facilities for these hazardous wastes.
Abstract No. 243

ELECTRONIC WASTES (E-WASTES) AND THEIR MANAGEMENT

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ABSTRACT

Present age is said to be the age of Information Technology (IT), advancement in technology has brought about a revolutionary change in the field of exchange of ideas and communication. Getting in touch with a person in any part of the world has now become simpler and quicker, thus expanding the global market in terms of latest gadgets and electronic products. The question which arises is- At what cost are we producing such electronic gadgets and devices? It is estimated that every year 20 to 50 million tonnes of electronic and electrical equipment waste (E-waste) is generated every year which could bring serious risks to human health as well as the environment.

E-wastes refers to electronic waste and encompasses obsolete electronic devices such as computers, monitors, servers, main frames, washing machines, TVs, calculators, printers, telecommunication devices such as cellular phones & pagers, batteries, scanners, copiers besides air conditioners. It also includes recording devices such as CDs, DVDs, floppies, tapes, military electronic waste, chips, processors, motherboards, circuit boards, industrial electronics and security devices. Recycling of many of these components is hazardous to human life and the environment too. Home-based recyclers burn wires and integrated chips over small flames to get at the copper and other metal inside, inhaling toxic fumes in the process. In India particularly, the presence of e-waste is mainly clustered in the metropolitan and developed cities. The government has finalized one of the strictest set of rules in disposal of e-waste. Under the new 'E-waste (Management & Handling) Rules', each manufacturer is responsible for the disposal for his products whether mobile phones or computers. A complete ban on import of any kind of electric or electronic product for dismantling or recycling has also been proposed.
Abstract No. 244

AGRICULTURE AND ENVIRONMENT

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ABSTRACT

Agriculture always has both positive and negative effects on social issues as well as on environment. Unsustainable agriculture exerts mostly negative multiple effects including land conversion, habitat loss, wasteful water consumption, soil erosion, genetic erosion, degradation as well as pollution. This unsustainable agriculture cannot be continued over long period of time. Unsustainable agricultural practices do produce higher yields seem to be immediately efficient, but in long run that yield may decrease greatly, sometimes to zero, never to recover in future. When agriculture is practiced at sustainable levels, after several years the total yield will be the same or more, adding to total production indefinitely.
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.
Abstract No. 246

A BIODIVERSITY SURVEY OF MUNTJIBPUR POND OF DISTRICT OF PRAYAGRAJ (U.P.)

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ABSTRACT

Muntjibpur pond is one of the natural fresh water reservoirs located in Pratapur block of district Allahabad (U.P.). This pond was surveyed and studied in detail once in a month for the period from Jan 2014 to Jun 2015. The survey indicates a rich biodiversity of the pond. The notable animal diversity includes 13 species of fishes, several species of lobsters, crabs, snails, other gastropods, annelids, butterflies, moths, grass hoppers, ants, termites and several zooplanktons. Avian fauna consist of Egrets, Crows etc. The result shows occurrence of a number of flowering hydrophytes, pteridophytes, bryophytes, species of green algae, blue green algal genera and several diatoms and other phytoplankton.
Abstract No. 247

POPULATION DYNAMICS OF INDIAN SARUS CRANE, GRUS ANTIGONE ANTIGONE (LINNAEUS, 1758) IN AND AROUND ALWARA LAKE OF KAUSHAMBI DISTRICT (U.P.)

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ABSTRACT

Sarus crane is a monogamous bird and well known as an eternal symbol of unconditional love, devotion and good fortune. This is the tallest flying bird in the world and is the only resident breeding crane in India. Its overall body colour is grey or dirty white. The upper neck and head is bright red in colour. They have black hair like bristles that cover the upper throat and neck. Its occurrence represents a healthy wetland ecosystem. These cranes are large, long-legged and long-necked birds belonging to family: Gruidae, order: Gruiformes, class: Aves and phylum: Chordata. As such the author has initiated a public awareness campaign since 2011 to save and conserve this species from becoming extinct. The awareness programme was carried out with the help of local people residing around the lake and district authorities. It helped to restore its exploited habitat and conserve the said species. The successful awareness programme tends this vulnerable species towards an increasing trend in and around the said perennial wetland.

Present exploration is aimed to compare the population of sarus crane from 2012 to 2016 in and around the Alwara Lake of district Kaushambi (Uttar Pradesh). In general, the population of sarus crane is decreasing at global level but mainly due to awareness programme, the author recorded its increasing trends during their exploration from 2012 to 2016 in the area studied. It has been observed that the prevailing ecological conditions of the lake, crane friendly behaviour of the local residents and awareness efforts of the authors have positive correlation in the conservation and increasing population trends of this vulnerable bird.
Abstract No. 248

USE OF BIO-PESTICIDES AGAINST PAPILIO DEMOLEUS INFESTATION AND YIELD IN CITRUS (CITRUS AURANTIFOLIA)

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ABSTRACT

Citrus fruit rank first in the world with respect to production among fruits. In addition to oranges, mandarin limes, lemons, pummelos and grapefruits. Other citrus fruits such as kumquats, calamondins, citrons, Natsudaidais, Hassakus and many other hybrids are also commercially important. The contribution of the citrus industry to the word economy is enormous and is provided jobs to millions of people around the world in harvesting, handling, transportation, and marketing operations. Citrus (Citrus aurantifolia) is an important fruit crop of India. Among the various insect-pests, Papilio demoleus, Phyllocnistis citrella and Diaphorina citri are the regularly occurring insect-pests in citrus orchards. Experiments were carried out in Horticulture garden of C.S.A. University of Agriculture and Technology, Kanpur. Bacillus thurangiensis Product Dipel, Biolep and Neem product neem oil, neem nool and achook were used in different concentrations and persistence to toxicity in field and LT50 were calculated to assess their Bioefficacy. It was found that plant originated insecticides, neem oil 0.5, 0.75, 1.0 persisted upto 5, 9, 9 days, neem gold 0.05, 0.75, 1.0 upto 11, 11, 17 days and achook 0.05, 0.75, 1.0 and 7, 11, 11 days, respectively. Residual toxicity and lethal time was found in neem formulations neem oil at 0.5 per cent, neem gold at 0.75 per cent and achook 1.0 per cent gave significant decrease in probit value per unit of dosage. Relative efficacy of neem oil was higher (1.245) as compared to neem gold (1.0%). It was concluded that Dipel, biolep and neem based insecticides can be used at flowering and fruiting stage of plants. They are treated as safer insecticides in nursery plants. Intercropping may be taken in to practice in citrus plantations.
Abstract No. 249

MEDIA, DEMOCRACY AND BIODIVERSITY CONSERVATION

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ABSTRACT

India is a huge democratic nation of global fame. 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. The media not only entertains the people with movies, serials, interviews, live matches, live programs, reality programs, quiz programs, etc. but also helps in conserving global biodiversity by awakening the people. The media campaigns the global and local environmental issues and their future impacts for awareness that may reduce the natural as well as anthropogenic disaster. It further narrates the threat of biodiversity loss and its long term impacts on ecological balance. The disturbance in ecological balance in turn badly influences the entire biota including human survival. The media therefore strengthens the democracy by educating the youths in order to establish national integration and patriotism. A democratic country may contribute better towards the conservation of endangered biota for the survival of entire globe including humans.
CHARACTERIZATION AND DEVELOPMENT OF SUPERIOR MINOR MILLETS VARIETIES FOR CLIMATE RESILIENT ADAPTATION

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ABSTRACT

Millets, known as powerhouse of nutrients, hold great potential in contributing food and nutritional security to our country. Millets are climate resilient crops and due to unique nutritional characteristics, contribute significantly in supplying for increasing demand of nutritious food and feed. The other millets including Sorghum (Jowar), Pearl Millet (Bajra), Finger Millet (Ragi/Mandua), Minor Millets: Foxtail Millet (Kangani/Kakun), Proso Millet (Cheena), Kodo Millet (Kodo), Barnyard Millet (Sawa/Sanwa/ Jhangora), Little Millet (Kutki) and two Pseudo Millets (Black-wheat (Kuttu) and Ameranthus (Chaulai) are known as “Nutri Cereals”, instead of “coarse cereals”. Small millets are very promising agricultural entity and are the primary sources of energy in the semi-arid tropics and drought-prone regions of Asia and Africa. The work includecollection of minor millet germplasm from diverse regions, molecular characterization and diversity analysis using SSR markers, protein profiling of selected minor millets and estimation of biochemical parameters to identify superior minor millet germplasm. The observations were recorded on morphological traits like days to 50% flowering, days to maturity, plant height, biological yield, grain yield, 100 seed weight and harvest index. The statistical analysis such as analysis of variance (ANOVA) for standard error (S.E.), critical difference (CD) and coefficient of variation (CV) on morphological traits was performed. The dendogram based on similarity index of morphological traits formed two major clusters GI and GII consisting 5 and 25 genotypes which were further subdivided into sub clusters IIA and II B having 2 and 23 germplasms, respectively. Most of the germplasm lines were characterized bearing similar morphological traits. The most distinguished varieties identified were kodo and Sawa. DNA markers have enormous potential to improve the efficiency and precision of conventional plant breeding via marker-assisted selection (MAS). The genome sequence of millets can be used for rapid identification of simple sequence repeats (SSRs), InDels and single nucleotide polymorphisms (SNPs). Improved nutritional quality, resistance to biotic and abiotic stresses and resistance to fungal infection are major thrust area for millet improvement programme and it can be achieved faster by applying recent biotechnological tools.
EFFECT OF CLIMATE CHANGE ON AGRICULTURE, POVERTY AND LIVELIHOODS- A REVIEW

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ABSTRACT

Effect of climate changes on Indian agriculture effect the crops, seasons and regions. The evidences indicate that decrease in production of crops in different parts of India with an increase in temperature. Many studies indicate that the probability of 10% to 40% loss in crop production in India with increases in temperature by 2100. The areas located above 27° N latitude yields of irrigated and rainfed wheat are projected to rise in response to climate change whereas in all other locations yields are projected to decline by -2.3% to -23.9%. Temperature rises of between 2°C to 3.5°C is projected to lead to a loss of 3-26% in net agricultural revenues. Increasing climate sensitivity of Indian agriculture will lead to greater instability of India’s food production which will also impact on poverty and livelihoods. So it is need quick response from Indian farmers to adjust their farming practices to adapt the climate change, and policies or technologies will transform for adaptation to climate issues.
Abstract No. 252

EFFECT OF UNSUSTAINABLE AGRICULTURE ON BIODIVERSITY AND HEALTH

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ABSTRACT

Agriculture, whether conventional or organic, always has some degree of impact on the environment. Impact of agriculture on environment is both positive and negative. Unsustainable agriculture exerts mostly negative impact on the environment, which is often discussed merely in terms of pollution and imbalance of nutrients. However, negative environmental impacts from unsustainable farming practices include several aspects namely land conversion, habitat loss, wasteful water consumption, soil erosion, genetic erosion, degradation as well as pollution. Agriculture is the art, science and occupation of cultivating the soil, growing crops, aquaculture and raising livestock. It not only includes the preparation of plant and animal products for people to use for their survival but also distribution of these products to markets. It provides most of the world’s food and fabrics. Authors are trying to discuss the impacts of unsustainable agriculture on biodiversity and health.
STUDIES ON YELLOW MOSAIC VIRUS RESISTANCE IN MUNGBEAN (VIGNARADIATA L WILCZEK)

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ABSTRACT

Yellow mosaic virus (YMV) is the most destructive disease of Mungbean which is prevalent in all Mungbean growing tracts of India. Now, it is also one of the severe diseases of Mungbean in most of the south East Asian countries. Losses up to 100% are reported depending upon severity of disease development. Inheritance of yellow mosaic virus resistance and presence of different strains of yellow mosaic resistance in various agro-climatic zones in India. 25 crosses were made to study the inheritance of yellow mosaic virus resistance. A set of yellow mosaic virus resistant varieties along with susceptible urdbean variety Barabanki local were grown at 5 hotspots of yellow mosaic virus. A yield trial with 12 varieties was also conducted to study the selection parameters.
ABSTRACT

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 not only entertains the people with movies, serials, interviews, live matches, live programs, reality programs, quiz programs, etc. but also helps and motivates the Indian society to conserve the biodiversity. The media campaigns the global and local environmental issues and their future impacts on society. It further narrates the threat of biodiversity loss and its long term impacts on ecological balance. The disturbance in ecological balance in turn badly influences the entire biota including human survival. The media influences the Indian societies that in turn prove beneficial for biodiversity conservation.
GENETIC FIDELITY TESTING OF TISSUE CULTURE RAISED POTATO PLANTS USING ISSR MARKERS

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ABSTRACT

Potato (Solanum tuberosum), the major species grown worldwide, is a highly heterozygous crop and a key member of Solanaceae family. The tetraploid genome of potato has 12 chromosomes (4n=48; x=12) and the genome size is 840 Mb. Plant tissue culture methodology has immense potential to rapidly multiply “true-to-type” genotypes leading to commercial production of planting material. Potato being a vegetatively propagated crop, this technology has proven to be of utmost importance in case of potato for maintenance of healthy stocks and rapid propagation of planting materials. Tissue culture has been commonly used and commercially valuable technique for production of quality material through in vitro culture. Although, in vitro culture is time saving but sometimes alterations in tissue culture raised plants due to somaclonal variation leads to the production of genetically variable and undesirable plantlets. The evaluation of micropropagated seedlings or plantlets for genetic fidelity at early stages is very important in preventing losses incurred during tissue culture seedling production. The use of robust and reliable techniques for genetic fidelity testing is performed in three potato species through simple, fast, cost effective and highly reliable ISSR markers. A set of hundred ISSR markers available from the University of British Columbia (UBC) were used for genetic fidelity analysis of DNA from three varieties of Banana. We evaluated tissue culture raised progeny of thirty three (1/10th of total seedlings produced) potato plants obtained from CPRI (Central Potato Research Institute, Shimla) for the detection of variation. A total of 12 ISSR primers out of 100 UBC primers were amplified and found reproducible. The variation in banding pattern of tissue culture raised progeny plants with few UBC primers was observed. This can act as robust system for the genetic fidelity testing of potato species with addition of some new marker systems.
EXPLORING BIODIVERSITY OF AGRICULTURAL CROPS: A PRAGMATIC SCENARIO FOR OUR FOOD AND HEALTH

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In very recent 2019, the UN's Food and Agriculture Organization produced its first report on the state of the world's Biodiversity for Food and Agriculture. This warned that many key components of the biodiversity for food and agriculture at genetic, species and ecosystem levels are in decline. The 2019 IPBES study asserts that industrial farming is a significant factor in collapsing biodiversity. The health of organisms is largely dependent on the products of an ecosystem. With biodiversity loss, a huge impact on health comes as well; biodiversity makes it possible to have sustainable level of ecosystem and the means to have the genetic factors in order to have food. Biodiversity is the total life on the earth. India ranks sixth under world's twelve mega diversity zones. Out of these, two of them exist in our country. India possesses tremendous ecological bio diversity. It contains 5 % of the world's bio diversity on 2%of the earth surface of the earth surface. The biodiversity in our country is very rich and unique in nature because it contains different types of plants with different characteristics, quality and uses. The main threats to our biodiversity are due to the loss, fragmentation and degradation of habitat; the spread of invasive species; unsustainable use of natural resources; climate change, inappropriate fire regimes, changes to the aquatic environment and water flows, urbanization, etc. We need to describe the issues surrounding preserving biological diversity on earth, reasons for being concerned about the depletion and extinction of organisms, and what can be done to preserve some of what is left. Despite efforts to manage threats and pressures to biodiversity, it is still in decline.

The presentation will serve as a source of first-hand information to all the stake holders including researchers, academicians, extension agencies and farmers in making the choice of latest and improved varieties of cereals, pulses, oilseeds, horticultural, medicinal & aromatic, forage, fibre, vegetable and spice crops to meet their requirements for food and health as well as to enrich significantly a quantum in genetic, species and ecological biodiversity of agricultural crops.
IMPACT OF AGRO-INDUSTRIAL WASTES ON SOIL BIODIVERSITY: AN OVERVIEW

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ABSTRACT

Agricultural-based industries produced the huge amount of residues every year. Disposal of these wastes are a major problem in several industries. The total waste generation in India presently hovers around 60-65 million tonnes per annum, of which only 20 % is actually treated. In India, approach towards Solid waste management is still unscientific. Solid Waste collection efficiency in India is around 70%, while same is almost 100% in the developed countries. Even today, large portion of solid waste is dumped indiscriminately on outskirts of towns or cities without any prior treatment. If these wastes are released to the environment without proper disposal procedure it shall cause environmental pollutions and harmful effects on soil, human and animal health. Many of the agro-industrial wastes are untreated and underutilized, therefore in maximum reports it disposed of either by dumping, burning, or unplanned land filling. These untreated wastes create different problems with climate change by increasing a number of greenhouse gases. Recycling of industrial wastes is one way of disposal mechanism and another way of resource management. India has an immense scope for re-utilization of renewable agricultural wastes like farmyard manure (FYM), industrial wastes like pressmud, coir pith and industrial by-products like gypsum. Value addition and utilization of above wastes as raw materials for crop production with suitable technologies are the necessities of the day. The use of agricultural and agro-based industry wastes as raw materials can help to reduce the production cost and contributed in recycling of waste as well to make the environment eco-friendly.
Phyllanthus amarus is a wild plant which is widely distributed as a weed in cultivated and waste land of India. The plant is branching annual glabrous herb and 30-60 cm long. Phyllanthus amarus plant is worldwide distributed in tropical and subtropical countries and in India plant is also widely distributed. Phyllanthus amarus plant is traditionally used for the treatment of skin diseases, cure of stomach, genitourinary system, liver, kidney and spleen problem. The juice of the plant leaves is anthelmintic, good in jaundice, small pox and destroys the bad odour due to perspiration. The plant is also very useful for lowering the blood sugar level. In Ayurveda this plant is also used for antidiabetic properties. Aqueous leaf extracts of Phyllanthus amarus shows the antidiabetic properties.
ROLE OF DIGITAL LIBRARIES IN ENVIRONMENTAL SUSTAINABILITY

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ABSTRACT

Environmental sustainability deals with all the socio economic changes happening all around the world, It not only refers to concerns about the planet's quality and environment, but also to the human activities, building and construction, trade, finances and culture at large, for the benefit of the world population. When it comes to library, one can ask how the libraries responding to this concern and issue. Are they housed and styled in sustainable buildings and design, Do they also work on (digital) sustainability of their collections, How much eco friendly is the infrastructure of libraries. Every piece of paper is the used in printing and writing is derived from living plant resources, therefore saving paper is saving plants. Thus digitalization of libraries is more eco-friendly than the traditional concept of libraries. This paper embodies the facts and circumstances that how digital libraries are dealing with global concern information on one hand and environmental sustainability on the other.
MARKETING IN THE SERVICE OF NATURE AND HUMANITY

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ABSTRACT

This paper presents role of marketing in the service of nature and humanity as a subject and as in practices. It outlines the evolution of marketing concept and its impact on biodiversity and nature and discusses some of the theories which are contributing towards sustainability. Research gaps from the literature have been discussed which could have lead to development of sustainable marketing practices. Then some marketing practices are discussed which are contributing towards sustainable growth and protection of biodiversity. Special attention has been given to consumer behaviour and satisfaction studies which leads to sustainable marketing practices. Further some suggestions regarding advances in research and improvements and introduction of sustainable marketing practices are discussed.
PARADIGM OF BIODIVERSITY AND SUSTAINABLE DEVELOPMENT

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ABSTRACT

The convention on biological diversity has defined 'biodiversity as the variability among living organisms from all sources including interalias terrestrial, marine & other aquatic ecosystem & the ecological complexes of which they are a part, this includes diversity within species between species & of ecosystems. India is a mega biodiversity country & rich in biodiversity. India is rich in flora & Fauna. India finds 10th position in the world & fourth in Asian plant diversity. Due to adverse physical & climatic conditions India has varies of wild life. India can be divided in to six geoogeographical regions. Biosphere reserves are multipurpose protect areas to preserve & reserve to the genetic, speci is & system diversity in respective ecosystem. These are three hierarical levels. There are 46,000 species of plants, 91,000 species of animals have been described by the botanical survey of India, Kolkata. India can divided into eight district floristic regions as Western Himalayas, The eastern Himalyas, Assam, The Indus Palain, The Ganga plain, The Deccan, The Malabar & The Andamans. India is very rich in terms of biological diversity due to enormous eco-diversity & geodiversity. India holds a unique position with the priority of conservation of natural resources & sustainable development. India is known 92,037 species in which 61375 species. The reason of biodiversity depletion are habitat fragmentation, over exploitation & hunting, disaster & pollution, shifting cultivation, invasion of exotic species, climate change & major impacts of biodiversity loss as culture, society, civilization, ecosystem & other valuable services. Some major effects are increase in atmosphere Co2, adverse effect on local climate & species, increased coastal erosion & loss of marine production reduction of genetic biodiversity of crops species.
Abstract No. 262

MEDICINAL PLANTS USED FOR THE TREATMENT OF GYNAECOLOGICAL DISORDERS BY RURAL POPULATIONS IN MADHYA PRADESH

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ABSTRACT

Medicinal plants have been used to cure several types of diseases and disorders by people throughout the world since ancient times. People in rural communities generally rely on traditional medicines developed from plants either directly or indirectly. This knowledge of plant medicine and its significance has been accumulated and transmitted through a process of experience over hundreds of years. In rural areas women prefer plant medicines rather than modern medicines for various types of gynaecological disorders and problems such as abortion, menstrual problems, conception disorders, sterility, delivery problems, etc. This may be due to the ready availability and low cost of these plant based traditional medicines. In the present study information regarding the use of medicinal plants for various gynaecological disorders by rural populations in Madhya Pradesh was collected and has been documented.
AN EVALUATION OF COMPUTERIZED FISH TAXONOMIC IDENTIFICATION SYSTEMS AND IMPLICATIONS OF MACHINE LEARNING TECHNIQUES IN FISH TAXONOMIC IDENTIFICATION

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ABSTRACT

The growing interest in biodiversity conservation demands for precise identification of individuals of biological organisms at taxon/ species level. Species identification is the primary step for any biological research activity. Precise identification of fish specimen is a time taking process for those who are not specialists. The present paper provides a review on approaches applied in taxonomic identification of the fish specimen using computational and statistical learning techniques based on distinguishing meristic and morphometric characters. Fishes are phenotypically more variable than other vertebrates and the meristic and morphometric characters measuring discreteness and relationships among fish species have become effective tools for taxonomic identification of fish specimen at the initial stage of identification. To identify fish specimen, very few automated system are in place using the statistical learning and computational techniques. These systems differ from each other in terms of efficiency and accuracy that measure the performance of the system. Most of the automated identification systems work on one to too many matching, which not only performs matching to an individual specimen but also with one of a set of extremely similar species to one another and possess the ability to reject it if that is not part of this set. Moreover, review of literature has evidence that the system based on the survey data for identification of specimens is more reliable and precise, than the system based on the hypothetical published data because such system provides the ability to check whether the taxonomic characteristics of the species identified by the system matches the characteristics of the fish in hands. Thus, automated systems not only differs in terms of techniques used and performance but additionally differ in number of characters used in identification and type of data used relied by the taxonomists. The present study provides deep insight into the different automated system in place for taxonomic identification of fish based on meristic and morphometric characters measuring discreteness and relationships among fish species, their pros and cons and discusses in details the relevance of machine learning technique in taxonomic identification of fish. Additionally, the system addresses the main morphological characters promoting divergence between closely related fish species.
CLIMATE CHANGE AND IT’S HARMFUL EFFECTS ON BIODIVERSITY OF AVIAN FAUNA OF KANPUR

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ABSTRACT

Climate change in environment is a very complex and serious problem for the survival of avian fauna on earth. In the natural condition of habitat, variety of terrestrial and aquatic birds is at the stage of extinction due to change in climatic condition in the environment. The temperature, humidity, rainfall and availability of the food are very essential factors, which affects biodiversity of many terrestrial and aquatic avian species in the nature. There are so many human activities like, deforestation, overuse of fossil fuels, excessive use of natural resources, which are responsible for the decline of Avian fauna in the city and village areas of Kanpur. It is observed that there are some other natural disturbances like solar variability, volcanic eruptions, sudden change in temperature etc., directly affects the Ozone layer in the atmosphere. In the present situation of climate, it is very difficult for Avian fauna to survive in the natural conditions of the environment. The aim of the present study is focused on impacts of harmful effects of climatic change on the biodiversity of Avian species of Kanpur City and Village areas. The data of terrestrial and aquatic species of birds were collected in the Summer (April to June, 2018), Rainy season (July to September, 2018) and Winter (October to December, 2018). It was concluded from the above study that variety of aquatic and terrestrial birds is declining or at the stage of extinction due to climatic change in the environment by the many anthropogenic activities of human beings.
QUALITY ASSESSMENT OF GROUND WATER IN SOME RURAL AREAS OF DELHI

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ABSTRACT

Water Pollution is one of the most serious problems of living beings. Water is the biggest and chief natural resource, necessary for conservation and survival of living organisms on earth. It is the biggest necessity for life and in developing countries like India; ground water is the most important source for drinking, irrigation, and industrial purposes. But unfortunately, wide spread over use of harmful chemicals in agriculture result in industrial effluents, pollution of rivers etc. Thus ground water is getting increasingly contaminated with pollutants. A general study was conducted for the quality assessment of ground water in some selected rural areas of Delhi. For this purpose, four water samples were collected from different locations from rural areas of the city in the month of September, 2018 (Two open well and two bore well). The results were analyzed with standard value prescribed. It was concluded that the sampling sites No. A to C represented that all the physico-chemical parameters were within the range of standard water quality and as prescribed by (W.H.O.). The results of present study also concluded that most of the physico-chemical parameters were within permissible limits except samples No. D.
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ABSTRACT

The present communication deals with the social stability within the ruler area of Kaushambi. Consistencies about issues relating to human social interaction, mutual awareness, social norm and social order all smack of social stability. Theories addressing social issues abound and remain crucial for the development and advancement of human society. The social stability of any given society could be the result of a process of which commencement was beak and murky but traversed hurdles of varied social problems. As an important factor for political stability, social stability is an ingredient of national sovereignty of which it is the minor of natural of national identity. Area of Kaushambi is enmeshed in any form of identity crises.
TRADITIONAL KNOWLEDGE ABOUT ETHNO-MEDICINAL PLANTS USED BY TRIBALS OF BILASPUR DISTRICT OF CHHATTISGARH

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Abstract No. 267

ABSTRACT

Bilaspur district have great flora biodiversity. This region is rich in diverse flora and suitable for studied related to ethno-medicinal plants. In this area ethno-medicinal plants made the integral part of the routine health care system of the tribals. In this area tribals are used in different plants for food medicine and other functions. The local people have huge traditional knowledge about the uses of plants and plant parts. The traditional knowledge of Chhattisgarh is mainly used by the local peoples of small villages. The present study deals with the folk uses of plants by the tribals of Bilaspur district. We have been conducted the research work from 3 years in different areas of Bilaspur district with the purpose of contributing to the traditional knowledge and finding out new or rare uses of ethno-medicinal plants. During the study 45 plant species belonging to 25 family were identified to cure diseases.
Thermophiles are microbes sustaining the temperature ranging high and are found in hot springs. Thermophiles in the belt of Madhya Pradesh is untouched part of extreme microbiology to be explored and contained the vast applicable compounds and cofactors that is applicable to human welfare and is in demand. It may contain compounds having role in industries as well as in tackling the lethal disease. This work is an attempt to inoculate and characterize the applicable microbes mainly culture dependent by 16S rDNA sequence technology. A high temperature tolerance ability in a micro flora is referred asthermophilei.e.is a type of extremophile and organism as thermophilic microbes having susceptibility at temperature ranging from 45 to 80 °C (113 and 176 °F). Source of thermophiles are in hot springs and in deep seahydrothermal vents. Microbes have significant role in variable fields and especially in biotechnological and pharma industries. Hence, this study is expected to inculcate and molecular characterize microbes with such applicability.
GLOBAL WARNING: A BIG ISSUE FOR OUR FORTHCOMING GENERATIONS

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ABSTRACT

Now we can say that global warming is a global warning which will be a biggest burning question for all of us in coming future and it arises from the fact that every day our small and daily activities may leading to changes in the Earth’s atmosphere that have the potential to significantly alter the planet's heat and radiation balance. It could lead to a warmer climate in the next century having adverse effect on humanity. As we know that climate change and global warming is the global concern of the day. Our natural resources are very limited but many activities are unlimited which creating a high pressure on mother earth. Many scientists observed that our earth is like a car without having any exhaust pipe. Hence, we cannot go on adding pollutants interminably to the hemisphere without a check for an unending period. Environmental pollution has become a health hazards so far as the drinking water and fresh breathing air are concerned. It is very difficult to get pure water for drinking purposes through our natural resources. Now we can say that Global warming word is turned in to Global warming and Climate Change is turned in to Climate challenge for all the human beings. It is necessary for growing awareness and concern about environmental issue and need to protect it for future generation. Besides this a process of constant assessment and adjustment must be required in the right direction of environment so this world can easily become a paradise once again.
BIODIVERSITY OF AQUATIC INSECT POPULATION IN CHITTAURA JHEEL OF DISTRICT BAHRAICH (U.P.) INDIA

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ABSTRACT

The present study deals with aquatic insects of Chittaura Jheel of district Bahraich (U.P.), India. The survey conducted from January 2018-December 2018, enumerated 21 different species belonging to 8 families and 3 orders. Aquatic insects are probably best known for their ability to indicate about the water quality in a particular environment. If a sample of the aquatic insects in a particular place is analyzed, in terms of the sensitive kind versus tolerant kinds and can get a good measure of the environment.
CONTEMPORARY FOOD TECHNOLOGY FOR HEALTH

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ABSTRACT

The ancient Asian concept that "food and medicine are one" has gradually become accepted in western countries. Nutritional and epidemiological studies have provided strong evidence that many chronic diseases such as cardiovascular disease, diabetes, and cancer are linked to diet and the risk posed by these diet-related diseases can be reduced by the consumption of foods with antioxidants and low fat content (saturated fat). A variety of foods are manufactured that provide specific nutrients to boost the immune system, prevent chronic disease. Modern food technology thus provides an alternative health pathway for individuals who are unable to prepare their own healthy foods. Artificial fats have been created to replace natural fats and oils for caloric reduction while still maintaining all the functional properties of natural lipids. The food technology has brought countless benefits to today's food supply. Technologies discussed are related to food storage, refrigeration, frozen foods and baking, pickling, fermentation and vegetables, animal products and food activities.
Abstract No. 272

ANALYSIS OF GROUNDWATER QUALITY NEARBY INDUSTRIAL AREA OF BALRAMPUR CITY (U.P.)

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ABSTRACT

Present paper deals with the analysis of physico-chemical qualities of groundwater nearby industrial area of Balrampur. The industrial area of Balrampur city has a large number of small scale industries as well as one of the largest sugar factory i.e., Balrampur Chinimill Limited. The main aim of this paper is to identify the effect of industrial effluents on groundwater quality which percolated down to the groundwater through soil and affect the water table and potability of water of a particular site. Here the water samples were collected from different sites. The analysis has been done during October 16-March 17. During this time the working occurs at its peak. DO, COD, BOD is calculated by titration method. We also analyse the pH, colour, odour, temperature and some chemical parameters like P, Cl, Ca, N, Mg. We also estimate the water quality index on the basis by taking its different parameters. The result obtained is that the quality of water is much more affected due to these industrial effluents. The groundwater quality reached the maximum level leading to severe depletion of both confined and unconfined aquifers persistent groundwater exploitation in excess of natural recharge. Due to these effluents it cause serious problem to the human beings like bone disease, skin disease and many water borne disease also.
Abstract No. 273

ASSESSMENT OF PLANT HEIGHT FOR QUALITY OF DIFFERENT VARIETIES OF GLADIOLUS

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ABSTRACT

Gladiolus has a great importance in floriculture industry. Gladiolus germplasm has a great scope for future development. Different genotypes of gladiolus were taken for experimental trials with different varieties of gladiolus. Experiments were laid out with randomize block design with three replications. Data were recorded and calculated on the mean performances of characters. The character plant height was taken for observation. In further observation maximum plant height was observed in treatment V41 (1.590m) - white prosperity and it was minimum in treatment V4 (1.183m) - variety Arti in the first year of investigation. In the next year of investigation, maximum plant height was observed in treatment V29 (1.600m) - variety Oscar and the next best plant height was found in treatment V14 (1.590m) - Eurovision, V10 (1.587m) - Black beauty and V7 (1.573m) - variety Apple Blossom.
DEGRADING BIODIVERSITY, IT’S EFFECT ON ECOSYSTEM

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ABSTRACT

Biodiversity refers to the variety and variability of life on Earth. Biodiversity is typically a measure of variation at the genetic, species, and ecosystem level. Biodiversity provides a better variety and range of food system. It has a large influence on the human beings as well as animals existing in the ecosystem. Biodiversity has changed over the years and grown immensely. In the last few years the biodiversity of our environment has degraded at large because of deforestation, pollution, soil erosion, over population and global warming. The degrading biodiversity has also affected our food habits and health on a serious note. Biodiversity degradation directly affects the health and food habits of humans as the adulteration of food items, degraded quality of crops and polluted waters have a large negative impact on the human beings. Today’s world needs to maintain the balance of ecosystem as the balance has been affected heavily and the increasing no of hazards, disasters, extinction of species are a result of this. Lesser use of fertilisers will improve the crop quality and prevent the soil erosion, less use of plastic will create a better environment and reduce the pollution. Steps and measures like these are much essential for maintaining the balance of ecosystem and protection of biodiversity of the environment.
ETHNO-VETERINARY PLANTS FROM DAVIPATAN MENDAL OF U.P.

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ABSTRACT

Plants have been most fascinating objects of nature since ever. They have played a key role in health care needs of domestic animals as well as human beings. Utility of plants against disease is quietly proved since time immemorial. A number of medical plants grown in wild conditions have rich medicinal properties. A study on ethnoveterinary usage of wild medicinal plants from Davipatan mendal of U.P. was conducted from July 2017- June 2018. All together 45 species are being identified having used to treat different veterinary diseases like fever, skin diseases, Eye problems, lactation, expel of maggot, constipation, wounds and injury, Pneumonia, Tympani, Heamaturia, malaria, foot and mouth diseases, diarrhea and dysentery, internal worms, Tick and lices, insect bites, mosquito repellent etc. These ethnoveterinary plants species are normally collected from nearby forest. Some of these like Allium sativum, Allium cepa, Carissa carandus, Cucurma lenga, Linum usitatissimum, Gossypium species etc. are even domesticated by them in nearby cropland for radially available at anytime.
Cyanobacteria are one of the most important components of aquatic ecosystem. They show oxygen evolving photosynthesis which produces oxygen in the atmosphere therefore earth’s CO2 rich atmosphere gradually changed to include increasing amount of oxygen. Cyanobacteria play a vital role in all aquatic ecosystems which forms the food and energy basis for all organisms living in lakes, ponds and stream. It has high ability to fix atmospheric nitrogen by the process called nitrogen fixation. It is very important for the growth of many types of plant. Excessive growth of Cyanobacteria form blooms. Toxic bloom in lakes can also reduce population of numerous spices due to toxicity or other impact such as excessive shading. Some impacts of blooms may be direct, including possible effects of toxins on fish, invertebrates, and other aquatic fauna, or indirect, including: a reduction of submerged plants when plankton biomass becomes very high; and changes in fish community structure if summer cold water refuges are lost due to hypolimnetic zone.
A MATHEMATICAL APPROACH TO SUSTAINABLE AGRICULTURE

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ABSTRACT

Sustainable approach is the stable model for future well being. The biologists, ecologists and economists altogether are demanding this model for biodiversity, environment and economic sustainability respectively. The mathematicians are also playing their bit to get the similar approach at their own part. Here we have analysed proposed an ecological situation, arising due to interaction of agriculture, industry and population, governed by system of three autonomous differential equations. In addition to stability properties, we have also obtained mathematical conditions for sustainable agriculture.
The notion of sustainability has diversified in many directions and has been cited to support quite contradictory social agendas. Therefore, sociology should not regard sustainability as the long-sought solution to every environmental and societal problem. On the contrary, sustainability needs to be approached as itself a problem, one that societies of the present day must tackle and for which they will require solutions.

Sustainability has an indisputably relevant place in society, and its significance and genesis has long been a distinct research object for the social sciences. Since the concept gained public currency with the Report for the Club of Rome in the 1970s, it has been used to respond to experiences of crisis and global risks that entered general awareness during the final quarter of the twentieth century.

These risks arise pre-eminently from contemporary societies’ confrontation with the destructive exploitation of resources that are essential to their survival - whether the natural resources of the ecosystem, the economic resources of societal prosperity, the social resources of welfare and solidarity, or the subjective resources of work performance and the conduct of private life, which today seem no less exhausted than the planet’s fossil fuels. Against the background of these dramatic processes, sustainability has become a central theme in the public sphere and a ubiquitous ideal for societal change, as well in the early industrialized countries of the global North as in some of the emerging economies of the South. Sustainability needs to be approached as itself a problem, one that societies of the present day must tackle and for which they will require solutions. Closely connected with the sustainable modernization of capitalism is the gradual emergence of sustainability as a new justification pattern in the order and organization of society. In Luc Boltanski and Ève Chiapello’s study of the “new spirit of capitalism” capitalism renews and reproduces itself by “recuperating” and internalizing whichever critique of capitalism is socially relevant at any one time.
POLITICAL CHALLENGE IN SUSTAINABILITY ISSUES

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ABSTRACT

The concept of sustainability is a complex and contested one, often misunderstood or misinterpreted and because of its complexity requires the engagement of a wide range of stakeholders including politicians, educators and citizens on a local and global scale. And what does sustainable development look like anyway? This paper highlights this complexity for us as well as outlining the challenges, difficulties and opportunities of engaging people in sustainability at many levels and the relationships between our political systems, the way we learn and education. Physically our environment is being degraded; our climate is changing, there is growing poverty and inequality; and even though this is the case, and the scientific evidence is there to show it, the great challenge of engaging people at all levels still remains. There is a need for a global response and a fundamental change in the way in which we do business. This paper stresses the sense of urgency and the need for change to happen soon. There is hope provided with a belief that this fundamental change can happen and that we can ultimately live in harmony with our natural environment. The paper is divided into four parts. Part One deals with challenges of sustainability, politics and education; Part Two looks at actions including case studies in politics, education and learning; Part Three looks at case studies from around the globe; and part four analyses future scenarios.
SOCIIOLOGICAL PARADIGMS OF SUSTAINABILITY

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ABSTRACT

Sustainability is a term used by the environmental movement to call attention to our dismal practices and policies relating to our environment and the pollution we create. For example, sustainable packaging has resulted in CDs and DVDs wrapped in plastic rather than those huge plastic encasements they used to be sold in. We have more recycling bins and more “green” awareness campaigns to get us out of our cars - not so easy here in Los Angeles - and onto trains, buses, and bicycles. In some settings, such actions are easy while in others, not so much. When your job is miles away from where you live, and not on a public transportation route, trains, buses, and bicycles won’t get you there, no matter how environmentally conscious you might become. Alternate power sources are part of the green sustainability movement. Since they are unlimited, wind and solar power are more attractive than fossil fuel sources of electricity. Nuclear and fuel cell power sources are also mentioned although their long-term sustainability is not fully clear and is often obscured. Nuclear power still produces tons of toxic radioactive waste that has to be stored somewhere for an inconceivable amount of time. Fuel cells are new and their safety has not yet been established. Just as we must continually research and develop antibiotics to fight the ever-changing bacteria that plague us, we must continue the search for sustainable societal structures if we are to ensure our long-term survival as a nation. This is no easy task as our capitalist individualistic post-industrial society has raised us to be good competitive consumers. As a result, it is difficult for us to imagine our society without the pursuit of profit for profit’s sake. However, we must think more about how we can preserve our quality of life over the long term. Our sustainability depends upon it.
IMPACTS OF MEDIA ON BIODIVERSITY CONSERVATION

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ABSTRACT

India is a huge democratic nation of global fame. 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. The media not only entertains the people with movies, serials, interviews, live matches, live programs, reality programs, quiz programs, etc. but also plays an important role during Natural Disaster. It strengthens the democracy in several ways including unveiling of corruption in government, social evils and election of suitable candidates. It educates the youths in order to establish national integration and patriotism. In this way, media exerts multidimensional impacts on Indian Society which in turn influences and strengthens the Indian Democracy. The biodiversity simply means the existence of a wide variety of plant and animal species in their natural environments or the diversity of plant and animal life in a particular habitat. India has varied climate and terrain and characterized by at least 10 distinct bio-geographical regions, supports a huge variety of forest types and harbours three global terrestrial biodiversity hot spots. Most of the terrestrial biodiversity now resides in the forest, as other terrestrial habitats have lost their natural state. The media exerts multidimensional impacts on biodiversity.
HISTORICAL PERSPECTIVES OF SOCIAL SUSTAINABILITY

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ABSTRACT

The idea of 'Sustainable development' or 'Sustainability' has become increasingly prominent across the globe, applied and discussed at a trans-national, international, national, regional and community level. Yet historians have as yet contributed relatively little to these debates, despite the emergence since the 1970s of Environmental History as an increasingly important strand of the discipline. Historians of all places and periods have, however, much to contribute to our knowledge of the human experience in attempting to live 'sustainably'. This site and project provides resources and links to those interested in more closely learning from, and enriching the humanities and history in particular in our understanding of the long history and possibly long future of human and environmental interactions. 'Sustainability' and the 'Environment' are themselves ideas that have their own history. Where did they come from and why have they become so widely used now? What can we learn from their emergence and the assumptions that have gone with them? Have many societies produced analogous concepts and debates or are they preoccupations only of very specific political, economic, cultural and social contexts? Have humans generally disdained to sustain - or if they have sought to do so, what have they aspired to sustain? The History and Sustainability project seeks to bring together environmental, economic and social historians, historians of political thought, anthropologists and others to address these questions. The project also seeks to build links between different educational providers within and without academia, in developing the study of History and Sustainability.
IMPACTS OF NONSUSTAINABLE FARMING ON ENVIRONMENT AND BIODIVERSITY

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ABSTRACT

Agriculture, whether conventional or organic, always has some degree of impact on the environment. Impact of agriculture on environment is both positive and negative. Unsustainable agriculture exerts mostly negative impact on the environment, which is often discussed merely in terms of pollution and imbalance of nutrients. However, negative environmental impacts from unsustainable farming practices include several aspects namely land conversion, habitat loss, wasteful water consumption, soil erosion, genetic erosion, degradation as well as pollution. Agriculture is the art, science and occupation of cultivating the soil, growing crops, aquaculture and raising livestock. It not only includes the preparation of plant and animal products for people to use for their survival but also distribution of these products to markets. It provides most of the world's food and fabrics. Authors are trying to discuss the impacts of unsustainable farming on environment and biodiversity.
SUITABILITY OF BRINJAL CULTIVARS INTERCROPPING IN 5 YEAR OLD AONLA ORCHARD

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ABSTRACT

Experiment was carried out at the Department of Horticulture, Kulbhaskar Ashram Post Graduate College, Allahabad during 2015-16 Eight brinjal cultivars viz. Pusa purple long, Pusa purple cluster, pant Samrat, NDB- 5, Mutthi local, Gold Vaughan Selection-4 and Selection-5 were tried to grow as intercrop in full grown Aonla plant of 5 year age planted at 7 x7 metre distance. None of the cultivars could perform as good as in open condition as sole crop i.e., control. Pusa purple cluster was far better among the cultivars tried. This cultivar produces 21 percent less yield as compared to control. The yield reduction was not due to number of fruits but was due to size of fruits. Number of fruits was at par. As number of clusters does not affect so the number of fruits per plant remains parallel to sole crop.
PROPER MANAGEMENT AND CONSERVATION OF WETLANDS

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ABSTRACT

Wetlands are areas where water is the primary factor controlling the environment and the associated plant 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 either permanently or seasonally. The Ramsar Convention takes a broad approach in determining the wetlands which come under its mandate. Under the text of the Convention (Article 1.1), wetlands are defined as: “areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six metres”. Wetlands are under increasing stress due to the rapidly growing population, technological development, urbanisation and economic growth. Additional pressures on wetlands from natural causes like subsidence, drought, hurricanes, erosion etc., and human threats coming from over exploitation, encroachment, reclamation of vast wetland areas for agriculture, commercial and residential development, and silviculture have altered the rate and nature of wetland functions particularly in the last few decades. Decline in a wetland will impact on associated systems: loss of nursery habitat could reduce coastal fishery yields or loss of a wetland on a flyway could disrupt waterfowl migrations, threatening the capacity of individual birds to reproduce and eventually the survival of populations or species. Loss of wetland habitats, which contain so much of the world’s plant and animal biodiversity, thus endangers the genetic resources on which our future prosperity depends. As of now there is no specific legal framework for wetland conservation, management and their wise use in India. Currently, wetlands come under the Environment (Protection) Act, 1986 and other various legal instruments, related to environment and forests. Therefore there is need of proper conservation strategies regarding such magnificent ecosystem on the earth.
SOCIO-CULTURAL AND DEMOGRAPHIC ISSUES IN E-BUSINESS
CONFLICT: THE INDIAN CASE

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ABSTRACT

The demographic, technological and economic variables seem to undergo a greater degree of change, as they are products of human enterprise. The social and cultural aspects, which arise from this historical nature-human interaction, take effect within a workday routine of livelihood and provide the element of specificity to the society. They accumulate over time and form a corpus of certain behavioral facets of a people. The social and cultural aspects of developing societies were considered to be a “drag” on their transformation into modern economies. The many failures of the largely techno-economic orientation to development policies, provides the basis for a new search: a search for giving fresh meaning to hitherto neglected socio-cultural norms before they are transformed beyond recognition. The initial resource and ecological context of fish, and much of the traditional techno economic aspects of fisheries in the tropical developing countries of Asia, have given rise to a considerable fund of socio-cultural features which are rooted in the context of people’s pursuit for livelihood and food security. Examining some facets of this neglected reality, provides an opportunity to assess their continued relevance for the inextricably intertwined objectives of maintaining the integrity of the ecosystem and ensuring the food and livelihood security of the community. The dimensions of diversity vary from country to country, a close insight about country-specific diversity dimensions and their implications is almost essential for developing strategies for managing diversity. The purpose of this paper is to discuss overall fundamental diversity dimensions of India, categorize them and understanding their organization challenges. Design/methodology/approach - The major task is to identify specific diversity dimensions of India and understanding their organization implications in a diverse workforce set up. In this backdrop, an attempt has been made in this paper to discuss overall fundamental dimensions of Indian diversity.
A SURVEY ON NESTING MATERIAL OF SARUS CRANE
IN AND AROUND ALWARA LAKE, DISTRICT KAUSHAMBI,
(UTTAR PRADHESH), INDIA

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ABSTRACT

The nesting material of Sarus Crane is specific and entirely made by the residing flora of marshy wet land and confines the distribution and conservation of Sarus Crane. The nest size, material and buoyancy are appealing towards the nest of this vulnerable state bird of Uttar Pradesh. A total number of 46 nests including 89 eggs were encountered during the survey from July to September, 2016. These nests were mainly located inside the marshy wet land, agricultural and non-agricultural surrounded by croplands and non-croplands. Thw nests were mainly fabricated by the twigs of residing aquatics and land plants for the purpose of buoyancy. The nests were a plateform of varying size (1.3 to 2.5 feet), having broad base and submerged type. The water level was quiet and less than its leg and also influenced the nest height as well as use of nesting material. The maximum percentage of the utilized plants observed were - Oryza sativa, Typha angustata, Oryza rufipogon, stem and roots of Pennisetum typhoids, stem and roots of Sorghum bicolar, roots of Typha angustata where as minimum percentage were recorded- Echinocola colonum, Hydrilla verticillata, Eleochharis duleis, Ipomaea aquatic, Ipomaea cornea, Digitaria sanguinalis, Cyperus rotundus, Argemone mexicana, rhizome of cyperus rotundus, Commelina benghalensis,Kirganelia reticulata, Eichhoria crassipes, Scirpus littoralis, Marcelia species, Nymphoides indica, Najas graminea, Limnophyton obtusifolium, tuber of cyperus species and others. The percentages of utilized material varied according to the availability of plants in their habitat .Therefore, selection of nesting sites depend on the nesting material of land scape flora which varied in different transects of Alwara lake. The nests at water surface level were round or oblong. The central surface of the nest was always slightly depressed and lined with soft green material of plant like hydrilla. Interestingly, the nests were formed so far from each other (more than one kilometer to each other) but their number varied according to marsh land and flora in different transects of Alwara Lake.
BIOMINERALISATION AND BIOMIMETICS: INNOVATIVE DIMENSION IN ENVIRONMENTAL BIOTECHNOLOGY

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ABSTRACT

Biomineralization is the process by which living organisms produce minerals, offer to harden or stiffen existing tissues. Such tissues are called mineralized tissues. In Biologically Induced Mineralisation (BIM) organism modifies its local microenvironment creating condition suitable for the chemical precipitation of extra cellular mineral phases. In Boundary Organised Biomineralisation (BOB), inorganic particles are grown within or on some organic matrix produced by the organism. Bacteria that produce mineral phases by BIM do not strictly control the Crystalisation process, resulting in pracctiles with no unique morphology and abroad particle size distribution. Nonmagnetotactic dissimilatory iron reducing and sulfate reducing bacteria produce magnetite, siderite, vivianite and iron-sulfides by BIM processes. The iron reducing bacterium Geobacter (GS- 15) metallireducers is a non mangnetotactic anaerobe that couples the oxidation of organic matter to the reduction of ferric iron, inducing the extra cellular precipitation of five grained magnetite as a byproduct. In laboratory culture, GS-15 can produce 5000 times more magnetite by weight them an equivalent biomass of magnetotactic bacteria. Nevertheless magnetic measurements show that most of the particles GS-15 produces are within the magnetically unstable, Super Para Magnetic (SPM) size range for magnetite (<20nm) at room temperature. The study of the biomineralisation of magnetite magnetosomes has been aided by the isolation and axenic culture of several different magnetotactic bacteria. The most common magnetosome arrangement is one or more linear chains transversing the long axis of the cell. How the bacteria accomplish this is not presently under food, but bioarchtitetural framework of assemblies of aligned magnetic practicles in MTB clearly has artificial counterparts in the manufacture of permanent magnets. Biomimetics is a new interdisciplinary field that seeks to understand relationships between structures and functions of biological composites in order to design and synthesize new materials, perhaps without the toxic residues characteristic of non-biological modes of industrial mass production. This research may lead to the synthesis of novel magnetic, electronic or magneto pharmaceutical materials on a nanometer scale.
Abstract No. 289

IMPACTS OF CLIMATE CHANGE ON AGRICULTURE: A STUDY ON THE NORTHWEST INDIA

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ABSTRACT

Climate change has been impacting agriculture of this country in both physical and social dimensions. As the benefits of Green Revolution faded out off-Punjab, the impetus is shifted to other areas of Northwestern India. But the longer warmer periods, irregular precipitation patterns or snowmelt, and changing biological systems present challenges to the viability of traditional agricultural livelihoods in general. Changing climate is undermining local communities' livelihood assets. A change detection study using monthly rainfall data for 306 rain-gauge stations distributed across the country showed, areas of northeast peninsula, the northwest peninsula and sub-Himalayan India, experience a decreasing trend in summer-monsoon rainfall; ranging between (-) 6% to (-) 8% of normal rainfall in the last 100 years. Random fluctuations in annual rainfall are noted since the 1950s. Building on the poverty and fragility elements of resilience, factors such as rapid urbanization and access to resources contribute to determining the resilience capabilities. Adaptability and capacity to manage disasters is another pillar in considering resilience. Agriculture is strongly linked to both these parameters in the tapestry of climate change.

Indian agriculture remained dependent mostly on monsoon rains. Irrigation, temperature and rainfall patterns are most important in determining crop selection or productivity. Changes in regional climates are the key-stone determinant in the agricultural systems. The same has also been observed by the IPCC in their Fourth Assessment report (AR4, 2007). In the vast agricultural areas of Uttar Pradesh or hilly terrains of Uttarakhand, rainfall anomaly and increasing warmer periods are of greatest concern. The present study delves into the problems emanating from two major areas: firstly, the consonance of anomalous rainfall patterns and their concomitant impacts. To point in particular, the monsoon rains in the hills of Uttarakhand, that once provided the lifeline for the river systems and the associated irrigational facilities, are no longer being retained in the catchments. Instead, the rains are causing widespread landslides and wash-off down the slopes, creating havoc in the upper reaches and down to the plains. So there is either flood at small spells, which are not always commensurate with the total amount of precipitation in the regions, or long-spells of dry periods. In both counts, the agriculture sector and the livelihood are badly affected. The second factor is that the agricultural systems in these regions are not being matched with the changing climate regimes, which are still water intensive, while the water availability of dwindling over the years. The Punjab-style agriculture could not become a sustainable agricultural model for the country for want of irrigational water extracted from groundwater reserves.
PLANT BASED TRADITIONAL KNOWLEDGE
OF SANTAL TRIBES OF WEST BENGAL

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ABSTRACT

Ethnobotany is defined as the study of the relationship between people and plants and most commonly refers to the study of indigenous uses of plants. People have always depended on plants for their primary needs, (food, shelter, medicines, etc.), and thus naturally have learned their uses. In the course of nomadic roaming this knowledge was exchanged with neighbouring tribes, friends and foe and was gradually expanded upon. Thus, plant knowledge has been passed around the world since the beginning of time - and frequently the actual plants themselves have spread along with it. The word 'Santal' is derived from two words; “santa” meaning calm and peaceful and “ala” meaning man. They reside in the vicinity of forest and use various plant parts as food, medicines, and in many other purposes for their daily livelihood. They have ethnic knowledge about ambient vegetation around their dwelling areas. Medicinal plants have a long-standing history in Santal communities, and are an integral part for treating various diseases, particularly to curve daily ailments and this practice of traditional medicine is based on hundreds of years of belief and observations. Due to environmental degradation many plants have become extinct and others are on the verge of extinction. Special awareness and training programme should be arranged for the use of these medicinal plants along with the development of the tribal communities who are the pioneer of this type of work, measures should be taken to preserve their valuable, ethnobotanical knowledge before its extinction forever.
MORPHOANATOMICAL STUDIES OF LEAF GALL OF ALSTONIA SCHOLARIS

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ABSTRACT

Leaf galls of Alstonia scholaris R.Br. are caused by Homopteran insect Pauropsylla tubercullata Crawf. during monsoon period. These pouch galls are glabrous, hard, semiglobose, conical or obtusely conical present on the upper surface of the leaf. The galls are pale green when young becoming yellowish during maturity. The structure of the gall issue differs from the normal tissue of the leaf in several features. Mesophyll tissue of the gall is not differentiated in to palisade and spongy parenchyma. Parenchymatous cells of the galls are filled with starch grains and tannins. In the centre of the gall, there is present a cavity known as larval cavity. This larval cavity is filled with many nutritive hairs.
SOCIAL SCIENCE IN THE SERVICE OF HUMANITY

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ABSTRACT

The contribution of Social Sciences in the development of human civilization has been mostly overlooked in favour of explicit progress in the field of natural sciences. This has however not discouraged social scientists to analyze and present solutions to the problems plaguing the human society in its various forms. The paper tries to establish the various mechanisms with which social sciences such as sociology has supplemented, complemented and even heralded a better understanding of human society to implement the projects identified in the realm of natural sciences to improve human civilization. It also tries to bring out the dichotomy of individual vs society and brings to fore the challenges of rising unabashed individualism in the face of a collective and quasi-conservative Indian society. The paper also gives due weight to the fact that the study of human value system and morality is needed to sustain probity in an increasing mechanized iron-caged Weberian bureaucracy.
The existing species diversity of fishes represent only a fraction of the species diversity that lived in the past, however, still they are most numerous among all the vertebrates. About 21,585 species of fishes presently exist, of these 41.2% inhabit in fresh water and 58.2% in marine water of the world. Since the fresh water of this planet constitutes only about 0.0093% as against 97% of marine water, it is therefore, significant to conclude that the number of fresh water species are greater than marine species. In developing countries like India, the fishes have special importance as food supplement to balance the cereal diet, because the meat, milk and egg intake is very low. Now-a-days protein deficiency is the most serious global problem and about 40% of world population is suffering from this problem. It is estimated that about 8.5 million tons of fish is required annually to meet the present day demand of fish proteins in the country against an annual production of only about 2 million tons. The Indian potential of inland water fish culture is approximately 7.5 million hectares or about 2.34% of the total land area of the country. Many of the water reservoirs remain either unused or not properly used for fish culture, because of the want of proper scientific knowledge. Since the demand of fish as a valuable source of animal proteins, fats and minerals are increasing day by day. Fish farming aims at the cultivation of selected varieties of fishes in ponds by providing them suitable physio-chemical and biological conditions. By exercising a control over the feeding, breeding and the growth of the pond fishes, high yield of marketable size of fishes is obtained over a short period of time.
KRISHI KALYAN ABHIYAN – A BOON FOR
FARM FAMILIES OF ASPIRATIONAL DISTRICT

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ABSTRACT

Krishi Kalyan Abhiyan (K.K.A.) launched by Ministry of Agriculture and Farmers Welfare on June 1st 2018 in 111 aspirational districts covering twenty seven States of India, is very instrumental for doubling the farmers income (DFI). Out of the identified eight aspirational districts of Uttar Pradesh, Fatehpur the only district under jurisdiction of CSAU, Kanpur is also identified as the aspirational district by Neeti Ayog, New Delhi. Twenty five aspirational villages coming from eleven developmental blocks are being covered under K.K.A., in which farmers were issued soil health card on soil test basis, benefited by 100 moong and 40 til minikits, 100 farm families were provided five fruit plants each and kharif vegetable seed kit (NSC). 100% vaccination against HS, FMD and PPR.was done in the village. Artificial insemination of low producing cattle was provided free of cost for breed upgradation by Veterinary department Fatehpur. One day awareness cum training programme was organized in each village and three, three days training programmes on Bee keeping, Mushroom cultivation, Kitchen gardening specially for farm women and other relevant topics were conducted by K.V.K., Fatehpur. Twenty farm implements given to farmers and twenty NADEP/Vermicompost units being established in each village for the promotion of organic farming, crop residue management and soil health improvement. Definitely the said programmes under KKA shall play a vital role in doubling the farmer’s income in the coming years ahead.
ADAPTIVE MANAGEMENT OF PARTHENIUM HYSSTEROPHORUS THROUGH UTILIZATION

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ABSTRACT

*Parthenium* is one of the most invasive and harmful terrestrial weeds. Weeds pose an important biological constraint to crop productivity. Many weeds release allelochemicals to interfere with crop plants. These allelopathic weeds are economically destructive, and the attempt to control them has met with limited success. However, the allelopathic action may be used as an important strategy for crop and weed management system. Weeds cause reductions in yield and quality and remain one of the biggest problems in rice production. The negative impact of commercial herbicides makes it desirable to search for other alternative weed management options like utilization of *Parthenium* as bioherbicide and Vermicomposting transforms allelopathic parthenium into a benign organic fertilizer. Present work shows that parthenium vermicompost is a good fertilizer. Vermicomposting is shown to destroy the chemicals which cause parthenium toxicity. The work paves way for large-scale utilization of parthenium as organic fertilizer. The findings open up the possibility that several other invasives known for their negative allelopathy and toxicity may also produce vermicompost which may be plant-friendly and soil-friendly. It also makes it appear possible that the huge quantities of phytomass that is generated annually by parthenium can be gainfully utilized in producing organic fertilizer via vermicomposting, thereby providing a means of exercising some control over parthenium’s rampant growth and invasion.
INTERNATIONAL CONVENTIONS ON BIODIVERSITY CONSERVATION (CBD)

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ABSTRACT

Biodiversity-related conventions work to implement the key slogan of environmentalism “Think Globally, Act Locally” i.e. to work at the national, regional and international level in close co-ordination to reach shared goals of conservation and sustainable use. In meeting their objectives, the conventions have developed a number of complementary approaches (site, species, genetic resources and/or ecosystem-based) and operational tools (e.g., programmes of work, trade permits and certificates, multilateral system for access and benefit-sharing, regional agreements, site listings, funds). The International Conventions on Biodiversity Conservation are; The *Convention on Biological Diversity*, The Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES), The Convention on Wetlands of International Importance (Ramsar Convention), Convention on the Conservation of Migratory Species of Wild Animals, The International Treaty on Plant Genetic Resources for Food and Agriculture, World Heritage Convention (WHC), International Plant Protection Convention (IPPC), International Whaling Commission (IWC). While each convention has its own specific objectives and commitments—inter-linkages between the issues each addresses, and potential complementarities in their monitoring and implementation processes, provide a basis for cooperation. The proposed paper would be an effort to comprehend and analyse these international conventions on biodiversity. The viabilities of these conventions and the power dynamics behind them at international level will also be assessed.
CONSERVATION OF BIODIVERSITY AND SUSTAINABLE SOCIAL DEVELOPMENT

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ABSTRACT

“The more deeply I search for the roots of the global environmental crisis, the more I am convinced that it is an outer manifestation of an inner crisis that is, for lack of a better word, spiritual… what other word describes the collection of values and assumptions that determine our basic understanding of how we fit into the universe?” Al Gore,


The uncomfortable resistance between the human rights and the imperative to preserve and sustain biodiversity is an emerging controversy in theory and practice in both international human rights law and international environmental law. Even while the world has seen a progressively elevated consciousness of the significance of biodiversity conservation, much discord has been spurred by different measures proposed to achieve it - from protected areas to state regulations to total trade prohibitions. In all of these measures, the common element is the calibrated removal of human interaction with, and access to, protected species essential to the area’s biodiversity. This is where the resistance comes in. Tensions inevitably arise when communities who have historically exploited and utilized certain animal and plant species for purposes of livelihood are suddenly restricted or even absolutely precluded from doing so in the pursuit of environmental goals. The philosophy behind this research article is logically sound and intuitively rational: since human rights to livelihoods cannot be suffered to be lost and biodiversity cannot be suffered to collapse without causing serious harm both to communities and to the environment. The best way forward is to make the conservation of biodiversity integral to human rights for livelihood. This way: (a) communities will continue to have a source of livelihood and, at the same time, (b) the biodiversity integral to the same livelihood is conserved and protected. Specific cases have been cited from different locations in the world in order to understand ground realities.
ENVIRONMENTAL POLLUTION AND CLIMATIC CHANGE

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ABSTRACT

Environmental pollution and climatic analysis change both are attributed directly or indirectly to human activity that alters the composition of global atmospheres. Man’s ambition or comfort and development led him towards the exploitation of natural resources, fossil fuels burning and clearing forest population growth and economic development are contributing too many serious environmental calamities. These include heavy pressure on land, land degradation forests habitat destruction. The find outcomes of this are global warming, climate change, ecosystem degradation reduction in water and food availability. Environmental decline is continued and visible in the form of increasing no of disasters, weather and climatic hazard such as floods cyclones, draught etc. The purpose of present this research paper is to understand the concept of environment pollution, climate change and their inter relationship. It also seeks to examine the efforts of community participation of solve the problems of environmental pollution and climate change.
More than 70% of the earth’s surface is covered by water. Water is one of the most important resources for life and the environment. When water gets contaminated by any harmful or unwanted material, it is called polluted. Hence, water pollution is the contamination of water bodies such as lakes, rivers, oceans, aquifers and groundwater etc. mostly by the human activities. Water pollution affects drinking water, rivers, lakes and oceans all over the world. In many developing countries, it is usually a leading cause of death, because people drink polluted water from different sources. Water pollution not only affects individual living beings, but also populations and entire functioning ecosystems that exist in the waters. Adverse alteration of water quality presently causes large scale illness and deaths, accounting for approximately 50 million deaths per year worldwide. Africa and Asia are the two most affected continents by water pollution. Microbes are the most problematic of all water pollutants as they induce disease, since their sources may be construed as natural, but a preponderance of these instances result from human activities. People are now realizing the importance of clean water as a foundation for life. In recent times, more and more organizations and councils are working hard to educate, protect, restore waterways and encourage practices that help keep waters from contamination, and also to preserve water ecosystems from destruction. This study deals with the water pollution, causes along with the effects and some preventive measures that one can use to deal with water pollution.
Non Timber Forest Products (NTFP) are all biological materials other than timber which are extracted from forest for human use. These products include foods, medicines, nuts, vegetables, spices, exudates (gums, resins, latex, etc), condiments, ornamental plants, fuel-wood and raw materials notably bamboo, broom grass, rattan and small wood and fibers, wild life products (bones and skin), tannins, dyes, fatty oils, essential oils, shrubs, herbs and vines. Aquatic and wetland plants play a major role in NTFPs which are classified as leafy vegetable, rooted vegetables, fodder and medicines and given in details in this paper. Aquatic plants produce huge green lush biomass which can be exploited as a potent source of dietary food and feed protein and reservoir of many bio functional secondary metabolites which can be used as preventive drugs, pharmaceutical and industrial uses, after removal of its anti-nutritional factor.
Abstract No. 301

POST HARVEST PROCESSING OF GARLIC

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ABSTRACT

India is world’s largest exporter of spices and spice products viz. ground (powdered) spices, blended spices, spice pastes, spice essential oils & oleoresins etc. Almost 26 Indian spices find ready overseas market and garlic is one of them. The most important part of garlic plant is the compound bulb. Each bulb is made of 6-26 cloves and is wrapped in white papery sheath. Some varieties have a radish or purplish sheath. Garlic processing involves various unit operations such as curing, cleaning, grading, storage, bulb breaking, clove separation, peeling, dehydration, size reduction, packing and product (flakes, powder, paste, pickle, oil pills etc.) formation etc. Garlic (Alliums sativum) has been used as a food, a condiment, and for medicinal purposes for over many centuries. Garlic is still probably nature’s most powerful medicinal plant to us today. It is recognized to have remarkable preventive and curative abilities. Garlic is mainly used aromatic spices and pickles as it has digestive, carminative and anti-rheumatic properties. It is being used in ayurvedic formulation since a long for curing lungs, healing intestinal ulcer and checking muscular pain & giddiness. The alliin is found within the mesophyl cells and around the vascular bundles an enzyme called alliinase is present. When garlic cloves are crushed, the combination of these two produces allicin and other thiosulphonates. The largest concentration of alliin is actually found in garlic that is why garlic is considered the main source of allicin. The allicin appears to be effective against E. coli. Staphylococcus aureus, Clostridium perfringens and Salmonella spp. Bulb breaking is the unit operation through which cloves are separated to facilitate further processing. The separation of garlic cloves requires special care and skill due to its typical physical characteristics and presence of essential volatile oils in the epidermal cells. Conventionally, separation of garlic cloves is performed manually by rubbing the bulb between palms, against jute bags or by beating with wooden stick. These method are very laborious, time consuming and unhygienic. Therefore, mechanical garlic bulb breaker was developed and evaluated.
A STUDY ON USE OF FOLK MEDIA IN BIODIVERSITY CONSERVATION

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ABSTRACT

Fresh air, water and atmosphere are the basic needs for the human life. We are social animal. God gifted us lots of biodiversity but lack of our attention is gradually demolishing the biodiversity. Biodiversity is the pedestal of all living systems. It’s a biological resource which includes thousand species of plants and animal. Due to habitat loss and over misuse & rapidly increasing population, the biodiversity of our country is extremely threatened. The issue of biodiversity conservation has become a global debate. It is the prime time to get aware & sensitive for our environment. It is being realized that the existing forest in a country is not just recourse although it is an asset for the whole world. The jungles are main remedy to purify the global atmosphere. The rate of deforestation is several time higher in the era of development. Awareness is the main tool to protect Biodiversity. In this study researcher focused that how folk media can create awareness for the biodiversity conservation in rural area. The present study aimed to investigate that which folk media they should use to spread the information regarding biodiversity conservation to overcome its challenges. Here survey method approach was adopted in order to know about the awareness. Researcher selected two hundred respondents for the interview schedule.
NUTRITIONAL COMPOSITION OF OPTIMIZED CHICKPEA
(CICER ARIETINUM) SEED PROTEIN ISOLATES

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ABSTRACT

Protein isolates were prepared from defatted whole seed flour of desi chickpea cultivar (K850) by isoelectric precipitation method. The factors for optimization of isolate yield and protein content were pH, temperature, time and meal / solvent ratio. Central composite rotatable design was used for selection of factor combination and response surface methodology (Design expert) was used for optimization of protein Isolate yield and protein content. The best condition for maximum protein content was at pH 11, temperature 40°C, time 20 minutes and meal/solvent ratio of 1:15. But the isolate yield was not maximum at this combination which showed the presence of carbohydrate affecting the protein isolate yield. On dwb protein content in isolate was around 90%, moisture was 4-5%, carbohydrate was 4% and fat were almost negligible. Colour value (Lab) had lower L (lightness) value and higher +a (redness) value, due to the presence of polyphenol content also present in the flour and responsible for darker colour of protein isolates.
FOOD ADULTERATION, THEIR HEALTH EFFECTS AND PREVENTIVE MEASURES

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ABSTRACT

Adulteration of food refers to the act of intentional debasing of the quality of food extended for sale either by the admixing or substituting inferior substances or by the removal of some valuable ingredient from them. Under the Prevention of Food Adulterant Act, an Adulterant is referred to any material employed for the purposes of adulteration. Food is essential for life. It should be pure, nutritious and free from any type of adulteration for proper maintenance of human health. Despite of improvement in production, processing and packaging, more poisons seem to be entering our food chain. For example Indian spices or 'masalas' add taste and flavour to food and also help in digestion. Some spices like turmeric have an antiseptic effect on the body. But what is most important is the quality of these ingredients. Every consumer wants to get maximum quantity of a commodity for as low a price as possible. This attitude of the consumer being coupled with the intention of the traders to increase the margin of profit, where the quality of the commodity gets reduced through addition of a baser substance and/or removal of vital elements also commonly known as food adulteration. This paper embodies various types of food adulterants their health effects and preventive measures by providing simple methods of testing to avoid taking adulterated food stuffs for the welfare of the society.
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BIOMEDICAL WASTE: A HEALTH MENACE TO RAGPICKERS

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ABSTRACT

Biomedical waste is any waste in the form of solid or liquid, including its containers and any product which are generated during the treatment, diagnosis and immunization of human beings and animals in research. Basically health care wastes refer to all wastes produced which are discarded and not intended for any further use in hospitals. Biomedical waste has always been considered potentially hazardous. It is considered very dangerous for health because it contains many chemical and harmful substances, it is not only infectious but also hazardous as it transmits diseases among the patients and health care personnel and other workers causing harm to life and environment. The disposal of untreated wastes poses an environmental and public health hazard. The indiscriminate disposal of untreated wastes is the cause to spread of infectious diseases. Apart from these, a good amount of bio-medical wastes such as disposable syringes, saline bottles, IV fluid bottles etc. are picked up by the rag pickers are recycled back into the market without any processing. The most unhygienic, dangerous job in scrap collection is rag picking where in they collect waste materials of plastic, tin, iron, bottles etc from garbage. Injuries and diseases due to untreated waste has become a major health concern in India. As per WHO, the global life expectancy is increasing year after year. A study conducted by WHO in 1996 revealed that more than 50,000 people die every day from infectious diseases and the major reason being improper waste management. The present study was taken up to analyse the waste management practices being adopted by various health care centres and research labs and also created awareness to ragpickers about the health hazards due to biomedical waste.
BENEFITS OF BIODIVERSITY : CONSERVATIONAL TOOLS

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ABSTRACT

In developing country poverty and illiteracy are main problems which do not permit quick adoption of modern scientific technologies to boost agricultural production. Management practice is needed to tackle the problem. To enhance the waste land productivity crop diversification under close guidance and resource aided supervision by the government is needed. The growing of medicinal and aromatic crops will be more suitable not only to obtain the better productivity but to conserve the medicinal plants diversity and raising the income of the resource poor farmers of India. The cultivation of medicinal and aromatic crops also fulfill the growing demand of natural drugs and cosmetics manufacturing companies. The medicinal plants in the farming system will encourage the Agro-Medico forestry system. It will increase the productivity for unit area per unit time and income of the farming community. Growing of medicinal trees, shrubs and perennial herbs along with traditional agriculture crops will not only provide the drug martial but also solve the problem of food, fodder fuel and furniture.
ABSTRACT

Human civilization and globalization are the main cause of constant change in the global environment in present time. Various activities that enhance the global environmental problems include pollution, global warming, ozone depletion, acid rain, depletion of natural resources, over population, waste disposal, deforestation and loss of biodiversity. All most all there processes are the result of the use of natural resources in unsustainable manner. These processes have negative impact on our environment. CO2 releases in large quantities have major impact on environment. The farming of fossil fuels creates world wide pollution problem. Loss of forest, damage of water bodies and ecosystem by acid rain, over exploitation of natural resources, massive extension of species are globally challenged environmental issue. Current environmental problem lead to disaster and tragedies now will also be the reason of causalities in future and require urgent attention from the responsible authorities to frame suitable laws to over come these issues and also by making people aware to use natural resources in sustainable manner.
Biodiversity and Bio Prospecting Conservation with Traditional Knowledge for Social Suitability

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ABSTRACT

Biodiversity is the degree of variation of life. It is a measure of the variety of organisms present in different ecosystem. Human kind has been prospecting from very down of civilization. Modified use of bio-resources for food, medicine and other material requirements had been the traditional form of bio-prospecting. Modern prospecting involves well-organized research and mythologies. Genetic resources constitute an integral component of biological diversity. They provide the basis not only for the continuous evolution and maintenance of the life-supporting system on earth but also for the sustainable economic, scientific, technological, cultural and spiritual development of humankind. The prospects of exploring biodiversity for new medicines, food, crops, insecticides, pesticides and other commercially valuable genetic and biological products and processes are blooming. Thanks to the referred development in biotechnology- particularly genomics, proteomics, enzymatic and transgenic technologies- Herbal technologies and information technology. This exploration of biodiversity for commercially valuable genetic and biochemical resources is termed as bio-prospecting.

The traditional knowledge associated with the biodiversity which is developed and held within the indigenous and local communities are thus found to be most valuable lead for modern technological innovation and its developing novel food, medicines, photochemical and other products of commercial importance. Biodiversity and traditional knowledge thus the most powerful resources which with the interventions of science and technology can generate wealth with the advent of new tools and techniques particularly biotechnology would convert biodiversity resources into industrially and commercially valuable products and processes having increased productivity and application in agriculture, healthcare, medicines, vaccine, diagnosis, environmental and bio-energy etc.
“Any error in this Abstract Booklet is silent testimony of the fact that it was a human effort”.
‘O’ Earth....!

All creatures, born from you, move round upon you.
You carry all that has two legs, three or four.
To you, ‘O’ Earth, belong the five human races,
Those mortals upon whom the rising sun
Sheds the immortal splendor of his rays.

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Mother of plants and begetter of all things,
Firm far-flung Earth, sustained by heavenly laws,
Kindly and pleasant is she.
May ever dwell on her bosom,
Passing to and fro....!

.............

May the creature of earth, united together,
Let flow for me the honey of speech....!
Grant to me this boon,
‘O’ Earth....!

(Atharva Veda 12: 1: 1)