National Conference on Science and Technology in Environmental Management (STEM-2020)

February 22-23, 2020

ABSTRACTS & SOUVENIR

Organized by :

Society for Green World and Sustainable Development, Jhansi (UP)

at

Bipin Bihari College, Jhansi (UP)

National Conference on Science and Technology in Environmental Management (STEM-2020)

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National Conference

on

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Bipin Bihari College, Jhansi-284001 (UP) India

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शुभकामना – संदेश

मुझे यह जानकर अत्यन्त प्रसन्नता हो रही है कि बिपिन बिहारी महाविद्यालय, झाँसी एवं सोसायटी फार ग्रीन वर्ल्ड एण्ड सस्टेनेबेल डेवलपमेंट के संयुक्त तत्त्वावधान में Science and Technology in Environmental Management (STEM-2020) विषय पर दिनाँक 22 एवं 23 फरवरी 2020 को एक राष्ट्रीय संगोष्ठी का आयोजन किया जा रहा है। साथ ही इस अवसर पर एक स्मारिका का प्रकाशन भी हो रहा है।

मुझे आशा ही नहीं वरन् पूर्ण विश्वास है कि उपर्युक्त संगोष्ठी के आयोजन से शिक्षकों एवं छात्र–छात्राओं को अपने शैक्षणिक विकास एवं शोध कार्य में सहायता प्राप्त होगी।

मेरी ओर से संगोष्ठी के सफल आयोजन तथा स्मारिका के प्रकाशन हेतु शुभकामनाएँ प्रेषित हैं।

शुभकामनाओं सहित,

(प्रो. जे. वी. वैशम्पायन)
कुलपति

डॉ. ध्रुव कुमार अग्रवाल
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बिपिन बिहारी महाविद्यालय,
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संदेश

यह अत्यंत हर्ष का विषय है कि **"सोसाइटी फार ग्रीन वर्ल्ड एण्ड सस्टेनेबेल डेवलपमेंट"** एवं बिपिन बिहारी पी.जी.कॉलेज,झांसी(उ.प्र) के संयुक्त तत्वावधान में **Science and Technology in Environment Management (STEM-2020)** विषय पर दिनांक 22-23 फरवरी 2020 को राष्ट्रीय संगोष्ठी का आयोजन किया जा रहा है ।

राष्ट्रीय संगोष्ठी में भाग लेने वाले विद्वानों/प्रतिभागियों से मैं यह अपेक्षा करता हूँ कि अपने व्याख्यान/शोधपत्र प्रस्तुतीकरण में आयोग द्वारा निर्मित मानक शब्दावली का अधिक से अधिक प्रयोग कर सारगर्भित व्याख्यान प्रस्तुत करेंगे ।

शब्दावली आयोग परिवार की ओर से मैं राष्ट्रीय संगोष्ठी के महत्वपूर्ण आयोजन हेतु समस्त सदस्यों को शुभकामनाएं देते हुए इसकी सफलता का कामना करता हूँ ।

अवनीश कुमार 17/02/2020

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अनुराग शर्मा
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शुभकामना–संदेश

मुझे यह जानकर अत्यन्त हर्ष हो रहा है कि बिपिन बिहारी महाविद्यालय झांसी (उ0प्र0) एवं सोसायटी फार ग्रीन वर्ल्ड एण्ड सस्टेनेबेल डेवलपमेंट के संयुक्त तत्वाधान में *Science and Technology in Environmental Mannagment (STEM_2020)* विषय पर दिनांक 22–23 फरवरी,2020 को राष्ट्रीय संगोष्ठी का आयोजन और उक्त अवसर पर स्मारिका का प्रकाशन किया जा रहा है ।

मैं आशा करता हूँ कि स्मारिका में प्रकाशित लेखों से शिक्षक एवं छात्र लाभान्वित होंगें। संगोष्ठी के सफल आयोजन एवं स्मारिका के प्रकाशन हेतु आयोजकों एवं प्राचार्य को मेरी ओर से हार्दिक बधाई एवं शुभकामनाऐं।

(अनुराग शर्मा)

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पत्रांक :

दिनाँक :.....

शुभकामना – संदेश

मुझे यह जानकर अपार प्रसन्नता हो रही है कि बिपिन बिहारी महाविद्यालय, झाँसी में सोसायटी फार ग्रीन वर्ल्ड एण्ड सस्टेनेबल डेवलपमेन्ट द्वारा **'साइंस टेक्नालाजी इन इनवायरनमेन्टल मैनेजमेन्ट'** विषय पर राष्ट्रीय संगोष्ठी का आयोजन किया जा रहा है। आयोजकों द्वारा संगोष्ठी का आयोजन एक सराहनीय प्रयास है।

मैं संगोष्ठी के सफल आयोजन एवं Commending of Abstract के प्रकाशन हेतु अपनी ओर से हार्दिक शुभकामनाएँ प्रेषित करता हूँ।

डॉ. राकेश गोस्वामी
विधायक – महोबा

सेवा में,
प्राचार्य,
बिपिन बिहारी महाविद्यालय,
झाँसी

डॉ सन्ध्या रानी
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झोकन बाग रोड, झाँसी
दूरभाष/फैक्स : 0510–2370060

शुभकामना - संदेश

यह जानकर अत्यन्त प्रसन्नता हुई है कि विपिन बिहारी महाविद्यालय, झाँसी के द्वारा सोसायटी फार ग्रीन वर्ल्ड एण्ड सस्टेनेबेल डेवलपमेंट के संयुक्त तत्वाधान में STEM-2020 विषय पर दिनाँक 22 एवं 23 फरवरी, 2020 को एक राष्ट्रीय संगोष्ठी का आयोजन कर रहा है। महाविद्यालय में आयोजित की जा रही राष्ट्रीय संगोष्ठी निश्चित रूप से प्राप्त संकलित लेख इत्यादि प्रतिस्पर्धात्मक वातावरण में सभी का ज्ञानवर्धन करने में सहायक सिद्ध होगी।

मैं स्मारिका के सफल प्रकाशन की कामना करती हूँ एवं स्मारिका के सम्पादक मण्डल एवं महाविद्यालय के प्राचार्य तथा समस्त प्रतिभाग करने वाले प्राध्यापकों एवं छात्र/छात्राओं को मेरी ओर से हार्दिक शुभकामनाएँ।

डॉ. सन्ध्या रानी
क्षेत्रीय उच्च शिक्षा अधिकारी
झाँसी/चित्रकूटधाम मण्डल

सेवा में,
प्राचार्य,
बिपिन बिहारी महाविद्यालय,
झाँसी

PATRON'S MESSAGE

The society is facing a great challenge in the form of ecological security due to rapid pace of urbanization and industrialization. Environment management is important because it prevents us from many problems like global warming, green house effect, ozone depletion, smog that are caused by pollution and pollution is caused by human interference. I hope that during the technical session fruitful discussion and viable recommendation will come out on the proposed theme.

I also congratulate the organisation committee for planning this academic event in the college.

Finally, i welcome u all to the seminar with the hope that all of you will carry pleasant memories of this event with you.

Dr. D.K.Agarwal
Patron and Principal
Bipin Bihari (P.G.) College

Dr. H.D. Bhartiya,
Convenor

Associate Professor
Department of Botany
Bipin Bihari College, Jhansi

From Convenor Desk

It gives me immense pleasure to present the view of the national conference on science and technology on environmental management. STEM-2020, as it is an era of multidisciplinary research this conference is for accomplishment of culmination of new collaboration in the prestigious Bipin Bihari College, Jhansi. I hope the deliberation of this National conference will benefit all especially academician, and young researchers who will be inspire by emineal scientists and speakers gracing the occasion. This conference includes lead lectures, key note address and poster presentation sessions, STEM-2020 cover a wide spectrum of subjects from faculty of science engineering and technology. Environment management concerned with the understanding of the structure and function of the earth system. It is, therefore concerned with description and monitoring of environmental changes, with predicting future changes and with attempts to maximize human benefit and to minimize environmental degradation due to human activities. Environmental management offers research and opinion on use of conservation of natural resources, protection of habitat and control of hazards.

As convenor of the conference and secretary of the society I extent my gratitude to Vice - Chancellor for encouragement and support for holding this conference. I would like to thank all the member of organizing committee, technical and volunteers for their contribution to make conference grand success. Finally, I would like to thanks all the delegates who came from the different part of country. I would further like to express my gratitude to the supporting staff from different department who directly or indirectly play an important role in success of this conference.

(H.D. Bhartiya)
Convenor
STEM -2020

Dr. Vijay Kumar Yadav
Department Of Zoology
Bipin Bihari (P.G.) College, Jhansi.
Contact-+91-9415073625, 9140197423

Dear Delegates

Greetings!

On behalf of Society for green world and sustainable development, I would like to extend my cordial welcome to the historic city of Jhansi who, have gathered here from all the corners of the country to attend 1st National Conference being organized by the “Society in collaboration with Bipin Bihari College Jhansi”. Friends! out of various challenges faced by the country, environment management is one of the major thrust area which will require huge investment of time, money and efforts. This is a welcome challenge for the entire scientific community /academia and researchers who can play a very important role in the area of environment management through networking. Our beloved Prime Minister Shri Narendra Modi Ji has also said in COP Paris recently that ,"India has set a goal to reduce green house gas emission intensity to its GDP 33-35% below 2005 levels by 2030". I think STEM2020 will certainly provide a right platform to bring various researchers, scientists, academicians and stake holder under one roof to discuss and take constructive steps to achieve one common goal to make our environment healthier and safer for the future generations to come.

The thematic talk and the plenary sessions will drive you through the multispectral emergence in the new world. I welcome you, your family and friends again to this wonderful gathering in this city. I thank each and every one of you who are contributing to the success of the conference and I wish a wonderful stay here.

Dr. Vijay Kumar Yadav
Organising Secretary
STEM-2020

Society for Green World and Sustainable Development (SGWSD)

(Regd. Under society registration Act, 1860, Para R-696 J-29464)

Society for Green world and Sustainable development is a scientific body constituted for the advancement of Botany , Zoology ,Physics, Chemistry , Mathematics, Engineering Science and technology and various allied subjects of science . The society was founded in 2017 by a team of experts with a view to bring together Botanists , Chemists , Physicist , Biochemists, Mathematicians, Scientists, Engineers of the country and with the broad objectives of promoting development of science and technology in India in all its aspects and in the widest perspectives. There are more than 100 life members, including professionals and upcoming experts with varied interest including Botany, Zoology, Physics, Mathematics, Agriculture, Engineering and Science and Technology and other all allied subjects of life science.

It develop research strategy that crosses many disciplinary boundaries to create a holistic approach for the benefit of society .It will help in mapping depth analysis , interpretation and evaluation of the interrelationship between the innovation and modern techniques in science and technology with healthy discussion and exchange of ideas in the concerned fields . The final outcome of this conference is to develop sustainable development for mapping the mother earth beautiful and hygienic and to inculcate ideas in the budding researchers.

A challenge for the whole community of scientists and academician at present is to raise the level of recognistion of the importance of science and technology this required the briefing of our peers in other scientific discipline specially those formulating and implementing policies. Establishment of good society or organization which help, rather act as bridge between traditional research and global demand of innovation is urgently needed.

Therefore, the need to form a society for green world and sustainable development was felt for the long time by the active academician and scientist working in various parts of the country to create awareness and develop scientific temperament amongst t students and researchers.

With best wishes

H.D. Bhartiya
Secretary, SGWSD
Associate Professor
Department of Botany
Bipin Bihari College, Jhansi

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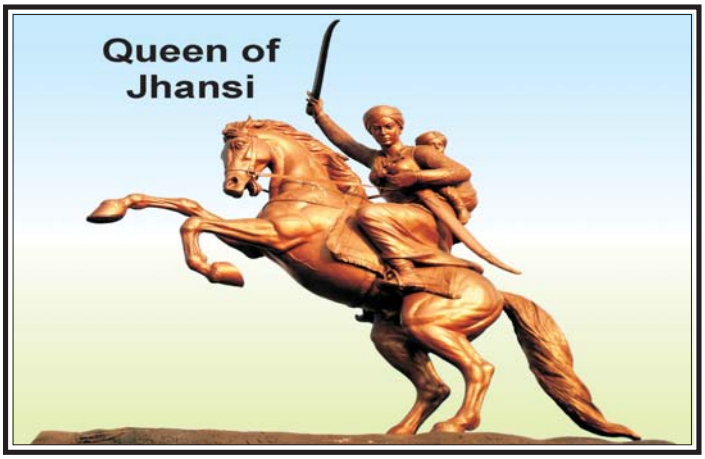
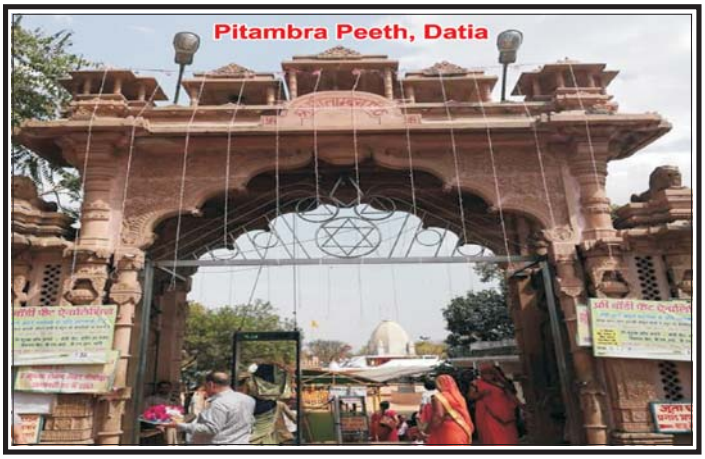
- Dr. A.K. Singh
- Dr. A.P. Singh
- Mr. Mahendra Kumar Yadav
- Mr. Abhishek Patel
- Dr. K.M. Agarwal
- Dr. Mukesh Kumar
- Devendra Yadav

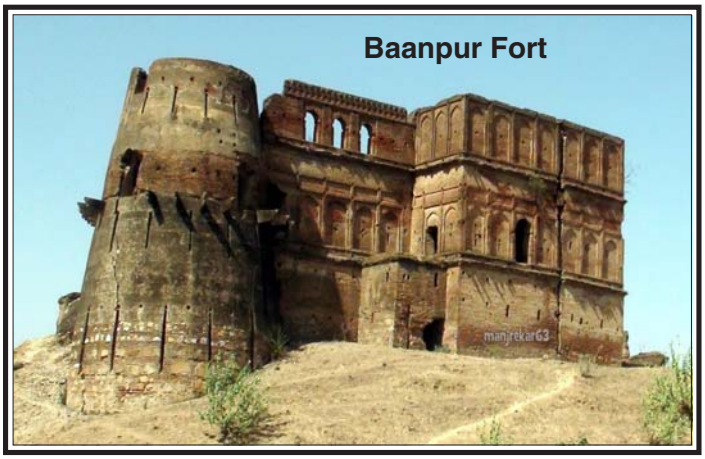
TRANSPORT AND ACCOMODATION

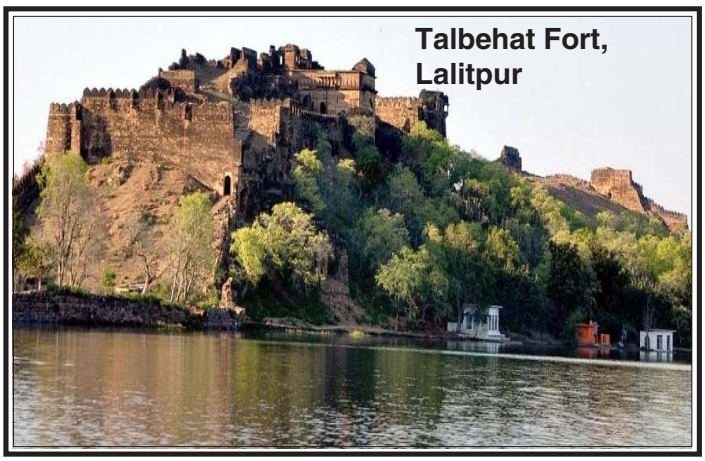
- Kanchan Kumar Rai
- Mr. Rajeev Kumar Dubey
- Mr. Kanchan Kumar Rai
- Mr. Kamlesh
- Mr. Rajeev Kumar Dubey
- Umesh Kumar Mishra
- Praveen Kumar
- Kamlesh Kumar

BUNDELKHAND REGION : AN OVERVIEW









BUNDELKHAND AT A GLANCE

Jhansi is a historic city of Bundelkhand region. It is also called the City of Rani Laxmi Bai Gateway to Bundelkhand and cross roads of India. It is situated between the river Pahuj and Betwa. The ancient name of Jhansi was Balwant Nagar Lakshmi Bai, the Rani of Jhansi was one of the leading figures of the Indian Rebellion of 1857 and became a symbol of resistance to the British Raj for Indian nationalists.

ABOUT THE SOCIETY :

Society for Green World & Sustainable Development is a professional forum. The society was established on 07 December 2017. The society provides an International plateform to advance the modern concept of Biological Science, Agricultural Science, Chemical Science, Material Science, Mathematical Science, Engineering and various allied subjects of science. It strives to provide information on latest developments and research advances in the area of engineering science and technology through its official journal "Indian journal of Innovative Research" and exchange information of engineering sciences and Technology with scientific community, public policy makers etc. It provides opportunities for scientific communication collaboration and professional development. The society organizes National and International conferences, symposia and seminars on major topics of sciences and technology. Society members includes research scientists, teachers, students, technicians and professional.

ABOUT THE COLLEGE :

Bipin Bihari P.G.College is a govt. aided post graduate college affiliated to Bundelkhand University, Jhansi. The college is named in the honour of Great saint, Shri Bipin Bihari Banerji. It is a prestigious science college of Bundelkhand region of Uttar Pradesh. Since its inception in the year 1959 it has grown to one of the exemplary institution of Higher Education & Research. The College is well known for its administration, discipline and academic qualities and is popularly known as BBC.

KEY NOTE ADDRESS

UV-ABSORBING PIGMENTS IN PLANTS GROWING AT POLAR REGIONS

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Dr. RML Avadh University,
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Abstract

Antarctic and Arctic ecosystem are large but poorly understood ecosystem due to limited and meager scientific information available. Poles provide a unique platform for the understanding of atmospheric processes in a hostile and complex environment. Environment of the poles is characterized by high UV-B doses, extreme cold and dry conditions.

Studies have been conducted on the presence and induction of the UV-B absorbing pigments among the targeted species (*Spirogyra* species, (Algae-Aquatic), and terrestrial plants *Bryum* species-Bryophyte and *Xanthuria elegans*-Lichen) in the fields of Antarctica and their survival mechanism and structural and functional adaptations.

Angiosperms are growing at Arctic region therefore, induction of the UVB absorbing pigments have been studied in recently conducted study at Indian research station- Himadri, Ny-Alesund (Arctic). Arctic plants have developed UVB absorbing pigments that provides protection to the plants at the time of increased UVB radiation. Induction of UVB pigments have been carried out in several plants namely *Saxifraga oppostifolia, Saxifraga cernua* (Angiosperms), *Bryum* species (Mosses), *Xanthoria elegans* (Lichen) etc. All these plants have high concentration of UVB pigments and provide protection to the plants growing at poles. Results of various studies conducted at Poles have provided valuable information on the UV-photoprotective pigments, and several other processes which counterparts to other similar locations in the world. These data will help to reduce some of the uncertainty about the risks of ozone depletion, and also emphasizes on the importance of more detailed understanding of UV-B effects on terrestrial ecosystem.

LEAD LECTURE

IMPROVEMENT OF SOIL AND PLANT HEALTH THROUGH RHIZOBACTERIA

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Abstract

Rhizobacteria are root-associated bacteria, which have different type of relation with the plants like either cause disease or to improve their health. They are also have an important interface of soil by playing a significant role in biodegradation of pesticides, phytoremediation of contaminated soil by heavy metals, and availability to the plant through release of chelating agents, acidification, phosphate solubilization and redox changes, and therefore, have potential to enhance soil health. Though parasitic varieties of rhizobacteria exist, the term usually refers to bacteria that form a relationship beneficial for both parties. It produces a wide spectrum of bioactive metabolites such as antibiotics, siderophores, volatile and growth promoting substances ranging between 0.4 to 2.0 ¼g/ml which help plants to cope up with environmental stresses. Rhizobacteria were isolated from rhizosphere of solananceous crops from different climatic conditions of India. Out of 59 rhizobacterial isolates, 33.6% isolates showed strong inhibition zone against *Ralstonia solanacearum* causing bacterial wilt of chilli. Growth promotion activities were assessed by production of hydrogen cyanide, siderophores, ammonia, indole acetic acid, and solubilization of phosphorus. Various antagonistic rhizobacteria are applied in the field to control the different diseases of crops, *Pseudomonas fluorescens*, *Bacillus* spp. and *Panteao agglomerans* showed potential to control the diseases of crops. Out of 30 isolates of *B. amyloliquefaciens* isolated from rhizosphere of tomato, two isolates DSBA-12 and DSBA-11 were found *very good bio control efficiency against R. solanacearum in vitro* as compared to other species of *Bacillus*. Pesticides could be classified based on their toxicity, chemical group, environmental persistence, target organism etc. According to the Stockholm Convention on Persistent Organic Pollutants, 9 of the 12 persistent organic chemicals are pesticide including organochlorine, organophosphate, organometallic, pyrethroids and carbamates and many more. The ability of bacteria to bioremidate these pesticides mainly based on their biodegradation activity. The result indicates massive potential of *B. subtilis* DTBS-5, *Pseudomonas fluorescens* DTPF- 3 and *Panteao agglomerans* to degrade pesticides such as chlorpyrifos and glyphosate yielding diethylphosphoric acid (DETP). Hence it is necessary to select potential rhizobacteria to obtain benefit of them to have it well-characterized. However, further research on plant growth promoting, antagonistic and biodegradation activities through these bacteria is utmost require if these strategies are to be implemented for betterment of plant and soil health.

INVITED LECTURES

CLASSIFICATION, ISOLATIONAND IDENTIFICATION OF FUNGI

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Abstract

Fungal isolates have been researched for decades, different groups of fungi and their natural beauty and because of their immense potential and diversity, the researchers have interestto isolate the fungi ***in vitro***. Till now, only a little number of total fungal wealth of the living world has been explored and many of them are unexplored from this living hidden wealth on this holly earth. One third of fungal diversity of the earth exists in India. Out of 1.5 million of fungi, only 50% are characterized until now. Unfortunately, only about 5–10% of fungi can be cultured ***in-vitro***. Fungi are not only beautiful butthey play a significant role in impact on the economics and they have been used in agriculture, as biofertilizers, medicine, food industry, textiles, paper making industry, bioremediation, natural cycling, and many other ways. The fungal biotechnology has become an integral part of the human welfare.

The earlier estimated fungal numbers are 1.5 billion, but now the number of fungi on the earth has been recently been revised upwards to 2.2- 3.8 million this figure may consideras more than double.

Until now, known fungi are consisted of around 97,000 species as it is mentioned in present Dictionary of fungi. However, the approximate number of fungi is said to be around 1,500,000 species, which means that fungi are the next largest guild following insects on earth. This is significantly larger than 270,000 and 44,000 of tracheophytes and vertebrates, respectively.

The identification of fungal genera/species depends on the exclusive knowledge held by taxonomists. For the isolation of fungi from different sources/substrates, sampling is a very important step for obtaining ***in-vitro*** culture of fungi. The visual assessment of infected plants or plant products is often insufficient to diagnose the causal agent of the disease, particularly where different organisms can induce similar symptoms. Conventional methods for the identification into species generally involve for isolation of the fungus. Isolation is the preparation of a pure culture, free from any contaminant and ready for identification. The different isolation techniques to isolate specific groups of fungi different techniques like**Direct**isolationand **Selective (targeted)** etc. methods of isolation are applied using specific media.

Once the mould is isolated, further culturing may be required before the organism can be identified.Usually, fungal identification is done on the basis of morphological characteristics of the colony, conidia and conidiogenous cells.The fungal moulds are characterized by the development ofhyphae, which result in the colony characteristics observed in the plate culture in the laboratory. Hyphae elongate by a process known as apical elongation, which requires a careful balance between cell wall lysis and new cell wall synthesis. Because moulds are often differentiated on the basis of conidiogenesis, structures such as conidiophores (naked development on the substratum) and conidiogenous cells must be carefully evaluated using slide culture to observe the all developmental stages of the fungus. Some fungi produce special structure called sporangia in which the entire

protoplasm of which becomes cleaved into spores called sporangiospores.Sporangia are typically formed on special hyphae called sporangiophores (in case of Oomycetes (sporangium, antheridia/oogonia and in Zygomycetes (zygospore/sporangium). The other cases like some fungi produce sac like special fruiting bodies (Ascomata and Conidiomata (Pycnidia) as in case of Ascomycetes and Coelomycetes and the formation of fruit bodies (Basidiocarps) in case of higher Basidiomycetes and lower basidiomycetes (rusts, smut and the form group like mycelia sterilia) etc.

In most modern classifications, fungi are ranked, like plants and animals, as a separate Kingdom. A cluster of related species is grouped in a genus, of related genera in families,of families in orders, orders in classes, and classes in subkingdoms. Zygomycotina,Ascomycotina, andBasidiomycotina are the three subkingdoms of the kingdomthat include the most significant genera. Fungi from each of thesesubkingdoms have quite distinct properties, shared with other genera and species from thesame subkingdom. The name applied to any fungus is binomial, first appears a capitalised genus namefollowed by a lower-case species name, both written in italics and underlined. Theclassification of organisms in genera and species was a concept introduced by Linneaus.

During ongoing programme of taxonomic study of fungi and selective isolation of litter, soil, water, and plant pathogenic fungi and Mushrooms from different forests of Western Ghats region in India revealed interesting fungi. Determined efforts were made to isolate the pure fungal cultures of varied group of fungi *in vitro*, and their ex situ maintenance were made to enhance the germplasm bank of (NFCCI) National Fungal Culture Collection of India, which is an exclusive depository for fungi in India. These collections were categorized and methodically placed under pertinent genera/species amongst these, numerous of them were isolated from unique habitats. Authentication of native novel genera/species, including non-documented unique/rare taxa greatly essential as many of the fungal forms are unseen in a diversified habitat may provide as explorative materials to screen the prospective of different fungal forms which are not known previously for their application.

Several plants pathogenic foliicolousleaf spot fungi, post-harvest infested and infected vegetables, fruits, leaf litter, dead wood, dead barks, soil and polluted water samples were collected from different forests areas of Mahabaleshwar and from the vicinity of Pune, Maharashtra. Several micromycetes and macro fungal forms were isolated *in-vitro* and identified, studied and analysed by using morphological molecular tools described and illustrated. The different groups of fungi like plant pathogenic foliicolous fungal genera voz. *Pseudocercospora* (Mycosphaerellaceae) *Cercospora,* (*Mycosphaerellaceae*) *Colletotrichum* (Glomerellaceae)*, Jasmidium, Passalora* (*Mycosphaerellaceae*)*, Phoma,Daluca, Curvularia* (Pleosporaceae)*, Corynespora* (Corynesporaceae) and the other plant pathogenic fungal genera/species *Cercosporacolocasae* (Mycosphaerellaceae), *Ceratocystis adiposa, Ceratocystis paradoxa*, (Ceratocystidaceae), *Corynesporacassiicola* (Corynesporaceae), *Thirumalacharia*sp. (*Incertaesedis*), *Cylindrocladiumscoparium* (Nectriaceae), *Clonostachysrosea* (Hypocreaceae), *Calonectria*sp. (Hypocreaceae)*, Myrothecium verrucaria* (*Incertaesedis*), *Pythium aphnidermatum* (Pythiaceae) *Pseudocercosporamarginalis*, *Pseudocercosporanerricola*, *Pseudocercosporakamalii* (Mycosphaerellaceae), *Gonatophragmiumtriuniae* (*Incertaesedis*), *Drechslerayamadae*, *Alternaria multirostrata* (Pleosporaceae), *Thaxteriellopsislignicola* (Tubeufiaceae), mushrooms *Agaricusbambusigenous* (Agaricaceae), *Coprinus vermiculifer, Pleurotusdjamor* (Pleurotaceae),*Pleurotus*sp.*,Ciliochorellaphenericola*, *Saprolegnia*sp. (aquatic fungus) (Saprolegniaceae),*Cyathusberkleyanus*, *Cyathusmontagnei*, *Cyathusuniperidiolus, Schizophillum commune*(Agaricaceae),*Phaeoisariaclematid*is, *Ph. synnematicus*(Diatrypaceae) and some coprophilous fungal genera like *Peziza* sp.*, Scutellinia*sp.were classified, studied and described.

In addition, the identity of a few interesting and noteworthy taxa viz., *Hyweljonesiaindica* (*Incertaesedis*)*, Cephaliophoratropica* (*Incertaesedis*)*, Thamnostylumpiriforme* (Syncephalastraceae), *Beniowskiamacrospora*, (*Incertaesedis*) and some very specific group of fungi i.e.saprophytic Entomophthoralean genera/species like *Conidioboluscoronatus* (Ancylistaceae), *Basidiobolusranarum* (Basiobolaceae). Some new fungal genera/specieslike ***Neoacladiumindicum*** **(Botryobasidiaceae)** and ***Saksenamyceskamalii*** were established and published in impact factor Journal (**Fungal Diversity** and **Mycotaxon**). Of these, several fungi wereauthenticated by rDNA sequencing and some of them phylogenetically proven as new species.

In earlier classification of Lineus, the two-kingdom system in the early 18th century the fungiwere placed under **Thallophyta**. In-between, several changes have been occurred and in the early 20th centuryit was treated under the6th kingdom of classification. In 21st century it has taken separate status as Kingdom **Fungi** and it comprises of**'The Seven Phyla'**which includes Microsporidia, Chytridiomycota, Blastocladiomycota, Neocallimastigomycota, Glomeromycota, Basidiomycota and Ascomycota classifiedby Hibbet et al**.**In recent classification it has now become **'Ten Phyla'** inthe present Century, the phyla are Cryptomycota (Hidden Fungi), Microsporidia, Chytridiomycota (little Pot), Monoblepharidomycota, Neocallimastigomycota, Blastocladiomycota, Zoopagomycota, Mucoromycota, Ascomycota and the Basidiomycota.

The details regarding different isolation techniques, identification, classification of fungi and result obtained during study will be discussed in detail duringin symposium.

COMPUTER AIDED STUDIES

(AN APPLICATION OF MODELING USING COMPUTER-A GREENER APPROACH IN DESIGNING OF COMPOUNDS)

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[An Institute of excellence recognized by Department of Higher Education,
Govt. Of M.P. and NAAC accredited Grade " B" College]

Abstract

It is a demand in the modern era of chemical sciences to develop and design new and useful compounds for the service of mankind without the use of methods which are traditional one. Workers were trying to develop and synthesizing series of new compounds since past in the laboratories using traditional synthetic methods and they used to check their properties thereafter. This process is time consuming and this lead to synthesis of a large number of compounds.

Some recent trends have been emerged and developed in the field of designing of compounds which may include microwave synthesis, computer aided designing etc.. Out of these methods this present talk/ presentation will focus on application of computers in the wet lab as an aid. These computational methods are less time consuming, involve less chances of error, helpful in controlling and causing less pollution and may prove to be helpful in designing compounds with desired properties.

This presentation includes introduction to the computational methods with a little theory behind these methods along with, their applications and use of software/s methods in simulation of spectra and QSAR studies which were carried out by our research group.

MINING IMPACTING THE SURROUNDING AND FLORAL BIODIVERSITY

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Abstract:

Open cast mining and quarrying activities are continuously going on in Trans Yamuna region of Prayagraj district, to exploitation of the Rocks and Minerals, which are non-renewable products of nature. Minerals have significant importance for the development of industrial, social and economic prosperity of any nation. Due to continuous mining, Trans Yamuna region of Prayagraj district, is being suffered from widespread drought, forest of the area has been degraded and the ecosystem is threatened. Opencast mining activities alter the landscape of the mining area and also cause some disturbance to the surface features of the surrounding areas. Agriculture and forest in nearby areas may get impacted because of dust generation. Fertile soils get degraded due to dust settlement and become infertile. Mining activities are triggering drought and desertification in the trans-Yamuna region of Prayagraj. The present paper is the study of mining on the biodiversity of the mining affected area. Since it is not possible to avoid destroying habitat during the mining operation, options for mitigation lie in restoration of these mining areas. Therefore, the restoration strategies have also been discussed in brief.

Key words: Mining, Floral Biodiversity, Restoration, Trans Yamuna.

CONSERVATION PRACTICES OF FORAGES INCLUDING RANGE PASTURES AND FODDER TREE LEAVES FOR LIVESTOCK IN INDIAN AGRICULTURE

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FORMER PRINCIPAL SCIENTIST AND HEAD
I.G.F.R I. Jhansi

Abstract

India is basically an agrarian country with large livestock population making dairy and livestock industry an important subsidiary occupation of farmers. It contributes to the economy of the country by providing milk, meat, wool etc. India has recently emerged as largest producer of milk in the world but livestock productivity is very low as compared to the developed countries. Low productivity of the animals is ascribed chiefly due to inadequate supply of nutrients. Both quantitatively and qualitatively, there exists a huge gap in availability and supply of feed nutrients which is further compounded during lean and scarcity period . Poor supply of nutrients to livestock during scarcity period is a matter of concern. So, there is urgent need for preservation of nutrients from forages including fodder tree leaves available during the flush period for feeding livestock during lean period .Farmers are still unware of benefits of conservation of surplus forages which are often exess of need and are wasted

India being a tropical monsoon bound country, large quantity of surplus *Kharif* forages, range grasses in wastelands and forests are produced which are frequently excess of need. It is therefore essential to preserve the nutrients available from excess forage both during *Kharif* as well as *Rabi* season at proper stage of maturity to provide nutrients during lean period.Large quantity of grasses and fodder tree leaves remains under utilized and therefore it becomes imperative io conserve grasses like sehima nervosum, Dicanthium[Marvel grass], Cenchrus cilliaries, C. setigurus[Anjan grass], Heteropogon contortus, Sylosanthus etc as hay and leaf meal.Drought of 2002-2003 affected 62% bovine population in 18 states of the country. Due to inadequate nutritional supply during scarcity, milk production decrease.. Poor nutritional support during scarcity also caused adverse effects on dairy animals which included poor fertility and reproductive function, breeding cover, bovine population and draft energy. Successful animals production requires an adequate supply of nutrients throughout the year. The nutrients from forage can be preserved either as silage, hay or high temperature dehydration. There is high energy out put in high temperature dehydration and therefore can not be termed as economically feasible. Forage can be profitably preserved either as silage or hay for providing nutrients during scarcity. Besides hay and silage, attempts have also been made to preserve the nutrients particularly protein in from of leaf meal from the leguminous forages such as *Lucerne*, *Stylosanthes* etc and leguminous top feed, such as *Leucaena*, *Sesbania, Gliricidia* etc.

PHYTOREMEDIATION: AN OVERVIEW

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Abstract

Any unwanted changes in natural resources lead negative effects on organisms which ultimately affects humans. Anthropogenic activities such as mining, metal working industries, combustion of fossil fuels lead emission of heavy metals and accumulation of these chemicals in natural resources.

Phytoremediation is an emerging green technology helping to clean the soil and water bodies from harmful pollutants. It is a low cost effective eco-friendly technology in which higher plants and microorganisms are used according to their potential to minimized contaminants from soil and water resources. It includes phytostabilization, phytodegradation, phytovolatilization and phytoextraction. The present paper focuses a brief review of Phytoremediation as an emerging green technology for removal of pollutants from natural resources.

Key words: Phytoremediation, green technology, Pollutant etc.

Economic evaluation of Vermicomposts on *Vigna radiata* L. in major soils of Bundelkhand region of Uttar Pradesh, India

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Abstract

An attempt has been made to ascertain the efficacy of different Vermicomposts on *Vigna radiata* on properties of soil, yield and yield attributing character, and encourage the economic, environmental and sustainable use of agricultural land status of rural areas as well as farmers in Bundelkhand region. Similarly the straw yield and harvest index of mung bean also found significantly increased in different vermicomposts treatments in both soil groups. Our finding shows that the application of vermicomposts gave significantly higher gross income and net profit over to control. Gross income and net profit was found highest in cow dung based vermicompost in black soil. It also concluded that vermicompost is particularly good for farmers, consumers and ultimately for soil as it can be used as a resource for maximum crop productivity with more financial output in comparison to those chemical fertilizers. Besides, the agricultural applications of these products as an alternative to chemical fertilizers enhance soil nutritional status; hence, mung bean yields are positively affected without significant loss of the food nutritional value and even, in some case, enriching the content of health-promoting substances. The utilization of vermicompost results in several benefits to farmers, industries, environment and overall national economy.

Keywords : Bundelkhand, black soil, mung bean, vermicomposts.

SPIN-TRANSITION IN FE^{II} N_6 COMPLEXES: SMART MATERIAL

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Abstract

Six-coordinate FeII complexes, mostly those with an $Fe^{II}N6$ coordination environment, may occur in a paramagnetic high-spin (HS, S = 2) or diamagnetic low-spin (LS, S = 0) state depending on the relative magnitude of crystal-field strength of the ligand and mean electron-pairing energy. For intermediate ligand-fields, the energy gap between the excited HS state and the ground LS state may fall in the range of thermal energy. Consequently, a reversible transition between the two states can be induced by variation of temperature, pressure, or light irradiation. The phenomenon of spin-crossover (SCO) between the low-spin (LS) and high-spin (HS) states is the most spectacular example of molecular bistability. Although this energy gap can be tuned in a relatively predictable fashion by varying the strength of the ligand-field, this is not the only factor upon which the existence and character of a spin-transition depends. This phenomenon is very sensitive to packing effects in the crystal lattice of the compounds, and entities such as lattice solvent molecules or counterions may have a drastic influence on SCO properties of the material. Potential applications of SCO materials are molecular switches, data storage devices and optical display units. During the past fifteen years or so we have been engaged in this area of research with use of nonplanar N3 donor ligands. The effect of nonplanarity of the chosen tridentate N_3 ligands on the SCO properties of $[Fe^{II}(L^1/L^5)_2]^{2+}$ complexes has been identified and compared with that of the reported behavior of $[Fe^{II}(L_6)_2]^{2+}$. In this presentation an account of the effect of counteranion and sovent of crystallization on the spin-state properties of $[Fe^{II}(L^4)_2]^{2+}$ will be highlighted.

PLANTS AS AMELIORATORS (MITIGATORS) OF POLLUTION

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Abstract

Plants can effectively be used as cheap and naturally available monitoring systems or bioassays of the level and type of air, soil and water pollution in an area. The type and concentration of a pollutant can be reliably found out by various characteristics damage symptoms produced in the plants because such damage symptoms are pollutant specific as well as concentration specific. The young needles of Pinus, chlorois indicates SO2 pollution, necrosis indicates HF pollution, beaching indicates NO2 pollution while chlorotic mottle indicates Cl2 pollution in the atmosphere. These characteristic symptoms of damage in young pine needles appear only when concentration is 0.3 ppm for SO2, 0.07 ppm for HF and 1.0 ppm for Cl2. Similarly, browning in moss leaves due to fluoride accumulation is 5% in 65 ppm dry weight accumulation but rises to 90% in 4500 ppm dry weight accumulation.

Many types of higher and lower plants and microorganisms have the capability to tolerate and absorb large amounts of gaseous, liquid and solid pollutants from the environment and decompose them into harmless substances. This ability of such organisms can be usefully exploited in the control of environmental pollution.

Large surface area of ponds, lakes, rivers and sea coasts is also covered with aquatic flora. All this vegetation provides huge surface area that can be gainfully used to trap pollutants from the environment. In this large vegetational cover, those plant species that can absorb large quantities of pollutants and accumulate them in their tissues without damage (tolerant-accumulator species) provide natural storehouses or sinks of various pollutants without any cost. Such plants are very important resource materials in environmental pollution control strategies.

Use of plants in the control of water pollution mostly involves treatment of sewage an industrial effluents before their release into lakes or rivers and treatment of polluted water bodies. Introduction and maintenance of accumulator aquatic plants like Eichhornia, Azolla, Cladophora, Fontinalis squamosa etc. in the ponds is very effective in cleaning polluted water and keeping them free of organic, chemical and metal pollution.

Keywords: - Bioassays, Chlorosis, Necrosis, Effluents

MEDICINAL IMPACT OF POMEGRANATE IN DIET AND IN PREVETION OF DISEASE

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Abstract

Conjugated fatty acid, the general term of structural and steromeric isomers of polyunsaturated fatty acids with conjugated bonds, has attracted considerable attention because of its beneficial biological effects. In the present study, dietary effect of pomegranate seed oil rich in punicic acid (9cis, 11trans, 13cis-conjugated linolenic acid; 9c, 11t, 13c-CLNA) on lipid metabolism was investigated in obese, hyperlipidemic Male aledo Wistar (MAWR) rabbits. After 4 weeks feeding period, MAWR rabbits revealed obesity and hyperlipidemia compared with their progenitor AELM rabbits. Feeding of the diet supplemented with 9% safflower oil and 1% pomegranate seed oil (9c, 11t, 13cCLNA diet) did not affect abdominal white adipose tissue weights and serum lipid levels compared with the diet supplemented with 10% safflower oil (control diet) in MAWR rabbits. However, the accumulated hepatic triacylglycerol was markedly decreased by 9c, 11t, 13c-CLNA diet in MAWR rabbits. Activities of hepatic enzymes related to fatty acid synthesis and fatty acid â-oxidation were not altered by 9c, 11t, 13c-CLNA diet. Levels of monounsaturated fatty acid (MUFA), major storage form of fatty acid, in serum triacylglycerol were markedly higher in obese, hyperlipidemic MAWR rabbits than in lean AELM rabbits. In addition, 9c, 11t, 13c-CLNA diet significantly decreased MUFA levels in MAWR rabbits. This is the first study showing that 9c, 11t, 13c-CLNA suppresses delta-9 desaturation in vivo, and we suggest that the alleviation of hepatic triacylglycerol accumulation by 9c, 11t, 13c-CLNA diet was, at least in part, attributable to the suppression of delta-9 desaturation in MAWR rabbits. Keywords: Conjugated Fatty Acids; Punic Acid; MAWR; MUFA hypertension; Lifestyle Related Diseases

Keywords: Conjugated Fatty Acids; Punic Acid; MAWR; MUFA hypertension; Lifestyle Related Diseases

DECAY OF EAST KOLKATA WETLANDS- A THREAT TO SOCIO-ECOLOGICAL WELFARE AND CAUSE FOR BIODIVERSITY LOSS

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Abstract

East Kolkata Wetlands (EKW) spreads over an area of 12,500 hectare (Ha), is the world's largest wastewater fed aqua culture system which got included in the Ramsar list of 'Wetlands of International Importance' on 19th August, 2002. It serves as kidney of the city, by acting as a carbon sink and sequester ~1.9 Mg C/ha/year, mitigating at least ~118 Gg atmospheric CO2/year. Kolkata produces almost 750 million litres of wastewater and sewage every day which is fed into EKW, an eco-friendly system of solid waste and sewer treatment system for the city that transforms one-third of the city's sewage and most of its domestic refuse into a rich harvest of fish (10,000 tonnes of fish each year) and fresh vegetables (40- 50% of the green vegetables available in city markets) thus providing an ecological subsidy and making Kolkata cheapest city in India. EKW is host to several sewage fed fisheries, many small agricultural plots, couple of solid waste farms and home for a large number of flora and fauna both at macro and micro level. This natural sewer system, makes water conducive for algal and plankton growth, which enhances microbial biodiversity and ensures Biogeochemical cycling. Exponential expansion of real-estate projects in eastern Kolkata especially in the Salt Lake and Rajarhat sectors has escalated land encroachment and land alteration in East Kolkata Wetland (EKW), leads to obstruction of wastewater flow, siltation in bheris and the alteration in bio-chemical components in sewage water, thereby disturbing the ecological balance. Prevention of decay of EKW will support biodiversity and enable socio-ecological welfare to thrive.

Keywords: *EKW, microbial biodiversity, socio-ecological welfare, carbon sink.*

CONFORMATIONAL ANALYSIS OF ’-AMINO ACID DIPEPTIDE

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Abstract:

The conformational analysis of *N*-acetyl *N*’-methyl ²-alanineamide using multidimensional conformation analysis (MDCA) and potential energy scan (PES) techniques. Exploration of solvent effect on the relative stability of the minima was also performed. The strength of intramolecular N-H...O=C and N-H...N hydrogen bonds were evaluated by computing hydrogen bond energies using the molecular tailoring approach (MTA) (**Figure 1**). The estimated values are in good correspondence with the trends predicted by the geometrical parameters. Examination of the Cambridge Structural Data Base (CSD) for ²-amino acids in crystal structure of peptides was carried out to map and analyze the ramachandran plot for ²- amino acids (**Figure 1**) which reveals a similarity to the glycine R-map. Furthermore, ¸ value in observed crystal structures, preferred a 90p occurrence, contradictory to the theoretical results where *gauche* and *anti* conformations for ¸ are predicted to be mostly stable.

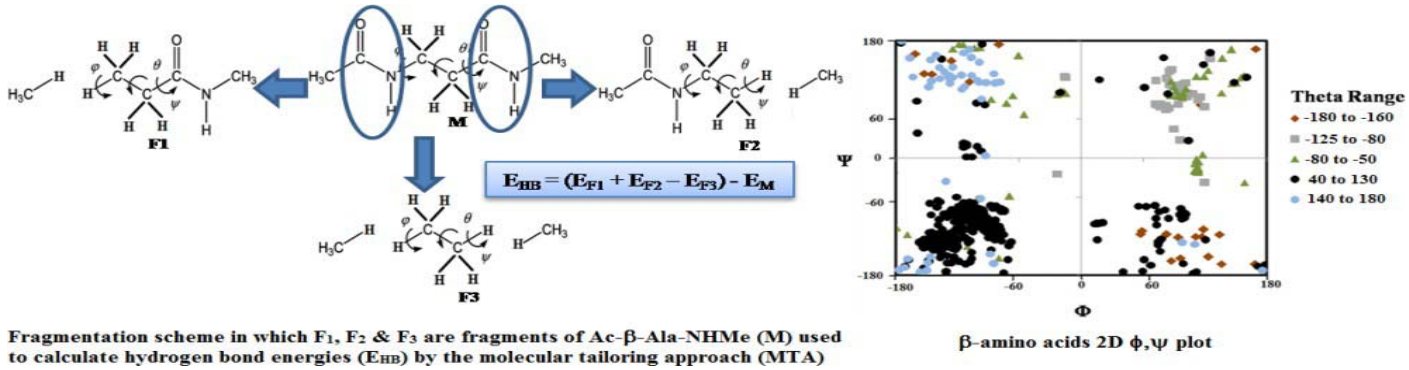

Figure 1. Fragmentation scheme to calculate H-bond energies by the MTA and 2D ¡, ¨plot for ²-amino acids.

BASIC INTRODUCTION OF NMR SPECTROSCOPY

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Abstract

Phthaladomide molecule was discovered by pharmaceutical industry called Gronther in Germany and this molecule was sold in the clinical market for the treatment of disease called Morning sickness in prignent woman but after 7 or 8 years data were collected it was found that those prignent woman who took this medicine for the treatment of morning sickness, 10 thousand babys died and those survive they had permanent disability .If you want to know the structure of compound we need to know about spectroscopy. So this is the basis of development of spectroscopy. The Organic chemist mostly study uses the IR and NMR. Nuclear magnetic resonance (NMR) is a spectroscopic method that is even more important To the organic chemist than infrared spectroscopy. Many nuclei may be studied by NMR techniques ,But hydrogen and carbon are most commonly available. Whereas infrared (IR) spectroscopy reveals the type of functional groups present in a molecule, NMR gives information about the type and number of hydrogen atom in the molecule and by C13 NMR we can determine the number of carbon atom present in the molecule.

BIOPESTICIDES ROLE IN ENVIRONMENT SUSTAINABILITY

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Abstract

Green revolution boosted the agricultural production in India making the country self-sufficient in food supplies (Swaminathan, 1995) that highlight the value of pesticides in reducing crop losses. Thus, the use of pesticides has gradually become a part of our modern agriculture practices.

Agricultural crops are under constant assault by insect pests, making insecticides essential to reduce losses. The over use of chemical pesticides causes environmental and health problem have been the matter of concern so plant extracts which known as biocide or green pesticides can be an alternative good source of chemical pesticide due to their safe, eco-friendly and more compatible properties. These are being used to manage the pest and minimize the yield loss.

Plant extracts pesticides are produced by active ingredients, volatiles and secondary metabolites from natural plants that interference the reproductive and feeding behaviors of insects.Many plant extracts and essential oils are known to possess ovicidal, repellent and insecticidal activities against various insects. The insecticidal action of extracts of some are rapid whereas insecticidal action of some extracts is slower since over 90% mortality was only obtained at 3-4 days after treatment.

The different types of plant extract used as biocides such as Neem, Tobacco, Marigold, Chrysanthemum,Datura and many others are being utilized to control and manage the pest or disease of different plants. The alkaloids such as nicotine (obtained from *Nicotiana tabacum*) and pyrethrum (obtained from Chrysanthemum spp.) make good insecticides. the extracts from Neem tree (*Azadirachta indica*) containazadiractin which keep away the insects . Marigold repressive impact on pests has been documented for over 50 years. The purpose of this review has revealed to control pest in some economically important crops through different plant extract for sustainable agriculture.

Keywords: - Insecticide, Biocide, Sustainable, Ovicidal, Alkaloid

ABSTRACTS

BIOCHEMICAL & HISTOPATHOLOGICAL CHANGES DUE TREATMENT WITH DIFFERENT HERBAL FORMULATIONS IN CARBON TETRACHLORIDE INDUCED HEPATOTOXICITY IN WISTAR RATS

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Abstract

The liver is a vital organ having a wide range of functions including detoxification, protein synthesis and production of biochemical compounds necessary for digestion. It is involved with almost all the biochemical pathways environmental toxins, drugs and alcohol which can eventually lead to various liver disorders, generally presenting as a distinct patterns of diseases such as hepatocellular, cholestatic (obstructive), or mixed type of liver disorders. Almost all types of liver injuries may lead to hepatic failure and ultimately death. Thus liver diseases are one of the most fatal diseases in the world today. Till date available modern drugs have not been able to come up with a satisfactory answer for liver disorders because of high cost and additional adverse effects. It is therefore necessary to search for alternative drugs for the treatment of liver diseases to replace the currently used drugs of doubtful efficacy and safety.

Present study is design to overcome hepatotoxicity through herbal formulation as they are reported to possess least side effect. For which we have used three formulations [F1 (*Curcuma longa* + *Solanum nigrum* + *Alium sativum*), F2 (*Curcuma longa* + *Ocimum tenuiflorum* + *Phyllanthus embilica*) and F3 (*Curcuma longa* + *Solanum nigrum* + *Alium sativum* + *Ocimum tenuiflorum* + *Phyllanthus embilica*] all the above mentioned herbs possesses antioxidant, hepatoprotective, cardiovascular and antidiabetic, anticancer, anti-inflammatory, antimicrobial, photoprotective and wound healing activities also. In our study when these formulations was given to the hepatotoxicity induced rats, they overcomes hepatotoxicity induced by carbon tetra chloride. The results are as par to standard drug sylimarin and possess less side effects. Hence we can say that herbal preparations are better healers. As in our study after the use of formulations the recoupment in the histological structure of liver was observed which was supported with the help of various biochemical parameters.

KEYWORDS: Carbon tetrachloride, Hepatotoxicity, Herbal formulation, Liver.

CORDYCEPS SINENSIS-THE MAGICAL CATERPILLAR FUNGUS

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Abstract

Cordyceps is a type of medicinal mushroom said to offer antioxidant and anti-inflammatory benefits. Long used in traditional Chinese medicine, cordyceps is available in the United States as a dietary supplement.There are 400 species of cordyceps, most of which are native to Bhutan, China, Korea, Nepal, Thailand, and Vietnam. The most well-known medicinal species is Cordyceps sinensis (now known officially as *Ophiocordyceps sinensis*). The mushroom has a long, finger-like body and is usually a brown or orangish-brown colour. In India, it is known as keera jhar, keeda jadi, keeda ghas or ghaas fafoond in Nepali, Hindi and Garhwali.The Tibetan name is transliterated in Nepali as yarshagumba, yarchagumba or yarsagumba.

The genus *Cordyceps* is an important kind of medicinal fungi belonging to the Ascomycota, Pyrenomycetes, Hypocreales, and Clavicipitaceae.*Cordyceps* are specific macrofungi because of their characteristic parasitic habit on larvae and pupae of insects. As a pleomorphic fungus distributed worldwide, *Cordyceps* is particularly abundant in tropical forests and humid temperate.

Cordyceps is a unique blade-shaped fungus growing on caterpillars, and is a highly valued tonic herb claimed to treat a wide range of disorders, including respiratory, renal, liver and cardiovascular diseases, low libido and impotence, and hyperlipidaemia. Many bioactive components of *Cordyceps* sinensis have been extracted including nucleoside, polysaccharide, sterol, protein, amino acid, and polypeptide. In addition, these constituents' corresponding pharmacological actions were also shown in the study such as anti-inflammatory, antioxidant, antitumour, antiapoptosis, and immunomodulatory actions. Till now, numerous bioactive constituents have been extracted such as cordycepin, polysaccharides, ergosterol, mannitol, and adenosine. Cordyceps Cs-4 showed an increase in exercise performance in healthy older adults according a study from the Journal of Alternative and Complimentary Medicine in 2009.

Keywords: -Antioxidant, Anti-inflammatory, Pleomorphic, Antiapoptosis, Bioactive

SURVEY OF EARTHWORM BIODENSITY IN EASTERN UTTAR PRADESH

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Abstract

The bio-density of earthworm was recorded for the period of July 2015 to June 2016 and July 2016 to June 2017. The number of earthworms recorded in 50x50(cm) area of cultivated soil, non-cultivated soil, grassland soil, irrigation channel and orchard of the selected five districts of eastern Uttar Pradesh. During fist year the maximum population occurs during August in orchard. The population in Grassland and non cultivated soil was also found maximum during August. At cultivated and irrigation channel sites the population was maximum in July. The lowest population of earthworm was recorded during April in orchard. At non-cultivated and grassland sites population was minimum during the months of February and March, respectively. Cultivated and irrigation channel sites had the lowest population during February and June. No earthworm were found during May and June at all the sites. During the second year of the study the maximum population was recorded from archard and non-cultivated during August followed by grassland during September. At cultivatesd and irrigation channel sites the population was recorded maximum during July. The lowest population was recorded in March from non-cultivated and grassland sites followed by April from cultivated and orchard. The irrigation channel site had the minimum population in the month of June. No earthworms were recorded any of the sites in May and June except irrigation channel. It was observed that rainy season have the maximum population. Results also indicate that the undisturbed sites like orchard and grassland possessed more population. Thus, it was concluded that the earthworm population was highest in wet months i.e., in July, August and September. Population is decreasing gradually from September onwards.

AMELIORATIVE EFFECT OF GARLIC EXTRACT ON GLYCOGEN LEVEL IN CYPERMETHRIN TREATED FISH, *Heteropneustes fossilis*

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Abstract

The present study was conducted to evaluate the protective role of garlic extract against cypermethrin induced toxicity in fresh water fishes *Heteropneustes fossilis*. The previously calculated LC_{50} values of cypermethrin (CYP) after 24, 48, 72 & 96 h exposures were 0.00066, 0.00044, 0.00033, and 0.00022 ml/l respectively at which 50 % fishes were died after exposure. The effective concentration of garlic extract (GE) was 10 ml/l at which no mortality occurred even that the fishes were received LC_{50} concentration also after all exposure periods. To analyze the effect of GE on glycogen level after acute exposure of cypermethrin, fishes were divided into 4 groups of 10 fishes each. For acute toxicity experiments 1st group served as control, 2nd, 3rd and 4th group were received CYP (24h LC_{50}), GE (10ml/l) and CYP (24h LC_{50}) + GE (10ml/l) respectively. Same protocol was employed for 48-96 h using LC_{50} values of 48,72 ad 96 h & 10ml/l GE. After completion of experiments liver tissues taken out homogenized and centrifuged separately at 3000 rpm for the estimation of glycogen. The glycogen content was estimated from supernatant by anthrone reagent method. Decreased glycogen level was observed after acute exposure of cypermethrin. The decreased glycogen content in tissue recovers slightly, near to control after addition of garlic extract because garlic have ability to enhance insulin secretion.

Keywords: Cypermethrin, *Heteropneustus fossilis*, Garlic extract, LC_{50}.

HISTOLOGICAL STUDY OF MALATHION SUB-LETHAL TOXICITY IN GILLS OF *CLARIAS BATRACHUS*

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Abstract

Malathion is used in the agricultural field due to their rapid biodegradability and non-persistent nature to control the pest but their broad spectrum of harmful effects extends far beyond the pest. The freshwater fish *Clarias batrachus*, when exposed to a sub-lethal concentration of malathion (50% EC) for a period of 15, 30, 45 days, shows histological alterations in gills. The main objective of this paper is to carry out an experimental study to investigate the effect of sub-lethal concentration of malathion on gills of the freshwater fish *Clarias batrachus*. The present study focuses on the effect of malathion induced histological alterations in the gills tissues of freshwater fish *Clarias batrachus* (Linn.,1758). The organophosphorus pesticide malathion (50% EC) is procured from the local market of Jhansi. Value of malathion LC50 96 hours calculated 0.25 ppm. The sub-lethal concentration of 0.025 ppm was fixed by using $1/10^{th}$ of LC50 at 96 hours (Yogesh et. Al., 2009).

The effect of malathion on sub-lethal concentration (1/10 of 96 hours of LC50) was observed on the histology of the gills in treated groups of fishes. notable alterations were observed in gills sections of treated fishes as compared to the control group. In addition, the study aimed to investigate the histological alterations of sub-lethal concentrations of malathion in the gills. The most common histological changes in the gills of fish exposed to malathion were characterized by thickening of secondary lamellae, hemorrhage at primary lamellae, deformation of the cartilage core, erosion of secondary lamellae, blood congestion in the secondary lamellae, shortening of the secondary lamellae. Ultimately, the study revealed that the degree of distortion of the gills was in proportion to the duration of exposure and concentration i.e., dose and time-dependent.

For this study, the control group was being freed from the treatment of malathion whereas the experimental group was treated with a sub-lethal concentration of malathion with 0.025 ppm. Histological tissues were collected from both the control group and experimental group at 15, 30 and 45 days and the technique of microtomy was used for the histological slide preparation of the gills tissues.

Keywords: *Clarias batrachus*, gills, malathion, LC50, Microtomy, Histology.

ALTERING ENVIRONMENT IS THE BIGGEST THREAT OF PRESENT ERA

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Abstract

Climate change is the biggest challenge for 21st century. It is not a problem of any single specific country or continent but it is a global problem. Present world is continuously speeding towards a catastrophe. Our foot is stuck on the accelerator and we are heading towards an abyss. It has far reaching effects, consequences and implication for entire globe in general and developing countries in particular. If sincere efforts are not made on war footing, then the life would become hell on this planet. Now-a-days, seasons are changing, temperature is rising of both earth and seawater and there is no end to it. The globe is entering in era wherein the environment would get intertwined in a spiral of decline and degradation affecting the availability and access to water, food, and energy in a big way. Studies reflects, world over people would consume 10 per cent more water per year than nature could replenish. Increase in global warming has been melting glaciers and receding snowlines. Accordingly, seventy rivers have stopped flowing into the sea and as a result, aquifers are depleting. It has far reaching effects, consequences and implication for entire globe in general and developing countries in particular. Hence, it is high time that globe as a whole must come forward to formulate a collective strategy for meeting or facing the biggest challenge of 21st century. Both developed and developing nations are sailing in the same boat. Hence, it is high time that globe as a whole must come forward to formulate a collective strategy for meeting or facing the biggest challenge of 21st century.

Keywords: Climate, Catastrophe, Energy, Glaciers, Globe

ECO-FRIENDLY INTEGRATED MANAGEMENT OF BIOTIC STRESSES (INSECT PESTS AND DISEASES) OF UNDERUTILIZED VEGETABLES BY PACKAGE AND MODULES FOR DOUBLING OF INCOME TO THE VEGETABLE growers

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Abstract

India's significant vegetables production is despite its comparatively lower productivity (17.4 tonnes per hectare) is about half of the productivity of USA (31.4 tonnes) and its productivity was closer to world average for vegetables (18.8 tonnes per hectare). Compared to the leading producer of vegetables China, India lags behind in productivity in case of vegetables. During 2015-16, India produced 169.1 million metric tonnes of vegetables from the area under cultivation of vegetables stood at 10.1 million hectares. The vast production base offers India tremendous opportunities for export. During 2018-19, India exported fruits and vegetables worth Rs. 10236.93 crores/ 1,469.33 USD Millions which comprised of fruits worth Rs. 4817.35 crores/ 692.01 USD Millions and vegetables worth Rs. 5419.48 crores/ 777.25 USD Millions. Though India's share in the global market is still nearly 1% only, there is increasing acceptance of horticulture produce from the country (APEDA 2019). This has occurred due to concurrent developments in the areas of state-of-the-art cold chain infrastructure and quality assurance measures.

To fetch more foreign exchange, by virtue of enhancement of popularities of underutilized vegetables among the vegetable growers for expansion of area and productivity, management of biotic constraints, availability of diverse suitable genetic resources at its vicinity, congenial ecological conditions and handsome trade outcome would be open new avenue of doubling the income of vegetable grower. During last 3 decades, India has achieved the target of food grains production for food security by Green resolution but nutritional security is yet one of the major challenges in front of vegetable and fruit growers. Among the edible vegetables, a wide range of economically very viable vegetables due to its unique nutritional features are yet cultivated on sporadic area due to its biotic constraints and these vegetables are known as underutilized vegetables, among the growers and consumers. Systematic application of different carriers/fillers based formulations viz. liquid based, powder based, pellet based, granules based etc for effective management of biotic stress to keep their population under economic threshold level (ETL) following package and modules has been proposed:

Modules for the application of biopesticide in integration with other safe components:

In case of transplantable crop-nursery based, as a representative**:**

A). For Soil-borne diseases – fungal (wilt, root rot) bacterial (soft rot) and root-knot nematode:

1). At Nursery level:

a). Soil treatment/drenching: For this, organic amendment with neem oil seed cake @500g/m^2 and + 200g VAM/m^2 were done 10 days prior to sowing followed by constant watering for decomposition while at sowing, fungal bioagents@100g//m^2 (*Trichoderma viride*@50g/m^2 /acre + *Paecilomyces lilacinus*@50g/m^2) were applied.

b). Foliar spray/drenching with a mixture of fungal bioagents 500g in 5 liter/ m^2 (*Trichoderma viride* @250g + *Beauveria bassiana*@250g) and neem oil seed cake@500g + 200g VAM/m^2 were done with first spray after one week of germination followed 3 more sprays at intervals of 5 days.

2). Bare root dip treatment/drenching: Transplantation was done of 20-30 days old healthy seedlings after subjecting them to bare root dip treatment for 30 minutes in a slurry containing Jaggery@50g + fungal bioagents (*Trichoderma* sp.@50g/lit. + *P. lilacinus*@50g/lit.) + 200g neem oilseed cake + 200g VAM.

3). Transplantation of seedlings to the 'hot spots' on ridges prior to which deep ploughing followed by application of a mixture of fungal bioagents@1kg grown on sorghum grains or talc based + 25 kg summer solarized Farm Yard Manure + 10 kg neem oilseed cake/acre+ 2kg VAM/acre were + fungal bioagents @1kg (*Trichoderma viride* @500g/acre + *Paecilomyces lilacinus* @500g/acre) applied as soil treatment about 4-5 days before transplantation.

B). Foliar treatment/drenching of crops for diseases (blight, Cercospora & leaf curl) and insect pests (beetle, thrips, white fly, diamond moth etc.) was done by**:**

- **Foliar spray/drenching** with a mixture of fungal bioagents 1kg in 200 liter/acre (*Trichoderma viride* @500g + *Beauveria bassiana*@500g) and neem oil seed cake@10 kg + 200g VAM/acre were done with first spray after a week of germination followed 4 more sprays at intervals of 10 days.

In case of directly seeded crops- okra, cucurbits, leafy vegetables etc: Okra as a representative,

A). For Soil-borne diseases - wilt, rot fungi, termites and root-knot nematode:

Seed treatment: For this, fungal bioagents grown on sorghum grains *T. viride* @ 50g/kg + *P. lilacinus* @50g/kg were dissolved in mixture of 1 liter fresh water, 50g jaggery as a sticker and 100g neem oilseed cake. Prior to sowing, seeds were mixed in above solution followed by shade drying.

Soil treatment/drenching: For this, organic amendment with neem oil seed cake @50kg/acre was done 10 days prior to sowing followed by constant watering for decomposition while at sowing, fungal bioagents (*T. viride* @500g/acre + *P. lilacinus* @500g/acre) and 2kg VAM/acre were applied.

B). Foliar part of crops for diseases (blight, Cercospora & mosaic) and insect pests (beetle, white fly, moth) is to be done before the time of attack of diseases on foliar part by Foliar spray with a mixture of fungal bioagents 1kg in 200 liter/acre (*T. viride* @500g + *B. bassiana*@500g) and neem oil seed cake @10 kg was done with first spray after a week of germination followed 4 more sprays at intervals of 10 days.

Underutilized vegetable crops require special emphasis and must be popularized in order to utilize their potential modules to combat many lifestyle related acute and chronic ailments by increasing

in production, productivity, quality, improved diverse genetic resources of individual underutilized vegetables for doubling of income of vegetable growers. The increase in area and production of these vegetable crops will not only provide nutritional security and save money on import but also export of fresh vegetable crops and seed in further expected to boost region economy. Underutilized vegetable crops also provide many fold employment opportunities in agro-based industries, packaging, storage, preservation, canning and transportation.

DIVERSITY AND MEDICINAL IMPORTANCE OF FAMILY ASTERACEAE

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Abstract

The family Asteraceae considered being one of the largest family of flowering plants, having distributed throughout the world. The medicinal plants have been used traditional in conventional drug preparations by Ayurvedic and other medical practitioners for treatment of many diseases such as : allergies, anti-inflammatory, cardio- tonic, jaundice, cough, asthema, cuts, wounds, eczema, ulcers ,ringworm, leprosy ,vomiting and pimples. The plants or plant parts of this family are also used against seed-borne, soil-borne and air-borne micro-organisms which cause different diseases in plants. Present study deals with the survey of some area of Ghazipur district for important medicinal plants diversity and documentation. During survey twenty medicinal plant species viz. *Ageratum conyzoides* L.,*A. houstonianum* Mill., *Blumea* Dc., *Caesulia axillaris* Roxb., *Chysanthemum indicum* DC., *Cineraria* L.,*Cosmos* Cas.,*Dahlia* Cav.,*Eclipta alba* Hossk,*Eupatorium capillifolium* Lamk.,*Helianthus annuus* L.,*Lactuca* L.,*Launaea asplenifolia* Willd., *Parthenium hysterophorus* Web., *Sonchus oleraceous* L., *Tegetes erecta* L.,*Tridax procumbens* L.,*Vernonia cinerea* L., *Xanthium strumarium* L., *Zinnia* L. were collected and prepare the herbarium and further scientific informations like botanical name, habit, parts used, phytochemical, use and propagation were noticed. Due to their medicinal properties and for other plant products, it is necessary the conservation and preservation of medicinal plants.

Key Words: Medicinal properties, Diseases, Pathogens, Asteraceae, Ghazipur district

PERILOUS EFFECTS OF WASTE CHEMICALS ON THE DRINKING WATER SYSTE

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Abstract

Drinking water is one of our basic needs, which is an essential chemical for life. It covers most of our planet Earth, covering about 71% of the total surface area of the Earth.The term water pollution refers to water that is contaminated by anthropogenic substances such as waste chemicals and is not suitable for human consumption. Hazardous wastes are ubiquitous in the global environment and have been around for a long time. This was also clearly evident at the turn of the twentieth century when the International Joint Commission (IJC) was established in 1918 by the United States and Canada to address issues of serious pollution in the border waters of the two countries. Despite much effort and success over the decades of intervention, serious concerns still remain today. This is an example of a public health challenge, which appears in many forms around the world.

Industries that are the main source of waste chemicals are the main contributors to this pollution and as a result, many treatment plants, which have primary, secondary and tertiary treatment processes, have been set up to treat contaminated water. Pathogens in this polluted water can cause waterborne diseases in living beings. The global scope of human health concerns from hazardous wastes has steadily increased. These approaches are based on insights gained from the world's peer-reviewed literature in broad areas of exposure, toxicology, epidemiology, public health practice, and the implementation of regulatory frameworks. Life on Earth would be impossible if the current situation continues.

Kew words: Chemical exposures, Computational toxicology, Environmental public health, Hazardous waste, Health effects, Pollution, Public health

RESPONSE OF NITROGEN CONCENTRATIONS TO FUNGAL DIVERSITY DURING LITTER DEGRADATION

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Abstract

The present study has been investigated with an aim to find out the effect of varying concentrations of nitrogen during the decomposition of agricultural litters. The litter have been collected from the agricultural fields of Sonagir area of Datia district, Madhya Pradesh. During the course of study, litters in the form of fallen twigs and leaves have been collected. The collected samples have been treated with various concentrations (5%, 10%, 15%, 20% and 25%) of nitrogen in the form of urea. It has been found that nitrogen concentration effective up to 20% concentration after that the concentration of nitrogen have been limiting factor. The rate of decomposition have been enhanced by addition of various fungal flora such as *Aspergillus fumigatus, A. niger, Bipolaris spp., Chaetomium spp., Circinella spp., Colletotrichum spp., Curvularia spp., Fusarium spp., Gilmaniella spp., Neosartorya spp.,* and *Scopulariopsis spp.*

Key words- Fungal flora, Leaf litter, *Saccharum officinarum L.*, Urea

LEAF INHABITING FUNGI AND ITS ROLE

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Abstract

Leaf spots fungi comprise of wide range of plant disease pathogen that do injury to many host plants . These organisms are classed by their structures ,and are quiet numerous in species . Most of the members are imperfect fungi . *Cercospora , Alternaria ,Anthracnose , Corynespora* , *Cylidrosprorium ,Cylindrocladium , Pleospora Ramularia ,Septoria , Passalora* , are some of the most common leaf spotting genera of fungi . Leaf spots damage will vary from minor to severe depending on the interaction of the host plant pathogen and environment . They producing fruting bodies , that are typically dark coloured , other produce distinctive mass of spores . As the infection expands the spots can merge forming larger dead areas which are termed as obligate . In severe cases all the foliage can become blighted . the spots are actually cocentric circle of damage from the centre of damage to the outer edge. Leaf spot diseases a generally regarded as leaf inhabiting fungi which are reduces greater photosynthetic yield in economically important cereal crops in the country as well as abroad .

Keywords: *Cercospora , Anthracnose* , Concentric, Blight.

ISOLATION OF SEED MYCOFLORA ASSOCIATED WITH PULSES FROM JHANSI DISTRICT

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Abstract

The present study was conducted for the isolation and identification of fungi associated with some common pulses of Jhansi district. The common pulses taken were *i.e., Cicer arietinum* L, *Pisum sativum* L., *Lens esculenta* Medik.. The isolation of seed mycoflora was done by both blotter and Agar technique prescribed by ISTA 1996. Sterilized and unsterilized seed were taken in each case. The total CFU (colony forming unit) along with individual specie population was observed and recorded. The effect of seed mycoflora on the germination percent was also estimated. In our study we came across 15 species belonging to 12 genera *viz*. *Aspergillus, Alternaria, Curvularia, Chaetomium, Penicillium, Rhizopus, Fusarium, Mucor, Macrophomia, Rhizoctonia, Trichoderma* . The unsterilized seeds harbored more fungal species, than sterilized seeds in both cases (Blotter and PDA). There was variation in total CFU and germination percent of seeds among pulses. Chickpea possessed maximum number of seed fungi and showed its superiority in germination percentage among the other pulses.

Key words:ISTA method, agar plate technique, blotter paper technique, pulses, seed mycoflora.

MORPHOTAXONOMIC STUDY OF RARE CESTODE PARASITES FROM THE GANGA RIVER AT PRAYAGRAJ (ALLAHABAD) U.P., INDIA.

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Abstract

The present study has been conducted to investigate taxonomic aspects of piscian cestode focusing on its morphological characters. freshwater catfish Clarias batrachus (Linnaeus, 1758) were collected from sampling stations and examined for tapeworm parasites. Six tapeworm parasites were found from its Intestine. The morphological study of cestode indicates that parasitic diversity is available in the Ganga river at Prayagraj (U.P.) region. Morphotaxonomic characters were examined as – H, butterfly-shaped ovary, vitelline follicle - cortical.

Key Words - Morphology, Morphotaxonomic, tapeworm, Cestode, Ganga River, Prayagraj (Allahabad).

DIVERSITY OF MYCORRHIZAL SPORES FROM IN AND AROUND BABINA FOREST JHANSI

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Shivangi Pandey, Jyoti Richhariya, Mily Anjaly Vaidyaraj
and Tirthesh K. Sharma*
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Abstract

Soil is a habitat of large number of micro-organisms like bacteria, fungi, actinomycetes, algae and protozoa etc. Some of these have been found as growth promoting while some are pathogenic. Present work has been carried out to isolate and identify various types of mycorrhizal spores growing symbiotically with roots of trees in and around Babina forest range of Jhansi district of Uttar Pradesh. For this surveys have been carried and soil samples have been collected. Using wet sieving method mycorrhizal spores have been isolated and identified on the basis of shape, size and colour. Spores belongs to genera are *Acaulospora, Glomus, Enthrophospora, Gigaspora and Scutellospora.*

Key words: mycorrhizal spores, wet sieving, forest.

DIVERSITY OF THE APHID PARASITOIDS IN EASTERN UTTAR PRADESH

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Abstract:

Aphid parasitoids belong to two families of Hymenoptera: Aphelinidae and Braconidae (subfamily:Aphidiinae.) *Aphelinidae* comprises only one species, *Phelinus gossypii* Timberlake which more common on several species of aphid on many plant species and needs future investigation considering its biology and population dynamics. The braconidae comprises ten species, *alhidius colemaniviereck, Aphidius matricariae* Haliday, *Aphidius* smithi Sharma & Subba Rao, *Aphidius uzbekistanicus* Luzhetzki, *Binodoxy sindicus* (Subba Rao & sharma), *Diaeretiella rapae* (Mcintosh), *Ephedrus plagiator* (Nees), Lipolexi *sorygmae* Gahan, *Lysiphle biamirzal* Shuja-uddin and Lysiphle busdelhiensis (Subba Rao & Sharma)

Key Word : Aphelinidae, aphids,braconidae, parasitoids.

DIVERSITY OF WEED FLORA IN JALAUN DISTRICT OF BUNDELKHAND REGION , UTTAR PRADESH.

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Abstract

Diversity of weed plants in Jalaun district of Bundelkhand region, Uttar Pradesh has been analysed in the present study. The economical backbone of this district mainly based on cultivation of *Triticum aestivum, Cajanus cajan, Cicer arientinum, Lens culinaris, Pisum sativum* and different vegetables in all season. Weed cause enormous reduction in crop yield, wastage of resources and human energy and are also a health hazard to human being. Detail information about the weeds of any region is essential for deciding a weed control method. To study the diversity of weeds in Jalaun district field survey was conducted from 2017 to 2019 in different cultivated crop field. In this study 151 weed species belonging to 118 genera and 41 families reported. Maximum number of species 25 belonging to family Asteraceae followed by Poaceae (17 sp.), Fabaceae (14 sp.) Amaranthaceae (13 sp.) and Euphorbiaceae with 09 species. The dominant genera is *Euphorbia* with 04 species followed by Alternanthera*, Heliotropium, Alysicarpus, Solanum* and *Corchorus* with 03 species each.

Keywords- Jalaun, weed, diversity, family, crop.

EVALUATION OF THE LEAF JUICE OF SOME PLANTS FOR THEIR TOXICITY AGAINST SOIL BORNE PATHOGENS

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Abstract:

Out of the leaf juice of fifteen plants species, only *Saraca indica* exhibited complete toxicity against *Pythium debaryanum* and *Fusarium oxysporum* . Shade drying of the leaves had no adverse effect while oven drying produced an adverse effect on the fungitoxicity of the leaves of *S.indica*. The crude leaf juice of *S.indica* successfully inhibited damping off (*Fusarium oxysporum*) infection of *Pisum sativum seedling.*

Key Words : damping off of seedling, *Saraca indica*, *Pisum sativum*, soil amendment.

PHYTOSOCIOLOGICAL ASSESSMENT & DISTRIBUTION PATTERN OF WOODY SPECIES IN SELECTED FORESTS OF JALAUN DISTRICT, UTTAR PRADESH, INDIA

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Abstract

The present study was conducted in the selected five forest ranges (Ikona, Lohai, Rampura, Dang-kharai and Simiriya) of Jalaun district, Uttar Pradesh during year 2017-2019. Phytosociological studies of the sites were conducted for woody species. Fifty quadrats of 10 x 10 m^2 size were laid-down on each site for studying the woody plant species composition and structure. A total number of 82 woody plant species belonging to 63 genera and 33 families were recorded. Fabaceae was the most dominating family followed by Moraceae, Rutaceae, Rubiaceae, Tiliaceae etc.

Keywords: Woody Plant Species, Woody Plants Species, Jalaun District Forests

BIOCONVERSION OF FOOD WASTE INTO COMPOST

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Abstract

Biotransformation is of primary importance to toxicology because the biological activity of toxicants is enhanced or decreased by this process.Bioconversion technology has proffered lasting solutions to a series of problems posed by environmental pollution which, to a large extent, threatens the health, quality of life, and the environment of many communities worldwide. Uncontrolled deposit of waste on land, in water, and into the air, adversely effects both biotic and abiotic earthly components. These wastes are now found in productive utilization in homes and industries globally. Wastes which were formerly toxic, unwanted or worthless byproducts, can now be handled safely and even ingested without detrimental effects. Waste-to-wealth systems and technologies provide additional sources of income to farmers, raising their standard of living and diversifying their products. Many age-long problems of waste management can be solved through further studies on bioconversion technology.This review analyses the main challenges of the process of food waste composting and examines the crucial aspects related to the quality of the produced compost.

Key words: Microbiology, Composting, Food waste,Greenhouse gases.

AN OUTLINE OF MODERN ENVIRONMENTAL PROBLEMS IN INDIA

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Abstract

There are many environmental issues in India. Air pollution, water pollution, garbage, and pollution of the natural environment are all challenges for India. The situation was worse between 1947 through 2019. According to data collection and environment assessment studies of World Bank experts, between 1995 through 2010, India has made one of the fastest progress in the world, in addressing its environmental issues and improving its environmental quality. Still, India has a long way to go to reach environmental quality like those enjoyed in developed economies. Pollution remains a major challenge and opportunity for India.Environmental issues are one of the primary causes of disease, health issues and long-termlivelihood impact for India.

WATER QUALITY STATUS OF BETWA RIVER IN BUNDELKHAND REGION

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Abstract

Water is the most basic natural resource for the life. It has unique physico-chemical properties in the form of its desirable and acceptable range of water parameters. These parameters are very essential for survival of any living organism. In the current scenario many natural and anthropogenic activities accelerates the aquatic pollution day by day and these undesirable threat makes the serious disturbance in aquatic biota, which ultimately disturb our aqua environmental-ecosystem. This present research was carried out during the period from July 2018 to June 2019. The different water quality parameters like Temperature, Transparency, Turbidity, pH, EC, DO, TDS, TSS, TS, BOD, COD, Ca, Mg, Alkalinity, Nitrates, Phosphate, Hardness, chloride were analysed, which explore the actual water quality status of different selected sampling sites on Betwa river in Bundelkhand region

Keywords: Water quality parameters, Betwa river, Bundelkhand Region.

EVALUATION OF THE LEAF JUICE OF SOME HIGHER PLANTS FOR THEIR TOXICITY AGAINST SOIL BORNE PATHOGENS

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Abstract

Out of the leaf juice of fifteen plants species, only *Saraca indica* exhibited complete toxicity against *Pythium debaryanum* and *Fusarium oxysporum* . Shade drying of the leaves had no adverse effect while oven drying produced an adverse effect on the fungitoxicity of the leaves of *S.indica*. The crude leaf juice of *S.indica* successfully inhibited damping off (*Fusarium oxysporum*) infection of *Pisum sativum seedling.*

Key Words : damping off of seedling, *Saraca indica*, *Pisum sativum*, soil amendment.

MORPHOTAXONOMICAL STUDY OF A NEW TAPE WORM *PEUDOBATRACHUS NIWARIENSIS* N.SP. FROM *CLARIAS BATRACHUS* (LINN)

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Abstract

Five fishes of *Clarias batrachus* (Linn) were Collected from niwari district Tikamgarh (M.P.). Single unique cestode was reported from its intestine, which shows 'H 'shaped ovary with remarkable unequal and straight arms and apical projections at the anterior end of the scolex. Morphological study of the cestode revealed them to a new species, *Pseudobatrachus niwariensis* sp. of the family Capingentidae Hunter, 1930.

"EMERGING CORONA VIRUS"

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Abstract

Corona are large group of viruses that consists a core of genetic material surrounded by an envelop with protein spikes.It gives an appearance of crown Latin word "corona" that is why these viruses get this name. Symptoms can be respiratory or gastrointestinal . Disease can range from common cold to severe pneumonia. **SARS CoV** was identified in China and **MERS CoV** was identified in Saudi Arabia . 2019 CoV first identified in China . Initially occurred in group of people with pneumonia would associate with sea food and live animals in market in Wuhan.

It is known that corona virus circulate in range of animals. Sometime these viruses jumps on from animals to human , this is also called spillover. Range of factors like mutation in viruses or increase contact between human and animals. Mers CoV is known to be transmitted from camels whereas SARS CoV is known to be transmitted from civet cats.

Respiratory viruses are usually transmitted through droplets created by infected person's cough or sneez. Groups at most risk are close contact with animals infected , live animal market workers and and those caring infected persons.

Symptoms can be such as cough , shortness of breath. More severe case can lead to pneumonia, kidney failure , death. Mortality rate yet to be known .

Preventions can be taken like covering mouth and nose while sneezing or coughing with tissues , using medical masks , avoiding close contact with infected person , washing meat thoroughly before cooking etc .

GINGER PRODUCTION IN BARUASAGAR LOCALITY: AN ANALYTICAL STUDY

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Abstract

Baruasagar is a famous town area of Bundelkhand region in Jhansi district. It is 22km far from Jhansi headquarter. It is situated at longitude 25.379936^0 and at latitude 78.739014^0. The topography of this area is narrow and there are many ridges seen near the town. The variety of soil of this area is called *ranker*, which is deteriorated *mar*soil. This soil is known for best fertilization in growing vegetables especially *ginger* crop. The temperature is semi-humid of this area. This town is well known for its ginger production. There are many varieties of ginger produced here. Ginger is a perennial monocotyledon herb which can be used in both i.e. vegetable and in medicine. However it is interesting to note that the some fungi, genera, insects, nematodes are very responsible factors for the production of ginger. insect pest generally infest their host to a lesser extent in their natural home. Thus they are likely to be attached by a more number of insect pest in the manmade agro ecosystem. In the present study I want to discuss about the microbial diversity, which infect the production of ginger and I also discuss about the symptoms of pathogens, its damage control and its nature, rich is very necessary for the formers of ginger agriculture.

FUNGAL DIVERSITY IN AND AROUND ORCHHA FOREST RESERVE, M.P. INDIA

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Absract

Fungi plays important role in decomposition of organic matter. The objective of this work is to scrutinize fungal diversity in and around forest reserve areas of Orchha, M.P. involved in decay of organic litter. For this, decaying litter samples have been collected in different seasons and efforts have been made to isolate and identify the fungal strains through serial dilution technique. Diluted suspensions of different concentration were streaked over Potato dextrose agar (PDA) medium. Heterogenous cultures have been purified through culturing and sub-culturing. Pure cultures were maintained at 4°C as slants in deep freezer. A total of 26 fungal strains were isolated and identified. They were – *Aspergillus flavus, A. japonicas, A. terreus, A. flavipes, A. nidulans, A. niger, A. fischeri, A. fumigatus, Alternaria alternata, Acremonium implicatum Beltraniella humicola, Chaetomium salami, C. convolutum, Cladosporium sphaerospermum Cunninghamella blakeesle, Curvularia lunata, Fusarium oxysporum, Mucor hiemalis, Penicillium chrysogenum, P. decumbens, Paecilomyces lilacinus, P. variotii, Rhodotorula glutinis, Rhizopus stolonifer, Scopulariopsis sps., Trichderma viride.*

Key words: Fungi, litter, decomposition.

IMPACT OF LAND USE CHANGE ON SOIL ORGANIC CARBONCONTENT INURBAN AREA OF UTTAR PRADESH

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Land use change from natural ecosystems tocultivated ecosystems is one of the major drivers of globalenvironmental change associated mainly with climatechange, loss of biodiversity, reduction of soil fertility andchanges in ecosystem services.Land use change leading to loss of soil carbon content is of major concern. In the present study, the effect of land use change involving naturally regenerated mixed vegetation, Teak plantation and agro- ecosystem in urban area of Uttar Pradesh was analyzed on thepotential of soil carbon sequestration in terms of the concentration of soil organic carbon. Soil organic carbon concentrationwas found to be highest innaturally regenerated mixed vegetation (0.80%) followed in decreasing order by Teak plantation (0.70%) and lowest in agro-ecosystem (0.25%). This study reflected that although the naturally regenerated mixed vegetation have greater potential of carbon sequestration but plantation of Teak for about 20 years ondegraded urban soil have potential of carbon sequestration compared to agro-ecosystem as teak plantation not only givesenvironmental sustainability but also economic sustainability.

Key words: Soil organic carbon, urban area, teak plantation, mixed vegetation, agro- ecosystem.

INFLUENCE OF FLY ASH ON SOIL PROPERTIES AND GROWTH YIELD OF CHICKPEA CROP IN SEMI-ARID REGION OF BUNDELKHAND

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Abstract

Fly ash changes the soil properties which may directly or indirectly affect microbial activity and growth of the plant. However, the knowledge about the impact of fly ash application alone or in combination with an organic amendment on soil properties and microbial response at semi-arid region of Bundelkhand soil is scanty. The main objective of this study was to assess the impact of lower or higher doses of fly ash on the soil physico-chemical characteristic, microbial popuation and growth of leguminous plant chickpea (*cicer arietinum L)*, an important crop of Bundelkhand. In the present study, it was observed that fly ash altered the soil texture, increased water holding capacity, moisture content, soil porosity, pH, electrical conductivity and organic carbon values of the soil. A marginal increase was also observed in the concentration of P, K, S, Mn, and B elements whereas bulk density and total nitrogen decreased in the fly ash amended the soil. The bacterial growth was found optimum at a certain level of fly ash start ceased with increasing fly ash concentration.

Keywords: Fly ash, Semi-arid, Microbial, Bundelkhand, Soil

STATUS OF CERCOSPOROID FUNGI IN BUNDELKHAND REGION

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Abstract

Bundelkhand region has a diverse and rich phanerogamic vegetation. This area is rich in biodiversity and for foliar fungi in particular, still for the foliar fungi this region is virgin, but for the growth and development of foliar fungi the climatic conditions are suitable. The fungi constitute a very large group of heterotropic organisms and ubiquitious in extreme habitats such as tropical to polar regions. There successfulness has led them to outnumber the sum total of green plants and other organisms on earth . The foliicolous hyphomycetes consist of Cercosporoid fungi which are heterogenous assemblage of hyphomycetes forms of Deuteromycotina. Cercosporoid fungi was represented by genus *Cercospora* which was introduced by Fresenius (1863) to accommodate foliicolous hypomycetes producing vermicular, phragmosporic conidia. In *Cercospora c*omplex, almost all the generic seggregrates have their root in monophyletic Mycosphaerella teleomorph, which is one of the largest genera of Ascomycetes. The seggregrates of *Cercospora c*omplex fall in to two groups, the Dematiaceous and Nondematiaceous. The dematiaceous genera are charaterized by their pigmented conidiophores and conidia, conidia being hyaline in case of *Cercospora*. The generic seggregrates represented by *Cercospora* are known as Cercosporoid or *Cercospora-Passalora* complex whereas the Nondematiceous genera, produce hyaline conidiophores and conidia and represented by *Ramularia* are called Ramuloroids or *Cercosporella- Ramularia* complex. The *Cercospora-Passalora* complex representedby *Cercospora, Pseudocercospora*, *Passalora, Phaeoramularia, Phaeoisoriopsis*, *Mycovellosiella, Stenella, Distocercospora*, *Corynespora* and few others.The *Cercosporella-Ramularia* complex represented by *Cercosporella, Mycocentrospora*, *Ramularia* and many more .Recently, Crous & Braun, upon examination of hundreds of type collections and thousands of non-type collections, assingned to *Cercospora,* deposited in various mycological herbaria of the world and analysis and correlation of molecular data have changed the entire scenario which were previously based on morphological study.

Key words: Heterotrophic, Foliicolous, Dematiaceous, Cercosporoid, Phragmosporic

ENHANCEMENT OF CROP GROWTH AND YIELD WITH FERTILIZER APPLICATION

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Abstract

Today fertilizer has become essential to modern agriculture to feed the growing populations. These are any material of natural or synthetic origin that is applied to soils or to the plant tissues to supply one or more plant nutrients essential to the growth of plants. They act as catalysts in providing nutrients to plants for their optimum growth and yield. A poly pot experiment carried out to study the effect of different levels of chemical fertilizer (DAP) and bio fertilizer (PSB) application on two *Vigna* crops (*Vigna radiata* L. Wilczek and *V. mungo* L. Hepper) and observed that the values of all experimental parameters such as root and shoot length, fresh weight of root and shoot, dry weight of root and shoot, leaf area index, chlorophyll content of leaves, 100 seeds weight etc. were positively enhanced with the application of PSB and the interaction level showed the greater values than control and other single fertilizer treatments.

Keywords: Bio Fertilizer, Vigna crop, PSB

STUDIES ON MANAGEMENT OF ANTHRACNOSE AND COMMON BACTERIAL BLIGHT OF MUNGBEAN (*VIGNA RADIATA*) BY USING OF AGROCHEMICALS AND BACTERIAL ANTAGONISTS

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Abstract

The mungbean crop suffers from several fungal diseases, among which anthracnose and common bacterial blight respectively caused by *Colletotrichum gloeosporioides and Xathomonas axonopodis pv. phaseoli* are the serious disease observed regularly in mungbean growing areas of Utter Pradesh and its incidence has increased alarmingly during the recent years in Utter Pradesh and Rajasthan. In the present study we tested four fungicides (Carbendazim, Azoxystrobin, Propineb and Mancozeb), one antibiotic (Streptomycin sulphate) and three bacterial antagonists' viz. *Pseudomonas fluorescens, Bacillus subtilis* and *Bacillus amyloliquefaciens.* Under in vitro study fungicides were screened against *C. gloeosporiodes* at different concentrations 500, 1000, 1500 and 2000 PPM by poisoned food technique and bacterial antagonists were screened for their efficacy against *C. gloeosporioides* by dual culture plate method. It was observed that carbendazim and azoxystrobin at 2000, 1500 and 1000 PPM completely inhibited the growth of *C. gloeosporioides* while Pseudomonas fluorescens and B. amyloliquefaciens were also inhibited the mycelial growth of *C. gloeosporioides*. Based on *in vitro* screening, promising fungicides were selected and re-evaluated under field condition against anthracnose of mungbean during kharif season. Experiment under field condition revealed that anthracnose disease of mungbean can effectively managed by propineb , azoxystrobin , and Carbendazim. Among bacterial antagonists *B. subtilis* and *P. fluorescens* were found very effective to reduce disease severity caused by *C. gloeosporioides*. Common bacterial blight of mungbean was found to be effectively controlled by application of *B. subtilis* and *P. fluorescens* at par with Streptomycin sulphate.

POLLUTION THREATS OF HEAVY METAL IN BIODIVERSITY OF FISHES

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Abstract

It is essential to monitor the level of water pollution not only to health reason but also for industrial and agricultural purposes. River are the main inland water resources for domestic, industrial and irrigation purposes and often carry large municipal sewage, industrial wastewater discharges and seasonal run-off from agricultural land to the coastal region. It is for this region that river water is mostly enriched in nutrients compared to other environments. Heavy metals are known as metallic elements with high molecular weight or specific gravity which produces toxicity by forming complexes or ligands with organic compounds and active site enzymes. The non- degradable and persistent nature of the metal ions results in longer exposure and accumulation of these substances in the aquatic flora and fauna. This would result in deterioration and disturbance of aquatic ecosystems. The high concentration of heavy metal affected the growth and development of fish during early stage such as hatching, larval development and juvenile growth because they are sensitive during these stages than during mature stages.

Keywords: Pollution, heavy metal,

POND : FRESH WATER CONSERVATION

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Abstract

The freshwater has been of vital importance to man and animal for sustenance of life and maintaining the balance of nature. Water is the nature's most wonderful, essential and an invaluable gift to all living organisms. Pond is an area filled with water, artificial or natural, sensitive, adaptive and vital ecosystem. Ponds are easily disturbed by human activities like dumping of industrial waste, sewage discharge, direct release waste water and garbage etc. Many ponds are vulnerable to serve water loss during drought. The objective of water conservation can be achieved through concrete efforts on the conservation and utilization of water on sustainable basis with a focus on holistic planning and sustainable development of sources of water. Some strategies like rain water harvesting, minimize domestic water conservation, recycling of waste water, improved irrigation methods and awareness building on water conservation.

PREVALENCE OF SOIL BORN DISEASE PATHOGEN OF PEA GROWING AREA OF DISTRICT JALAUN (UP)

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Abstract

A survey was conducted to disease incidence of soil born disease pathogen of district Jalaun during 2017 and 2018. Soil sample collected from pea growing area of nine blocks viz. Jalaun, Rampura, Kuthond, Mathogarh, Mahewa, Konch, Nandigaon, Dakore and Kadaura. In this survey seven pathogen viz. Alterneria sp. Rhizoctonia sp. Pythium sp. Fusarium sp. Phytophthora sp. Sclerotium sp. And Colletotrichum sp. Were isolated from serial dilution of soil samples. Maximum five types of pathogen were isolated from Konch Madhogarh, Kadura and Jalaun blocks. Three types of pathogen were isolated from two blocks Nandigaon and Dakore. Minimum two types of pathogen were isolated from Kuthond, Rampura and Mahewa blocks. Fuserium sp. was dominant as soil born pathogen in district Jalaun. Maximum percentage of Fuserium sp. was found in konch block soil samples and minimum in Mahewa block.

RELATIONSHIP BETWEEN PHYSICOCHEMICAL FACTORS OF SOIL AND RHIZOSPHERIC MYCOFLORAL DIVERSITY OF PIGEON PEA FIELD IN JALAUN DISTRICT

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Abstract

Soil is an excellent culture media for the growth and development of various microorganism. It is a mixture of five component i.e., organic matter, mineral matter, soil air, soil water and soil microorganism. Soil is not an inert static material but a medium pulsating with life. The amount proposition of different components in soil varies with localities in climate. The study was undertaken to investigate the relationship among physicochemical characteristic of soil and their impact on mycofloral diversity and wilt disease incidence of pigeon pea, from ten different villages belonging to Jalaun district. Soil sample were analysed for various characteristic pH, EC, soil moisture, N, P, K, organic carbon. A total 20 fungal species belonging to 12 genera comprising of *Aspergillus, Alternaria, Botrytis, Curvularia, Cladosporium, Fusarium, Pythium* pathogenic and *Aspergillus, Emericella, Mucor, Penicillium, Rhizopus, Trichoderma* saprophytic fungi was isolated. N and K composition have significant role on wilt disease incidence while other characteristic showed insignificant impact on disease incidence of wilt of pigeon pea. Correlation of soil microflora with physical and chemical property of soil have no uniform trend. Soil pH, Moisture, EC and P showed significant impact and other component like C, N and K also affect the growth of soil microbiota.

Key Words: Pigeon pea, Soil characteristic, Wilt disease incidence, Soil microflora.

ISOLATION AND IDENTIFICATION OF FUNGI FROM GILL AND SKIN OF *CLARIAS BATRACHUS* L

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Abstract

Microbiological analysis have been carried out from infected fish samples obtained from fish market for isolation and identification of fungi in infected regions. The infected fish sample with open wound and ulcerative growth found on caudal region and gills of *Clarias batrachus.* Extract was prepared from this infected part of fish. Serial dilutions of each sample upto 1: 1000 have been prepared.and was streaked over Potato Dextrose Agar (PDA) and the petriplates were incubated at 28°C. After purification of culture, microscopic study was carried out. The fungi isolated from the infected fish samples includes – *Aspergillus flavus, A. terreus A. fumigatus, Alternaria alternata, Curvularia lunata, Penicillium chrysogenum, Cladosporium sphaerospermum, Rhizopus stolonifer* and *Sepedonium sp. .* In the present study it has been found that almost 50% of the fish studied were infected with genus *Aspergilllus* and thus, it can be concluded that *Aspergillus* sp*.* is most dominant fungus among all the fungal genera identified.

Key words: Potato dextrose Agar, *Clarias batrachus.*

TOXICITY ASSESSMENT IN FRESHWATER CATFISH CLARIAS BATRACHUS (LINN.) AFTER EXPOSURE TO MALATHION

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Abstract

In recent years the high rate of increase in human population and rapid pace of industrialization have created problem of disposal of waste water. The domestic waste and untreated or partially treated industrial iffluents supplemented with pollutant like heavy metals , pesticides and many organic compound have greatly contributed to massive fish death of aquatic ecosystem . These toxic chemical and metals have changed the quality of water that affect the fish and other aquatic organism .

Toxicity assessment of behavioural change in catfish clarias batrachus due to melathion exposure base on the acute toxicity bioassay value 1/10,1/20 and 1/30 of the 96 h LC50 will be selected as sub lethal concentration and tha fish would be exposed to each concentration for a period of 7, 14 and 21 days. A control batch corresponding to each test group would be simultaneously maintained. The expose experiment would be reapeted three times and concentration supplied daily to maintain a constant toxic media. Fishes would be taken out blotted dry with soft absorbent paper and dissected to remove liver, kidney and gill tissue. The organ would be preserved in leveled sample bottle containing formal sailine selectioned and slide preparations would be made for histological investigation unde the microscope.

Results from animal studied would show that high level of melathion causes effect on the nervous system and on the kidney similar to those seen in people results from animal studies also show additional effect of melathion after exposure to lower levels for longer period. These other health effect of melathion in animal include change in the liever and reduced ability to fight infections . In addition animal born to mothers who have eaten large amounts of melathion do not live very long. This results , in part from the newly born animal being poisoned by melthion in the mother's milk. Studies In animals give conflicting information about whether melathion cause birth defect.

Keyword :- Melathion , aquarium , behavior ,hematological , indices, toxic effect, exposure time.

SOME ETHNOMEDICINAL CLIMBER PLANTS CHITRAKOOT DISTRICT

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Abstract:

Climber species constitute a very important group of non-timber forest products, as it becoming clear over the last decade. The distribution and abundance of climbing plants in forest varies, greatly with the geographic locality of forests. An initial survey recorded that among the entire phytodiversity prevailing in it, trees exhibit a good diversity, but the present study deals with the climber species only; which are useful as various herbal drugs by local inhabitants. During the present ethnobotanical investigations, much emphasis was made to list out the medicinal useful climber species. An extensive field survey was carried out in selected localities of Chitrakoot District inhabited by various casts and tribes during different season of 2013 to 2016. The present survey encompasses 35 climber species of medicinal uses belonging to 33 genus and 16 families. Some important climber species like *Abrus precatorius*, *Aristolochia indica*, *Asparagus racemosus*, *Cardiospermum halicacabum*, *Cayratia carnosa*, *Dioscorea bulbifera*, *Ichnocarpus frutescens*, *Luffa echinata*, *Mucuna pruriens*, *Pueraria tuberosa*, *Tinospora cordifolia* are rare in Chitrakoot and its ethnomedicinal information is documented here with their botanical names, local names, family and uses.

Key words: *Climber, Non-timber, Phytodiversity, Geographic, Ethnobotanical.*

SOME NATURALLY OCCURING WILD MEDICINAL PLANTS IN DISTRICT DEORIA, UTTAR PRADESH

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Abstract

In india the medicinal plants are used from the time of Vedas, then it was the only way to concur the diseases and ailments. During 200 B.C., Dhanvantari has referred the system of medicinal use of plants in the Atharv-Veda. The Rig-Veda (3500- 1800B.C.) appears to be the oldest record available on the medicinal plants. Aristotle (380 B.C.) and Theophrastus in his book "Historia de Plantarum" mentioned about the medicinal plants. Charak samhita and Sushruta Samhita were written between 700- 200 B.C. recording over 340 and 700 drugs respectively and this period is said to be the golden age of Indian culture. In Buddhist period (between 200 B.C. to 642 A.D.) the great physician Nagarjuna wrote a book on medicinal plants.

Most of the supply of drugs is obtained from wild plants growing in all parts of the world and especially in tropical region. These drug yielding plants are popularly known as 'Jari-Buti' in india. The drug plants are collected and prepared in crude indigenous way. Indigenous healthcare system plays always a vital role in the discovery of novel products from plants as chemotherapeutic agents. Even today, in most of the rural areas, people depend on local traditional healing system for their primary healthcare. This green wave is also discernible in our country by the fast growing herbal industry. Most of the medicinal plants are grown under natural ecosystem and are said to be wild plants. The medicinal value of drug plants is due to the presence of some chemical substances in the plant tissues which produce a definite physiological action on the human body. The present study highlights the description, illustration and medicinal uses of some wild plants found growing in Deoria district of Uttar Pradesh like *Phyllanthus fraternus, Oxalis corniculata, Datura metel, Sida acuta, Sida cordifolia, Boerhaavia erecta, Boerhaavia diffusa, Basella alba, Acalypha indica, Achyranthes aspera, Spilentha acmella, Adiantum lunulatum, Andrographis paniculata, Heliotropium indicum, Hyptis suaveolens, Imperata cylindrical, Solanum nigrum, Solanum surratens, Tridex procumbens, Amaranthus viridis, Amaranthus spinosus, Argemone mexicana, Calotropis procera, Cassia obtusifolia, Cassia occidentalis, Leucas aspera, Cleome viscosa, Cleome gynandra, Chenopodium album, Catharanthus roseus, Cyanodon dactylon, xanthium strumarium, Cyperus rotundus, Tinospora cordifolia, Eclipta prostrate, Vetivera zizanoides, Physalis minima, Vernonia cineria, Mimosa pudica, Peristrophe bicalyculata* etc.

STUDIES OF SIMULATION OF SPECTRA OF SOME HETEROCYCLIC ORGANIC COMPOUNDS

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Abstract

Quantum chemical viz. *ab initio* or semi-empirical based simulation studies are now prevailing among workers/scientists pursuing their studies in theoretical chemistry. These studies provide better insight for the compounds so far as the studies of their structural orother parameters are concern. Studies involving the packages developed on the basis of *ab-initio* or semi-empirical methods are proven to be more effective and as a better tool because of number of their advantages. The present communication includes the studies on synthesis or procurement along with the simulation of spectra viz. I.R. of some heterocyclic organic compounds.

Keywords: Semi-empirical calculations/simulation of spectra/heterocyclic compounds.

The River Water Pollution in India – A Critical Review to Study the relationship among Different Physico -chemical parameter

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Abstract

Water is the Preemption of life as there is no life without water and the river's are the life line of our economy and culture. The River water Pollution in India is dangerous problem as it has affected not only of human and animal health but also the economic value of society. This abstract a large number of research paper published by different researchers on river water pollution in India by critically analysing and interpreting data on the different physico- chemical parameter's and finds that the river water in India is highly polluted in respect of physically, chemically and bacteriologically with different hazardous pollutants including both chemical and microbial activity coming from various sources such as a industries, mines, agriculture, urban and domestic besides. This work find and outlines the interrelationship among different physico-chemical parameters after sincere analysis and interpretation of data and discussion published in different research papers. The dissolved Oxygen (DO) and The PH are inversely related with temperature and turbidity and it is directly related with photosynthesis by Autotrophic plants. Biological Oxygen demand (BOD) and free carbon dioxide are directly prepositional with temperature. This Abstract work gives suggestion to explain the experimental result by applying the standard concept outlines a brief guideline is the assessment of water pollution of river water.

Key words: Water Pollution, BOD, DO

THERAPEUTIC EFFICACY OF *MORINGA OLEIFERA* LEAF EXTRACT AGAINST IMIDACLOPRID INDUCED HEPATIC-DYSFUNCTIONS IN ZEBRA FISH, *DANIO RERIO*

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Abstract

Moringa oleifera is the member of the Moringaceae family of perennial angiosperm plants commonly known as "miracle tree" or "tree of life". Different parts such as root, bark, pods and leaves of *Moringa oleifera* have nutritional and medicinal virtue. Its leaves are particularly rich in potassium, calcium, phosphorous, iron, vitamins A and D, essential amino- acids as well as such known antioxidants such as Chlorogenic acid, Moringinine, Quercetin, rutin, ²- carotene and ascorbic acid. Hence, this study was conducted to investigate the protective effects of *Moringa oleifera* leaf extract (MLE) against Imidacloprid (IMC) induced Hepatic- dysfunctions in zebra fish after 24 and 96 hrs exposure periods. 20 healthy fishes were randomly selected and divided into four groups. Group Ist served as control, Group- IInd received effective concentration of MLE- 12 ml/l, Group- IIIrd exposed with 24 hrs LC50 value of IMC (0.423 ml/l) and Group-IVth received both (0.423 ml/l of IMC + 12 ml/l of MLE). Same protocol was employed by taking 96 hrs LC50 value of IMC (0.270 ml/l) and effective concentration of MLE (10 ml/l). At the end of all experiments, liver was dissect out, homogenized and centrifuged separately to collect supernatant for enzyme analysis by autoanalyzer. The biochemical results revealed that the activity of LDH (Lactate Dehydrogenase) and GGT (Gamma- glutamyltransferase) were increased after both exposure periods in hepatic tissue in IMC exposed group as compared to control groups after both exposure periods whereas the combination of IMC with MLE normalize the increased activities of these hepatic enzymes. The study conclude that co-administration of MLE has shown protective potential against IMC induced hepatotoxicity.

Keywords- Imidacloprid, MLE, hepatic enzymes, zebra fish.

EFFECT OF TIN OXIDE ON KIDNEY OF *CHANNA PUNCTATUS* (BLOCH.): A REVIEW

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Tin oxide is an inorganic compound also known as stannic oxide with the formula SnO2. The mineral form of Tin oxide is called cassiterite and this is the main ore of tin. This oxide of tin is an important material in tin chemistry. It is a diamagnetic, amphoteric and solid colourles. Tin oxide has been used as an opacifier and as a white colorant in ceramic glazes. *Channa punctatus* (bloch.) found in ponds, swamps, brackish water, ditches and beels. It is found in the Indian Subcontinent and nearby areas, ranging across Afghanistan, Pakistan, India, Sri Lanka, Nepal, Bangladesh, Myanmar and Tibet. Its natural habitats are swamps, ponds and brackish water systems. It is a fish of high food value and has little value as aquarium fish. The present review is designed to effect of heavy metals (tin oxide) on histo-architectural and morphological changes such as body weight and organ weight ratio of *Channa punctatus* (Bloch.), this information may be helpful for future researcher.

Keywords: *Channa punctatus,* Heavy metal, Morphological changes, SnO_2, Tin oxide,

ETHNOBOTANICAL OBSERVATION OF *NYCTANTHES ARBOR-TRISTIS* L. (NIGHT JASMINE) OF AGRA REGION

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Abstract

Ethnobotany is considered as the study of past and present interrelationships between specific cultures of human and the use of domestic plants. *Nyctanthes arbor-tristis* (Night Jasmine) is a high voluble traditional medicinal shrub or small tree plant belongs to Oleaceae family. Its native to India but distributed in Nepal and Himalayan region. In India it is found as ornamental plant in garden and temple side. Ethnobotanical survey and knowledge about the plant, the five villages of Agra District were selected for this observation. Ethnobotanical observations were made on target plant and considerable discussed by five villager rural people like Farmer, Medicine men, Vaidhya and Hakim of Agra District regarding medicines and socio-religious beliefs. The household survey for obtain information on traditional uses, availability and conservation of target plant. The present study we observed the leaves, flowers, fruits, bark and seed is extensively used in Ayurvedic medicine since ancient times for the treatment of many diseases by local people of agra region. Therefore, it should reproduced and promoted cultivation in rural as well in urban areas.

Keywords: Ethnobotany, Medicinal knowledge, *Nyctanthes arbor-tristis,* Oleaceae, Traditional healers.

AGRICULTURAL POLLUTION: EFFECT ON OUR ENVIRNMENT

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Abstract

In this paper we have tried to cover all the aspects of Agricultural Pollution.

Even when talking about different types of pollution, we were unaware of these kinds of pollution such as plastic pollution, soil pollution, agricultural pollution, smog etc,but when we study the particular topic, it is very familiar to us. Thus let us understand what agricultural pollution is ,their cause, types, prevention methods and effects elaborately.

Pollution by agricultural practices has come up ever since the demand for food has increased, proportional to the increase in population. To increase the yield of forms and fields the farmers have resort to additional chemical, fertilizers, pesticides, weedicides,hormonal treatments which changed the way forming was done traditionally.

Agricultural pollution is contamination of the environment and related surroundings as a result of using the natural and chemical products for farming. This contamination is actually injurious to all living organisms that depends on the food on cultivation.

Keywords: Agricultural Pollution, Methods, Contamination

COLLECTION, PRESERVATION AND FUNCTION OF PITUITARY GLAND OF *LABEO ROHITA* AND *CLARIAS BATRACHUS*

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Abstract

The present study on the collection and preservation of pituitary gland from the *Clarias batrachus* and *Labeo rohita* which are use for making Pituitary gland extract for induce breeding in fish. The fish pituitary is an endocrine gland of dual origin found on the ventral side of mid brain attached to it by means of stalk. Based on the presence or absence of the stalk, the pituitary is classified into leptobasic (with stalk) and platybasic (without stalk). Our fish classified into leptobasic. The pituitary gland produces many hormones which control the various functions of fish. The fish was killed by transection of the spinal cord, and the pituitary gland was rapidly dissected, and take out from the skull and cut into halves in the sagittal plane which are further preserved in alcohol for hypophysation technique.

Keywords: Induced breeding, Pituitary gland*, Clarias batrachus* and *Labeo rohita,*

A SEASONAL STUDY OF HAEMATOLOGICAL AND BIOCHEMICAL PARAMETER OF COMMON CARP (*CYPRINUS CARPIO*) AND CAT FISH (*CLARIAS BATRACHUS*) IN BUNDELKHAND REGION

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Abstract

The purpose of the present study was to know the seasonal (rainy and winter) variation in haematological and biochemical parameter of two fishes (*Cyprinus carpio* and *Clarias batrachus*). In our finding hemoglobin level of *Cyprinus carpio* in rainy (10.1±0.65), winter (7.74±0.45) and in *Clarias* batrachus (9.12±0.88), (8.82±0.67) is decreased in both species, while cholesterol level in *Cyprinus carpio* (145.6±5.12), (212±8.03) and *Clarias batrachus* (165.6±5.12), (195.6±14.7) is increased from rainy to winter and no significant difference in the protein content (4.77±0.46), (4.82±0.40) was observed in *Cyprinus carpio* but in *Clarias batrachus* little variation from rainy to winter (5.21±0.46), (6.30±0.39) was observed. Glucose level decreased in *Cyprnius carpio* (82.4±14.5), (67.4±4.33) but increased (78.4±14.58), (151.4±25.14) in *Clarias batrachus* during rainy to winter season.

Keywords: Haematological parameters, Biochemical parameters, *Cyprinus carpio* and *Clarias batrachus*,

FRESH WATER FISH DIVERSITY OF PAHUJ RESERVOIR BUNDELKHAND REGION, DISTRICT JHANSI UP, INDIA

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Abstract

The present study was aimed to investigate fresh water fish diversity of Pahuj Reservoir Bundelkhand region district Jhansi UP, India. Ichthyological study was conducted for twelve months (Feb. 2019-Jan.2020).A total no of 23 species were identifies which belonged to 6 orders 9 families and 2 divisions viz. Cypriniformes, Siluriformes, Mastacembelliformes, Ophiocephaliformes, Perciformes and Notopterideformes. Various major carps, minor carps, cat fishes and weed fishes were identified. Endangered species like *Notopteruschitala, Notopterusnotopterus,* and *Eutropiichthysvacha* were also observed.

Key Words: Pahuj reservoir, Fish diversity and Fresh water

PROTECTIVE EFFECTS OF DIFFERENT COMPOSITIONS OF HERBAL PLANTS ON ALLOXAN INDUCED DIABETIC ALBINO RATS

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Absract

Diabetes mellitus is a non-communicable disease which is also referred as life style disorders need modification in diet, exercises and behaviour along with medication. It is a common and very prevalent disease all over the world and about 25% of the world population is affected by this disease. Synthetic drugs are expensive and also cause genetic and metabolic alterations so new anti-diabetic drugs are in great demand and the herbal medicines that are easily available in surrounding environment being used traditionally for untreated *Diabetes mellitus* provide a rich source for new drug. Different herbal formulations are preferred due to maximum therapeutic efficacy with low cost and lesser side effect. They are not addictive or habit forming, and are powerful nutritional agents that support the body naturally.

Present study was an attempt to evaluate antidiabetic effect of different compositions of five herbal plants extracts viz F-1 [*Azadirachta indica, Phyllanthus emblica* and *Tamarindus indica*], F-2 [*Allium sativum, Azadirachta indica* and *Zingiber officinale*] and F-3 [*Allium sativum, Azadirachta indica*, *Phyllanthus emblica, Tamarindus indica* and *Zingiber officinale*] in diabetic albino rats at a dose of 300mg/kg and various biochemical and haematological parameters were done to evaluate effect. These different formulations possess antidiabetic effect against alloxan induced diabetes in rats with more efficiency than glibenclamide standard when treated with F2.

Keywords: Diabetes mellitus, Antidiabetic activity, Different herbal formulations.

MOLLUSCS USED FOR CLEANING POLLUTED WATER

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Abstract

Water pollution is defined as the presence of toxic chemicals and biological agents what is naturally found in water**,** when exceeds in groundwater and may pose a threat to human health and on the environment also. The chemicals like nitrate, phosphate, manganese are good nutrients but can be bad when in excess. These chemicals comes in reservoirs as the result of civilized human activities and cause algal blooms, loss of sea grass and low oxygen levels, which effect entire biosphere of plants and organisms living in these water bodies. Many practices are ongoing know a days but not much success is still gained in this field. One of them Biological testing is good practice which involves the use of plant, animal or microbial indicators to monitor the health of an aquatic ecosystem. Their are many group of species whose population, biochemical, physiological, or behavioral mechanisms helps in controlling these nutrients of any water ecosystem. Copepods, Crustaceans, and Mollusks that are present in many water bodies are used as bio indicators. Molluskan group which lives in various habitats have been widely utilized as a biological indicator in monitoring pollutants of water. The reason for picking mollusks is that they are filter-feeding organism, able to accumulate within its tissues many of the contaminants (pesticides, hydrocarbons, metals, nutrients etc.) and can filter bacteria, microalgae, and detritus containing in aquatic water. Because Mollusks are not for sale on the commercial market so these mussels aren't directly consumed by humans and this strategy can be easily applied in aquatic ecosystem for controlling contamination and in the resolving of the biological effects.

Keywords: Toxic chemicals, Pollutants, Biological Indicator, Mollusks

ORGANIC FARMING: THE FUTURE OF AGRICULTURE

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Abstract

Growing crop plants with assistance of green manure, compost or bone meal is called organic farming. Organic farming is an alternate agricultural system which originated early period of 20th century. Organic farming evolved in different geographical regions of the world and continues to be developed by various organic agricultural organizations today. It relies on fertilizers of organic origin such as composts, green manures & bone meal and places emphasis on techniques such as crop rotation and companion planting. Biological pest control, mixed cropping and the fostering of insect predators are encouraged. Organic farming offers vast food resources for beneficial arthropods and birds, thus contributing to natural pest control. Organic farming system enables ecosystems to better adjust to the effects of climate change and offers a major potential to reduce the emissions of agricultural green house gases. Organic farming as a sustainable practice also contributes towards curtailing the phenomenon of global warming. Organic farming poses no risk of ground and surface water pollution through synthetic pesticides. Nitrate leaching rates per hectare are significantly lower in organic farming as compared to conventional farming system. An interesting research by the Rodale Institute Farming system examined thoroughly the comparative outcomes from conventional agriculture and organic farming. The study revealed that the organic farming has the potential to not only reduce carbon dioxide but also slow down climate change process. Hence organic farming can be called the flag bearer of sustainable farming with all its environmental benefits. With the increasing population and growing need to feed more mouths in the years to come, it is of paramount importance to adopt this practice so as to ensure that our natural resources are in a position to satisfy basic human needs in the future. Since 1990 the market for organic food and other products has grown rapidly reaching 63.82 billion tones worldwide in 2011. This demand has driven a similar increase in organically managed farmland that grew from 2001 to 2011 at a compounding rate of 9.1 % per annum. It is showing the trend that future for organic farming will absolutely be brighter.

Keywords: Organicfarming, Natural Pest control

ABUNDANCE AND BIODIVERSITY OF ZOOPLANKTON IN RELATION TO PHYSICO - CHEMICAL PROPERTIES IN LENTIC FRESH WATER OF PAHOOJ RESERVOIR DISTRICT - JHANSI (U. P.)

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Abstract

Zooplankton is the intermediate link between phytoplankton and fishes. Their fluctuation in occurrences and abundance can be a major indicator of the environmental status of any water body. Zooplankton population can be used to estimate the fishery potential of any water body, because they are strongly affected by environmental conditions and respond to quickly to such changes. Hence qualitatively and quantitative study of zooplankton are of great importance. In the present paper qualitatively and quantitative assessment and seasonal variations of zooplankton was performed during November 07 to October 08 in the Pahooj reservoir District- Jhansi. It is situated near I.G.F.R.I. in Jhansi at the distance about 9 K.M. from railway station, Jhansi at latitude of 25°-27° north and at longitude of 78°-37° eastern position with approximate height of 271 meter above mean sea level. It has an area of about 518 hectares with maximum length 4.02 km, maximum breadth 1 km and maximum depth 10 meter. The identified groups of zooplankton were: Protozoa, Rotifera, Cladocera, Ostracoda and Copepoda. There were in increasing order in study water body as < Ostracoda < Cladocera < Protozoa < Copepoda < Rotifera. In all 26 genera of zooplankton were recorded in the dam, out of which six were Protozoa, ten Rotifera, six Cladocera, one Ostracoda and three Copepoda. The zooplankton population in the studied water body varied from 256 to 835 organisms/L. The seasonal variations of zooplankton population in the water body show higher magnitude during summer and lower during winter. The seasonal variations of zooplankton population in the studied water body varied from 307 to 725 organisms/L. The monthly and seasonal variations of zooplankton showing relation with different physico – chemical properties of studied water body.

Key words - Zooplankton, Seasonal variations, Biodiversity, Rotifera, Cladocera, Ostracoda, Copepoda

A STUDY ON FRESH WATER FISH DISEASES PREVAILING IN BILASPUR REGION (CG)

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Abstract

The present study was carried out to evaluate the fish diseases prevailing in the fresh water bodies of Bilaspur region (CG). It was observed that fishes were suffering with a number of diseases causing due to various types of pathogens, chemical toxicants, pollution, etc. In the present investigation, the diseases in fish caused due to pathogens including protozoans, fungi and bacteria were taken into consideration. The important fish diseases identified were found EUS, saproligniasis, furunculosis, ulcer, fin rot and dropsy. Among these diseases, furunculosis is widely spread disease which causes high mortality of fish in the investigated area.

Key words: Fish diseases, Fish species, Pathology.

INVASION OF ALIEN FISH SPECIES IN RIVER YAMUNA AT MATHURA, UTTAR PRADESH, INDIA; A THREAT TO NATIVE FAUNA

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Alteration of the habitat structure in river Yamuna has provided a favorable environment for the exotic species. Significance presence of *Oreochromis nilocticus, Cyprinus carpio, Hypophthalmichthys molitrix* (Valenciennes) *and Clarias geripineus* is evident in majority of the river stretches and gradually establishing themselves as a breeding population replacing the Indian Native Fish Fauna.

Yamuna River supports a rich diversity of fishes of commercial value. But over the years the rivers has become highly polluted. The river water is extensively used for irrigation and receives heavy load of domestic and industrial wastes. All these factors have imparted the fisheries in the river as reflected by decline in fish catch a discernible shift in fish species composition and an increase presence of invasive fish species. Domestic pollutions, Industrial pollutions, Agricultural pollutions and Sand mining are the main responsible source in declining the native fauna and making the favorable ground for invaders.

A preliminary record shows that 48-fish species belonging to 13-families (Garg et. al., 1971). As far as concern with the trophic utilization of fishes; carnivorous fishes were dominant followed by herbivorous and omnivorous. In my observation reported 20 species of fish species in river Yamuna at Mathura, including 4- Invasive Alien fish species (belong to 2-families) viz. *Oreochromis nilocticus, Cyprinus carpio, Hypopthalmicthys molitrix and Clarias geripineus*. Abundance of these species is recorded due to less stressed condition which reflects the dominance in terms of biomass than any other species. It also recorded the degraded environment condition; resulting the gradual depletion of native fish species.

It has been recorded that presence of exotic 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 exotic fishes. So, need of the hour is to check the entry of exotic 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.

Key words: Yamuna River, Native fish fauna, Exotic fishes, Conservation.

STUDY ON PATHOGENICITY, VARIABILITY AND BIO-INTENSIVE MANAGEMENT OF *FUSARIUM VERTICILLIOIDES*, CAUSE OF POST FLOWERING STALK ROT IN MAIZE

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Abstract

Post flowering stalk rot (PFSR) caused by complex of Fusarium spp. of which *Fusarium verticillioides* is the major species affecting productivity not only in India but also in other parts of the world. We isolated 59 isolates from PFSR affected winter maize growing areas of southern Rajasthan and eastern Gujarat states and through molecular sequencing using Tef1-á primer, it was found that major Fusarium species involved in causing PFSR was *F. verticillioides.* Of the 74 isolates collected from southern Rajasthan. To assess *in vitro* efficacy of Trichoderma isolates, Pakdaman's biological control indices (PBCIs) were studied and only three representative species *Trichoderma harzianum* referred to as BThr29, *T. asperellum* referred as BTas25 and *T. erinaceum* referred as BTer43 were used as seed treatment and soil application for the field trials based on their superior ability to produce inhibition zone against *F. verticillioides* in dual culture assay. In the field experiment, prior inoculation of *F. verticillioides* fungus was done and the effect of various treatments was observed. It was observed that soil application, seed treatment and furrow application with T. harzianum BThr29 @10g/lit water showed minimum % PDI of 13.3%, lodging 15.0% and disease reduction by 72.2% as compared to 10% PDI, 3.3% lodging and 79.1% reduction of disease on application of seed treatment and two sprays and furrow application with Carbendazim 12% + Mancozeb 63% @ 2g/lit water. As compared with *T. asperellum* and *T. erinaceum*, application with *T. harzianum* effectively reduced severity of PFSR at par with fungicidal application.

DIVERSITY OF FLESHY MUSHROOM IN DRY DECIDOUS FOREST IN SANGALI DISTRICT, MAHARASHTRA. (INDIA)

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Abstract

During the floristic study of the mushroom of this region author come across a number of mushroom species . In this study five species of mushroom are being discussed. 1. *Lacterius vellereus* (Fr.) Kuntze (1891), 2. *Mycena pura* (Pers.) P. Kumm., 3. *Asterophora lycoperdoida* , 4. *Hygrophorus melizeus* (Fr.) and 5., *Spinolosa sps.* are being discussed with different five genus and species. All the different genus and species are being reported for the first time from this region .

Key words : Mushroom.

ECONOMICS AND AGRONOMIC PERFORMANCE OF VETIVER CULTIVATION AT FARMER'S FIELD OF AWADH REGION OF U. P. - A CASE STUDY

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Abstract

Vetiver (*Vetiveria zizanioides*) commonly known as "khus" is one of the important perennial grass. This grass is widely grown throughout the tropics. It plays an important role in soil conservation, water purification, and in handicraft. Vetiver roots produce essential oil that is variously used in perfumery and cosmetic industries. India produces only 20 tons of oil annually as against the world's production of 300 tons. In India vetiver is cultivated in southern and western regions but the oil produced in northern India holds high value. The Central Institute of Medicinal and Aromatic Plants have developed agro-technology for vetiver as an annual crop that is quite popular amongst the farmers in northern India. In order to study the impact of commercial cultivation of newly developed variety of khus, a survey at three farmers' field each of Sitapur and Barabanki districts was conducted. Data on different agronomical inputs, production and marketing of oil were collected from each farmer. Constraints faced by the farmers in its cultivation were also recorded. It is revealed that average cost of cultivation was higher in district Barabanki (Rupees 24,300/-) as compared to district Sitapur ((Rupees 22,850/-). The oil yield was higher (22.5kg/hectare) in Sitapur than Barabankai (17.5kg/hectare). The net return received in Sitapur was higher by 94% as compared to Barabanki due it high yield and high oil quality fetching higher value. On the basis of results it is concluded that the climatic condition and land quality of district Sitapur is favourable for the growth of Vetiver and the oil produced in Sitapur is of better quality. Farmers reported that digging of root and their proper distillation and time of harvest is not well understood, and there is need to optimize cultural practices.

Keywords: Cultivation, economics, land-use survey

CYANOBACTERIA AND THEIR IMPORTANCE IN SUSTAINABLE AGRICULTURE

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Abstract

As cyanobacteria have the ability for nutrient management, bioremediation and biodegradation, they are used as biofertilizer, which improves the productivity of plants with diminishing harmful effects of chemical fertilizer and maintains the sustainability of environment. They have always played the central role in evolution and shaped out the existing life on earth. The population increase needs to keep pace with the agricultural front to meet the demands with supply. As the crops and other plants are sessile they have to combat biotic and abiotic stresses. The stressful environmental conditions including the stress, soil fertility issues, presence of pathogens etc. can hamper the growth and development of the plants and affect the crop productivity. These conditions could be regulated by using fertilizers specially biofertilizers, as the chemical fertilizers are effective but have deleterious effects on the ecosystem. The role of cyanobacteria in agriculture to improve the crop yield because photosynthetic prokaryotes fix the atmospheric nitrogen into utilizable form and make it available to the plants. They also form symbiotic associations and provide nourishment to the host and in turn get housing either endophytic or exophytic. The exo-polysaccharide of cyanobacteria improves the soil quality and fertility. The recent trend involves the manipulation of the higher plants with the genes from these organisms to improve their production and stress related properties.

Keywords- Cyanobacteria, biofertilizers, agriculture and physical stress

BIOMONITORING OF METAL CONTAMINATION IN AQUATIC ECOSYSTEMS BY MACROPHYTES

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Abstract

The study focused on the assessment of metal accumulation in certain aquatic macrophytes to be used as biomonitors. The macrophytes and water samples were collected from January to December 2017 from three selected water bodies – Keerat Sagar, Kalyan Sagar and Madan Sagar of the Mahoba district, central India. Hot digested samples of macrophytes and water were analysed for metal concentration using AAS-200. In the macrophytes and water samples, five metals were investigated: Zn, Pb, Ni, Cu, and Cd. Based on the accumulation levels in the macrophytes, the selected metals were arranged in the order of Zn> Pb> Cd> Ni > Cu>.

Keywords: Heavy metal, Macrophytes, Biomonitoring, Central India.

STATUS OF THE QUALITY OF GROUND WATER AND ITS EFFECTS ON HEALTH AROUND DISTRICT SULTANPUR (U.P.) INDIA

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Abstract

Ground water is one of the sources for drinking water in District Sultanpur. A study was carried out to assess the quality of the ground water in different places of District Sultanpur. For this purpose, physical and chemical parameters were analysed with the help of standard procedure and compare them with permissible limit of the quality of drinking water. An attempt was made to study the health hazard and some preventive measures are suggested.

DISTRIBUTION OF VESICULAR-ARBUSCULAR MYCORRHIZAL FUNGI IN URBAN EFFLUENT POLLUTED SOILS OF AZAMGARH (U.P.) INDIA

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Abstract

In India, more than 53% of the land area is degraded, due to many reasons. One of the reasons for this is rapid industrialization and the disturbance of land by the discharge of the effluents. It has been proved the mycorrhizal fungi improve revegitation of disturbed areas. In recent years, the disposal of industrial effluents on land has become a common practice in many countries. Industrial effluents contain toxic elements and heavy metals. Though many of these are essential plant nutrients, almost all becomes phyto-toxic at higher concentration. The present study was taken up to assess the mycorrhizal profile of urban effluents polluted soil of Azamgarh District, Uttar Pradesh.

GUT MICROBIOTA PLAY REGULATORY ROLE IN SUBSTRATE METABOLISM & GASTROINTESTINAL HEALTH

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Abstract

The microorganisms residing in the gastrointestinal tract are collectively referred to as gut microbiota. These gut microbiota play important role in host metabolism and physiology regulation by producing metabolites from dietary fibres. Dietary fibres cannot be digested by the human digestive enzymes. These fibres are fermented in colon by microbial community and produce gut metabolites. These gut metabolites includes short chain fatty acids like butyrate, propionate and acetate. Short chain fatty acid may improve metabolic health through improvement insulin sensitivity, increments in satiety and modulate insulin secretion from pancreas. SCFAs promote secretion of gut incretin hormone. Glucagon like peptide -1 (GLP-1) is an incretin hormone secreted from enteroendocrine cells upon stimulation by nutrients. GLP-1 exerts very important physiological effects like promote glucose dependent insulin secretion and proliferation of b-cells in pancreas, prevent secretion of glucagon and decrease gastric emptying enhance satiety. Now a days, there were drastic change in life style and human diet, with increase intake of fats and carbohydrates and reduces intake of dietary fibres, consumption of such type of diet will skew gut microbiota composition. Gut microbiota is important for host health, disbiosis of gut microbiota resultant in pathogenesis of numerous metabolic disorders such as obesity, diabetes and artherosclerosis.

Key words- Gut microbiota, Glucagon like peptide-1, Metabolites, Short chain fatty acids.

AWARENESS ON DIABETES

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Abstract

Diabetes is a chronic, lifestyle metabolic disorder, characterized by elevated level of blood glucose (or blood sugar). Complications of diabetes are retinopathy, nephropathy and peripheral neuropathy. Most common types of diabetes are:- Type 2 diabetes (non-insulin dependent), pancreas usually secrete some insulin but cells don't respond to insulin. Type 1 diabetes (insulin dependent), an autoimmune condition, it happens when body attacks pancreas with antibodies. The damaged organ can't produce insulin. Prediabetes, in which blood sugar is high but not enough to be type 2 diabetes. Gestational diabetes, a form of high blood sugar affecting pregnant woman. Symptoms of diabetes are weight loss, polyuria, polydipsia, and polyphagia. Symptoms may develop rapidly (week or month) in type 1 while they usually develop much more slowly and may be subtle or absent in type 2 diabetes. Some diagnosis test for type 1, type 2 diabetes and prediabetes are: Glycated hemoglobin(A1C)test,a sugar attached hemoglobinlevel of 6.5%orhigher indicates diabetes and between 5.7 and 6.4 % indicates prediabetes. Random blood sugar test,a blood sugar level of 200mg/dL(11.1mmol/L) or higher suggests diabetes. Fasting blood sugar test in which the blood sugar level vary from 100-125mg/dL(5.6-6.9mmol/L) is consideredprediabetes. If it's 126 mg/dL (7 mmol/L) or higher, indicate diabetes.Oral glucose tolerance test, a blood sugar level less than140mg/dL(7.8mmol/L) is normalbut reading more than 200mg/dL(11.1mmol/L) indicate diabetes. A reading between 140 and 199mg/dL(7.8mmol/L) indicates prediabtes. Testfor gestational diabetes:- Initialglucose challenge test,sugar level below 140 mg/dL (7.8 mmol/L) is normal. If blood sugar level is higher than normal, it indicates risk of gestational diabetes.Preventions and treatments involves diet modification, weight reduction, exercise, oral medication and insulin. High blood pressure control and foot care are also important. Type 1 diabetes must be managed with insulin injection. Type 2 diabetes may be treated with medication with or without insulin. Prediabetes treated with maintaining a healthy weight through exercise and healthy eating.

Keywords: Polyuria, retinopathy, nephropathy, peripheral neuropathy, polydipsia, polyphagia, gestational

HUMAN HEALTH EFFECTS OF AIR POLLUTION

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Abstract

Environmental pollution has been a matter of concern for many years. Air pollution is becoming a major health problem that affects millions of people worldwide. Air pollution is a complex mixture of different gaseous and particulate components and can cause several health effects. Hazardous chemicals escape to the environment by a number of natural and anthropogenic activities and may cause adverse effects on human health and the environment. Increased combustion of fossil fuels in the last century is responsible for the progressive change in the atmospheric composition. Air pollutants, such as carbon monoxide (CO), sulfur dioxide (SO_2), nitrogen oxides (NOx), volatile organic compounds (VOCs), ozone (O_3), heavy metals, and respirable particulate matter (PM2.5 and PM10), differ in their chemical composition, reaction properties, emission, time of disintegration and ability to diffuse in long or short distances. Air pollution has both acute and chronic effects on human health, affecting a number of different systems and organs. It ranges from minor upper respiratory irritation to chronic respiratory and heart disease, lung cancer, acute respiratory infections in children and chronic bronchitis in adults, aggravating pre-existing heart and lung disease, or asthmatic attacks. In addition, short- and long-term exposures have also been linked with premature mortality and reduced life expectancy.

Keywords: Air Pollution; Human health; sulfur dioxide; air pollutants.

POPULATION STUDY OF GREY FRANCOLIN (*FRANCOLINUS PONDICIRIANUS*) IN BUNDELKHAND REGION, UTTER PRADESH, INDIA

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Abstract

The Grey francolin **(*Francolinus pondicirianus*)** is the game bird species present in the drier region of Bundelkhand. Francolin species is an important part of agriculture and forest ecosystem. Study survey on Grey francolin bird diversity of Bundelkhand Region was carried out from January - 2017 to December – 2018. It included population and habitat behavior. Seasonal variation also been studied. During the study period mostly maximum no. of francolins were found in lalitpur, Jalaun and Mahoba are 362, 279 and 236 respectively. Maximum no of Grey Francolins were found in monsoon and post monsoon seasons in comparison to pre monsoon session. Francolins mostly use herbs, shrubs and some small trees for nesting. Decline no of grey francolin mainly causes are hunting, use of pesticides, water scarcity, reduced food availability, climatic conditions and other anthropogenic disturbances. Immediate efforts for their conservation are needed because of instant decline number of francolin in our nature.

Keywords: Francolin, Diversity, Bundelkhand region, Conservation. Nature

AGRICULTURAL SUSTAINABILITY: PLANT AND SOIL RESPONSES TO THE APPLICATION OF MANURE IN A DEGRADED LAND OF BUNDELKHAND REGION JHANSI

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Abstract:

Agriculture is a critical sector of the Indian economy. It forms the backbone of development in the country. Agriculture is a source of livelihood and food security for a vast majority of low income, poor and vulnerable sections of society. Agriculture in Bundelkhand region is rainfed, diverse, complex, under-invested, risky and vulnerable. The scarcity of water in this region, with poor fertile soils and low productivity further aggravates the problem of food security. Soil performs key ecosystem functions like sustaining biological diversity and productivity; immobilizing and detoxifying organic and inorganic materials; storing and cycling of nutrients and provides support for socioeconomic structure of a region. Farm manure is a heterogeneous composted organic material, composed of a mixture of dung, crop residues, and/or household sweepings at varying stages of decomposition. Soil performs multiple functions to support our ecosystem sustainability. Protecting and nurturing agricultural soils, which are the cornerstone of production, has to be a central feature of sustainability. Throughout the world, agricultural soils have been degraded.

Therefore, present investigation was conducted to study the effects of farm yard manure on soil properties and growth and yield of *Psoralea corlifolia*. Our study revealed that soil physical properties were improved by the addition of farm yard manure. Addition of farm yard manure also significantly increased aggregate stability and permeability of Bundelkhand soil. Manure application largely improved chemical properties and availability of P and K were selectively enhanced. Effects of farm yard manure on soil have evidently enhanced soil microbial biomass. It also reduced toxicity of some heavy metals. This farm yard manure stimulated plant growth and thus increased the yield of plants.

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ROLE OF PLANTS TO MITIGATE DUST POLLUTION GENERATED BY OPEN CAST MINING.

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Abstract

Open cast mining activities whether small or large scale are inherently disruptive to the environment, producing enormous quantities of dust that can have deleterious impacts on adjacent environments. Mine and stone crushing industry in India has been growing rapidly due to increasing demand from the construction industry and the present emphasis on developing the country's infrastructure. In present study the impacts of deposition of dust on roadside plant and its impact on leaf characters has been studied on some selected roadside plants species at Jhansi-Allahabad highway. The variation in terms of dust deposition with species specific result observed during the entire study. Decreasing of leaf pigment concentration (viz. Chlorophyll, Protein, Carotenoid) indicate the positive impact of dust pollution. Species like *Ficus hispida, Calotropis procera, Butea monosperma, Ficus benghalensis,* are shown the maximum deposition of dust on their leaf surface. Our observation may be helpful to find out some species which is resistant or to cope with open cast mining generated dust in and around mining areas and adopt also for the beautification of highways.

Keywords: Dust pollution, Chlorophyll, Carotenoid, Protein.

EFFECT OF SUBCULTURING METHODS ON RATE OF MULTIPLICATION DURING IN VITRO MICROPROPAGATION OF SUGARCANES

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Abstract

To increase rate of multiplication in sugarcane different subculturing methods were adopted first time in this work. The highest number of shoots was obtained in cultures raised from inoculums of small size (containing 2 shoots). The results clearly indicated that subculturing with small sized propagules proved to be beneficial for enhanced multiplication of shoot cultures. Trimming of leaves of propagules during subculture enhanced the rate of shoot multiplication as well as shoot growth in both the experimental varieties. Days of subculturing (i.e. incubation period after subculture) had noticeable effect on rate of shoot multiplication. The highest number of shoots could be produced when the cultures were subcultured at 15 days interval.

Keywords: micropropagation, multiplication, subculturing, sugarcane, trimming.

BIOINFORMATICS: APPLICATIONS AND CHALLENGES

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Abstract

Bioinformatics is an interdisciplinary field that develops methods, software tools for understanding biological data and aims to investigate questions about biological composition, structure, function, and evolution of molecules, cells, tissues, and organisms using mathematics, informatics, statistics, and computer science. As we are moving towards the era of cutting edge technologies there will be a lot of data to store and analyze. It offers analysis software for data studies and comparisons and provides tools for modeling, visualizing, exploring and interpreting data. It includes analysis, structural and functional characterization of biomolecules leading to the development of Genomics, Proteomics, Transcriptomics, and Metabolomics, etc. Drug discovery and development tools, supported by recent advancements in machine learning and cloud computing should shorten the time to find and produce an efficient drug compound with fewer side effects and more results emerge as a branch called Chemo-informatics. Personalized medicine where bioinformatics can help a lot to make drug molecules based on the genetic makeup of individuals for better outcomes is a prime area of research and need of the society at present. The major futures challenge of the scientific community is to create an *in-vitro* model of whole-cell or organism and further simulating a whole cell or an organism by applying *in-silico* approaches. To achieve that, reliable tools that utilize those technologies need to be developed and tested. Bioinformatics reduces the search space/size of the problem by thousand times. The main goal is to convert a multitude of complex data into useful information and knowledge. As a consequence of understanding such data, one can basically engineer longer life for society.

Bioinformatics application includes applications of computer science to address biological problems and aim is to understand cell system at molecular level. Emerging branches of bioinformatics includes Genomics, Proteomics, Transcriptomics, system biology and further it can be applied to databases development, software and tools development, sequence analysis, gene expression, structural bioinformatics, comparative genomics, agro-informtics, chemo-informatics, drug discovery, personalized medicine, crop improvement, waste cleanup etc. where it is playing a significant role for society.

Working of a cell or an organism itself a major challenge for the biologist, which need to be solved as it is not very well understood. Bioinformatics is not only limited to Genomics, Proteomics, Transcriptomics and System Biology but it is also having applications in Sequence Analysis, Gene finding, Structural Biology, Protein structure prediction, Homology Search, Multiple Alignment, Phylogeny construction, Genomic full genome-genome comparisons, Rapid assessment of polymorphic genetic variations, Prediction of unknown molecular structures, protein folding, Drug Designing, Machine Learning, Advanced Algorithm for Bioinformatics, Complete construction of orthologous and paralogous groups of genes, Structure determination of large macro molecular assemblies/complexes, Investigate dynamic form and function of large macro molecular and supra molecular complexes, Rapid structural/ topological clustering of proteins, Realize interactive modeling, Foster the development of bio molecular modeling, Computer simulation of membrane structure and cell as a whole etc., all of these fields have generated a lot of information in understanding cellular functions at molecular level and still more

needed to be discovered with accuracy. There are a number of problems in each field of above mentioned bioinformatics and they need to be resolved and well understood. We need to work on these problems and try to find answers. Variety of software, algorithms and tools are available which can solve these problems up to certain accuracy level. We have to develop tools and software to resolve these problems with better performance and accuracy because tools and software which work on some parameters may not necessarily work for every sequence or structure that follow their parameters. We need Bioinformaticists to narrow down the work that has to be done in a wet-lab, save time and cost, to make sense of the huge data produced, to be able to predict a lot of things like new therapeutics, genes implicated in various diseases etc.

Bioinformatics now is so integral to all aspects of biological research, we cannot imagine any research in life sciences without some kind of bioinformatics analyses being used such as it may be sequence analysis, structure prediction and simulations, NGS analysis, evolutionary relationships and phylogeny etc. because now it is very much an integral and indispensable part of all biological sciences related research. In the past time focus of scientific community was towards *in-vivo* to *in-vitro* studies but now the paradigm has shifted from *in-vitro* to *in-silico*. This is one way where we might be able to accurately model biology at a molecular level and use this knowledge to test hypothesis on a much larger scale. Bioinformatics is developing at a much faster pace than ever before and helping a lot in understanding the biology of cell or an organism and decoding the mysteries of life. Bioinformatics has evolved a lot; the field is now focusing on improvement of existing algorithms or development of new algorithms for better performance and accuracy. As the whole scientific community is trying to solve mysteries of life, Bioinformatics together with latest cutting edge technologies may solve some of them.

The River Water Pollution in India-A Critical Review to Study the relationship among Different Physico -chemical Parameter

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Abstract

Water is the Preemption of life as there is no life without water and the river's are the life line of our economy and culture. The River water Pollution in India is dangerous problem as it has affected not only of human and animal health but also the economic value of society. This abstract a large number of research paper published by different researchers on river water pollution in India by critically analysing and interpreting data on the different physico- chemical parameter's and finds that the river water in India is highly polluted in respect of physically, chemically and bacteriologically with different hazardous pollutants including both chemical and microbial activity coming from various sources such as a industries, mines, agriculture, urban and domestic besides. This work find and outlines the interrelationship among different physico-chemical parameters after sincere analysis and interpretation of data and discussion published in different research papers. The dissolved Oxygen (DO) and The PH are inversely related with temperature and turbidity and it is directly related with photosynthesis by Autotrophic plants. Biological Oxygen demand (BOD) and free carbon dioxide are directly prepositional with temperature. This Abstract work gives suggestion to explain the experimental result by applying the standard concept outlines a brief guideline is the assessment of water pollution of river water.

Key Words: Water Pollution, BOD, DO

STUDY ON PATHOGENICITY, VARIABILITY AND BIO-INTENSIVE MANAGEMENT OF *FUSARIUM VERTICILLIOIDES*, CAUSE OF POST FLOWERING STALK ROT IN MAIZE

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Abstract

Post flowering stalk rot (PFSR) caused by complex of Fusarium spp. of which *Fusarium verticillioides* is the major species affecting productivity not only in India but also in other parts of the world. We isolated 59 isolates from PFSR affected winter maize growing areas of southern Rajasthan and eastern Gujarat states and through molecular sequencing using Tef1-á primer, it was found that major Fusarium species involved in causing PFSR was *F. verticillioides.* Of the 74 isolates collected from southern Rajasthan. To assess *in vitro* efficacy of Trichoderma isolates, Pakdaman's biological control indices (PBCIs) were studied and only three representative species *Trichoderma harzianum* referred to as BThr29, *T. asperellum* referred as BTas25 and *T. erinaceum* referred as BTer43 were used as seed treatment and soil application for the field trials based on their superior ability to produce inhibition zone against *F. verticillioides* in dual culture assay. In the field experiment, prior inoculation of *F. verticillioides* fungus was done and the effect of various treatments was observed. It was observed that soil application, seed treatment and furrow application with T. harzianum BThr29 @10g/lit water showed minimum % PDI of 13.3%, lodging 15.0% and disease reduction by 72.2% as compared to 10% PDI, 3.3% lodging and 79.1% reduction of disease on application of seed treatment and two sprays and furrow application with Carbendazim 12% + Mancozeb 63% @ 2g/lit water. As compared with *T. asperellum* and *T. erinaceum*, application with *T. harzianum* effectively reduced severity of PFSR at par with fungicidal application.

AWARENESS ON DIABETES

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Abstract

Diabetes is a chronic, lifestyle metabolic disorder, characterized by elevated level of blood glucose (or blood sugar). Complications of diabetes are retinopathy, nephropathy and peripheral neuropathy. Most common types of diabetes are:- Type 2 diabetes (non-insulin dependent), pancreas usually secrete some insulin but cells don't respond to insulin. Type 1 diabetes (insulin dependent), an autoimmune condition, it happens when body attacks pancreas with antibodies. The damaged organ can't produce insulin. Prediabetes, in which blood sugar is high but not enough to be type 2 diabetes. Gestational diabetes, a form of high blood sugar affecting pregnant woman. Symptoms of diabetes are weight loss, polyuria, polydipsia, and polyphagia. Symptoms may develop rapidly (week or month) in type 1 while they usually develop much more slowly and may be subtle or absent in type 2 diabetes. Some diagnosis test for type 1, type 2 diabetes and prediabetes are: Glycated hemoglobin(A1C)test,a sugar attached hemoglobinlevel of 6.5%orhigher indicates diabetes and between 5.7 and 6.4 % indicates prediabetes. Random blood sugar test,a blood sugar level of 200mg/dL(11.1mmol/L) or higher suggests diabetes. Fasting blood sugar test in which the blood sugar level vary from 100-125mg/dL(5.6-6.9mmol/L) is consideredprediabetes. If it's 126 mg/dL (7 mmol/L) or higher, indicate diabetes.Oral glucose tolerance test, a blood sugar level less than140mg/dL(7.8mmol/L) is normalbut reading more than 200mg/dL(11.1mmol/L) indicate diabetes. A reading between 140 and 199mg/dL(7.8mmol/L) indicates prediabtes. Testfor gestational diabetes:- Initialglucose challenge test,sugar level below 140 mg/dL (7.8 mmol/L) is normal. If blood sugar level is higher than normal, it indicates risk of gestational diabetes.Preventions and treatments involves diet modification, weight reduction, exercise, oral medication and insulin. High blood pressure control and foot care are also important. Type 1 diabetes must be managed with insulin injection. Type 2 diabetes may be treated with medication with or without insulin. Prediabetes treated with maintaining a healthy weight through exercise and healthy eating.

Key Words: Polyuria, retinopathy, nephropathy, peripheral neuropathy, polydipsia, polyphagia, gestational.

SOME ETHNOMEDICINAL CLIMBER PLANTS CHITRAKOOT DISTRICT

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Abstract:

Climber species constitute a very important group of non-timber forest products, as it becoming clear over the last decade. The distribution and abundance of climbing plants in forest varies, greatly with the geographic locality of forests. An initial survey recorded that among the entire phytodiversity prevailing in it, trees exhibit a good diversity, but the present study deals with the climber species only; which are useful as various herbal drugs by local inhabitants. During the present ethnobotanical investigations, much emphasis was made to list out the medicinal useful climber species. An extensive field survey was carried out in selected localities of Chitrakoot District inhabited by various casts and tribes during different season of 2013 to 2016. The present survey encompasses 35 climber species of medicinal uses belonging to 33 genus and 16 families. Some important climber species like *Abrus precatorius*, *Aristolochia indica*, *Asparagus racemosus*, *Cardiospermum halicacabum*, *Cayratia carnosa*, *Dioscorea bulbifera*, *Ichnocarpus frutescens*, *Luffa echinata*, *Mucuna pruriens*, *Pueraria tuberosa*, *Tinospora cordifolia* are rare in Chitrakoot and its ethnomedicinal information is documented here with their botanical names, local names, family and uses.

Key Words: Climber, Non-timber, Phytodiversity, Geographic, Ethnobotanical.

POLLUTION THREATS OF HEAVY METAL IN BIODIVERSITY OF FISHES

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Abstract

It is essential to monitor the level of water pollution not only to health reason but also for industrial and agricultural purposes. River are the main inland water resources for domestic, industrial and irrigation purposes and often carry large municipal sewage, industrial wastewater discharges and seasonal run-off from agricultural land to the coastal region. It is for this region that river water is mostly enriched in nutrients compared to other environments. Heavy metals are known as metallic elements with high molecular weight or specific gravity which produces toxicity by forming complexes or ligands with organic compounds and active site enzymes. The non- degradable and persistent nature of the metal ions results in longer exposure and accumulation of these substances in the aquatic flora and fauna. This would result in deterioration and disturbance of aquatic ecosystems. The high concentration of heavy metal affected the growth and development of fish during early stage such as hatching, larval development and juvenile growth because they are sensitive during these stages than during mature stages.

Key Words: Pollution, heavy metal,

BIOMONITORING OF METAL CONTAMINATION IN AQUATIC ECOSYSTEMS BY MACROPHYTES

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Abstract

The study focused on the assessment of metal accumulation in certain aquatic macrophytes to be used as biomonitors. The macrophytes and water samples were collected from January to December 2017 from three selected water bodies – Keerat Sagar, Kalyan Sagar and Madan Sagar of the Mahoba district, central India. Hot digested samples of macrophytes and water were analysed for metal concentration using AAS-200. In the macrophytes and water samples, five metals were investigated: Zn, Pb, Ni, Cu, and Cd. Based on the accumulation levels in the macrophytes, the selected metals were arranged in the order of Zn> Pb> Cd> Ni > Cu>.

Key Words: Heavy metal, Macrophytes, Biomonitoring, Central India.

ORAL GLUCOSE TOLERANCE TEST (OGTT) IN NORMAL ALBINO RATS WITH POLYHERBAL FORMULATION

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Abstract

The effect of aqueous extract of Polyherbal formulation on Oral Glucose Tolerance test was determined. The Oral Glucose Tolerance Test (OGTT) measures the body's ability to use a type of sugar called glucose that is the body's main source of energy. OGTT, a test of immense value and sentiment, in favour of using fasting plasma glucose concentration alone was seen as a practical attempt to simplify and facilitate the diagnosis of diabetes. The glucose tolerance test measures the clearance of an oral glucose load from the body. It is used to detect distribution in glucose metabolism that can be linked to diabetes. Medicinal plants are sources of important therapeutic aid for alleviating human ailments. With increasing realization of the health hazards and toxicity associated with the indiscriminate use of synthetic drugs and antibiotics, interest in the use of plants and plant based drugs has revived throughout the world. Polyherbal formulation is the use of more than two herbs in a medicinal preparation. Plants are important sources of medicine and bioactive molecules for discovery of drugs. Diabetes mellitus is a metabolic disorder characterized by high blood glucose level. Every fifth person in India above 40years of age is suffering from diabetes. Aqueous extract of Polyherbal formulation was evaluated for Oral Glucose Tolerance Test (OGTT) in normal rats. Blood glucose concentration was evaluated at 0,30,60,90 and 120 minutes. This Administration of Polyherbal formulation promotes glucose tolerance.

Key Words: OGTT, Polyherbal formulation, Diabetes.

GUT MICROBIOTA PLAY REGULATORY ROLE IN SUBSTRATE METABOLISM & GASTROINTESTINAL HEALTH

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Abstract

The microorganisms residing in the gastrointestinal tract are collectively referred to as gut microbiota. These gut microbiota play important role in host metabolism and physiology regulation by producing metabolites from dietary fibres. Dietary fibres cannot be digested by the human digestive enzymes. These fibres are fermented in colon by microbial community and produce gut metabolites. These gut metabolites includes short chain fatty acids like butyrate, propionate and acetate. Short chain fatty acid may improve metabolic health through improvement insulin sensitivity, increments in satiety and modulate insulin secretion from pancreas. SCFAs promote secretion of gut incretin hormone. Glucagon like peptide -1 (GLP-1) is an incretin hormone secreted from enteroendocrine cells upon stimulation by nutrients. GLP-1 exerts very important physiological effects like promote glucose dependent insulin secretion and proliferation of b-cells in pancreas, prevent secretion of glucagon and decrease gastric emptying enhance satiety. Now a days, there were drastic change in life style and human diet, with increase intake of fats and carbohydrates and reduces intake of dietary fibres, consumption of such type of diet will skew gut microbiota composition. Gut microbiota is important for host health, disbiosis of gut microbiota resultant in pathogenesis of numerous metabolic disorders such as obesity, diabetes and artherosclerosis.

Key Words- Gut microbiota, Glucagon like peptide-1, Metabolites, Short chain fatty acids.

EFFECT OF SUBCULTURING METHODS ON RATE OF MULTIPLICATION DURING IN VITRO MICROPROPAGATION OF SUGARCANES

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Abstract

To increase rate of multiplication in sugarcane different subculturing methods were adopted first time in this work. The highest number of shoots was obtained in cultures raised from inoculums of small size (containing 2 shoots). The results clearly indicated that subculturing with small sized propagules proved to be beneficial for enhanced multiplication of shoot cultures. Trimming of leaves of propagules during subculture enhanced the rate of shoot multiplication as well as shoot growth in both the experimental varieties. Days of subculturing (i.e. incubation period after subculture) had noticeable effect on rate of shoot multiplication. The highest number of shoots could be produced when the cultures were subcultured at 15 days interval.

Key Words: micropropagation, multiplication, subculturing, sugarcane, trimming.

DECAY OF EAST KOLKATA WETLANDS - A THREAT TO SOCIO-ECOLOGICAL WELFARE AND CAUSE FOR BIODIVERSITY LOSS

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Abstract

East Kolkata Wetlands (EKW) spreads over an area of 12,500 hectare (Ha), is the world's largest wastewater fed aqua culture system which got included in the Ramsar list of 'Wetlands of International Importance' on 19th August, 2002. It serves as kidney of the city, by acting as a carbon sink and sequester ~1.9 Mg C/ha/year, mitigating at least ~118 Gg atmospheric CO2/year. Kolkata produces almost 750 million litres of wastewater and sewage every day which is fed into EKW, an eco-friendly system of solid waste and sewer treatment system for the city that transforms one-third of the city's sewage and most of its domestic refuse into a rich harvest of fish (10,000 tonnes of fish each year) and fresh vegetables (40- 50% of the green vegetables available in city markets) thus providing an ecological subsidy and making Kolkata cheapest city in India. EKW is host to several sewage fed fisheries, many small agricultural plots, couple of solid waste farms and home for a large number of flora and fauna both at macro and micro level. This natural sewer system, makes water conducive for algal and plankton growth, which enhances microbial biodiversity and ensures Biogeochemical cycling. Exponential expansion of real-estate projects in eastern Kolkata especially in the Salt Lake and Rajarhat sectors has escalated land encroachment and land alteration in East Kolkata Wetland (EKW), leads to obstruction of wastewater flow, siltation in bheris and the alteration in bio-chemical components in sewage water, thereby disturbing the ecological balance. Prevention of decay of EKW will support biodiversity and enable socio-ecological welfare to thrive.

Key Words: EKW, microbial biodiversity, socio-ecological welfare, carbon sink.

Studies on the Invertebrate macrofaunal biodiversity of Sumera Pond Lalitpur U.P.

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Abstract:

Sumera pond is an important field of this investigation, provide vital ecosystem services including the support of important as food web, the provision of drinking water etc.The present investigation was done on the 1125 specimen of Invertebrate macrofauna which were collected seasonally from the area of Sumera pond Lalitpur. Biodiversity plays in important part in balancing ecosystem which on a global scale influences the bioshere. From an economic viewpoint, mankind depends on the benefits from biodiversity for such activities as the food industry.

Key words: Invertebrates, Macrofauna, Sumera Pond, Biodiversity.

Biodiversity of Angoori Barrage in Datia district, Madhya Pradesh

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Abstract

India is a diversified country in terms of its biogeographical location, climatic conditions, seasonal activities and its rich form of floral and faunal diversity. There are innumerable forms of species which have not yet been identified and described. These species also play an important role for environmental conservation and maintaining the ecological balance. Angoori barrage is an important unique water bodies which contains a lot of faunal and floral diversity. This barrage provides support for agriculture sector, human society and varies form of animal community. This barrage contains various varieties of invertebrates, vertebrates, phytoplanktons and zooplanktons. These animals are very essential for maintaining the eco-environmental-chain. This research investigation focus on various forms of faunal diversity which reveals detailed information of biodiversity of Angoori barrage.

Key Words: Faunal diversity, Eco-environmental chain, Angoori Barrage.

Influence of fly ash on soil properties and growth yield of chickpea crop in semi-arid region of Bundelkhand

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Abstract

Fly ash changes the soil properties which affect the microbial activity and plant growth may be directly or indirectly. However, the scientific study on the impact of fly ash amendments alone or in combination with organic manure on properties of soil and microbial response at semi-arid region of Bundelkhand soil is scanty. The main objective of this study was to assess the efficacy of lower or higher doses of fly ash on the soil physico-chemical characteristic, microbial population including growth of leguminous plant chickpea (*cicer arietinum L)*, an important crop of Bundelkhand. In the present study, results show that the fly ash changes the characteristics of soil, increased water holding capacity, moisture content, soil porosity, pH, EC and organic carbon percentage in soil. A nominal increase in potassium, phosphorus, sulphur, magnese and boron was also observed whereas bulk density and total khjeldhal nitrogen decreased in the soil by amendment of fly ash. The bacterial growth was found optimum at a certain level of fly ash start ceased with increasing fly ash concentration.

Keywords: Fly ash, Semi-arid, Microbial, Bundelkhand, Soil

Fine structure of dentric organ in exotic sharp tooth catfish *Clarias gariepinus* and and Indian catfish *Clarias batrachus*

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ABSTRACT

Number of piscine groups are adapted for bimodal respiratory mechanism for exploration of water (through its gill) as well as air (through its accessory rerspiratory organs ARO). The ARO assists the fish to overcome extreme drought conditions. In specialized air-breathing fishes, sac-like diverticulae developed from the dorsal surface of the branchial chamber, which is also known as “oppercular lung”. These organs lie above the gills and may contain specialized structures, called labyrinthine organs or rosettes to increase the respiratory surface. Such air-breathing organs, with some modifications are found in many air-breathing fishes such as swim bladder of *Amia calva* and *avapaima gigas*, airsac of *Heteropneustes fosslilis*, skin of mud skipper or through the dendritc organ (also called aborscent organ), present on the second and forth gill arches in species of *Clarias*. In both sharp tooth catfishe *Clariasgariepinus* and Indian catfish *Clariasbatrachus*, these are located in supra branchial chamber and are found enclosed by bony opercular plates. Ascertaining the notion of their exceptional tolerance to Oxygen deficient milieu in the surrounding, an ultrastructure investigation was undertaken through ESEM and TEM to deal with principal cellular structures which are probable candidate in the *modusoperandi* of the dual mode of respiration. The observations are reported and discussed in the light of structural modifications in these structures to cope with higher osmolarity and water deprived ambient medium on one hand and its suitability in commercial aquaculture in swamp and mashes, and in derelict water bodies, on the other.

Keywords- Air-breathing fishes, Oppercular lung, Labyrinthine organs, Swim bladder, ESEM, TEM

EFFECT OF TWO EDIBLE MUSHROOMS ON ORAL GLUCOSE TOLERANCE IN NORMAL WISTAR RATS

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ABSTRCT

Mushrooms have been valued throughout the world as both food and medicine for thousands of years. It is now increasingly recognized that correct diet, controls and modulates many functions of human body and consequently participates in the maintenance of state of good health, necessary to reduce the risk of many diseases. In the current study, we reported the effect of aqueous extract of two edible mushrooms *M. esculenta* and *A. campestris* on Oral Glucose Tolerance test (OGTT). OGTT measures the body's ability to use a type of sugar called glucose that is the body's main source of energy. OGTT, a test of immense value and sentiment, in favour of using fasting plasma glucose concentration alone was seen as a practical attempt to simplify and facilitate the diagnosis of diabetes. It is used to detect distribution in glucose metabolism that can be linked to diabetes. With increasing realization of the health hazards and toxicity associated with the indiscriminate use of synthetic drugs and antibiotics, interest in the use of plants and plant based drugs has revived throughout the world. Diabetes mellitus (DM) is a chronic metabolic disease characterized by hyperglycemia with defects in insulin secretion and/or insulin resistance. Recent discoveries have opened up an exciting opportunity for developing new types of therapeutics from medicinal mushrooms to control DM and its complications. Aqueous extract of *M. esculenta* and *A. campestris* was evaluated for Oral Glucose Tolerance Test in normal rats. Blood glucose concentration was evaluated at 0,30,60,90 and 120 minutes. The Administration of *M. esculenta* and *A. campestris* showed increased glucose tolerance in normal rats.

Keywords: OGTT, Mushrooms, Diabetes mellitus

IMPACT OF FLY ASH ON SOIL QUALITY AROUND PARICHHA THERMAL POWER PLANT, JHANSI

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Abstract

Soil is one of the most important ecological factors which provide the medium for plant growth, habitat for many insects and other organisms, act as a filtration system for surface water, carbon store and maintenance of atmospheric gases. Due to some anthropogenic activities day by day soil quality degraded. Present study has been taken to assess the quality of soil in and around Parichha Thermal Power Plant Jhansi district of Bundelkhand region of Uttar Pradesh. In the present investigation, comparative studies have been done, to find the effect of fly ash generated from the exhaust of thermal power plants on the physico-chemical properties of soil. Two sites (Baratha & Parichha) have been selected for the present study. Results show that pH of the soils varies 7.8 to 8.9, EC 0.24 to 0.84, O.C 0.55% to 1.08%, N 213 to 268 kg/hec, P 9 to 45 kg/hec and K 63 to 448 kg/hec respectively. Results revealed that soil of Baratha has more potassium and phosphorus value as compared to Parichha but nitrogen value is less in Baratha as compared to Parichha. Result also revealed that value of Fe, Zn and S are in moderate level in both soil as well as in fly ash and Mn present in low level in both soil but in fly ash it present in very low level while Cu present in high level in all samples. It indicate that both soil are contaminated by Cu which are generated by thermal power plant in form of fly ash.

ungle jalebi:The Astonishing Ecological benefits of Exotic canopy in Bundelkhand Region.

Poonam Mehrotra* and Swati Gupta

DEPT OF BOTANY - BUNDELKHAND UNIVERSITY JHANSI

The excavation of natural resources from forest and fulfill the demands of rural domestic fuel, fodder and other requirements are convolutely linked to management of natural resources. In general half of the world cook with different forms of biomass. This demand of forest commodity is responsible for adverse consequences on forest canopy and ecosystem-services.

Conservation of bio diversity and more specifically forest genetic resources is therefore becoming increasingly important.

Since seeds are the major components of such conservation programs, the emphasis on conservation research today is not only to select superior genotypes but their increase increases in germination, and significant establishment of canopy by adopting indigenous local methods may become a pivotal concept in forestry .

In general unscientific management of land resulted in severe soil erosion. This feature has become a very common in Bundelkhand region of Utter Pradesh. The dry deciduous forests of the region in a highly degraded state. The increase in intensity and frequency of droughts leading the forest lose their self maintenance capabilities.The regeneration in situ is extremely low.

By the ex_situ efforts for development of canopy cover of the species, which are useful as Ecologically , economically and moreover listed in forest department as priority basis may be helpful significantly in the combat of reforestation.

...Pithecellobium species is highly adaptable to a range of soils and habitats due to its thorniness, irritant sap and ease with which it forms spiny root systems and moreover forming mono specific thickest. By These characteristic it competes pasture species and others.

This plant has a broad ecological amplitude ie., tolerates harsh sites ,heat , drought and heavy cuttings. Being a nitrogen fixing plant thickets of this tree may likely to change the pattern of nutrient cycling.

In addition, this is useful in construction, boxes, sawn timber , domestic fuel .

As we aware Bundelkhand is a gently sloping upland with hot and semi humid region and encompassing some drought prone areas . Presently little sense forest area remains in this region. So the development of an significant canopy of Jungle Jalebi by adopting indigenous methods for its various nursery techniques germination and establishment in field may be a important weapon in a combate against degradation of forest ecosystem and services of Bundelkhand.

ABSTRACTS
PHYSICAL SCIENCE

SYNTHESIS AND CHARACTERISATION OF COBALTATE COMPOUNDS WITH TETRA DENTATEN$_4$MACROCYCLICLIGANDS

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Abstract

The chemistry of macrocyclicligands and their complexes has been an interesting and fascinating area of research activity for chemists all over the world during last few decades and their varied applications in the area viz. medicinal, biochemical, environmental, industrial, photochemical, photophysical, photoelectronicetc.Synthesis of the complexes- The reaction is carried out in 1:1 molar ratio 0.9-0.8 gm ligands MacL[1]-MacL[44] were dissolved in methanol. The reaction is followed by the addition of $CoCl_3.xH_2O$ and $Co(NO_3)_2.xH_2O$ The resulting mixture was stirred for 12 hours at 0ÚC, the solid product was obtained by filtration and washed repeatedly with same solvent and dried in vacuo. The product wererecrystallized from benzene.

SYNTHESIS & SPECTRAL CHARACTERIZATION OF [CUX$_2$L] COMPLEXES (WHERE X = CL$^-$, NO$_3^-$, CH$_3$COO$^-$) & L = MACROCYCLIC SCHIFF BASE LIGANDS

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Abstract

Certain new macrocylic complexes were synthesized and their structures were proposed on the basis of elemental analysis, IR, photo-electron spectra. The metal to ligand molar ratio of the Cu (II) complexes were found to be 1:1. The Cu (II) complexes to be non-electrolytes by their molar conductivities value. Their configurations were proposed to be octahedral geometry.

Key words: Macrocylic complex, Photoelectron spectra, Molar conductance, IR.

STRUCTURAL AND MAGNETIC PROPERTIES OF ALUMINIUM DOPED FERRITENANOMATERIALPREPARED BY SOL- GEL AUTOCOMBUSTION TECHNIQUE

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Abstract

M-type Nano size Barium Hexaferrite $BaMe_xFe_{12-x}O_{19}$ where (Me= $Al^{3+}$and x= 0.0, 0.4)were synthesised by Sol-gel Auto combustion method using Urea as a fuel.Characterization of prepared sample were doneby using different technique such asX-ray Diffraction (XRD), Scanning Electron Microscope (SEM), Tunnelling Electron Microscope (TEM)and Vibrating Sample Magnetometer (VSM). X-ray diffraction studies show the formation of pure single phase M-type Barium hexagonal ferrite with space group $P6_3/mmc$. The effect of substitution of Al^{3+} ion for Fe^{3+} ion on the unit cell parameter, density, porosity has been studied. SEM and TEMmicrographs show that the samples exhibits well defined hexagonal grains in nanometres range and also agglomeration of particles in some parts.

The magnetic study from VSM graph reveals that the variation of magnetic properties such as saturation magnetization (Hc) decreases and Coercivity (Hc) value increases with increase in doping content in Barium ferrites. The substitution of Al^{3+} ion for Fe^{3+}ion in Barium Hexaferrite significantly improves the magnetic parameters.Thesetypes of substituted Barium Ferrites materials are applied for many applications like recording media, permanent magnets, data storage etc.

Keywords: Sol-gel Auto combustion, Barium Hexaferrite, VSM, XRD

THE ROLE OF ANTIOXIDANTS IN HUMAN HEALTH

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Abstract

There has been a great interest in phenolic compounds and their antioxidants activity among consumers and the scientific community in the past decade because of the epidemiological studies linking the consumption of diet rich in natural antioxidants with decreased risk of diseases associated with oxidative stress such as cancer and cardiovascular diseases. Phenolic compounds are commonly found in both edible and inedible plants, and they have reported to have multiple biological effects, including antioxidants activity. Certain fruits and vegetables containing antioxidants such as ascorbic acid, carotenoids and flavonoids play an important role for treating various diseases. Antioxidants are the substances which significally destroy the free radical-reactive oxygen species responsible for degenerative diseases. Antioxidants in the body can show down the process of ageing and may even increase longevity. They destroy the free radicals by chelating catalytic metals and by acting as oxygen scavengers. To combat toxic free radicals, various antioxidants are used as drugs and as ingredients in various food products. Research has shown that people who eat more vegetables and fruits have lower risks of several diseases. Vegetables and fruits are rich sources of antioxidants. There are good evidences that eating a diet that includes plenty of vegetables and fruits is healthy. However, high dose supplements of antioxidants may be linked to health risks in some cases. The high dose of beta carotene may increase the risk of lungs cancer in smokers and high doses of vitamin E may increase risk of prostate cancer and one type of stroke.

Keywords: Antioxidants, Polyphenolic, ROS, SCAVENGERS.

SYNTHESIS, CHARACTERIZATION AND ELECTROCHEMICAL STUDIES OF COBALT MOLYBDATE SYNTHETIC MEMBRANE

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Abstract

The study of electrical conductance across parchment supported cobaltmolybdate synthetic membrane in various 1:1 electrolytes has been experimentally determined in order to evaluate selectivity of membrane using the values of the intramembrane permeability ratio. The synthetic membrane was tested for its antibacterial activity against gram-negative and gram-positive bacteria. The result of these studies also signifies the activity of the membrane as compared with a well-known antibiotic that is Erythromycin and therefore, can be specifically used as an antibacterial agent. The prepared membrane was characterized by Scanning electron microscopy (SEM), Transmission electron microscopy (TEM), Fourier transform infrared (FTIR) spectroscopy, Thermogravimetric analysis (TGA)/ Differential thermal analysis (DTA), and X-ray diffraction (XRD) analysis.

MAINTAINING BIODIVERSITY – ALL FOR SUSTAINABLE DEVELOPMENT

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Abstract

Sustainable development is an attempt to leave a place better than one found it. It is the most sought objective today to ensure better present and future perspective. The elements of sustainability can be broadly classified into different parameters Economy, Environment, Social and Administration .It presupposes Equity and Social Justice, Efficient Economic System, Ecological Harmony and Stable Social System. Thus for sustainable development, proper resource management is required and one aspect of this is maintaining ecological balance. Ecological balance can be attained by maintaining biodiversity and minimizing the adverse effects of climatic changes on environment. Environment means all the natural surroundings such as land, air, water, plants, animals, solid material, waste, sunlight, forests and biotic and abiotic components. The components of natural environment are a resource and human being should value our natural resource and stop adding pollution and waste to the environment. The need of the hour is to conserve the environment to protect the human race. Effects of climatic changes lead to global warming, melting of glaciers and ice caps and and its causes are water and air pollution, urban development, not conserving the natural resources. Biodiversity refers to variations of life forms. It is the variations among animals, plants and micro-organisms.Biodiversity is under serious threat as a result of human activities such as deforestation, habitat destruction, adding pollution in air water and on earth. Biodiversity is of prime concern for human survival and economic development. It is a major agent to regularize the climate. In a sustainable development highest quality of life at lowest level of impacts on local and global scales while also repairing the damages of the past are envisaged. The study of paper is to discuss the effects of climatic changes rendering changes in biodiversity and need to maintain biodiversity for sustainable development.

Key words :environment, effects and causes of climatic changes, biodiversity, sustainable development

THERMOPHYSICAL STUDY OF THE BINARY MIXTURES OF DIMETHYLACETAMIDE WITH POLYETHYLENE GLYCOL 200/ 400 AT DIFFERENT TEMPERATURES

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Abstract

Cost effective and large scale carbon di oxide capture is a most prominent technology for greenhouse gas abatement. However, current capture technologies are energy and capital intensive, which prohibits the deployment in industries. Particularly, the need for elevated temperature steam is a troublesome problem for industry. In this work, we proposed a chemical blend System, which focus on developing a novel absorbent for CO_2 capture, The thermophysical properties of blend DMA + PEG 200/PEG400 were theoretically calculated . Since the fact that the binding of DMA molecules with PEGs are identical with that of carbon dioxide CO_2 can be absorb easily. Results of thermophysical properties explain in term of molecular interaction. The binary systems of DMA with PEGs are of considerable interest for investigating the intra- and inter-molecular behaviour of DMA-PEGs solvent systems.

Keywords: - Thermophysical properties, Amide, PEGs, Molecular interactions, CO_2 capture

ELECTRICAL CONDUCTION PHENOMENA OF IODINE DOPED POLYSTYRENE FILMS (PS)

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Abstract:

Polystyrene films (PS) is reportedly one of the most widely used high molecular weight compounds. Polystyrene and its applications are quite attractive for both academic and industrial researchers. Electrical Conduction of iodine doped Polystyrene films (PS) thin of about 20 μm thickness has been recorded as a function of temperature, electric field, heating rates and storage times. Two current maxima in positive direction and found around (60 ± 10) and (110 ± 10) °C. The trapping capability of Polystyrene (PS) can be greatly modified by doping it with certain impurities. Polarised samples of Iodine doped Polystyrene films (PS) films for doped sample with Polystyrene films (PS). Differentia thermal analysis gave a second-order transition at bout 345K because of good correlation between both thermal techniques it is concluded that the TDC peak is associated with glass transition of the polymer, and therefore it involves the motion of large parts of the polymer chains.

EVALUATION OF ANTIMICROBIAL ACTIVITY OF FOENICULUM VULGARE

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Abstract

In present study anti-bacterial activity of *Foeniculum vulgare* was evaluated by well diffusion method against *Staphylococcus aureus, Enterobacter aerogenes, Escherichia coli* and *Pseudomonas aeruginosa*. The maximum zone of inhibition was observed against *Pseudomonas aeruginosa* for both benzene and acetone extract (18mm) at the concentration 100 µl/ml. *Staphylococcus aureus* is also more susceptible for Benzene extract at 100 µl/ml concentration which showed 18mm zone of inhibition. However, the growth of *Pseudomonas aeruginosa* was inhibited (16mm zone of inhibition) by benzene extract at the concentration of 50 µl/ml.

Keywords: Antibacterial activity, *Foeniculum vulgare*, methanolic extracts, zone of inhibition.

AN OUTLINE OF MODERN ENVIRONMENTAL PROBLEMS IN INDIA

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Abstract

There are many environmental issues in India. Air pollution, water pollution, garbage, and pollution of the natural environment are all challenges for India. The situation was worse between 1947 through 2019. According to data collection and environment assessment studies of World Bank experts, between 1995 through 2010, India has made one of the fastest progress in the world, in addressing its environmental issues and improving its environmental quality. Still, India has a long way to go to reach environmental quality like those enjoyed in developed economies. Pollution remains a major challenge and opportunity for India.Environmental issues are one of the primary causes of disease, health issues and long-termlivelihood impact for India.

SYNTHESIS OF BIOLOGICALLY ACTIVE NATURAL PRODUCTS FROM *DALBERGIA OLIVERI*

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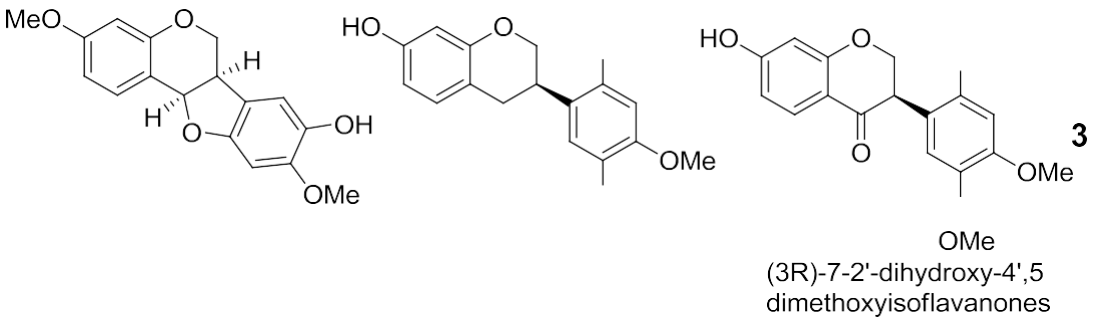
Abstract

Biological screening of the natural products from *Dalbergia oliveri* identified that Pterocarpan **1** and isoflavanone **2** significantly increased the proliferation of dermal papilla cells and subcutaneous injection of these compounds induced the anagen of hair cycle in animal models. These interesting biological activities led us to design a practical synthetic route to these natural products for further pharmacological evaluation. Here we report the first total syntheses of naturally occurring Pterocarpan **1**, Isoflavan **2** and Isoflavanone **3** in a racemic form.



BIOLOGICAL IMPACT AND STABILITY CONSTANT OF MULTINUCLEAR COMPLEXES IN AQUEOUS MEDIUM

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Abstract

The metal chelates play an important role in various field of biological analytical industrial and medicinal importance. Mixed ligand and multimetalmultiligandcomplexes of somebiologically important bivalent transition metal ions viz- Co(II), Ni(II), Cu(II), Zn(II) formed with biologically significant ligands viz- GlycylGlucine (A) and Uracil (B) have been investigated . The stability Constant of Multimetal-Multiligand chelates have been determined potentiometricallyin biologically relevant conditions at constant ionic strength. The formation constant have been evaluated using SCOGS computer program and species distribution curve sketched by Origin 4.0. The metal ligand overall stability constant of MA, MB, MAB, M1M2AB type of complexes follow Irving William order. The speciation constant of quaternary systems have observed and probable solution structures of metal complexes with said ligands have been compared and discussed.

Key words: Multimetal-Multiligand chelates / SCOGS / ORIGIN 4.0/Glycyl Glycine / Uracil **(Footnotes)**

IMPORTANCE OF SPECTROSCOPY FOR PHYSICO-CHEMICAL STUDYOF MATERIAL

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Abstract

Modern spectroscopic techniques which require smallquantities of samplesare increasingly beenusedto analysephysico-chemical properties of unknown materials. Spectroscopic techniques such as Scanning Electron Spectroscopy (SEM)is used for micro electrograph picture of material, Energy Dispersive X-ray Spectroscopy (EDS)is used for assessment of elemental constituents, X-Ray Diffraction (XRD)is used for detection of elemental phase form, Infra Red(IR)is used to find out the presence of functional groups, Atomic Absorption Spectroscopy (AAS) is used for estimation of elements, Inductively Coupled Plasma Mass Spectrometry (ICPMS) is used for total elements present in liquid sample and Flame Photometer is used for elemental analysis most commonly of K, Na, Li. Thesetechniques are proving to be a boon in analysing the physico-chemical properties of materials and contributing towards the enhancement of knowledge for the betterment of mankind.

Key word- SEM, EDS, XRD,ICPMS,AAS, IR.

ACCUMULATION OF ESSENTIAL METAL CU,FE,ZN,MN IN VEGETABLES AND SOIL POTENTIAL EFFECTS ON HUMAN HEALTH

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Abstract

If an alien from a distance galaxy were to visit our planet Earth, the first thing that would amaze and baffle him would most probably be the enormous diversity of life that he would encounter. The biological wealth of our planet has been declining rapidly and accusing finger is clearly pointing to human activities . One of the activity that has been recently encountered is the accumulation of certain essential elements in vegetables and its growing soil in Mathura district as these vegetables are irrigated by water from Gokul barrage. Excess of metal also effects the nutritive values of agricultural materials and thus exert deleterious effect on human beings. Vegetables are essentially dietary source of carbohydrates, proteins, vitamins, iron, calcium and other nutrients. The study was conducted to assess potential transformation of metal in vegetables such as spinach radish radish leaves guard ridged gourd. Tomato seed and its growing soil was used for irrigation. The content of these metals was measured by using Atomic Absorption Spectrophotometer (AAS). It was observed that max. concentration of Cu (65.75mg/kg), Fe(420mg/kg), and Zn(68mg/kg) in vegetables did not elevate the safe limit recommended by FAO/WHO except Manganese in Spinach and radish leaves, although the iron and manganese concentration in soil is high.

Key words : Heavy metals, Leafy Vegetables, AAS.

Abbreviation: (PCF) plant concentration factor, (MCv) *Metal concentration in vegetable ,(MCs) metal concentration in soil,* (WHO) world health organisation, (FAO) Food and agriculture organisation, (CDF) cumulative distribution function, (AAS) Atomic absorption spectrophotometer.

A STUDY ON MAGNETIC NANOCOMPOSITES FOR WASTEWATER TREATMENT

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Abstract

Water is a essentially basic element for all living things, and we need water in every day to day activity related to agricultural, industrial, and domestic uses. Thus, its quality influences all aspects of human life including energy, food, health, and economy. Water pollution is one of the worldwide problems, Heavy metals are discharged into water from various industries. They can be toxic or carcinogenic in nature and can cause severe problems for humans and aquatic ecosystems. Thus, the removal of heavy metals from wastewater is a serious problem. [1,2]. So, we use affordable techniques for water treatment to access portable water to the humanity. Nowadays, nanotechnology offers the possibility of an efficient removal of metals, organic dyes, bacteria, parasites etc. from polluted water[3] In the present study, magnetic nanocomposites like iron oxide/ graphene oxide, evaluating their morphologic and magnetic properties, and assessing their performance in removing heavy metal ions from industrial wastewater[4,5] Due to its important physiochemical property, inexpensive method and easy regeneration in the presence of external magnetic field make them more attractive toward water purification. Surface modification strategy of iron oxide nanoparticles is also used for the remediation of water increases the efficiency of iron oxide for the removal of the heavy metal ions from the aqueous system. [6, 7].

Keywords: Magnetic nanocomposites, Heavy metals, water treatment, water pollution

FABRICATION AND ELECTROCHEMICAL STUDIES ON LEAD TUNGSTATE SYNTHETIC MEMBRANE

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Abstract

Membrane Potential and Bi-ionic Potential across the parchment supported lead tungstate Membrane bathed in different concentration of 1:1 electrolyte (KCl, NaCl, LiCl) have been measured. The methods used for the estimation of fixed charge density were: The Teorell - Meyer - Sievers method (TMS) and Kobatake et al, The value derived from different theories were almost the same, confirming there by the validity of the recently developed theories of membrane potential for the evaluation of effective fixed charge density of the system under investigation. The membrane has been characterized on the basic of SEM, TEM, TGA, DSC and FTIR analysis.

CYANOGENIC PROPERTIES IN S. MARGINATUS

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Abstract

Seeds of S. Marginatus (400 g) were investigated . The seeds broken and kernels separated from shells. A Yellow mass (250 g) was extracted with petroleum ether (60-80 ^{0}C) for 12 hours. 25% oil recovered from seeds. Oil was first investigated by TLC eluting petroleum ether : diethyl ether : acetic acid (80:20:1, V/V). The oil components were visualized with solid Iodine followed by heating the plates.

After the study by TLC, the composition of oil was separated by column chromatography elution with petroleum ether/diethyl ether. On the basis of TLC, Column chromatography and liberation of HCN, Cyanogenic properties were found in S. Marginatus.

Keywords : S. Marginatus , TLC , Column Chromatography.

STUDIES OF SOME SCHIFF BASE LIGANDS COMPLEXES WITH MERCURY (II) AND THEIR APPLICATIONS

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Abstract

A variety of Schiff bases have been investigated. Mercury (II) with Schiff base ligands formed as supramolecular frameworks or multifunctional coordination polymers coordination geometry. Mercury (II) are also formed asymmetrical as well as nitrogen, sulpher and oxygen as donor Schiff-base complexes. Sometime mercury (II) are formed supramolecular complexes by non covalent linkages. The Schiff-base complexes are ability as biologically active substances, dyes, liquid crystals, luminophores and polymer stabilizers. The applications these Schiff-base complexes such as antimicrobial, antitumor, antidepressants, nematocide, antiphlogogistic and other medicinal significants. Another applications in the paper industry and as preservative, fluorescent lamps, sensors and batteries. The Schiff-base are used to simultaneous detection and removal of mercury (II) ions from water.

STUDY OF OPTICAL AND ELECTRICAL PROPERTIES OF SOME CONJUGATED POLYMERS

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Abstract:

Polymers based new materials of low cost, flexible, light weight and high efficiency for the applications of PLEDs and PSCs investigated continually. Polymer solar cells (PSCs) have many advantages over polymer-fullerene solar cells, including flexibility, highly efficient, low coast, and portable electronics. We have their focus on developing optimal polymer donor and polymer-acceptor combinations, synthesis technique, well-controlled bulk-heterojunction (BHJ) morphologies, to enhance the flexibility and PCE of PSCs and PLEDs. There are few types of metal nanoparticles as dopant that can enhance performance in PSCs and PLEDs simultaneously. We will investigate the comprehensive study of all-polymer, polymer-fullrence and hybrid PCSs and PLEDs. Also investigate a proper combination of optimum donor and acceptor polymers, synthesis techniques and morphology to enhance leading characteristics of the PCSs and PLEDs.

GREEN CHEMISTRY; THE ROAD AHEAD; ADVANCEMENTS, CHALLENGES AND APPLICATIONS

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Abstract

The most worrying challenge of 21st century is pollution and keeping our only habitable planet Earth survivable. In the field of chemistry, the latest and most investigated topic now-a-days is Green Chemistry, because it deals with reducing the consumption of energy, eliminating the production of hazardous byproducts and maximizing the desired product without impacting the environment, in short environmentally benign chemistry, possesses the spirit of sustainable development. Main developments in green chemistry include use and reuse of super critical solvents for reactions, nature friendly oxidizing agents and modifying traditional heating method with that of heating by microwave radiations, reducing carbon footprint. Flow chemistry, microwave or ultrasonic irradiation are just a few representative examples of research platforms being independently developed keeping in mind chemical and environmental efficiency. Green chemistry, therefore promotes the design environmentally benign chemicals and chemical processes. Of late, one of the most active areas of Research and Development in Green Chemistry is the development of analytical methodologies, giving rise to the so-called Green Analytical Chemistry. Ample interests are being directed to such innovations by whole scientific community. Our study mainly discusses the advancements, challenges and application of this field.

Keywords: green chemistry, hazardous, environment, energy.

IMPACT OF PLASTICS ON SOIL POLLUTION AND ECOLOGICAL BALANCE; AN ALARMING THRESHOLD

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Abstract

Human civilization and our home planet are gradually reaching an alarming threshold due to plastic pollution. Production of plastic is increasing drastically day-by-day. From beaches to surface water into the oceans, deep seas and sediments, arctic ice, freshwater systems, soil and terrestrial niches, to indoor environments as well as food and drinking water, plastic debris or micro plastics are now found in everything and everywhere. Other fields such as its impact towards marine life has been well developed and studied but it has no lesser effect in soil pollution too. Disused and waste or abandoned plastics create chemical hazards in soil and misbalance the ecological system. Living organisms, including humans, need to depend on the soil for their survival and even affecting food safety for humans. Industrial development around the globe has reached great heights and the production and disposal of plastics have gone by leaps and bounds, resulting concerns on plastic pollution are growing. Disposal of municipal waste-water effluent, sewage sludge landfill and plastic mulch from agricultural activities are serious issues to fight against. Earthworms, the most helpful soil organisms are gradually vanishing. Our study will discuss impacts of plastic pollution and effects of diverse plastic wastes, mainly micro plastics on the soil ecosystem and our perspective is to perform future directional research on soil eco-toxicity.

Keywords: Soil Pollution, Ecosystem, Micro Plastic.

SYNTHESIS OF SOME NEW 3-CHLORO-4-(4'HYDROXY PHENYL)2-AZETIDINONES DERIVATIVES WITH POSSIBLE ANTIMICROBIAL ACTIVITIES

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Abstract

The present study was conducted to evaluate the antimicrobial activity , many phenols and compounds with phenolic groups have antifungal potency A large number of fungicides are formulated as wettable powders; this is the form most commonly used for spray mixes.Nodern wettable powerders are easily wetted and disperse well in water . In the present review, emphasis is given on diverse pharmacological properties associated with substituted thiazolidinones and structurally related thiazolidines. Such a chemical is called a ''fungistat" and the phenomenon of temporarily inhibiting the growth is ''fungistasis" .Some other chemicals, like certain phenanthrene derivatives and Bordeaux mixture, may inhibit spore production without affecting the growth of vegetative fungistate hyphae. They simply inhibit fungus growth temporarily.. 2-amino 4-Phenyl thiazole is condensed with appropriate aromatic aldehyde in methanol was refluxed on water bath for 1 hr.Various. obtaining gave 2 Substituted N-[4-Phenyl-2-thiazolyl]-2-imino (4^{I}-hydroxy phenyl) methylene Which were converted into N-(4-Phenyl thiazolyl)3-Chloro-4^{II}-(4^{I}hydroxy phenyl)-2-azetidinones. and by reaction with chloroactyl chloride respectively and synthesized compounds showed moderate to good antifungal activity with respect to standard drugs

Keywords: 2-amino 4-Phenyl thiazole , EtOH and Antimicrobial activity.

ACCUMULATION OF ESSENTIAL METAL CU,FE,ZN,MN IN VEGETABLES AND SOIL : POTENTIAL EFFECTS ON HUMAN HEALTH

Tiwari Indu , Barkodia Neha, Dixit Lovely , Yadav Surabhi
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Abstract

If an alien from a distance galaxy were to visit our planet Earth, the first thing that would amaze and baffle him would most probably be the enormous diversity of life that he would encounter. The biological wealth of our planet has been declining rapidly and accusing finger is clearly pointing to human activities . One of the activity that has been recently encountered is the accumulation of certain essential elements in vegetables and its growing soil in Mathura district as these vegetables are irrigated by water from Gokul barrage. Excess of metal also effects the nutritive values of agricultural materials and thus exert deleterious effect on human beings. Vegetables are essentially dietary source of carbohydrates, proteins, vitamins, iron, calcium and other nutrients. The study was conducted to assess potential transformation of metal in vegetables such as spinach radish radish leaves guard ridged gourd. Tomato seed and its growing soil was used for irrigation. The content of these metals was measured by using Atomic Absorption Spectrophotometer (AAS). It was observed that max. concentration of Cu (65.75mg/kg), Fe(420mg/kg), and Zn(68mg/kg) in vegetables did not elevate the safe limit recommended by FAO/ WHO except Manganese in Spinach and radish leaves, although the iron and manganese concentration in soil is high.

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RECURRING DECIMALS IN HEXADECIMAL NUMBER SYSTEM

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Abstract

Vedas occupy oldest position Of respect in world literature.Vedas contain the seeds of all modern sciences. But the difficulty in understanding by a common person gave birth to non-Vedic teachings, writings and ultimately the ignorance. Basically the Vedic Dharm and science can not be distinct from each other . If one were to understand the true science then one should look into the Vedas because vedic way is the only way for the survival of the humanity. The Indian mind has ever sought to know the inner spiritual truth in the outer physical laws of nature in all shades of human activity . The original source of all knowledge is from the oldest literature of the world i.e . Veda . Hence Vedic sciences are holistic-integral-synthetic-all embracing-all inclusive. The vedas contain the seeds and the roots of all sciences, traditional as well as modern.

In recent times there have been a number of attempts to look into the details of what is contained in Vedic literature. A time has come for scientists to learn Vedas and start looking into the science in the vedas. The scientsts are digging out from Vedic literature the treasures of traditional scientific and technological experise as pradactised in ancient India and establish their validity and utility in terms ot modern science and thus to establish the interface between the ancient and modern sciences in its all aspects. Any such discovery will enhance welfare of whole mankind. It is by virtue of these insights and creative thinking the investigators have proposed to evaluate the recurring decimals in hexadecimal number system using Sutras and Upsutras of Vedic mathematics. The Sutras ekadhiken purvena (one greater than the previous one) and ekanyunena purvena (one less than the previous one) are utilized extensively for present work. In this works the recurring decimals are computed for denominators 11, 21,31,41,51,61,71,81,91,A1,B1,C1, D1, E1, F1 and F, 1F,2F,3F, 4F, 5F, 6F, 7F, 8F, 9F, AF, BF, CF, DF, EF for all possible nunerators less than denominator. The results thus obtained are tabulated, discussed and concluded.

INDUSTRIAL POLLUTANTS AND ITS HARMFUL EFFECTS

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Abstract:

Effluents discharged into water bodies contain toxic chemicals , hazardous compounds, phenols, aldehydes , ketones, amines ,cyanides, metallic wastes, plasticizers, toxic acids , corrosive alkalies, oils, greases, dyes, biocides, suspended solids, non-biodegradable matter and thermal pollutants from numerous industries. The effluents from the industries such as that of pharmaceuticals, breweries, tanneries , dyeing , textiles, paper, plastic, chemical, metallurgical, fertilizer, pesticides, coal, lime, cement, steel, paints, rubber, electroplating, sugar, , oil refineries, etc. are some of the most important agents of water pollution.

The toxicity of various pollutants to aquatic environment is variable but all of them contaminate on the bottom of water systems where they poison or smoother the aquatic organisms.Toxic metals are extremely lethal for living beings. Sulphuric acid waste from coal mines is a cronic pollutants which enhanced water hardness and corrodes etc. Dyes and dye stuffs used in printing and dying up textiles and leather goods are also posing serious problems of water pollution in India. Industrial effluents cause deleterious effect on living organisms and may bring about death or sub-lethal pathology of kidney, liver, lungs, brain and reproductive systems.

Kew Words: Organic pollutants, heavy metals, toxic, aquatic organisms,

A COMPARATIVE STUDY ON ULTRASONIC PROPERTIES OF NANOFLUIDS

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Abstract

Recent developments in nanotechnology gave rise to a new class of fluids named as nanofluids. The term 'nanofluid' was first introduced by Sir Stephene Choi, a scientist of Agronne Laboratory (USA), in 1995. Nanofluids are dilute liquid suspension of solid nanoparticles with size smaller than 100 nm. The nanoparticles may be metallic (e.g. Cu, Fe, Au), non-metallic (Al_2O_3, CuO, ZnO) or different forms of carbon (fullerene, graphene). The basefluid may be water, vegetables oils (e.g. coconut, rapeseed or canola), organic liquids (e.g. butanol, ethylene glycol) or polymeric solutions.

Nanofluids are well known for their enhanced thermal conductivity property but they may also possess wide applications in biomedical sciences, electronics, engineering as well as in practical applications such as catalysis, and applications of optical devices. Ultrasonic propagation in a nanofluid has proven to be a typical way to understand the molecular interactions. The present paper reviews the ultrasonic properties like ultrasonic velocity and ultrasonic attenuation of various nanofluids.

Keyword: nanofluids, ultrasonic propagation, ultrasonic velocity, ultrasonic attenuation

WATER QUALITY INDEX AND PHYSIO-BIO-CHEMICAL PARAMETERS OF HARVESTED RAINWATER OF ATARRA, BANDA, U.P., INDIA

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Abstract:

At the peak of rainy session (August 2019) rainwater samples were collected at five sites from nearby area of Atarra, Banda, U.P., India. Banda is a part of Chitrakoot division. Banda lies south of the Yamuna River (latitude 24.53' N and 25.55'N and longitude 80.07'E and 81.34'E) in the Bundelkhand region The collected water samples were analyzed periodically like chlorination, solar disinfections, use of silver nitrate and also determined Physiochemical & Biological parameters .All the above treatment are highly effective in reducing the colonies for an initial (around 280) to zero. The Water Quality Index of different water samples were found 50.55,50.83, 52.32, 54.44, 49.89 respectively and average water quality index is 51.606, which indicates the poor quality (level of WQI for poor 51 to 75) of water.

Keywords: Physio-bio-chemical parameters, Water Quality Index.

Harmful Effects of food Preservatives on human health

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Many people are shying away from foods with less- than-nature ingredients because of a substance or a chemical that is added to many products such as beverages, sweets, baked-goods, breads and many more these days . These can be also commonly found in vegetables, fruits and tinned foods. We are talking about preservatives and how an excessive consumption of these could lead to long term health issues. Preservatives are typically used to , 'preserve' food items. This helps increase the shelf-life of products and makes sure that there is no loss of taste or flavour in the product over a period of time. There are basically two types of preservatives –

1. NATURAL PRESERVATIVES-These are ingredients that are used to preserve 'as is'. Their chemical composition is not altered and they are not mixed with any synthetic items either. These also have, in most cases, anti-oxidant properties .We know that Anti-oxidants delay the process of oxidation or ageing as it were. This is similar to what a preservatives needs to do; delay the ageing process of a food item to increase its longevity.

2. ARTIFICIAL OR CHEMICAL PRESERVATIVES-These preservatives are also used to delay spoilage and contamination in foods, but these are artificially produced or synthetic in nature. Often these are also called 'additives' on food labels – so read the label carefully before you make the purchase.

The purpose of the study is to find the harmful effects of food preservatives to human health. 1.One of the possible harmful effects of preservatives could be a trigger for breathing problems asthama, bronchitis. 2.Preservatives can cause problem within young children like hyper active behaviour. This problem is also measured by parental and objective reporting. 3.Sustained and excessive consumption of artificial preservatives can weaken heart tissues which is dangerous especially for the aged people. 4.They could contain BHA and BHT food additives which could be cancer causing. BHT is used in cereals and fats while BHA could be present in potatoes, meats and other baked goods. 5.Preservatives could cause obesity in some as it contains fatty acids especially in processed foods.

Key words – Preservatives, natural preservatives and artificial preservatives

PRESERVING FOOD FOR SUSTAINABLE FUTURE

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ABSTRACT

Food preservation is an age old practice of stopping or slowing down the spoilage of food, loss of quality and edibility of food for longer time. It involves various techniques of preventing the growth of bacteria, fungi and microorganism. Raw food products are processed into marketable food products, range of usage of which could be seen form daily life to space food which is especially processed for consumption under Zero gravity. While talking about sustainable future in term of food spoilage, storage, food preservation with its various age old and modern techniques catches attention. Old practices of preserving food is drying salting, smoking etc. were more energy efficient as compared to modern techniques like – Canning, pasteurization, freezing etc, which require greater energy inputs. No doubt revolutionary modern techniques of food preservation have brought food security and availability to newer heights but when food safely is considered we need to give it a serious thought and review. In addressing the issues of food security and sustainability food spoilage, storage and transportation have received much attention from science which eventually led to newer innovations and practices, allowing a greater variety of items to be preserved, but there newer techniques often require large energy inputs. Canning uses combination of heating, refrigeration uses compressed gas, vaccume packing, storage in gasses such as carbon dioxide and nitrogen, addition of chemicals, irradiation using electrons, gamma rays, X-rays etc. Despite the impressive innovations and advances, most food preservation techniques still relies on the principles discovered by ancient cultures.

Key Words :- Food Preservation, Sustainable Future, Canning, pasteurization, Energy

SYNTHESIS AND CHARACTERIZATION OF TIN (II) MACROCYCLIC COMPLEXES

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ABSTRACT

The interaction of SnX_2(Where X= Cl or Br) with five macrocyclic Shiff base ligands, derived from 9,10phenanthrenequinone and different diamines i.e. $NH_2(CH_2)_nNH_2$(Where n=2 or 3 or 4 or 5 or 6). The products which are obtained characterised by physicochemical methods to establish their geometry. All the tetradentate Schiff base ligands were prepared by condensation between diamines i.e. $NH_2(CH_2)_nNH_2$(Where n=2 or 3 or 4 or 5 or 6) and 9,10 phenanthrenequinone in ethanol or methanol in 2:2 molar ratio and purified by recrystallisation. Ligands were characterised by elemental analysis, IR and XPS data. A template reaction was carried out to synthesize the complexes. A methanolic solution of the respective divalent metal halide SnX_2 (where X= Cl or Br) was mixed with methanolic solution of the prepared macrocyclic Schiff base ligand. The reaction mixture was stirred and was left under reflex for about 4 to 5 hours. The metal complexes were precipitated out on cooling the reaction mixture overnight. It was further collected by filtration and washing with methanol and then dried in vacuum under pressure. All these newly synthesised compounds [SnX_2.L] are light pink colour solids. They all were soluble in common organic solvents and stable towards moisture and atmospheric oxygen. The elemental analysis for C, H and N were found within $\pm$0.5%. Molar conductance of 10^{-3} M solution of the compound were observed 20-30 $ohm^{-1}cm^2\ mol^{-1}$ in acetone indicating absence of ionic species[22].Infrared frequency associated with fundamental modes of vibration.

SAFE DIETARY SUPPLEMENTS

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ABSTRACT

Purpose of writing this paper is to investigate the harmful health risks of adulteration in dietary supplements which are easily accessible and widely used by people. Supplements are considered an addition to an already healthy diet. Athletes and active people may take supplements to help meet nutritional needs, improve nutrient deficiencies, enhance athletic performance or achieve personal fitness goals. Dietary Supplements are placed in a special food Category and are not considered as drugs. These need not to be sent to FDA (Food and Drug Administration) for regulation. Although the FDA can review the health claims and ingredients but unfortunately very few are investigated and rarely are based on scientific evidence. This leaves the consumer without a guarantee of safety, effectiveness or purity of supplement for dietary or ergogenic purpose. The international society of sports nutrition (ISSN) indicates the foundation of good training is a sound energy balanced, nutrient dense diet. ISSN Considers only those supplements which are properly backed up by research are scientifically safe and effective.There is a wide variety of synthetic drugs which are illegally added to dietary supplements meant for weight loss, muscle building and sports performance. This describes that dietary supplements adulteration is an emerging food safety problem and an effective control by authorities is highly recommended. Few supplements i.e. Glutamine, smilax, prohormones etc. which claim to enhance muscle building are known not to be very effective and unsafe which could lead to serious health risks. Prolonged use of prohormones are known to cause fat gain, acne, hair loss, CVD etc. Glutamine also causes gas, joint pain, dizziness etc. Pharmaceutical adulterants includes appetite suppressors, stimulants, antidepressants and diuretics in weight loss, anabolic steroids, and prohormones in supplements used for muscle building/ Sports performance enhancement and are easily accessible by the masses.

Key Words :- Dietary Supplements, FDA, Synthetic Drugs, Glutamine, Prohormones, Adulteration

A STUDY ON MAGNETIC NANOCOMPOSITES FOR WASTEWATER TREATMENT

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Abstract:

Water is a essentially basic element for all living things, and we need water in every day to day activity related to agricultural, industrial, and domestic uses. Thus, its quality influences all aspects of human life including energy, food, health, and economy. Water pollution is one of the worldwide problems, Heavy metals are discharged into water from various industries. They can be toxic or carcinogenic in nature and can cause severe problems for humans and aquatic ecosystems. Thus, the removal of heavy metals from wastewater is a serious problem. So, we use affordable techniques for water treatment to access portable water to the humanity. Nowadays, nanotechnology offers the possibility of an efficient removal of metals, organic dyes, bacteria, parasites etc. from polluted water. In the present study, magnetic nanocomposites like iron oxide/ graphene oxide, evaluating their morphologic and magnetic properties, and assessing their performance in removing heavy metal ions from industrial wastewater.Due to its important physiochemical property, inexpensive method and easy regeneration in the presence of external magnetic field make them more attractive toward water purification. Surface modification strategy of iron oxide nanoparticles is also used for the remediation of water increases the efficiency of iron oxide for the removal of the heavy metal ions from the aqueous system.

Key words: Magnetic nanocomposites, Heavy metals, water treatment, water pollution

The Role of Big Data in Precision Agriculture of Medicinal Plant (A Review)

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ABSTRACT

In modern era of digital life, Precision farming of medicinal plants (herbs) has central attraction toward huge business opportunities. Today's challenges around food production in regard to farming are optimizing production, reducing cost, resources water and minimizing waste. There is specific need to develop a precision fertilization of medicinal plants toward health sector. **The Big Data approach and methodology used for precision agriculture in collecting, managing and analyzing large data sets to contribute to the productivity** Big Data including whole chain. The source of big amounts of data is used by farmers and expert in decision-making and strategies. *Precision* site specific *plant* production technologies are becoming more and more widespread in countries with developed *agriculture*. Thus implies that the traditional methods of farming are becoming inefficient for the future market. Analysis of data collected is important in improving the end results and rethinking most of the agricultural farming methods. Investment in agricultural data enabled devices has increased significantly. Farmers are using high-end technologies to extract important data from plants, soil conditions, fertilizer requirements, water needs, or even weather forecast. This data is essential in making precise decisions in farming. Both the hardware and software solutions are used in precision agriculture to process data and drive efficiency by analyzing decades of medicinal plants and weather details investigating patterns that will help farmers predict crop yields with much accuracy. Precision agriculture can be harnessed for unification of the cultivation conditions spatially and temporally in the cultivation sites and for site specific medicinal plants crop management. It is a potential tool that should be explored for standardization of the growing conditions and quality of the medical product.

Keywords: Medicinal plants, **Big Data,** Precision agriculture, digital life, data analytics.

SPECIAL NORMAL AND NEO-NORMAL PROJECTIVE RECURRENT, BI-RECURRENT, FINSLER SPACES ADMITTING AFFINE MOTION

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Abstract

This paper deals with the study of the recurrent and bi-recurrent, Neo-normal / normal and special normal projective Finsler spaces admitting an affine motion. The relation between two Ricci tensors has been established in a normal projective Finsler space and in a special normal projective Finsler space, the recurrence tensor of a bi-recurrent vector field generating an affine motion can not be independent of the directional arguments and is always non-symmetric. Also, some special types of affine motion generated by a vector field whose covariant derivative is recurrent has been discussed in this paper.

Key Words: Finsler spaces, Neo-normal, Recurrent, Bi-current, Affine motion

BIOLOGICAL IMPACT AND STABILITY CONSTANT OF MULTINUCLEAR COMPLEXES IN AQUEOUS MEDIUM

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Abstract

The metal chelates play an important role in various field of biological analytical industrial and medicinal importance. Mixed ligand and multimetalmultiligandcomplexes of somebiologically important bivalent transition metal ions viz- Co(II), Ni(II), Cu(II), Zn(II) formed with biologically significant ligands viz-GlycylGlucine (A) and Uracil (B) have been investigated . The stability Constant of Multimetal-Multiligand chelates have been determined potentiometricallyin biologically relevant conditions at constant ionic strength. The formation constant have been evaluated using SCOGS computer program and species distribution curve sketched by Origin 4.0. The metal ligand overall stability constant of MA, MB, MAB, M1M2AB type of complexes follow Irving William order. The speciation constant of quaternary systems have observed and probable solution structures of metal complexes with said ligands have been compared and discussed.

Key Words: Multimetal-Multiligand chelates / SCOGS / ORIGIN 4.0/Glycyl Glycine / Uracil

GOING GREEN: LIBRARIES FOR ENVIRONMENTAL DEVELOPMENT

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Abstract:

In this Modern library system green library in the latest concept and is emerging trend. Green libraries are also known as sustainable library and are viewed as a part of the larger green building movement. Today libraries extend beyond the physical walls of a building by electronic means. The term 'green' is defined as pertaining to a supporting environment. This paper discusses about the global surface temperature is probably rising. How libraries can play their role to control the pollution. Global warming the emphasis of this paper is to increases the awareness on environmental issue for the betterment of mankind. The characteristics of a library are connected to be basic components reuse and recycle of the green movement. Libraries are flexible in nature and as new technologies are being embraced by them.

The awareness among libraries in Indian about the Green libraries is least. Hence there in a need of building the green libraries more and more. It is the duty of every person to take the simple strip for making the planet Green to reduce the use of water and energy by designing the green libraries.

Thus libraries with its green images will be capable of improving and strengthening the environment.

ROLE OF GENETIC AND ENVIRONMENTAL FACTORS IN DEVELOPMENT OF CERVICAL CANCER

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Cancer of cervix, also known as cervical cancer is the most common type of cancer in women in India as well as in developing countries also. Incidence of cervical cancer is a remarkable reason for death in majority of women in undeveloped rural areas. As reported in literature, tumours generally found in cervical cancer are of benign and malignant tumours. Some research report that interaction between genes or alleles and various environmental factors shows a correlation and strong association with cause and development of various types of cancer like as colorectal cancer, breast cancer, urinary bladder cancer, cancer of cervix, and various others also. Due to the effect of environmental factors on gene expression resulting in modified metabolism of carcinogens exposed, resultantly determine the risk of development of cervical cancer. Health and hygiene sanitary facilities and practices used to maintain personal hygiene by women are very important contributing factor in development of cervical cancer.

Therefore, the present study was designed to understand the etiology and progression of cervical cancer along with the effect of various environmental factors that aggravate the risk of cancer development. The effects of various food habits, food packing materials, pollution, life style and smoking was also taken into consideration. The further study and along with the findings of present study, will be useful in development of better technique for prevention, screening, diagnosis of cancer of cervix.

COLONIZATION OF FUNGAL MYCOFLORA ON LEAF LITTER IN FOREST ECOSYSTEM DISTRICT DATIA, MP, INDIA

**Brijesh Kumar Jatav, Sippy Dassani,
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Jyoti Richhariya, Mily Anjly Vaidyaraj and Tirthesh K Sharma***

Abstract

The present investigation aim on isolation and identification of fungi associated with decomposition of leaf litter in forest ecosystem following dilution plate method. Altogether thirty fungal species are found associated with two litter samples during six month of decomposition. *Anogeissus pendula* and *Acacia catechu* litter harboured 16 species and 14 species respectively. *Aspergillus niger* and *Aspergillus japonicus* and some fungi imperfecti were of predominant occurrence. *Aspergillus* and *Penicillium* were dominant species. In early stages of litter decomposition, members of Mucorales and *Aspergilli* appeared followed by the dominance of *Penicillia, Aspergilli* and some Fungi imperfecti. *Trichoderm*a and *Chaetomium* contributed the major bulk of litter mycoflora as the litter decomposition is progresses.

APPLICATION OF ULTRASONICS IN NDT

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ABSTRACT

NDT stands for non-destructive testing. In other words it is a way of testing without destroying. Ultrasonic waves are non-destructive in nature, so these waves are widely used in the field of medical, defense, industry, oceanography etc. NDT are noninvasive techniques to determine the integrity of a material, component or structure to destructive testing, NDT is an assessment without doing harm, stress or destroying the test object. The destruction of the test object usually makes destructive testing more costly and it is also inappropriate in many circumstances.

Key words: NDT, Applications of Ultrasonics

A RELEVANT STUDY ON ANTICANCER PROPERTIES OF SOME MEDICINAL PLANTS OF BRAJ REGION

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Abstract

Medicinal plants are gifts of nature to cure limitless number of diseases among human beings. Almost over 21,000 plant species used for their medicinal purpose in all over the world. In the present studies is done to obtain more ethenobotanical information and uses of folk and traditional medicinal plant. Natural products have traditionally accepted as remedies for many diseases. Braj region of western Uttar Pradesh were selected for informations and ethnobotanical survey. The uses of medicinal plant since ancient times for the treatment of various disease such as cancer, tumors, diabetes, leprosy, skin disease, malaria and paralysis. The cancers may effect all ages and about 13% of all human deaths. More over 3000 species may produce secondary metabolites that have antimutagenic and anticancer properties may play significant role in either inhibiting or activating signal transduction pathway. The combination of secondary metabolites and other biological compound are potential anticancer drugs that cause either direct cytotoxic on cancer cells. Therefore, the traditional knowledge on medicine plants should be used to discover many drugs leads to cancer and any other harmful diseases. This information may very useful to future researcher.

Keywords: Anticancer properties, Biological active compounds, Ethnobotanical study, Medicinal plant.

EFFECT OF SEED MYCOFLORA AND STORAGES ON VIABILITY OF GROUNDNUT

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Groundnut (*Arachis hypogea* L.), or peanut, is commonly called the poor man's nut.It is an important oilseed crop. Production of groundnut is inadequate in the present scenario The expected increased production is achievable if adequate attention is given to ensure timely supply of quality seeds of improved varieties or hybrids and to improve the storage system, so that efficiency of seed is safeguarded Improper storage makes the oilseeds vulnerable to storage fungi which deteriorate thestored oilseeds both qualitatively and quantitatively. Loss of viability in oil seed crops is also attributed to non congenial storage environmental factors like high relative humidity and temperature during storage. In this context storage of seeds has been considered almost important. Effect of different storages and seed fungi on germination percent and seed viability of groundnut varieties was studied in this present paper.Three different varieties of groundnut namely Chandra, Manipuri and Rajasthani,were taken in four different storages. Plastic jar (PJ), Polythene bag (PB), Jute bag (JB) and Brown paper bag (BPB) were undertaken for the experiment. Seeds of each variety were taken out from each storage at an interval of four months for further investigations. Effect of storage on moisture content, germination percent, infection percent, root length, shoot length, seedling vigour index and fungal flora was studied. By this study an attempt has been made to explore safe and healthy storage for groundnut.

EFFECT OF PITUITARY GLAND EXTRACT ON HAEMETOLOGICAL PARAMETERS AFTER INJECTED IN COMMON CARP (*CYPRINUS CARPIO*)

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ABSTRACT

The purpose of the present study was to know the effect of pituitary gland extrac(PGE) injection in *Cyprinus carpio* by analysis of some parameters such as RBC, WBC, Hb, PCV, MCV, MCH, MCHC and blood glucose of the experimental fish and compared in relation to sex and pre and post spawning after treated hormonal injection. The brooders (male & female) were treated separately with PGE and blood samples were taken from the caudal vein of fishes.

The results obtain before PGE treatment in brooder (male, female), RBC (1.94 ± 0.10, 2.12 ± 0.13), Hb (10.8 ± 0.28, 9.6 ± 0.44), PCV (37.3 ± 3.41, 35.6 ± 3.89), MCH (53.2 ± 0.97, 46.87 ±

4.06), MCV (196.1 ± 13.1,1717 ± 8.03 and MCHC (29.1 ± 2.07, 27.3 ± 3.60) these value higher in

male, compared with female except glucose (154 ± 4.32, 156.3 ± 4.18). After treatment (male, female) RBC (1.81 ± 0.01,1.9 ± 0.16) , Hb (10.1 ± 0.16, 8.6 ± 0.30), PCV(21.5 ± 1.20, 34.2 ±

4.08), MCV(193 ±18.05, 160 ±7.87) these value were decreased and no significant difference was observed in MCHC(29.2 ±3.08, 27.4 ±3.70), while MCH (55.8 ±0.87,35.0 ±18.5) and glucose

increased (161.3 ± 5.43, 169.3 ± 4.18) in both the fishes.

Keywords: Pituitary glands extract, *Cyprinus carpio*, Haematological parameters.

RELATIONSHIP BETWEEN SOLAR ACTIVITY AND CLIMATE CHANGE

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Abstract

The sun is the primary driving force behind space weather and climate on earth. The most important factor that is known to influence the climate on earth is the activity of the sun. Sunspots are darker, cooler areas on the surface of the sun in a region called photosphere. Sunspot number Changes periodically on sun's surface over 11year solar cycle. The earth's climate is defined as average weather over a long period of time. Several scientists have established interrelationship between solar parameters and earth's climate. In this paper prominent solar features which have been used to study the effect of solar phenomena on earth's climate have been discussed. Sunspot number has been taken as the prominent solar feature and global mean temperature has been considered as parameter of climate change on earth.

Keywords – Space weather, Sunspots, Climate change, Solar cycle, Photosphere, Solar parameters.

EVALUATION OF THE TOXIC EFFECT OF HERBICIDE, ATRAZINE ON SERUM GONADAL HORMONES OF ZEBRA FISH, *DANIO RERIO*

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Abstract-

Atrazine is a chloro-s-triazine (2-chloro-4-ethyl amino-6-isopropyl amino-1, 3, 5-triazine) herbicide which is most widely used in agricultural crop fields of the corn, sorghum and sugarcane in India. It is non-biodegradable compound cause toxicity which may be associated with the metabolic activities, development of sexual characters and other deformities of the body. Atrazine can also cause oxidative stress and disturbances of endocrine system or hormonal level, such as progesterone, testosterone, Follicle Stimulating Hormone (FSH) and Luteinizing Hormone (LH) in mammals and fishes. Therefore, the present study was designed to investigate the toxic effects of Atrazine (ATZ) on reproductive hormones (FSH and LH) of zebra fishes. 60 fishes were divided into 3 groups of 20 fishes each. 1st group served as control, 2nd and 3rd group were treated with 24 hrs LC50 (27.797 mg/l) and 96 hrs LC50 (23.878 mg/l) concentrations respectively. Following 24 and 96 hrs exposure blood was pooled separately from each group, centrifuged at 5000 rpm for 10 minutes to separate the serum. The level of FSH and LH were analyzed by Chemiluminescent Immunoassay (CLIA). The results revealed that the ATZ reduced the serum concentration of FSH and LH in zebra fishes after both exposure periods as compared to control groups. Therefore, the findings of present investigation suggest that acute exposure of ATZ had deleterious effects on the serum level of gonadotropic hormones in zebra fishes.

Keywords- Atrazine, FSH, LH, zebra fish

STATISTICAL STUDIES ON DRINKING WATER QUALITY OF DATIA CITY, (M.P.)

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ABSTRACT:

The water quality of different sources of water viz. hand pump, wells, bore wells and taps of urban areas of Datia (M.P.) was studied. The results of Physico-chemical analysis for pH, electrical conductivity, T.S., T.D.S., T.S.S, T. H, T.A. NO3, Cl, SO4, Na, and K of 27 water samples collected from 10 wards of municipal area of Datia city are presented. The present study assessed the Water Quality Index (WQI) of Datia city to find out the impact of industrial and human activities. Physicochemical parameters were subjected to calculation of WQI for the winter, summer and rainy seasons. The correlation coefficients were calculated for water quality assessment.

Key Words: Datia Urban area, Physico-chemical characteristics, Drinking Water Quality Index (WQI), Correlation coefficient

MICROBIAL CONSORTIUM FOR BETTER ENVIRONMENT

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Abstract

Mother Nature is being continuously over exploited by human beings to fulfill their unending luxurious demands. Excess use of resources gives rise to excessive accumulation of toxics and pollutants, thus contaminating the environment surrounding us. Inorganic pollutants like radioactive nuclear wastes, Cadmium, Mercury, Lead, Arsenic etc and organic pollutants like petroleum hydrocarbons, explosives, fertilizers, pesticides, herbicides etc are discharged into various water bodies or air environment. To keep our environment clean and pure, bioremediation is the best process as compared to other physical remediation processes. Use of living things to purify environment is known as bioremediation, in which remediation is carried out with the help of microbes and plants. Bioremediation is natural, effective, inexpensive and smart way to restore the balance of polluted soil and groundwater using naturally occurring microbes and plants. There are many techniques like In-situ, Ex-situ bioremediations but the use of microbial consortium is most effective way of Bioremediation. Microorganisms in different mixtures and different ratios are effective for different types of pollutants present in wastes.

Key words- Microbial consortium, Organic pollutants, Inorganic pollutants and Bioremediation.

PHARMACOLOGICAL INVESTIGATION OF *COCCINIA INDICA* FOR ANTIDIABETIC ACTIVITY AND TRIGLYCERIDE LEVEL.

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ABSTRACT

The aim of present experiment to evaluate efficacy of fruits extract of *Coccinia indica* in streptozotocin induced diabetic rats. Isoflavonoids was isolated from *C. indica* investigation for antihyperglycemic activity. Experimental animals were divided into six groups (I) Control (II) Diabetic Untreated (III), (IV) and (V) Diabetic treated with *C. indica* alcoholic extract three different doses viz. 100 mg, 250 mg and 500 mg (VI) standard drug treated. The alcoholic extracts of *C. indica* fruits produced a significant triglyceride activity at 500 mg/kg body weight. Experiment was conducted for 21days period after result in significant fall in triglyceride level. The result showed significant reduction of triglyceride was observed in diabetic treated group up to 241.96 ± 11.3 to the level of 147.36 ± 11.6 at 500 mg/kg dose. The finding suggest that alcoholic extract of the fruits of *C. indica* posses hyperglycemic activity to warrant further detail study to elucidate its therapeutic and phytochemical properties.

Keywords: Isoflavonoids, *Coccinia indica*, Antidiabetic, Streptozotocin, phytochemical.

CYTOTAXONOMICAL INVESTIGATIONS OF EUKARYOTIC ALGA*CLADOPHORA*

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ABSTRACT

Green algae constitute a larger group among algae. It shows wide range of diversity of structure, cell organisations, chemical composition of cell wall, type of mitosis and the patterns of life cycle. *Cladophora*is filamentous, usually branched and withmultinucleate cell and are often heavily epiphytized by diatoms and otheralgae.The species of *Cladophora* have been collected from natural habitats andcultured in Bold Basal's and Godward'sculture medium and cytological study were done by applying Godward iron alum- acetocarmine technique.The different *Cladophora*species seem to have a monophyletic origin. As mentioned earlier the basic chromosome number for the genusis x=6. The chromosomes are of varying sizes in different species. In this investigation, three classes concerning length of the chromosomes have been found (Sarma, 1959)**.**The results of the present investigations on nuclear division and chromosome number in four species of *Cladophora*revealed 2n= 12 chromosomes in one species (*C. insignis*) and 2n= 24 chromosomes remaining three species (*C. fracta, C. crispata and C. glomerata*). The results of the present studyconform to the view of Geitler (1936) and Sinha (1958), who reported n=6 as the basic chromosome number forCladophoraceae.Most of the chromosomes of *C. fracta* and *C. crispate*(2n= 24) show more advanced characteristics (asymmetrickaryotype) than those of*C. insignis* (2n= 12) *and C. glomerata* (2n= 24) which have mostly median chromosomes (symmetric karyotype).It can further be concluded that the karyotypes of all the studied cladophoralean taxa (*Cladophora*sp.) are asymmetric in nature indicating advanced characteristics evolved in due course of evolution.

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