National Seminar

on

Climate Change and its Impact on Environment in Indian Perspective

6th and 7th April 2018



Department of Environmental Science Faculty of Life Science & Technology AKS University Satna

Organized by



on

Climate Change and its Impact on Environment in Indian Perspective

6th and 7th April 2018

Souvenir

Sponsored by

In association with

Department of Biotechnology

AKS University, Satna (MP)

Organized by



MP Council of Science & Technology, Bhopal

BER Chapter

NASI

AKS University Satna







6TH AND 7TH April 2018

Organized by

Department of Environmental Science Faculty of Life Science and Technology AKS University Satna M.P.

Souvenir

Editorial Committee

Dr. Kamlesh Choure

Dr. Mahendra Kumar Tiwari

Dr. Arvind Gupta

Dr. Samit Kumar

IN ASSOCIATION WITH

Department of Biotechnology, AKS University, Satna (MP) Microbiologist Society, India Centre of Excellence in Biotechnology Research & Training (CEBRT), AKS University The National Academy of Sciences, BER Chapter





Message

I am happy to know that Department of Environmental Science is conducting wonderful National seminar on "Climate change and its impacts on Environment: In Indian perspective" On 6th and

7th April 2018.

Climate is an important factor that affects agriculture, rainfall pattern, sea level and many more. It is a global issue, not only dependent on Govt. to take action but we all have to take steps together.

I believe knowledge exchange with experts, the student, researchers and all the delegates will be benefitted and come out with recommendation which will be useful for the Government.

I congratulate the department for selecting an appropriate theme and wish the best for successful completion of the seminar.

Shri B.P. Chancellor





Message

I am happy to know that Department of Environmental Science, AKS University, Satna is organizing a National Seminar on "Climate change and it's impact on Environment : In Indian

Perspective" during 6th - 7th April, 2018 at Satna.

As we know the livelihood of Satna is based on industries and agriculture, these two major sectors mostly are responsible for climate change. In turn, these two sectors get affected by it. We must understand the harmony of sustainable uses of resources and it's impact on climate change.

I am sure that the Department of Environmental Science will take the responsibilities for spreading awareness and provide knowledge with the help of experts from different fields. I extent the best wishes for the success of the Seminar.

Prof. P.K. Banik Vice Chancellor

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Message

I am pleased to know that Department of Environmental science, AKS University, Satna is organizing a National level seminar on " Climate change and it impact on Environment : In India

perspective" on 6th and 7th April, 2018.

Climate change is the Lime light issue presently. It is our pride & responsibility being an academic sector to provide knowledge to the students, researchers, industrial personals and everyone who needs to understand present scenario, on climate change, and take necessary steps together to solve the climate change issues.

I appreciate the effort of Department of Environmental Science for providing such a wonderful platform of knowledge sharing. It must be beneficial for students, researchers, industrialists and even common people.

I wish all the best and a grand success of the seminar.

Er. A.K. Soni Chairman

Prof. Akhilesh Kumar Pandey M.Sc. Ph.D., D.Sc., FBA, FMA, FNRS (Prof of Bio Science, R.D.V.V. Jabalpur) Chairman



M.P. Private Universities Regulatory Commission Govt. of M.P. Gyan Vatika, Valmi Road, Opp. Exellence College Kalisot Dame, Bhopal-462016 Mob.: +91-98261 68512 Off::0755-2490577, Fax: 0755-2490322 E-mail:akpmycol@yahoo.co.in, rdvvbiotechnology@gmail.com



Message

I am glad to know that Department of Environmental Science, AKS University, Satna organizing a National Seminar on "Climate Change and Its Impact on Environment : In Indian perspective" during 6 th and 7 th April, 2018 at Vindhya region of Madhya Pradesh.

Climate change is serious issue world wide the governments of every nation are concerned about climate change. As we all know government could not goes for except the involvement of industrial, agricultural, academic sectors and public participation. It is the responsibility of every citizen to protect nature as stated in the constitution of India.

It is a wonderful step of AKS University for providing knowledge and valuable information on this emerging issue. I am hopeful the seminar will be useful for all the participants and delegates. I extend my best wishes for success of the national seminar and Souvenir.

Chairman,

Dr. Harshvardhan

Pro-Vice Chancellor Phone No. : 7693077776, 9425330512 Email : vardhan.harsh02@gmail.com



University established by M.P. Legislature Act. no. 44 of 2011, duly recognized by UGC under section 2 (f) **AKS University, Satna** THE UNIVERSITY WITH DIFFERENCE



Dr. Mahendra Kumar Tiwari Organizing Secretary & Head Department of Environmental Science AKS University, Satna

Subject:- National Seminar on 'Climate Change & Its Impact on Environment' 6th & 7th April, 2018.

It is happy to learn that the Department of Environmental Science is organizing National Seminar on *"Climate Change & Its Impact on Environment"*. Definitely the discussion on this vital issue like climate change which is of more concerned with human life, would pave the way for finding solutions to this grave problem of this century. I express my all good wishes for the success of the seminar.

Harshvaralha Dr. Harshvardhan 2:4.18

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डॉ. गुरू प्रसाद रिछारिया सेवा नि. प्राध्यापक, वनस्पतिक शास्त्र अधिष्ठाता, जीव विज्ञान एवं तकनीकि संकाय एकेएस विश्वविद्यालय, सतना (म.प्र.) . 485001

मेरे लिये यह अत्यन्त गौरव तथा प्रसन्नता का विषय है, कि एकेएस विश्वविद्यालय, सतना के, पर्यावरण विज्ञान विभाग द्वारा "भारत वर्ष के संदर्भ में जलवायु परिवर्तन और इसका पर्यावरणीय प्रभाव" जैसे अत्यन्त महत्वपूर्ण एवं ज्वलंत विषय पर राष्ट्रीय स्तर के विशेषज्ञों को, दो दिवसीय (6 एवं 7 अप्रैल, 2018) राष्ट्रीय संगोष्ठी में, एक मंच पर एकत्रित किया जा रहा है। निश्चित रूप से यह संगोष्ठी सार्थक विचारों के आदान–प्रदान का एक सशक्त माध्यम बनेगी।

आज विश्व को अनगिनत पर्यावरणी समस्याओं का समाना करना पड़ रहा है, जैसे ओजोन परत का क्षरण, ग्रीन हाउस प्रभाव और भूमण्डलीय ऊष्मीकरण, सभी के लिये वैश्विक स्तर पर उचित रणनीति अपनाने की आवश्यकता है, साथ ही वन्य जीवन की तथा जैविक विविधता की हानि, वायु प्रथा जल प्रदूषण, खतरनाक कचरे के निष्पादन व विषाक्त रासायनिक पदार्थो आदि जैसी पर्यावरणीय समस्याओं की पहचान करना होगा।

आज की आवश्यकता है, कि पृथ्वी की पारिस्थितिकी व्यवस्था को सुरक्षित तथा संतुलित रखा जावे। प्राकृतिक संसाधनों का विवेक पूर्ण उपयोग किया जाए, साथ ही मानव कल्याण हेतु विकास को गति देते हुये ऐसी योजनाओं को संचालित किया जाये जो सभी क्षेत्र में संस्थागत तरीके से व्यवस्थित तथा संगठित हो।

मुझे पूर्ण विश्वास है, कि जन–जीवन में चेतना लाने तथा शासन के अन्तर्गत विभिन्न सम्बन्धित मंत्रालयों की भागीदारी, वित्तिय जगत तथा निजी क्षेत्र की भागीदारी से यह संगोष्ठी अत्यन्त महत्वपूर्ण साबित होगी।

संगोष्ठी में देश के विभिन्न कोनों से पधारे विद्वानों के प्रति अपनी कृतज्ञता ज्ञापित करता हूँ तथा अपेक्षा करता हूँ, कि संगोष्ठी में विचार मंथन से नये आयाम स्थापित होगे एवं समाज व देश लाभान्वित हो सकेगा।

(डॉ. गुरू प्रसाद रिछारिया)

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वन विभाग मध्यप्रदेश शासन

बी.बी. सिंह, भावले. अपर प्रधान मुख्य वनसंरक्षक एवं मिशन संचालक. मब्यप्रदेश राज्य बांस मिशन

U.O.No. Dr. MPSBM. 275

(बी.बी.सिंड)

//संदेश//

ए.के.एस. विश्वविद्यालय, सतना द्वारा "मौसम परिवर्तन तथा उसका पर्यावरण पर प्रभाव" पर दो दिवसीय (6 व 7 अप्रैल 2018) कार्यज्ञाला के रूप में सतना में आयोजित किया है, जो एक सामयिक तथा अति महत्वपूर्ण पहल है। भारत के संदर्भ में जहाँ मानसूनी वर्था व उष्णकटिबंधीय क्षेत्र होने से इसका प्रभाव ज्यादा दुष्ट्रमावी हो सकता है। भारतीय मानसून जो एलनिनो प्रभाव तथा मूपटल संरचनाओं की विभिन्नता के कारण पहले से डी एक जटिल प्राकृतिक प्रक्रियाओं से प्रमावित था तथा जिसकी सटीक भविष्यवाणी वैद्यानिको के लिए एक चुनौतिपूर्ण कार्य था, वह अब समय के साथ बढ़ते उपभोक्तावाद के कारण और भी जटिल हो गया है। घटते वन, पिघलते हिनालयीन ग्लेशियर, बढ़ती पानी की मांग तथा बढ़ते शहरीकरण के कारण पर्यावरण तेजी से बदल रहा है। आज जल, वायु, धरती, भूजल तथा रहवास सभी प्रदूषण की चपेट में है। देश की बढ़ती आबादी, निरंतर बदलती जीवनशैली तथा जिसके कारण बढ़ता उपभोक्तावाद भी इसे और विषम बना रहा है। पूर्व की अपेक्षा आज वर्था के दिन घट गये है, ग्रीष्म ऋतु में वृद्धि हो गयी है, शील ऋतु का अंतराल कम हो जाने से कृषि फसलों के चक्र पर विपरीत प्रभाव पड़ रहा है, जिसके कारण भविष्य में पेयजल तथा खाद्यान्न का संकट खड़े होने की प्रवल संमावना दिख रही है।

उपरोक्त सभी कारकों को हम लोग आपसी समझ तथा वैज्ञानिक सोध से कार्य करने से दूर कर सकते है। हम लोगों द्वारा जो भी दैनिक जीवन में कार्य किये जाते है वे पर्यावरण को किस तरह प्रमायित करते हैं तथा उसका वैज्ञानिक निदान क्या है इस पर कार्य करने की जरूरत है। आओ हम सब मौसम परिवर्तन की इस महती चुनौती को मिलकर सामना करें

जिससे हम सब के लिए पृथ्वी पर जीने के लिये एक बेहतर रहवास उपलब्ध हो सिकें।

कार्यालय – रहेल परिसर, ७४ वंजला, ओपाल (म.प्र.) ४६२००३ दूसमण – ९१ ७५५ २५५४३४३ खेळल - ९१ ७५५ २५५५५२३; मोषाईस – ०९४२४७९००६० ई-मेल:-mobamboomission@mo.pay.in; bbsingh2361@gmail.com



एम. काली दुरई M. Kalidurai



मुख्य वन संरक्षक वन वृत्त रीवा (म.प्र.) Chief Conservator of Forest, Circle Rewa(M.P.) Jayanti Kunj, Near Forest Rest House, Central School Road Rewa(M.P.)-486001E-Mail-ccf.rwa@mp.gov.in

MESSAGE

I am happy to learn that the Department of Environmental Science Faculty of Life Science and Technology AKS University Satna (M.P.) is organizing a National Seminar on "Climate Change and its Impacts on Environment in Indian Perspective" during 6th and 7th April 2018 at AKS University Satna (M.P.)

Climate change is adversely affecting the environment, human health and crop productivity. Global warming and green house gases are on rampant rise from Antarctica to Arctic pole and many of the factors of climate change are anthropogenic. Industrialization and urbanization are accelerating dominating environmental issues and those in turn are putting species sustenance under great risks. I hope that this Seminar will throw light on these major issues.

I wish the Seminar all success.

(Dr. M. Kalidurai)

IFS

Dr Ram Gopal Soni IFS Retd. APCCf. Ex. Member Secretary M.P. State Biodiversity Board





Climate Change and its impact on environment in respect of Indian Perspective

Climate change is going to have devastating effect on Indian environment and it needs to be addressed with sincere effort. Due to heavy industrialization and shrinking of forest area green house gas emission has increased to such a level that it is increasing temperature, drying of rivers, shortage of drinking water, and impact on forest cover is evident.

If we do not take steps to reduce green house gas emission then our development will not sustain.

In order to contain climate change our Prime Minister has announced to sequestration of 2.5 billion ton of carbon emission by plantation and other reduction measures.

Govt. of India, all state Govt. and people in General have to be made aware to save energy, save water, plant more trees and reduce carbon emission.

AKS university deserves all praise to highlight issue of climate change among people, policy makers and scientists to fight the problem as a team.

I wish all success to this seminar.

Dr Ram Gopal Soni IFS Retd . APCCF M.P.



6TH AND 7TH April 2018

Organized by

Department of Environmental Science Faculty of Life Science and Technology AKS University Satna M.P.

PROGRAMME SCHEDULE

06.04.18 (FRIDAY: DAY-1)

08.30 am – 09.30 am: 09.10 am – 09.40 am:

INAUGURAL FUNCTION: (C11; A-BLOCK)

Registration

Breakfast

10.00 am – 10.05 am:	Welcome of Guest
10.05 am – 10.15 am	Lightening of Lamp & Maa Saraswati Vandana
10.15 am – 10.25 am:	Welcome of guest on Stage by badges and token of plant
10.25 am – 10.30 am:	Welcome song by students
10.30 am – 10.35 am:	Welcome Address by Prof. G.P. Richariya, Chairman, Seminar
10.35 am – 10.40 am:	Address by Dr. Mahendra Kumar Tiwari, Organizing Secretary
	(About the Seminar)
10.40 am – 10.45 am:	Guest of Honor by Dr. Harshvardhan sir Pro Vice Chancellor
10.45 am – 10.55 am:	Speech of Guest of Honour Dr. R G Soni IFS, APCCF and Ex Sec. MPSBB
10.55 am – 11.00 am:	Address by Dr R S Tripathi Pro Vice Chancellor & I/c Registrar
11.00 am – 11.10 am:	Speech of Special Guest Shri. Suneel saxena
11.10 am – 11.15 am:	Speech of Er Anant Soni Chairman AKSU
11.15 am – 11.30 am:	Speech of Hon'ble Chief Guest Prof R M Mishra Ex VC APS University,
11.30 am – 11.40 am:	Speech of Special Guest Hon'ble Vice Chancellor, AKSU, Prof P K Banik
11.40 am – 11.45 am:	Release of the Souvenir of Seminar
11.45 am – 11.50 am:	Presentation of Mementos to Guests
11.50 am – 12.00 am:	Presidential Speech of Hon'ble Chancellor, AKSU, Sh. B.P. Soni
12.00 pm – 12.05 am:	Vote of Thanks by Prof. R. N. Tripathi, OSD and Dean FBS, AKSU
12.05 pm – 12:10 pm:	National Anthem

START OF TECHNICAL SESSIONS

TECHNICAL SESSION-1

Keynote Address by	
Dr. Sunil Saxena Ex Secretary Govt of Delhi and Metropolitan Magistrate Delhi,	12.10-12.40
Tea Break	12.401.00

IN ASSOCIATION WITH

The National Academy of Sciences, BER Chapter Department of Biotechnology, AKS University, Satna (MP) Microbiologist Society, India Centre of Excellence in Biotechnology Research & Training (CEBRT), AKS University



6TH AND 7TH April 2018

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Department of Environmental Science Faculty of Life Science and Technology AKS University Satna M.P.

TECHNICAL SESSION-2	1.00 -2.00
Invited Talks	1 00 1 00
Prof Arvind Deshmukh President. Microbiologist Society, India (MH)	1.00-1.20
Dr M Kali Durai IFS CCF Rewa	1.20-1.40
Dr. RLS Sikarwar Arogyadham DRI Chitrakoot	1.40- 2.00
LUNCH BREAK 2.00-2.30	
Technical Session-3	2.30-4.30
Invited Talk	
Dr. Anil Prakash Head Dept of Microbiology & Bioinformatics BU Bhopal	2.30-2.50
Dr. Sadhna Chaurasia, Head, EVS, MGCGVV, Chitrakut	2.50-3.20
Dr. R P Joshi Sr Scientist Govt Ag college Rewa	3.20-3.40
Prof I P Tripathi Ex Provc and Dean Science Faculty MGCGV	3.40-4.00
Dr A K Jain Princpal Scientist Govt Ag college Rewa	4.00-4.20
Technical Session 4	2 20 4 20
$\frac{1 \text{ echinical Session-4}}{\text{Denon Dragon tation}} (A \text{ block } C, 7)$	2.30-4.30
Paper Presentation (A block C-7)	
Poster presentation (Corridor of C-Floor)	
$\frac{07.04.18}{(SATURDAY:DAY-2)}$	
TECHNICAL SESSION-5	9.30-11.00
Invited talk	
Dr B.B. Singh IFS Director State Bamboo Mission Bhopal	9.30-10.00
Dr. Hausila Prasad Ex Dean IGNTU Amarkantak	10.00-10.20
Dr. S.N Dwivedi Ex Prof and Head Dept of Botany	10.20-10.40
Dr. D.K Singh General Manager KJS Cement Maihar	10.40-11.00
VALEDICTORY FUNCTION(11.00-12.00)	
Shri. Ganesh Singh, MP, Satna Loksabha	Chief Guest
Prof. Ravindra Kanhere	President
Vice Chancellor Madhya Pradesh Bhoj Open University	
Prof. P.K. Banik Vice Chancellor AKS University	Guest of Honour
Dr. B B Singh IFS APCCF	Guest of Honour
Dr. Harshvardhan, Pro Vice Chancellor AKSU	Special Guest
Dr. R.S. Tripathi, Pro Vice Chancellor AKSU	Special Guest
Prof. R. N. Tripathi, OSD	Special Guest
Prof. G. P. Richariya, Dean, FLST, AKSU	Special Guest
-	-

IN ASSOCIATION WITH

The National Academy of Sciences, BER Chapter Department of Biotechnology, AKS University, Satna (MP) Microbiologist Society, India Centre of Excellence in Biotechnology Research & Training (CEBRT), AKS University



6TH AND 7TH April 2018

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Department of Environmental Science Faculty of Life Science and Technology AKS University Satna M.P.

ABSTRACT

IN ASSOCIATION WITH

Department of Biotechnology, AKS University, Satna (MP) Microbiologist Society, India Centre of Excellence in Biotechnology Research & Training (CEBRT), AKS University The National Academy of Sciences, BER Chapter



6TH AND 7TH April 2018

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Department of Environmental Science Faculty of Life Science and Technology AKS University Satna M.P.

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Microbiologist Society, India



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Solid Waste Management and Climate Change in India

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ABSTRACT

Solid wastes are the wastes arising from human and animal activities that are discarded as useless or unwanted. Solid waste management and climate change are big concerns for India these days. Due to rapid growth of urban population, as well as constraint in resources, India cannot cope with the volumes of solid waste generated that deteriorates public health, causes environment pollution, accelerates natural resources degradation, causes climate change and thus greatly impacts the quality of life of inhabitants of environment. Climate change traditionally refers to any change in climate over time whether due to natural variability or as a result of human activity. Solid waste contributes directly to Green house gases emission through the generation of Methane from the anaerobic decay of waste in landfills and the emission of Nitrous oxide from our solid waste combustion facilities. Green house gases have high global warming potential that causes the planet to get hotter. So there is need to cultivate community awareness and change the attitude of people towards the current levels of waste generation reduction and increase in material and energy recovery as this is fundamental to developing proper and sustainable waste management systems.

Keywords: Solid waste management; Climate Change

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Environmental Problems and Sustainable Development in India: Issues and Challenges

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ABSTRACT

In India, rapid growth of population, poverty, urbanization, industrialization and several related factors are responsible for the rapid degradation of the environment. In the rural economy land is the site of production. Our villagers live and work with close relationship with nature; they love and adore nature. Villagers are facing the growing needs of food, fodder and fuel on the one hand, and fast encroaching urbanisation on the other. Both have disastrous consequences on nature's fragile fabric. Modern development in urban areas has resulted in stress and strain, and in the rural distress and drain of resources. The main environmental problems in India relate to air and water pollution particularly in metropolitan cities and industrial zones, degradation of common property resources which affect the poor adversely as they depends on them for their livelihood, threat to biodiversity and inadequate system of solid waste disposal and sanitation with consequent adverse impact on health, infant mortality and birth rate. Hence we need a though analysis of the strengths, weaknesses threats and opportunities for economic development now and in the future. This will create the much needed awareness for prioritisation of economic activities in the country to make the best use of relatively limited available natural resources. Keeping in mind the above factors the present study tries to draw the attention of academicians, policy makers, rural people and their urban brethren towards: (i) sustainable methods of environmental management, (ii) a holistic approach with multidisciplinary, multilocational and multiinstitutional involvement, and (iii) making the practice in resource management for sustainable development.

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Microbial mitigation of trace elements from coal for the development of clean coal

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ABSTRACT

India remains the 4th largest coal resource reservoir in world, andthird largest in terms of producer of coal in the world. Nearly 57% of the total Indian energy requirement is fulfilledby coal.Coal, an extremely complex and heterogeneous material, comprises of organic and inorganic mineral constituents. By definition coal may contain more than 50% by weight of organic compounds. Inorganic compounds are present in the form of mineral matter with as many as 76 of the 92 naturally occurring elements of the periodic table having been detected. The release of trace elements (TEs) into environment is influenced by both natural and anthropogenic activities. The large quantity of coal consumption makes it a significant anthropogenic source of these elements in the atmosphere. It is necessary to reduce the metals content before combustion for the minimization the environmental pollution problems associated with coal trace elements. Clean air Act and Clean Air Act Amendments (CAAA) 1970 & 1990 and National Ambient Air Quality Standards (NAAQS) of USA and similar legislation in other countries has increased the need for clean coal and technical challenges to use coal as an efficient and environmental friendly manner as possible to meet the energy demands.Clean coal technology developmentis, therefore, a priority area for research and needs continuous improvements in increased efficiency and decreased pollutantemission. Various approaches for coal trace elements removal are available, such as physical, chemical, Physico-chemical, and biological treatment methods. However physical and physico-chemical methods produced secondary products and affect the structural integrity of the coal. Metals removal by the microorganism is employed as an oval technique and is considered highly beneficial and potential for development and application. Thus, the microbial technology for removal of metals is promising approach to reduce the metal content present in the coal for eco-friendly fuels as well as to minimize the environmental problems associated with high metals coal combustions. The method is eco-friendly and useful in obtaining clean fuel.

Keywords: Mineral matter, Trace elements, Clean coal, Environmental, Eco-friendly

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Healthcare waste management & Environmental Effects on Public Health

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ABSTRACT

Wide amount of waste generation is a critical issue across the world. This issue becomes more vital when various types of hazardous waste gets mixed up with general waste. One such hazardous waste is healthcare waste; Air pollution is a major environmental risk to health and is estimated to cause approximately two million premature deaths worldwide per year. A reduction of air pollution is expected to reduce the global burden of disease from respiratory infections, heart disease, and lung cancer. This waste is generated in hospitals during different healthcare activities such as pathological diagnostic, surgery, etc. The present study was conducted to assess the quantities and proportions of different constituents of wastes, their handling, treatment and disposal methods in different health-care settings. Within the scope of the study, the current situation and management practices regarding healthcare waste such as waste generation, segregation, on-site and off side collection and transportation, storage, and disposal were examined. The environment affects our health in a variety of ways. The interaction between human health and the environment has been extensively studied and environmental risks have been proven to significantly impact human health, either directly by exposing people to harmful agents, or indirectly, by disrupting life-sustaining ecosystems. Hazards associated with poor biomedical waste management and shortcomings in the existing system were identified. The development of waste management policies, plans, and protocols are recommended, in addition to establishing training programs on proper waste management for all healthcare workers. Additionally, the un-addressed issues related to a healthcare waste management i.e., inventory management, warehousing, bins allocation, routing and transportation, also needs attention for an effective management of healthcare waste.

Keywords: Air pollution, life-sustaining ecosystems

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Issues Related to Biopiracy and Bioprospecting in the Thar Desert

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ABSTRACT

As a result of the revolutionary recombinant DNA technology, the genetically modified organisms require patent protection before they can be exploited commercially. This has got an adverse effect on the biodiversity as it is exploited by the developed nations or the MNCs The role played by the indigenous people in conserving the nature and developing new traits over generations is totally neglected. TRIPS not only favours patents but does not have any say in granting benefits to the owners of the biodiversity.

This paper tries to look at the effect of IP protection on the traditional knowledge, and the efforts being made at various levels for conservation of biodiversity and protection of traditional knowledge particularly with respect to Biodiversity and traditional knowledge of the Thar Desert.

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Environment, Society and Humanity: Our Holistic Approaches Vasundhara Samvad

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ABSTRACT

Society is second largest web of life, after nature's food web on this planet in which human civilization coexists with the environment. This relationship between human and environment is depending upon equilibrium of components. In race of globalization, we are just exploiting valuable environmental components of our Earth. Though, we know that among entire solar family, we have only single planet which unconditionally support life and we all called this planet, "home". Now, with concept of thinking globally and acting locally, we started campaigning from 31st August 2016 targeting youth of age group 08-26 year in Uttar Pradesh. The contents of our campaigns consist of lecture series, song, poetry, essay writing, quiz and painting and we covers primary schools, convent schools, inter collages and degree collages. Since 2016 to 2018 January 31st we organized 156 programs in 125 primary schools, convent schools, inter collages and degree collages of state benefiting 60,980 students. We have selected both formal and non-formal mode of education to spread awareness on core environmental issues of water conservation which include rainwater harvesting and watershed management, pollution, sustainable development, global warming, climate change, ozone depletion, importance of sanitation and hygiene in our society. We selected education as mode of awareness because it is single largest tool to transfer information from one generation to another. We are still continuing our awareness program which is now supported by Yuvak Biradari (Bharat) a nongovernmental organization and supportive training program under Tarun Bharat Sangh.

Keywords: Awareness, Bonding, Earth, Environment, Formal Education, Non-formal Education, Society, Sustainable Development, Vasundhara Samvad

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Study on proximate composition in muscle tissue of Harpodon Nehereus collected from sassoon dock, mumbai coast of maharshtra, india

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ABSTRACT

Marine fishes are the very important source of nutrition for not only the animals who depends on it through food chain but also the humans consuming the same as food source. *Harpodon nehereus* is a very common and locally available fish of west coast of Maharashtra. Consumption rate of this fish among the poor people is found to be high throughout the west coast of India as it is the very economic and cheap fish due to its high rate of landing. Thus the present study aims to analyse the proximate composition i.e., the levels of protein, lipid, carbohydrate and moisture content form the selected fish which can give an indication of its nutritional importance. The research was carried out during the post-monsoon season of the year 2016 and results were obtained in the form of mean. Moisture content in the muscle tissue was found to be 89 g %, the amount of protein was 26 g %, carbohydrate level was 3.4 g % and the lipid was found to be 0.14 g %. It can be clearly noticed from the above results that the moisture content in the fish is high and an inverse relation was seen with lipid. Thus the selected fish is said to be of nutritionally valuable for the environment and require conservation.

Keywords: Harpodon nehereus, Sassoon dock, proximate composition, nutritional importance.

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Climatic Change Adulteration and its Effect on Sapiens

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ABSTRACT

As decades pass the climate of our country changes in such a way that it adversely affects the human life, on natural resources such as soil fertility, water, oxygen purity, mineral availability too. As well on sapiens life climate also made its effect on yielding of lands and consequently tends to reduce the food availability. As the climate condition varies natural availability and yield of food and other resources are retarding day by day. If seen through the economic prospective adulteration tends to prove beneficial, but from the health aspects adulteration continuously degrades the strength to resist various diseases and also shortens the lifespan of sapiens. It is under consideration to reduce the climatic changes and various calamities occurring due to it. For the deduction of adulteration in foods the basic need is to make up the environment healthier than its current situation. The only method to reduce the adulteration and its calamities humans need to access the environmental sustainability and minerals availability.

Keywords: climatic changes, soil, air, water, human life, food availability, adulteration.

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Ecofriendly Approach of Phytoremediation by Optimizing the Effect of Rhizosphere for Industrially Polluted Soil

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ABSTRACT

Phytoremediation is the most prevailing tool against the industrial pollution because it takes advantage of natural plant processes. It requires less equipment and labor than other methods because plants do most of the work for remediation of soil. Soil microorganisms can affect heavy metal mobility and availability to the plants. There is need to develop a viable method to enhance the process of decay and removal of heavy metals by boosting the microbial and associated biota (flora and fauna), within the ecosystem, to degrade, accumulate and remove the contaminants from the industrial sites. In addition, the association of plant and microorganism present in the rhizosphere seems to enhance removal of the contaminants.

The use of microbial populations specifically adapted to high concentrations of heavy metals and will increase the ability to remediate heavy metal contaminated soils. As the objective of the study was to isolate and identify the microbes which can survive in heavy metal polluted environment. The total number of heavy metals was previously detected in the effluent samples. From the present study number of bacteria and fungi were seen from isolation and shows the positive reactions for the biochemical tests and the organism identified. The results of the present study suggest that microorganisms present in the investigated soil can be also useful for the remediation of heavy metal contaminated soils.

Keywords: Bacteria, Fungi, Heavy Metals, Phytoremediation, Pollution, Rhizosphere

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Role of Remote Sensing and GIS for Water Resource Management: A case study

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ABSTRACT

"Water is an important natural resource, a basic human need, and a precious national asset. National perspectives are governing planning, development, and management of this resource for sustainable use. Water covers under a part of a larger ecological system. Realizing the importance and scarcity attached to the freshwater, it has to be treated as an essential environment for sustaining all form of life", (GOI, 2002).

Water, as a resource is one and indivisible: rainfall, river waters, surface ponds, lakes, and groundwater are all part of one system.

Increasing public awareness, stricter measures and promulgation of new laws in the area of water resources have made the use of advanced technology indispensible. Remote Sensing and GIS are an effective tool for storing, managing and displaying spatial data often encountered in water resource management. The application of Remote Sensing and GIS in water resource management, application related to this area are addressed and evaluated for efficient future research and development. Fundamentals of RS& GIS are summarized and the history of GIS evolution in water resources is discussed. Current RS&GIS applications are presented quantitative analysis including Groundwater and Surface water management of Jhansi district a part of Bundelkhand region, U.P. for future prospect.

Key words: Remote Sensing & GIS, Quantitative Analysis, Surface Water, Groundwater, Water Resource Management

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Exposure of bio-toxic chemicals and heavy metals on environment and human health

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ABSTRACT

Some Chemicals have Bio-importance such as CFC, CO₂, CH₄, O₃, SO₂, N₂O, N₂O₅ etc. Along with certain environmental heavy metals they have shown the bio-toxic effect on human health and environment. Hence there is a need for proper understanding of mechanism involve such as concentration and their Chemical reactions which make them harmful. It is also important to know their sources, Chemical reactions and their modes of deposition in polluting the environment. Literature sources point to the fact that these chemicals and heavy metals are released into the environment by occurring natural and anthropogenic means especially thermal power plants, industrial activities, automobile exhausts and various modern anthropological activities. These chemicals are influences the environment and affect to human population in various forms of health such as: Cancer causes by UV-rays by Ozone layer depletion by means of CFC and acid rain causes CO₂, SO₃ and N₂O₅. The acid rain increases the acidity of water and soil. CO₂ causes global warming decrease the growth of plants and affected the biochemical process like respiration of living being. It is concluded that certain chemicals and their impact on environment and human health.

Keywords: Chemicals, Heavy metals, bio-toxic effect, Environment and Human health.

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Assessment of Genetic Diversity in *Azadirachta Indica* in Different Locations of Madhya Pradesh Using ISSR Marker System

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ABSTRACT

Neem (*Azadirachta indica*) is an important resourceful tropical tree species having family Meliaceae. It plays a major role for exhibiting medicinal and biopesticidal properties known to mankind. In this scientific work the multilocus fingerprinting profiles were studied using 10 highly polymorphic ISSR markers to estimate genetic diversity of 50 accessions of Azadirachta indica A. Juss. collected from four different regions of Madhya Padesh. The Shannon's Information Index (I) was higher (0.78) in Jabalpur region with 88.89% of polymophism. Nei's (1973) exp. Heterozygosity was also higher (0.44) in Jabalpur region and lowest in Katni (0.27). It shows the genetic variation in natural population. This, scientific marker based technology reveal about the genetic variations within the neem accessions to estimate genetic diversity which fomulates the appropriate strategies for conservation and tree improvement programs. **Keywords:** Neem, ISSR, Genetic diversity

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Environmental Challenges for Vector Borne Diseases

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ABSTRACT

The vector-borne diseases continue to contribute significantly to the global burden of disease, and cause epidemics that disrupt health security and cause wider socioeconomic impacts around the world. Such as malaria, lymphatic filariasis and dengue are becoming major public health problems associated with rapid urbanization in many tropical countries. Climate change creates new uncertainties about the spread of vector borne diseases such as the Zika virus, dengue fever, malaria, and lymphatic disease by altering conditions that affect the development and dynamics of the disease vectors and the pathogens they carry.Rising global temperatures may lengthen the season and increase the geographic range of disease-carrying insects. As temperatures warm, mosquitoes and other warm-weather vectors are moving into higher altitudes. Increased rainfall, flooding and humidity creates more viable areas for vector breeding and allows breeding to occur more quickly, as eggs hatch faster in hotter climates.

Changes in agricultural practices due to variation in temperature and rainfall are affect the transmission of vector-borne diseases. The growing of urban slums, lacking reliable piped water or adequate solid waste management are render large populations in towns and cities at risk of viral diseases spread by mosquitoes. Together, such factors influence the reach of vector populations and the transmission patterns of disease-causing pathogens.

Spreading of vector-borne diseases is determined by complex demographic, environmental and social factors. Global travel and trade, unplanned urbanization and environmental challenges such as climate change are impact on pathogen transmission, making transmission season longer or more intensing, due to which it is the main cause of the emergence of diseases in Asian and African countries more than intensely.

Therefore, requires the both appropriate new technology, public health systems. The need control environmental issues and climate changing, economic wealth, social awareness and priority allocation of resources to public health.

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Role of Nanotechnology in Human and Chemical Biology

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ABSTRACT

Nanotechnology is that field which provides a vast and diverse array of devices derived from physics, chemistry and biology. Applications of nanotechnology to medicine and physiology imply materials and devices designed to interact with body minor cellular scales with a degree of specificity. This can effectively converted into targeted and tissue specific clinical applications created to achieve maximums for the investigation and transformation of biological systems and biology offers inspiration models and bio assembled components to nanotechnology.

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Impact of Climate Change on Biodiversity

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ABSTRACT

Climate change is an expression of lack of consideration of environmental sustainability climate change affects people, ecosystem and economies. As per Intergovernmental panel on climate change (IPCC) an average increase in temperature of more than 15 to 25C result in 20 to 30 % species to extinction. Climate change also affects the rural poor as they are dependent on number of climate attributes such as rainfall, drought, storm, and floods. The resilience of climate change may be achieved by reducing non-climatic stresses such as conservation restoration and sustainable management strategies. Ecosystem based principles taking in to consideration the ecosystem services for climate change adaptation strategies can be cost effective and may generate social, economic and cultural dividends. Renewable energy resources may also be encouraged. Climate change is key driver of biodiversity extinction. Protecting biodiversity will be helpful in moderating climate change. The strategies of this sort may be helpful in reduction of biodiversity and also for sustainable poverty alleviation.

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Single and combined effects of ozone and soil salinityon two soybeans cultivars

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ABSTRACT

Increasing concentration of tropospheric ozone (O_3) and soil salinization may lead to crop loss. To assess the combined effects of ozone and soil salinity on two cultivars of soybean(*Glycine max* L.) were different levels of soil salinity (50 and 100ppm) in ambient and ozone exposure (100ppb in OTC) conditions. In both cultivars, the whole-plant dry biomass and grain yield were significantly reduced by combine treatment applied ozone and salinity. Increased soil salinity caused significant reductions in whole-plant growth and yield. No significant interactions between ozone and salinity were recorded for growth, yield, and leaf biochemical parameters in both cultivars. Study concluded that the effects of ozone are not bettered by soil salinity in two cultivars.

Keywords: Ozone fumigation; OTC; salinity; Cultivars; Growth; Yield loss

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Metagenomic Applications in Environmental Monitoring and Bioremediation

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ABSTRACT

Metagenomic and bioinformatic approaches are already common in microbial ecology and have been used to investigate whole communities containing many types of uncultivable microbes. However, to date, most analyses have depended on straightforward sequence similarity searches against reference databases. This may not be satisfactory because microbial genomes need to be the fundamental basis for microbial ecology and evolution. The enrichment of reference sequences (for microbial taxa and functional genes) is one of the fundamental issues for promoting various kinds of analyses. Platforms that enable a meta-analysis of diverse metagenomic datasets will allow us to discover the hidden laws of the microbial ecosystem from publicly available data. Long-read sequence information will open up the possibility of studies that focus on subjects that have not yet been examined in detail by using short-read sequences. Furthermore, more powerful bioinformatics methods for analyzing data from diverse perspectives are required in order to advance past routine metagenomic analyses. Bioremediation is a microbial mediated processes employed to degrade and detoxify environmental contaminants. Bioremediation is an appealing approach to dealing with environmental contaminants as it often results in removal of a contaminant through natural biological processes. Much of the research into bioremediation has been focused on understanding the rates of contaminant degradation under natural or perturbed conditions. While microbes are acknowledged as essential to bioremediation, in some cases very little is known about the microbes involved or the impact of various intervention strategies on the microbial community.

Key Words- Metagenomics, Bioremediation, Environmental monitoring, Microbial Diversity

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Department of Environmental Science, Faculty of Life Science & Technology, AKS University Satna (M.P.)

Study on women's participation in agriculture

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ABSTRACT

For sustainable development of agriculture and rural economy, making women the pioneer of agri. activities is of utmost importance. Out of total women engaged in farm sector s, 55% were agricultural laborers and merely 24% were cultivators. The studies conducted in various districts showed significant difference between income of families in which women were engaged in agriculture and allied activities and the families in which no women was involved in farm related activities. The main reason behind the rise was that the women who are engaged at all levels of agricultural activities like production , packaging ,processing , and marketing reduce the work load of men which make them able to indulge them in diversified agriculture related activities like dairying, fisheries, sericulture , processing, and marketing etc. And women contribute in income of family directly or indirectly.

So it becomes imperative to adopt gender specific interventions because conditions of women is poor in agriculture sector as figures show that only 12.8% operational land holdings are owned by women.

Government has implemented various schemes to improve entitlements of women but behavioral changes can't be brought overnight so role of male extension agents and female extension agents is increased a lot. After the phase of globalization & liberalization in our country the current need is of "feminization in agriculture" especially, if we want see the holistic development of agriculture.

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A Comparative Study on Soil pH in Different Areas of Mumbai Region

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ABSTRACT

Mumbai is situated at the top of the Ulhas River on the western coast of India. It is covered by Arabian Sea to the west. In the city sandy soil is predominantly present due to its proximity to the sea. The present study was conducted in year 2017-2018, during winter season month of March and April from inhabited areas. Soil samples were collected from different areas of Mumbai. Soil pH was measured by using standard method. Standard deviation was conducted on all variables. Our study showed that the pH value is in alkaline range in different areas of Mumbai. It could be due to decreased ground level of water, industrialization, pollution, inhabitation, and heavy construction in the area. Our study suggests that alkaline soils increases the salt content, could lower nutrition and mineral absorption leading to difficulty in taking up agricultural production. Therefore, drastic measures must be taken to conserve rainwater to reverse the situation.

Keywords: Alkaline soil, pH, water conservation

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Present Status of Fishing Co-Operative Societies at Tawa and Halali Reserviors, Bhopal, M.P, India

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ABSTRACT

There are in all 40 co-operative societies out of which 1500 are tribal members. Memberships to these societies are given to those fishermen residing within 3 kilometres of Tawa and Halali reservoir boundary. Presently welfare scheme to fishermen are provided for education, security and livelihood. At time of fishing if any fishermen are injured or accidental death happens, society provides them financial support. Insurance scheme, livelihood support scheme, jaldeep scheme are provided for uplifting the fishermen. There is a great deal of variations in management practices ranging from outright auctioning to almost free fishing access. Cooperative societies and state level fishery development corporations are also involved in fishing and marketing operation. Reservoir fisheries development is also linked to many social welfare and relief activities under village and district administration. Co-operative societies are also involved in fishing and marketing operation. An appraisal and rationalization programme for the present scenario of state policies concerning ownership, fishing rights, fishing managements leasing suggest that it would be an improvement to optimise reservoir fisheries. Present study states that appropriate guidelines should be provided on stocking, enhancement measures as well as infrastructure support to provide the needed quality and quantity of fish seed. Appropriate trained and supported technical assistance is one of the key aspects of success. Guidelines should be developed for including expected fishery management while planning proposed reservoirs. Keywords: Reservoir, Co-operative society, fishermen

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Report on Human Interventions creating climatic variation and extinction of animals

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ABSTRACT

Human activities contribute to climatic discrepancy by creating changes in Earth's atmosphere with the number of greenhouse gases, aerosols, and cloudiness. The substantial known contribution is burning of fossil fuels releasing CO_2 to the atmosphere. Aerosols and Greenhouse gases influences climatic changes like solar radiation and infrared radiation from Earth's energy balance. Beginning of the industrial era in 1750 by human activities resulted in a warming influence. Human impact on climate during the industrial era was exceeded to known changes in nature and activities like solar and volcanic eruptions. Nowadays, Human drives revamps in land consumption via urbanization, deforestation, and vegetation altering the climate changes like emissions from burning forests, a reflectivity of Earth surface, changes in the natural water cycle and urban heat island effects. Biological evolution rely upon the natural climate changes, competition from better-adapting species, catastrophic geologic events, and extinction of billions of species since three billion years ago of Earths life. However, fossil records proves that 2–4% of the species have existed on Earth today. This report reveals the human greediness and inference leading to the extinction of natural resource, valuable plants and animals interrupting natural habitats at a pace of generating history.

Keywords: Human, Climate, Variation, Extinction, Forest, Evolution, Atmosphere, Greenhouse gases etc.

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Study of Water Conservation and its Impacts of Alwar And Karauli Districts of Rajasthan

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ABSTRACT

Alwar and Karauli districts of Rajasthan suffering to water crisis in before years. Tarun Bharat Sangh is working for water conservation in this region. Tarun bharat sangh is a organization of dr. Rajendra singh (water man of India and Magsaysay Awardee and Stockholm Nobel prize winner) which is based on Alwar district of Rajasthan. The study is based on community based water management and traditional water management system use by Tarun Bharat Sangh. Tarun Bharat Sangh is Working with communities and use of traditional knowledge. Develop self reliance and water management natural resource before 32 years. Tarun bharat sangh Built 10500 water harvesting system by supporting the local people, and Community based decentralized water resource management. 8600 sq. Km geographical area comprising 1000 of village covered by tarun bharat sangh, White zone convert from dark zone. The study is based on these areas 1.Gopalpura, 2.Dhaware ki Pokhar Kheda 3.Mahare wali pokhar kheda 4.Rajarampura Khere Ki Badi Thanagazi Tehsil, Alwar district of Rajasthan and 5.Bood Kheda 6.Maharajpura in Karauli district OF Rajasthan. Tarun bharat sangh's working on these parameters 1.In-depthindividual interview 2.Keyinformant interview 3.Focused group discussion 4. Historical time analysis 5. Participatory sharing workshop 6. Active observation. impact of water conservation in these areas on Social, Economical, Cultural, Health and Environmental impacts on community. Water conservation is a key element of any strategy that aims to alleviate the water scarcity crisis in india. With rainfall patterns changing almost every year, we need revive the traditional systems of water harvesting in the country. Traditional methods are simple and eco-friendly for the most part, they are not just highly effective for the people but they are also good for the environment.

Keywords: Water management, socioeconomic, environment.

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Department of Environmental Science, Faculty of Life Science & Technology, AKS University Satna (M.P.)

Role of Soil and Climate Change in Agriculture Crop Production

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ABSTRACT

Global change directly resulting in a major potential change on soil and agricultural production. Indirect effect is causes by CO₂ on soil fertility are a result of climate change. As the temperature increasing moderately but it is enough to change microbial activity and soil productivity. Vegetation and the soil typically act as carbon sources. A 1% change in the amount of carbon stored in soils would equate approximately to 8-ppm change in atmospheric CO₂ concentration. It initiating the agricultural production decrease by 20-60% in the amount of carbon stored in the soil. If the partial pressure of CO₂ in the soil air would rise and that of O₂ decrease to levels impairing root function. There has been an enormous pressure on agriculture to fulfill food demand of ever growing population. Sustainable approaches should be ensuring irreversible damage from climate change. Soils most resilient against such changes would have adequate cation exchange capacity and anion sorption to minimize nutrient loss. Restoring ecosystem yields environmental, economic and social benefit. Agriculture practices determine the level of food production and to a great extent the state of the global environment state. In addition to causing the loss of natural ecosystem agriculture at globally plays a significant role and environmentally determines the amount of nitrogen and phosphorus to terrestrial ecosystem. In crop agro-ecosystems climate impacts increased various factor such as expansion of pathogens and insect pest ranges and seasons, competition from weeds, and other alterations.

Keyword: Climate change, soil, sustainability, agro-ecosystem.

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Reclamation of Chromium polluted soil by some floriculture plants

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ABSTRACT

In recent years, contamination of the environment by Cr, especially hexavalent Cr, has become a major area of concern. Chromium is used on a large scale in many different industries, including metallurgical, electroplating, production of paints and pigments, tanning, wood preservation, Cr chemicals production, and pulp and paper production. The tanning industry is an especially large contributor of Cr pollution to water resources. It has been estimated that in India alone about 2000 to 3200 tonnes of elemental Cr escape into the environment annually from the tanning industries, with a Cr concentration ranging between 2000 and 5000 mg L^{-1} in the effluent compared to the recommended permissible limit of 2 mg L-1. The accumulation of Cr in soil is of great concern because of its movement into the food chain. Therefore, an experiment was conducted to screen different floriculture plant species (calendula, chrysanthemum, aster and dahlia) for their tolerance to different levels of Cr (0, 5, 10, 15, 20, and 25 ppm). In all the four plant species, beyond 10 ppm, chromium was toxic to the plants and there was a drastic reduction in growth and of plants. In 20 and 25 ppm, there was negligible growth and mortality of the plants. In calendula, chrysanthemum and dahlia the application of chromium beyond 10 ppm inhibited flowering. The chromium content in different plant parts of calendula, chrysanthemum, dahlia, and aster was determined. It was found that in all the plant species, the highest concentration o f Cr was found in the roots and was followed by shoots and flowers. Dahlia recorded the highest concentration of chromium among the plant species and calendula the least.

Keywords: Chromium, Phytoextraction, Calendula, Chrysanthemum, Aster and Dahlia.

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Uncertainty Determination of 28 Pesticides in Bottle Guard by Gas Chromatography, Electron Capture Detector (Ecd)

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ABSTRACT

Vegetable samples are found contaminated by different pesticides which are very hazardous to health, if used injudiciously. To check the quality of vegetables monitoring of pesticide is necessary. The qualitative and quantitative estimation of pesticide residue results along with their uncertain values show the accuracy of results. Exploration and evaluation of uncertanity of 28 pesticides residue in bottleguard are complicated and impractical. Uncertainties evaluation of three basic analytical steps (First relative standard uncertainty due to purity of analytical standards, weighing of analytical CRM and precision i.e repeatability. As per the statistical procedure of the EURACHEM/CITAC Guide CG 4, combined uncertainty is calculated at 0.05 mg/kg level for all the pesticides taken under study. In bottle guard, minimum 1% uncertainty occurs in Heptachlor, whereas 10% for Dieldrin and maximum 12 % for o p DDD. Uncertainty for bottleguard lies in two ranges, $\leq 10\%$ and 11-15%. To calculate the total uncertainty, relative uncertainty due to purity of standard, weighing and precision are considered.

Total uncertainty is the square root of sum of the square of relative uncertainty due to purity of standard, weighing and precision. Expanded uncertainty is twice of combined uncertainty at 95% confidence level. Combined uncertainty values lies between 0.0006-0.0035.

Keywords: CRM, Bottle guard, GC-ECD, QuEChER, Uncertanity.

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Bio-Medical Waste: Challenges & Remediation

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ABSTRACT

Bio-Medical Waste (BMW) comprises waste generated through hospitals, research institutes and other health care units during diagnosis, testing, treatment and research production of biological products. Irrespective of its small portion –less than 15% of total hospital waste- the BMW is highly hazardous for the flora and fauna. The study attempted to determine quantity of bio-medical waste, its categorisation and its disposal pattern, besides the aspect of infectious and non-infectious types of the BMW.

A survey & identification of government, private nursing homes and pathological centres of Rewa City and their classification were done according to their bed strength .Primary and secondary data were collected, including that for segregation of waste, its disposal – onsite (e.g.-incineration) & offsite (shredding and recycling/deep burial).

The segregation and disposal practises followed in government district hospital and private nursing homes basically adhere to the policies for safe disposal of waste. However, non-availability of incinerators, shredding facilities and dedicated dumping sites appears to be the major concerns. Establishment of common Bio-Medical Waste facility at district level for safe and timely disposal of BMW is a must.

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The Impact of Climate Changes on the VSTPP Thermal power plant Singraulli, Madhya Pradesh

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ABSTRACT

This paper presents a methodology for studying the impact of the cooling water temperature on the thermal performance of a proposed pressurized water reactor power plant The Vindhyachal Thermal Power Station is located in Singrauli district in the Indian state of Madhya Pradesh

The main use of water in a thermoelectric power plant is for the cooling system to condense steam and carries away the waste heat as part of a Rankine steam cycle. The total water requirements of the plant depends on a number of factors, including the generation technology, generating capacity, the surrounding environmental and climatic conditions, and the plant's cooling system, which is the most important factor governing coolant flow rate.

An increase in the temperature of cooling water may have impact on the capacity utilization of thermal power plants in two concerns:

(1) reduced efficiency: increased environmental temperature reduces thermal efficiency of a thermal power plant,

(2) reduced load: for high environmental temperatures, thermal power plant's operation will be limited by a maximum possible condenser pressure. The operation of plants with river or sea cooling will in addition be limited by a regulated maximum allowable temperature for the return water or by reduced access to water.

through the thermodynamic analysis based on the thermodynamic laws to gain some new aspects into the plant performance. The main findings of this study are that an increase of one degree Celsius in temperature of the coolant extracted from environment is forecasted to decrease by 0.2947 and 0.14 % in the power output and the thermal efficiency of the water power plant considered, respectively.

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Status of Food Plants of Oak Tasar Silk Worm in Western Himalayan Region of Uttarakhand (India)

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ABSTRACT

The present study was conducted to report the status of food plants in different study sites of Uttarkashi and Rudraprayag districts of Uttarakhand during the study period 2014-2016. A total of 24 species of trees belonging to 12 families were identified. The maximum number of species of the plant species (07) belonged to the family *Fagaceae*, followed byPinaceae (04),Fabaceae (02),Ericaceae (02) Rosaceae (02)Sapotaceae (01)Combretaceae (01), Moraceae (01)Betulaceae(01), Myrtaceae (01)Myricaceae (01) and Lamiaceae (01). Among all these reported plant species only 06 species are considered as food plant species of oak tasar silk worm in these study sites. These species included*Quercuslucotrichophora, Quercusseretta, Quercusgluca, Quercus floribunda, Quercus lanuginose* and *Quercussemicarpifolia*.

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Real Time Flood Forecasting System for Flood Disaster Management Using open source HEC family models and open source Web GIS based dissemination

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ABSTRACT

Flood events across the world are costing millions of US\$ economic losses and as well as loss of human lives. As per a Global risk assessment report 2015 (Source: UN), Globally the Average Annual Losses (AAL) due to floods is around amounted to approx. 7472 Millions of USD.

The conventional method of flood warning is based on Gauge to Gauge discharge relationship. The key limitation of this approach is that, it offers a very small lead time of around 8 -12 hours to the flood disaster managers for their evacuation planning and relief operations.

RMSI has developed an innovative flood forecasting approach that is based on a rainfall to runoff relation, which gives a minimum of 3 days lead time to flood disaster authorities. The increased turnaround time gives a much larger window to plan effective evacuation and relief operations and hence, helps to minimize a major part of the losses due to flood events.

This system has been developed using open source HEC family flood models and utilizes open source Web GIS libraries to disseminate flood warnings through web. This approach is a very practical and economical solution for the flood management agencies as there is no licensing fee associated with it. Moreover, the approach runs on automatic mode hence eliminating errors due to manual intervention.

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Climate Change through Solid Waste Sector and its Implications on Water Bodies: A Case of Satna Municipal Corporation, M.P

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ABSTRACT

Climate change refers to change in weather pattern of a region for a prolonged period of time. Developmental activities have led to conversion of forests which has reduced the carbon carrying capacity and carbon sequestration potential of the environment. Climate change results in extreme climatic events which affects all life forms and their livelihood. Out of 51 districts of Madhya Pradesh 34 districts face threat of adverse weather conditions because of global warming and climate change. Satna district has been declared as the drought prone district along with 13 other districts of Madhya Pradesh and faces inconsistent rainfall every year. It has also witnessed incidences of severe heat waves. Satna city falls under very high climate variability alongside Tikamgarh and Rewa. The city experiences issues like water scarcity, encroachments on water bodies, open dumping of solid waste, pollution from cement industries, lack of green cover and open spaces. Waste Disposal is one of the major problems being faced by Satna city having major dumping sites located near water bodies and natural drains. This has increased the pollution load on water bodies and the constricted natural drainage invites urban floods during monsoon season in parts of the city. A significant contribution to greenhouse gas emissions is also from solid waste sector. The present study aims to analyse the contribution of municipal solid waste to Climate Change in Satna city and their combined impact on water bodies with suggestive measures for sustainable management of municipal solid waste to reduce GHG emissions and improve the quality of water bodies.

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Biotechnological Application on Tumour Nacrosis of Aloe vera in Swiss albino mice

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ABSTRACT

Aloe vera (L.) is commonly used plant for burn, cosmetic etc. It belongs to the family Liliaceae. From the study it was found that tumour nacrosis activity of *Aloe vera* extract was studied using skin Papilloma, Melanoma, Bone marrow, Micronucleus and Chromosomal assays in Swiss albino and C57 B1 mice. The random breed, 6-7 weeks old male Swiss albino mice of weight 25 \pm 2 gm body were used in the study. These mice were maintained under controlled conditions of temperature (22 \pm 1°C) and light (12 light: 12 dark) and water was given ad labium. For preparation of *Aloe vera* extract. Pulps were taken out from leaves and mixed in distilled water and kept in separating funnel for 6 hours. The supernatant was collected and this process was repeated until clear solution of supernatant was obtained. All supernatant was pooled together and dried to the powder at 400 C water bath. The powder was dissolved in double distilled water before the each treatment at required concentrations.

In this study a significant reduction was observed in tumor incidence, tumor burden, tumor weight, tumor size, and cumulative number of papillomas in Aloe vera treated groups (oral) relative to the carcinogen treated control. No papilloma was observed in *Aloe vera* (Topical) extract along with DMBA (7, 12 Dimethyl Benz-a anthracene) +Croton oil treated group. From the present study, it has been observed that the *Aloe vera* is a source of many anti-carcinogenic agents and antioxidants, which may be useful for the prevention of cancer treatment.

Keywords: Tumour, Micronucleus, Melanoma, Bone marrow, Chromosomal assays, Papilloma

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Department of Environmental Science, Faculty of Life Science & Technology, AKS University Satna (M.P.)

Genetic Variability Studies in Tomato (Solanum Lycopersicon L.)

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ABSTRACT

A field experiment entitled "genetic variability studies in tomato (Solanum lycopersicon L.)" was conducted at the experimental farm, AKS University, Satna during rabi season 2015-16. Fifteen genotypes of tomato were involved with this investigation and therefore, with a view to assess the genetic parameters and degree of mutual association in respect of yield and yield contributing characters viz., plant height (cm), number of primary branches per plant, days to first flowering, days to 50 % flowering, days to first fruit set, number of flowers per cluster, number of fruits per cluster, fruit length (cm), fruit diameter (cm), average fruit weight (g), number of fruits per plant and fruit yield per plant (kg). Significant variations were obtained among the genotypes for all the characters under investigation. The variety H-88-78-1 recorded the maximum plant height (cm) at 120 DAT, number of flowers per cluster and fruit length. Maximum number of primary branches per plant at 120 DAT and maximum number of fruits per plant were recorded in EC-528372. Maximum average fruit weight were obtained in Kashi Vishesh. Minimum days to first flowering was found in DARL-16. A minimum days to 50% flowering and days to first fruit set were observed in Azad T-5. Further it was also noticed that maximum fruit yield per plant was recorded in H-88-78-1. However, lowest yield per plant was recorded in VRT- 101 - A. The highest PCV, GCV, heritability, genetic advance and genetic advance as percentage of mean was recorded for average fruit weight. The significant and positive correlation with yield per plant was observed at phenotypic level with number of fruits per cluster and number of flowers per cluster. Path coefficient analysis revealed appreciable amount of direct positive effect of fruit length on fruit yield per plant.

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Organized By Department of Environmental Science, Faculty of Life Science & Technology, AKS University Satna (M.P.)

Study on Electricity Content of Healthy and Diseased Paddy Plants

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ABSTRACT

An experiment was conducted during 2017-18 to screen paddy plants infected with different diseases for electricity content at instructional farm at AKS University Satna (M.P.). From observed data, it was revealed that maximum disease incidence was observed in paddy by bacterial blight with PDI – 70% and content of electricity about 0.1 volt followed by Sheath blight and foot rot with percent disease index (PDI -30%) and minimum content of electricity about 0.3 volt. followed by paddy infected with khaira disease with PDI (40%) and electricity content 0.5 volt followed by paddy by blast with PDI 28% and electricity content 0.4 volt, paddy infected with nematode with PDI about 25% and electricity content 0.6 volt and paddy infected with brown spot disease with PDI 20% and electricity content about 0.7 volt. It was proved that all healthy plants possessed 8 volt electricity In all paddy plants electricity decreased with the enhance of disease incidence.

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Organized By Department of Environmental Science, Faculty of Life Science & Technology, AKS University Satna (M.P.)

Study of Aquatic Angiosperms of Selected Sites in Bhopal Region Reena Yaday & Dr. Pramod Patil

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ABSTRACT

This floristic survey conducted to showed the wealth of aquatic angiosperm flora of bhopal. The aquatic plants are the most important component of the aquatic ecosystem. They increase the productivity of aquatic ecosystem and thus help to maintain ecosystem balance.

Keywords: Aquatic plants, selected sited, classification etc.

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Organized By Department of Environmental Science, Faculty of Life Science & Technology, AKS University Satna (M.P.)

Ground Water Quality of Chitrakoot

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ABSTRACT

Water represents the basic element of supporting life and the natural environment and is a vector for domestic and industrial pollution. Water quality is a major concern of developing countries, where existing conditions of water supply infrastructure is poor and financial resources for construction and maintenance of infrastructure are inadequate. Water has a great role to play in socio-economic development of human population. Much of ill health that affects humanity can be traced to lack of safe and wholesome water supply. Therefore present study was carried out in Chitrakoot. The study was aimed to examine various physico-chemical and biological quality as it is related to public health .The parameter investigated were pH, EC ,TDS, DO, BOD, Hardness and total coliform etc. and results were compared with WHO and IS standard. It was observed that few ground water samples were in acceptable limit while few were found unfit for drinking propose and needs proper disinfection or treatment before consumption.

Key words: Ground water, Pollution, BOD, Temperature, Total coliform

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Study on Air Quality and Air Pollution Tolerance Index of Some Road Side Tree Plants at Satna City M.P.

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ABSTRACT

Air pollution tolerance index is very effective and important for selection of plants in order to check their susceptibility against any environmental stress like air pollution. This is a simple and easy method to adopt on different types of field conditions and reduced the use of costly environmental monitoring equipment's. To develop the usefulness of plants as bio-indicators requires an appropriate selection of plant species which entail an utmost importance for a particular situation. Air pollution tolerance index is used to select plant species tolerant to air pollution. Four physiological and biochemical parameters namely, leaf extract pH, ascorbic acid, total chlorophyll and relative water content were combined together in a formulation signifying the air pollution tolerance index.

Air pollution tolerance index (APTI) is natural quality of plants to face problem of air pollution stress therefore, APTI of the plants needs to be checked properly especially of economically important plant species. Since plants are stationary and continuously exposed chemical pollutants from the surrounding atmosphere, air pollution injury to plants is proportional to the intensity of the pollution. Air pollution has become a major problem arising mainly from industrialization and urbanization during the last few decades. Particulate matter is of great concern in relation to their adverse impact on vegetation. The particulates and gaseous pollutants, alone and in combination can cause serious setbacks to the overall physiology of plants. Therefore, APTI of the plants monitored that are present in the road side and control areas.

Key words: air pollution, tolerance index, particular matter, chlorophyll, ascorbic acid.

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Biochemical and Ultra Structural Changes in few Medicinal Plants Under Road Side Automobile Pollution Stress Around the City of Haridwar

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ABSTRACT

The plant foliar surface is the most important receptor of atmospheric pollutants. It undergoes several structural and functional changes when pollutant-laden air strikes it. In the present investigation, four medicinal plant species viz., *Ocimum tenuiflorium* (Tulsi),*Rauvolfia serpentina* (Sarpagandha),*Withania somnifera*,(Ashwagandha) and *Vinca rosea* (Sadabahar) were selected. These selected medicinal plants were cultivated in triplicates, near threeselected heavy traffic junctions of the city and one site was considered as control site where vehicular flow was very less. The micro-morphological traits like wax, cuticle, epidermis, stomata, and trichomes in leaves of selected plants were observed under scanning electron microscopes. Remarkable differences in the growth parameters and micro-morphological features were recorded in the exposed plants when compared to the respective control. The reduction in concentration of growth parameters like chlorophyll, carotenoids, cysteine, protein and ascorbic acid was observed as they are highly affected by automobile pollution. The size of epidermal cells, and stomata were reduced and cuticle damage was also observed at polluted sites when studied under SEM, as compared to control site. These changes in biochemical characteristics and epidermal traits of plants could be as indicator of automobile pollution stress in the city.

Keywords: Micro-morphological, Epidermis, Ascorbic acid, Cysteine, Protein

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Utilization of Food Waste: An Alarming Cause of Environmental Degradation

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ABSTRACT

The improvement in the lifestyle of people in cities has to lead to an increase in food waste. The amount of waste generated from Indian cities is increasing at an annual growth rate of 4.25% and it would be approximately 300 million tons by 2047. Food waste deposited on the lands block drainage bodies and in turn river bodies causing harm to the aquatic organisms. They cause environmental pollution and harm human population and as a whole living being. Therefore there is an utmost need to develop novel strategies to utilize food waste and produce substances which can be used for the betterment of the nation. This paper thereby aims at utilizing animal fat especially tallow obtained as waste from fish, meat, and poultry processing food industries. Tallow obtained from animals can be converted into biodiesel by using transesterification reaction and amidation reaction with the help of methanol and diethylamine respectively. Biodiesel thus produced will save the environment from harmful gases emitted by burning of ordinary fuels. This will also act as an alternative to our natural resources. The ignition properties of the biodiesel produced have also been checked by calculating cetane index which also proves its efficiency to be used as an alternate source.

Keywords: Lifestyle, environment, food, degradation, waste, biodiesel.

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Department of Environmental Science, Faculty of Life Science & Technology, AKS University Satna (M.P.)

Degradation of Lignin in Agro-Wastes by Chemical method

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ABSTRACT

Lignocellulosic biomass is composed of cellulose, hemicellulose and lignin. It contains about 50-65% cellulose, 20–30% hemicelluloses and 15–20% lignin. Hydrolysis of lignocellulosic biomass without any pretreatment can yield less than 20% of total sugars, while after pretreatment it can reach up to 0-90% with chemical pretreatment methods. Chemical pretreatment involves the use of different chemical agents such as Acids, Alkalis and organic solvents to release lignin and degrade the hemicelluloses. Concentrated acids such as H₂SO₄ and HCl have been used to pretreat the lignocellulosic materials. Though concentrated mineral acids Hydrochloric acid , Sulphuric acid and Nitric acid are powerful agents for cellulose hydrolysis. Second form of pretreatment utilises alkaline solutions such as NaOH, KOH, NH4OH or Ca(OH)₂. Sodium hydroxide is the most commonly studied pretreatment alkali and is seen as an alternative to sulphuric acid. Lignocellulose biomass can be converted to lactic acid using bacterial strains of *lactobacillus* genus. Lactic acid fermentation has received extensive attention since long time. It has wide applications in food, pharmaceutical, leather and textile industries and as a chemical feed stock.

Keywords: Lactic acid, Lactobacillus species, Lignocellulosic biomass and Fermentation.

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Isolation and Identification of Heavy Metal Resistant Bacteria from Industrially Contaminated Area of Satna District

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ABSTRACT

Urbanization and industrialization causes release of various organic and inorganic pollutants containing Toxic, mutagenic and carcinogenic heavy metals. These heavy metals accumulate in environment resulting in public health and wildlife problems. Toxic metals resistant Bacteria constitute to an attractive biomass for the development of systems to decontaminate soils, sediments, or waters .Bioremediation is a method, which uses specific microorganisms to help in biodegradation of pollutants and recovery of land and ground water. Our study aimed to isolate, investigate and identify bacteria that are capable of reducing and detoxifying heavy metals (like Chromium, Copper and mercury) naturally from various municipal and hospital discharge area of Satna. Three isolates were identified up to genus level based on their morphological, cultural, physiological and biochemical characteristics as Bacillus sp., Staphylococcus sp. Pseudomonas sp. respectively. All isolates showed different MICs against the above heavy metals at different levels. Therefore, identification of three bacteria for their heavy metal resistance and biodegradation capacity might be a base study to develop the production of potential local bioremediation agents in toxic effluent treatment technology. Heavy metal resistant bacteria are exploited in bioremediation of mixed wastes. On-site experiments will be useful in developing practical means for environmental cleanup in further studies.

Keywords: Heavy Metals, Bioremediation, MIC, Waste.

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Contribution of Small Pockets of Forests towards Carbon Sequestration – TRFI Jabalpur, A Case Study

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ABSTRACT

Among the global common concerns, climate change has been identified as the most important environmental challenge facing humanity in recent times. Indiscriminate deforestation in tropical world has become a major cause of increased carbon dioxide concentration in our atmosphere. Since it is not possible to increase the area under forests due to the ever increasing population on earth, improving the carbon sequestration potential of small pockets of forests would be a good opportunity to ameliorate the environment from the ill effects of climate change. With this idea in mind the present study was conducted to understand the Carbon dynamics i.e. is the standinf carbon stock and sequestration for the years 2015, 2016 and 2017 in Tropical Forest Research Institute (TFRI) Jabalpur. A total of 42 tree quadrats of dimension 10m X 10m were laid out in the study area in which a total of 436 individuals belonging to 28 different species were present. Around 62% of the study area was under plantations and around 38% was under natural vegetation. The standing carbon stock in the tree biomass from the year 2015 where it is 75.31 t/ha for natural vegetation and 76.34 t/ha for plantations has increased 79.99 t/ha and 82 t/ha respectively for natural vegetation and plantations in the year 2016. It has further increased to 82.37 t/ha for natural vegetations and 85.49 t/ha for plantations in the year 2017. The rate of increase in the standing carbon stock for plantations is greater than for the natural vegetation The highest IVI is shown by teak followed by Albizia prosera and Eucalyptus hybrid. These species can be used to further enhance the carbon density of the study area. Keeping in view the global concern towards carbon sequestration and its mitigating role in climate change, the present study was undertaken to assess carbon stock and annual sequestration in the tree plantations raised in TFRI Jabalpur.

Keywords: Climate change, vegetation and plantations

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Calotropis procera and its Specialist Insect Herbivores

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ABSTRACT

A host plant with its specialist herbivores is one of the most studied examples of coevolution. Coevolution is an evolutionary and ecological interaction between two or more species. The host plant has its own natural defense system in the form of anatomical, biochemical, physiological and ecological features. These features of a host plant influence the diversity of herbivores dependent on it. In the present study, *Calotropis procera (Asclepiadaceae*; now in Apocynaceae) has been found to support a number of specialist insect herbivores in the grassland ecosystem. The assemblage of the specialist insect herbivores on C. procera includes Aphis nerii (milkweed aphids), Aulacophora foveicollis (flea beetle), Corynodes peregrines (blue metallic beetle), Dacus persicus (aak fruit fly), Danaus chrysippus (plain tiger, the milkweed butterfly), Paramecops farinosus (aak weevil), Poikelocerus pictus (aak grasshopper), and Spilostethus pandurus (milkweed bug). The specialists use C. procera as a host plant and exclusively depend on this plant species for completion of their life cycle. These highly specialized insect species actually have adaptive ability to overcome and/or sequester toxic chemicals from their host plants for their own defense against their natural predators. Some of such insect species advertise their toxic nature or unpalatibility though their bright coloration (Aposematism). On the other hand, a few specialists use cryptic coloration as a strategy to become less vulnerable to their potential predators. The present paper briefly describes some of the interesting observations/interactions of the *Calotrpis procera* – specialist herbivores insect system.

Keywords: Co-evolution, *Calotrpis procera*, specialist insect herbivores

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Study of Water Quality Parameter of the Ground Water of Panna, Madhya Pradesh

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ABSTRACT

Ground water is main Source of drinking water in Panna District. For the present study of water quality of Panna district, ten sampling sites were selected and sampling has been done twice in post monsoon and in pre monsoon season. the physical chemical parameters Viz., colour, odour, turbidity, Electrical, conductivity(EC) total dissolved solid (TDS) hardness total chloride,PH and ,B.O.D. were analyzed. Most of samples do not impart turbidity and odour. T.D.S. was very high in almost all the samples. The PH is above the neutral in all samples. Hence shows alkalinity, chloride concentration was very high in the some selected sites.

Keywords: Water quality parameter, Total dissolved solid, Electrical conductivity.

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An Overview on Bioremediation Technique for Removal of Chemical and Environmental Pollutants

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ABSTRACT

Environmental contamination is increasing day by day because of increase in population, industrialization and urbanization Bioremediation is the technology that uses microorganism metabolism to remove pollutants it uses relatively low cost, low-technology techniques, which generally have a high public acceptance and can often be carried out on site. This technology includes biostimulation (stimulating viable native microbial population), bioaugmentation (artificial introduction of viable population), bioaccumulation (live cells), biosorption (dead microbial biomass), phytoremediation (plants) and rhizoremediation (plant and microbe interaction). Rapid advances in the last few years has helped us in the understanding of process of bioremediation. The use of culture independent molecular techniques has definitely helped us to understand the microbial community dynamics, structure and assisted in providing the insight in to details of bioremediation which has surely facilitated to make the technology safer and reliable. This paper represents the special features, strategies, limitation and a variety of approaches of bioremediation.

Keywords: Bioremediation, Phtyoremediation, Microbes .

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Management of Root Knot Nematode (*Meloidogyne Incognita*) in *Bacopa Monnieri* L. through Microbial Interventions

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ABSTRACT

Bacopa monnieri (L.) Pennell, (Plantagenaceae) commonly known as brahmi is an important medicinal plant having a major role in traditional and modern systems of Indian medicine. However the sustainable cultivation of brahmi faces severe challenge from root-knot disease (Meloidogyne incognita). Despite the vast exploration of rhizospheric microbial wealth for crop yield enhancement, knowledge about the efficacy of microbial agents against M. incognita remains elusive (B monnieri). In the present investigation, rhizospheric microbes, viz., Bacillus megaterium, Glomus intraradices, Trichoderma harzianum, in single and in combinations were evaluated for the management of M. incognita (Kofoid and White) Chitwood. The bacoside content was also studied in B. monnieri in comparison to control. A novel validated method Fourier transform near infrared (FT-NIR) was used for rapid estimation of total bacoside content. The results from the study indicated a significant reduction in root-knot indices in the combined treatment of B. megaterium and T. harzianum in comparison to untreated control plants. Similarly we found an enhancement in the total bacoside contents (plant active molecule) in the treated plants against untreated controls. The results thus validate that microbial interventions (bacteria/fungi and AMF) are better option for eco-friendly and safer management of root knot diseases along with improved growth parameters/yield attributes particularly in concern with economically important bacoside contents.

Keywords: Bacopa monnieri, Meloidogyne incognita, Medicinal and aromatic plants, biotic stress.

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Mitigating Climate Change using Appropriate Production Technology

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ABSTRACT

Prevailing climate change is a matter of concern as it impacts livelihood and food security of Indian farmers, particularly with small and marginal holdings. Like other crops, future soybean production as well is under threat. Since soybean is one of the major oilseeds of India and functions as subsistence crop for the farmers of Central India even under drought years on account of its resilience against aberrant weather, needs special attention in terms of popularising the mitigation technologies against climate change. Solidaridad is acivil society organisation presently working with more than 30,000 farmers in central part of India through its network of field extension team to sustain soybean productivity of small and marginal farmers by way of providing mitigation interventions against climate change. Global climate change is poised to increase in temperature and disrupt the precipitation pattern by few heavy storms and long dry spells during the growing season of the crop. The will influence the soil moisture status during the growing period and shall also favour the biotic stress by intensified pest population and disease incidence. Hence water stress is going to be major deterrence to optimise soybean yield. To mitigate the adverse effect, the interventions with respect to keep the crop healthy to fight abiotic and biotic stresses will be important. Solidaridad has been demonstrating and popularising the appropriate interventions by demonstrating these under real farm conditions so as to optimise soybean productivity under normal and distress conditions since 2009. In 2017, the organisation organised 150 demonstrations on the fields of small and marginal farmers, using improved varieties, integrated crop management and measures to increase incipient rainwater utilization. The results of demonstrations revealed average productivity of 1568 kg/ha against that of 1368 kg/ha by farmers practice. The increase in productivity was 16.50 % with additional returns of Rs 4,282/ha. Apart from above the organisation is reaching with the intervention technologies to other farmers in the ambit through the lead farmers, who are being regularly provided orientation on latest technology through concerned research organisations.

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Land Degradation: A Manifestation of Natural Imbalance

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ABSTRACT

Since the time, when our subhuman ancestors used to lead a subsistential life; till date when we are living in a global era with exceptional advancements in all the fields, Land has ever remained the basic resource for mankind. But what is the cost of such growth and development? What has been its impact on environment and specifically on land?

Natural resources are limited and are dwindling at a fast pace. The deterioration of the Natural balance has resulted in a number of problems, and Land degradation is one of them. So it is required to move ahead to achieve the objective of sustainable development by internalizing environmental considerations in the development process.

Land degradation is defined as the long-term loss of ecosystem function and productivity caused by disturbances from which the land cannot recover unaided. The most common causes are Salinity, alkalinity, wind erosion and deforestation.

The concept of Land Degradation has evolved over time and its focus shifted from productionoriented to the broader scope of impact on ecosystems. There has also been a shift in focus from soil degradation to land degradation, the latter including more biophysical elements such as water, vegetation, animals and men

Thus the article discusses the causes of Land degradation and the necessity of using sustainable approaches at all the levels of development. It also presents the current scenario of uses and abuses of Land resource in Indian perspective.

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Reclamation of Chromium polluted soil by some floriculture plants

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ABSTRACT

In recent years, contamination of the environment by Cr, especially hexavalent Cr, has become a major area of concern. Chromium is used on a large scale in many different industries, including metallurgical, electroplating, production of paints and pigments, tanning, wood preservation, Cr chemicals production, and pulp and paper production. The tanning industry is an especially large contributor of Cr pollution to water resources. It has been estimated that in India alone about 2000 to 3200 tonnes of elemental Cr escape into the environment annually from the tanning industries, with a Cr concentration ranging between 2000 and 5000 mg L^{-1} in the effluent compared to the recommended permissible limit of 2 mg L^{-1} . The accumulation of Cr in soil is of great concern because of its movement into the food chain. Therefore, an experiment was conducted to screen different floriculture plant species (calendula, chrysanthemum, aster and dahlia) for their tolerance to different levels of Cr (0, 5, 10, 15, 20, and 25 ppm). In all the four plant species, beyond 10 ppm, chromium was toxic to the plants and there was a drastic reduction in growth and of plants. In 20 and 25 ppm, there was negligible growth and mortality of the plants. In calendula, chrysanthemum and dahlia the application of chromium beyond 10 ppm inhibited flowering. The chromium content in different plant parts of calendula, chrysanthemum, dahlia, and aster was determined. It was found that in all the plant species, the highest concentration o f Cr was found in the roots and was followed by shoots and flowers. Dahlia recorded the highest concentration of chromium among the plant species and calendula the least.

Keywords: Chromium, Phytoextraction, Calendula, Chrysanthemum, Aster and Dahlia.

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Impact of Root Knot Disease on Content of Electricity in Some Vegetable Crops

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ABSTRACT

An experiment was carried out to study the effect of root knot disease on content of electricity in Brinjal, Bhindi, Tomato and chilli plants at instructional farm at AKS University, Satna (M.P.). It was observed from statistical analyses that Brinjal and Bhindi plants exhibited maximum root knot index (3.5) and Percent Disease index (38%) with minimum content of electricity (0.2 volt) followed by chilli with root knot index (3.0), P.D.I. (37%) and content of electricity (0.3 volt) and Tomato with root knot index (2.8), P.D.I. (28%) and electricity content (0.2 volt), Each plant of vegetable crops viz. Brinjal, Bhindi, Tomato and chilli were inoculated with 1000 IInd star juvenile of root knot causing nematode – *Meloidogyne incoginita*. It has also been observed from the experiment that all healthy plants were possessing electricity content about 8 volt positively.

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6TH and 7TH April 2018

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Impact of Climate Change on Water Resources and Food Security: An Indian Perspective

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ABSTRACT

Climate change is one of the majorchallenges of 21st Century, which has gained a lot of attention in recent timesof the Environmentalist and Socio-economist, Policy Makers for its impact on water and food security. The relationship between water, agriculture and climate is a significant one. Moreover, this relationship is falling out of balance and jeopardising food and water security. The continuous rise in the temperature poses a significant impact on water resources. Therefore harnesses the potential for devastating effects on agriculture and food security leading to intensifying poverty. India is home to over one billion people and projected to increase to 1.7 billion by 2050. India is recognised as one of the most affected countries in the subcontinent from the climate change. Union ministry of water Resources has estimated the countries water requirements to be around 1093 Billion Cubic Meter (BCM) for the year 2025 and 114 BCM for the year 2050. The facts indicate that India is expected to become water stressed by 2025 and water scarce by 2050. In 2015, 88% of the total population had access to at least basic water, or 96% in urban areas and 85% in rural areas. It is estimated that India would require increasing its annual food production by 30 per cent, to 333 million tonnes. In addition, more than 880 GW of new power generation capacity would be required by 2040. However, a new paradigm is needed to manage these resources better.

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Attitude of Students towards Rural Work Experience Programme (RWEP)

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ABSTRACT

The study was conducted at the RWEP centers of AKS University, Satna, by personal interviewing 107 students. Majority of the students have positive attitude towards RWEP. This programme have been attained it's objectives and it is useful programme for the students in getting exposure to rural conditions. Less stipend was the major constraint reported by majority of the students. This programme requires little modifications for better implementation and effective results.

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Phytochemical Investigation of Wildly Growing *Phyllanthus emblica* (Amla) in Vindhya Region

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ABSTRACT

The present study attempts to evaluate the phytochemical studies on the leaves and fruit of *Phyllanthus emblica*. Amla is a gift of nature to mankind. It is an indispensable part of the ayurvedic and unani system with amazing remedial qualities. Amla is a wonder herb and one of the precious gifts of nature to humans. During phytochemical investigation an aqueous extract leaves and fruit have been prepared by using Sohxlet exaction method. Presence of different bioactive constituent has been evaluated by qualitative analysis of bioactive constituents. the results of this investigation indicates carbohydrate, flavonoid, terpenoid, rasin and phytosteroids test found positive in leaves and fruit of *Phyllanthus emblica*. However alkaloids, protein and pholobatannins test found negative in leaves and fruit of *Phyllanthus emblica*. Coumarin test found positive in fruit and negative in leaves.

Keywords: Amla, Traditional uses and Chemical constituents.

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Usefulness of Powdered form of Mature-Dried Seeds of *Moringa oleifera* for Water Purification

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ABSTRACT

Nearly 2,000 children around the globe, under the age of five years, die every day from diarrheal diseases of which 24 percent of the deaths (i.e. 480 children) occurring in India alone attributable to unsafe water, poor sanitation and hygiene. Therefore, the present research work was carried out to purify the TAP water of AKS University, Satna by using powdered form of mature-dried seeds of *Moringa oleifera*, commonly available in the most rural neighborhood of India. To confirm the usefulness of powder form of mature-dried seeds of *Moringa oleifera*, randomized design with loading doses of 1000ppm was taken as coagulant. A control (water from the TAP without alum and Moringa treatments) was also included. The physico-chemical parameters such as Total Dissolved Solid (TDS), Electrical conductivity (EC), Salinity, pH, Total Hardness, Dissolved Oxygen (DO), Chemical Oxygen Demand (COD), Acidity and biological parameter such as presence of coliform were determined for all the samples. The almost all of the parameters were decreased on the treatment of powdered form of *Moringa oleifera* seeds. The Moringa treatment also gave lower bacterial counts. Thus, *Moringa oleifera* seeds might serves as a unique eco-friendly module for water purification in near future specifically in the most rural neighborhood of India.

Keywords: Moringa oleifera seeds, Coliform counts, Coagulant, Physico-chemical parameters etc.

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Effect of Fertility Levels and Varieties on Growth, Yield and Oil Content of Mustard [Brassica Juncea (L.)]

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ABSTRACT

In order to explore the possibility of improving growth, yield and oil content of mustard an experiment have been conducted during winter (Rabi) season of 2015'16, at the research farm of AKS University, Sherganj, Satna, Madhya Pradesh during 2015-16 to assess the influence of different fertility levels and varieties on growth, yield and quality of mustard (Brassica juncea L.). The experiment consisted of twelve treatment combinations comprising four fertility levels i.e. F₀-0:0:0 kg NPK/ha, F₁- 60.0:30.0:20.0 kg NPK/ha (RDF-recommended dose of fertilizer), F₂-105.0:52.5:35.0 kg NPK/ha RDF (75% increase) and F₃-135.0:67.5:45 kg NPk/ha RDF (125% increase) and three cultivars of mustard viz., RH-749, NRCDR-2 and Jumbo. The experiment was laid out in randomized block design with factorial concept with three replications. Growth parameters like plant height (cm), number of primary branches/plant, number of secondary branches/plant, leaf area index and dry matter production per plant were obtained highest F₂-105.0:52.5:35.0 kg NPK/ha RDF (75% increase) in combination of cv. NRCDR-2. Yield attributing characters like number of siliqua per plant, number of seeds/siliqua, length of siliqua (cm), 1000-seed weight (g), seed yield (q/ha), stover yield (q/ha) and harvest index were found maximum in fertility levels up to F₂-105.0:52.5:35.0 kg NPK/ha RDF (75% increase) with combination of cv. NRCDR-2. The increasing fertility levels up to F₂-105.0:52.5:35.0 kg NPK/ha RDF (75% increase) increased seed yield of mustard. Highest seed yield of mustard was recorded by the use of NRCDR-2. Further different fertility levels caused significant variations in it was further also noticed that increasing fertility levels also registered the stover yield NRC-DR2 was evaluated of crop. Stover yield increased with increasing fertility levels registering the maximum stover yield. Oil content in seeds increased with increasing fertility levels up to F₂-105.0:52.5:35.0 kg NPK/ha RDF (75% increase). Highest oil content was noted with NRCDR-2.

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NATIONAL SEMINAR ON CLIMATE CHANGE AND ITS IMPACTS ON ENVIRONMENT: IN INDIAN PERSPECTIVE

 6^{TH} and 7^{TH} April 2018

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Preparation and Characterization of Nanocellulose from Agro-waste Material for Ecofriendly Nanobiofertilizers

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ABSTRACT

The objective of this work the preparation and characterization of nanocellulose from agro-waste material using mechano-chemical process followed by encapsulating it with plant growth promoting rhizobacteria (PGPR) cultures to produce eco-friendly Nanobiofertilizers. Corn cob is an agro-waste which is source of nanocellulose. The nanocellulose was prepared by hydrolysis with the use of sulfuric acid and best methods of cellulose extraction from corn cob are using alkali treatment followed by a bleaching process. The cellulose yield from this method was 33% respectively. Nanocellulose and encapsulate with microbial cultures has been characterized by Fourier Transform Infrared Spectroscopy (FT-IR). Morphological investigation was performed using Scanning Electron Microscopy (SEM) and showed that majority of the nanocellulose were in the 24 nm range. Therefore, the microbial cultures containing nanocellulose will produce Nanobiofertilizers. Nanocellulose based nano bioformulations may provide the conventional carrier based biofertilizers to develop sustainable agriculture and can also help small marginal farmers to attain ultimate goal of increasing their productivity.

Keywords: Agro-waste material, Nanobiofertilizers, Nanocellulose, PGPR (Plant Growth Promoting Rhizobacteria), FT-IR (Fourier Transform Infrared Spectroscopy), SEM (Scanning Electron Microscopy).

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IN INDIAN PERSPECTIVE 6^{TH} and 7^{TH} April 2018

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Lactic Acid Bacteria Acts as a Probiotics

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ABSTRACT

Lactic acid bacteria (LAB) are industrially important organisms due to their fermentative ability as well as to their health and nutritional benefits. Many studies have shown that they give fermented foods unique flavour and texture. The fermentation using LAB improves nutritional value of food products increasing the quantity, availability, digestibility and assimilability of nutrients. The essential role of LAB is growth inhibition of food spoilage and pathogenic bacteria because of the low pH produced by the fermentation of lactose and in this way improving safety and food products shelf life. Many beneficial aspects are atributed to LAB regarding human health, such as on gut microbial ecology, lactose digestion, mineral absorption and some other beneficial effects. Since the Metchnikow thesis (1908) LAB have been assumed to possess more Probiotic properties. They are usually added to yoghurts and are often described as good bacteria. Probiotics are thought to help restore the natural balance of bacteria in your gut. The World Health Organization's (WHO) 2011 defines probiotics as live microorganisms that, when administered in adequate amounts, confer a health benefit on the host. Probiotics have received renewed attention in the 21st century from product manufacturers, research studies, and consumers. The history of Probiotics can be traced to the first use of cheese and fermented products. Proteolytic bacteria such as clostridia, which are part of the normal gut flora, produce toxic substances including phenols, indols and ammonia from the digestion of proteins.

Keywords: Lactic acid bacteria (LAB), Fermentation and Food products

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A Novel Integrated Development and Validation Strategy of Drug Substances and Drug Products for Multipurpose using Reverse Phase Liquid Chromatography

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ABSTRACT

To develop a novel integrated development and validation strategy for estimation of multiple tests (identification, related substance and assay) in single Chromatographic run with single sample preparation with shorter run time without compromising the method robustness, accuracy and precision for the drug substances and drug products. This developed basic chromatography method may also applied the remaining tests of content uniformity and dissolution test for the different strengths of same drug products. This strategy will required minimum trained personnel for testing, will lead to save time and cost.

Keywords: Chromatographic run, accuracy and precision, drug substances and drug products

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Phytoremediation: A Novel Way of Management of Heavy Metal Pollution

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ABSTRACT

The utilization of heavy metals by human beings through extraction from ores and processing for different applications has led to the release of these elements into the environment. Since heavy metals are nonbiodegradable, they accumulate in the environment and subsequently contaminate the food chain by becoming its inevitable member. This heavy metalcontamination poses a serious risk to environmental and human health. Some heavy metals are carcinogenic, mutagenic, teratogenic and endocrine disruptors while others cause neurological and behavioural changes especially in children. Thus, remediation of heavy metal pollution deserves due attention. Different physical and chemical methods used for this purpose suffer from serious limitations like high cost, intensive labour, alteration of soil properties and disturbance of soil native microflora. In contrast, phytoremediation is a better solution to the problem.

Phytoremediation is the use of plants and associated soil microbes to reduce the concentrations or toxic effects of contaminants in the environments. It is a relatively recent technology and is perceived as cost-effective, efficient, novel, eco-friendly, and solar-driven technology with good public acceptance. Phytoremediation is an area of active current research. New efficient metal hyperaccumulators are being explored for applications in phytoremediation and Phytomining. Molecular tools are being used to better understand the mechanisms of metal uptake, translocation, sequestration and tolerance in plants. This review article comprehensively discusses the background, concepts and future trends in phytoremediation of heavy metals.

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Solid Waste Management

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ABSTRACT

Waste disposal or waste management refers to managing the waste from its initiation to its final removal. This includes collation, transportation, processing, re-cycling and finally disposal of waste along with monitoring, regulation and control. It also covers the lawful and regulatory aspects that relates to the waste management, including the instructions and guidance on recycling and disposal of waste management, etc.

The phrase usually relates to all types of waste, whether produced during the withdrawal of raw materials, the dispensation of raw materials into final goods, consumption of final good, or other human activities such as metropolitan (institutional, residential and commercial), farming and social (household hazardous waste, health care and sewage sludge, etc.) The objective of the waste management is to minimize the hazardous effect of waste materials on health, environment or aesthetics.

The reuse and recycling of solid wastes can also serve as a means for conservation of energy. In the light of this, let use see, what are the principles guiding the management of solid wastes. Recognizing that our resources are finite and continued pollution will be difficult to rectify in coming times, the management of solid wastes has become important.

Before disposal, a waste should be considered for the following possibilities:

- Reduction in raw materials and solid waste quantities
- Reuse of waste materials
- Materials recovery
- Energy recovery

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