



ENVIRONNEWS

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Newsletter

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Professor Sagar V. Krupa R.I.P.

We deeply mourn the demise of Prof Sagar V. Kurpa, a life member and an Advisor of ISEB. Both for ISEB and ICPEP, he was a friend, philosopher and guide in true sense. Ever since ICPEP-2 Conference in 2002, he regularly attended all ICPEP Conferences and took keen interest in guiding their deliberations and publication of their proceedings. His deep interest in ISEB/ICPEP can be gauged from the fact that less than on a month before his death, he had informed about his illness "cancer survivor", while expressing his desire to visit India even on a wheel chair to attend ICPEP-5 Conference in December 2014. Professor Sagar V. Krupa, Emeritus and Research Scientist, age 73, died on May 12, 2014, survived by his wife of 46 years, Nancy. Sagar graduated from HS and college in his native India. He studied at the University of Wisconsin, Madison, and earned his Ph.D. at the University of Uppsala, Sweden where he continued to work and later earned there highest degree of Docent. He taught and did research at the University of Minnesota for 35 years and was appointed Professor Emeritus in 2009 after which he continued his work as a private consultant. His research was directed to coupling air pollution and climate change to food production and conserving natural resources. He taught many summers in Mexico at the post graduate agricultural colleges, arranged by Professor Maria de Lourdes de la Isla de Bauer (who also attended ICPEP-2 at CSIR-NBRI, Lucknow in 2002) and Professor Santiago Sanchez Preciado. Sagar published some 150 scientific articles and 11 books and was the chief editor of the Elsevier book series "Developments in Environmental Science," and was one of the editors of the electronic journal "The Scientific World." He acted as chair & science advisor to the Alberta, Canada government-industry acid deposition research program, the science committee of the German Parliament and the USDA National Agricultural Air Quality Task Force. Sagar had a passion for science that was truly incredible. He was internationally recognized as a brilliant scientist with a mind that never stopped. He traveled all over the world and challenged everyone all of the time. There was never a boring moment when Sagar had the floor at an international conference while making a point or delivering a talk. While his comments and observations were razor sharp, there was always a twinkle in his eye and a chuckle in his voice. As a teacher and educator he had a love for students and always encouraged everyone to get "off their butts" and make a difference. He is remembered for his bigger than life personality, his probing scientific mind, his incredible memory and for many acts of kindness, especially in helping others achieve their educational goals. Prof Kurpa has left behind a large number of friends in India, especially those in ISEB family who will deeply miss him. May his soil rest in peace.



Call for Registration & Abstracts (ICPEP-5)

Fifth International Conference on Plants and Environmental Pollution (ICPEP-5)



Organised by
**International Society of Environmental Botanists
and
CSIR-National Botanical Research Institute, Lucknow (India)**



Co-sponsored/Supported by
United Nations Educational, Scientific & Cultural Organization (UNESCO), Paris/New Delhi
International Union of Forestry Research Organizations (IUFRO), Vienna, Austria
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Deadlines: Submission of Abstracts (online/e-mail/mail) 31 August 2014
Submission of Registration forms (online/e-mail/mail) 30 September 2014

Detailed information about the Conference can be accessed from our website: <http://isebindia.com>



LETTERS

Departure of Professor Sagar Krupa is a deep loss to ISEB and to many of us, loss of a good friend and a guiding environmentalist. To ISEB, he always gave comfort and support as if he was an in-house member, sitting next door. The Society will miss his advice as it grows. Members will miss his very thoughtful contributions to the Newsletter, reviews on important meetings, expert and visionary recommendations, capturing lectures and interactions during his participation at the Conferences. The meeting scheduled by the year end will feel a big void.

My deep condolences to his family. May his soul rest in peace.

Dr. Rakesh Tuli, FNA

Former Director National Agri-Food Biotechnology Institute,
Mohali

& National Botanical Research Institute, Lucknow, India
< rakeshtuli@hotmail.com >

It is shocking to learn about the demise of Prof. Sagar V. Krupa, Advisor, ISEB. Prof. Krupa was the Global Ambassador of educational and awareness Programs on the Impact of Climate Change on Planet Earth. He was a brilliant and committed Environmentalist with a Human Face. He was a wonderful orator and his talks on the burning issues of Pollution and Phyto-remediation were very informative, supported by facts and figures.

I had the pleasure of close interaction with Prof. Krupa during ICPEPs held at CSIR-NBRI, Lucknow. The participants in the forthcoming ICPEP-5 will greatly miss him and I pray to the Almighty God to grant peace to the noble soul.

Dr. S.C. Sharma

Vice President ISEB, Lucknow, India
< scsharmagardener@gmail.com >

It is indeed sad. In Prof Krupa, the ISEB community has really lost a very sincere friend and enthusiastic colleague, who was always keen on promoting the cause of ISEB. May the departed soul rest in peace.

Prof. Muhammad Iqbal, PhD, FNASc

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I am extremely sorry to hear about the sad demise of Prof. Krupa. He was an important supporter of ISEB right from the beginning and in him we have lost a true friend of our society and an enthusiast in environmental sciences. I had several interactions with him during his visits to Lucknow and he had always impressed me by his keen interest in the activities of ISEB and his helpful attitude to bring up the society further. We will miss his presence in our ICPEP-5. May his soul rest in peace.

Dr. P.V. Sane

(Former Director, NBRI, Lucknow)
Mahanagar, Extension, Lucknow, India
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It is so unfortunate that Prof. Krupa is no longer there to support ISEB. He was a noble soul and hard core environmentalist. His contributions to this field of Science will always be remembered. He was an inspiration for young research scholars. Prof. Krupa will stay alive in our memories.
May God give peace to his departed soul.

Dr. Monika Koul

Assistant Professor,
Hans Raj College, University of Delhi, India
< drmkoul@gmail.com >

I am deeply disturbed by the sad demise of Prof. Krupa. His passing away will create a big vacuum in the ISEB friends circle. He was a very close friend of our society. I was very fortunate to interact with him on many occasions and I found him totally dedicated to the society. We will miss him in ISEB. Let me join his family and his friends to pray for the peace of the departed soul.

Dr. P. Pushpangadan

Director General & Sr. Vice President, RBEF
Amity Institute for Herbal & Biotech Products
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It is really shocking to know about the sad demise of Dr. Sagar Krupa. His presence in ICPEP meetings was truly inspiring for the youth and his lectures were very informative. We will really miss him. It is a great loss to the Environmental Science world.
May his soul rest in peace.

Prof. Vimala Yerramilli

Dept of Botany, CCS University, Meerut, India
< yvimala@gmail.com >

It is extremely shocking to know about the sad demise of Professor Krupa. He was not only a worthy scientist in the field of Environmental Sciences particularly air pollution and climate change, but a great supporter of researches in Indian subcontinent. His unconditional support to ISEB is one of such efforts, which is ranked very high for the success of ISEB. One of our students met Professor Krupa in March this year, while attending a conference organized by him in Mexico. I will always miss his guidance. It is a great loss to the Environmental Scientists.

May his soul rest in peace.

Prof. Madhoolika Agrawal, FNASc, FNAAS

Department of Botany
Banaras Hindu University, Varanasi
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Really sad to know about the demise of Prof Sagar Kurpa. I was expecting to meet him in coming International Conference. Really, we lost a very humble well wisher and champion of Ecology.

Prof. Arun Arya

Prof. & ex- Head, Department of Botany

Maharaja Sayajirao University of Baroda, Vadodara, India
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In passing away of Prof Krupa, ISEB family has lost a great friend, philosopher and guide. It is indeed shocking news. Apart from being a renowned environmental scientist, he was a source of inspiration to young and senior scientists alike. I had the privilege of interacting and discussing with him the emerging environmental issues, and I discovered that he had a wide coverage and deep insight of the subject. He was very enthusiastic and full of wit and humour. I salute the qualities of head and heart of the late Sagar Krupa. He definitely made a mark in his area of specialization. Let us celebrate his life and achievements. I send my heartfelt condolences to his family members and pray Almighty to grant peace to the departed soul and courage and fortitude to the bereaved family to bear this irreparable loss.

Prof. R. S. Tripathi, FNA, FNIE, FNASc,
INSA Honorary Scientist, CSIR-N.B.R.I,
Rana Pratap Marg, Lucknow
(Formerly, INSA Senior Scientist, NBRI, Lucknow; formerly
Professor of Botany, Director/Coordinator, NEHU Regional
Centre of National Aforestation and Eco-development Board,
Ministry of Environment, Govt. of India)
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Our heartfelt condolences to the bereaved family of late Prof. Sagar. Krupa and to the scientific community of which we are also a part.

Dr. Veenu Kaul

Associate Professor, Reproductive Biology, Cytogenetics
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I am deeply shocked by the sudden demise of Prof. Krupa. Last time I met him during ICPEP-4 Conference. He was a very good Environmentalist and very good inspiration for researchers. He always gave support to Society. No one can fill his space to the society. Society and all the members will always miss his advice, recommendations and his incredible contribution to the Society. I am expressing my deep condolence to his family. May God bless his soul.

Ms. Deepika Sharma

< deepikadesire@yahoo.in >

I am very sorry to learn about the sad demise of Prof. Sagar Krupa. May his soul rest in peace. I vividly remember Krupa Sir when he was dancing on the tunes of musicians playing army band, in ICPEP-3, that could be only Sagar Krupa, vibrant, always full of enthusiasm and encouraged all the young scientists engaged in research. He had been a great source of inspiration for all of us especially me. I will always miss him.

Dr. Mukta Singh

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WELCOME NEW MEMBERS

PATRON MEMBERS

Mr. L.K. Jhunjhunwala is Chairman, Jhunjhunwala Post Graduate College, Faizabad, Managing Director K.M. Sugar Mills Ltd. Faizabad & Chairman FICCI, Uttar Pradesh.
jhunjhunwala555@gmail.com

Dr. Girish Sahni, F.N.A.Sc., F.A.Sc. Director, CSIR-Institute of Microbial Technology (IMTECH), Chandigarh. Under Dr. Sahni's dynamic leadership IMTECH gives the highest priority on the Environment and Health Programs for the welfare of the society.
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LIFEMEMBERS

Dr. Mohammad Hussain Khan, Assistant Professor, Department of Botany, Ramakrishna Mahavidyalaya Kailashahar, Unakoti, Tripura.
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Dr. Ganesh Datt Bhatt, Research Associate, Shivnadar University, Greater Noida.
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Dr. Mukti Gill, Associate Professor, Khalsa College For Women, Civil Line, Ludhina, Punjab.
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Mr. Majid Ali, I.A.S. (Retd.), who holds a Masters degree in Physics; a former Principal Secretary, Science and Technology, Govt. of Uttar Pradesh, Lucknow.
alimajid532gmail.com

Ms. Garima Dixit, CSIR-SRF, Ecotoxicology and Bioremediation Lab, CSIR-NBRI, Lucknow.
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Er. Sumer Agarwal, B.E. (I.I.T. Roorkee), M.S. (Michigan, U.S.A.) is the Managing Director of R.R.Group and Levana, Hospitality. Er. Agarwal is also a Member of the Environment Group, Institute of Engineers, Lucknow.
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Dr. Baikunth Nath Pandey, Associate Professor, Department of Botany, Govt. Girls P.G. College, Ghazipur, U.P.
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NEWS FLASH

Professor Rana Pratap Singh of BBA University, Lucknow, Life member and Executive committee member of ISEB, delivered a lecture on “Need for Innovation in Resource Conservation in Agriculture” on 11 April, 2014 at Center for International Co-operation in Science (CICS), Chennai and addressed the Researchers and Policy makers from nine African countries. He also chaired a session in International Conference on “Mitigating Climate Change with Special reference to Developing Countries” held on 28-30 March, 2014 at Ram Manohar Lohia National Law University, Lucknow and addressed DST INSPIRE Internship Winner Camp at Visva-Bharati, Shantiniketan, West Bengal during 13-17 Jan, 2014 and attended Board of Studies meeting at Central University of Jharkhand, Ranchi on 7 Feb, 2014.

Dr. S.C. Sharma, Vice-President delivered a key note address on “Impact of the Climate Change: Urban Pollution and Solution with Special Reference to Lucknow the Capital City of the State of Uttar Pradesh” at the National Conference on “Mitigating Climate Change with Special Reference to Developing Countries” at Dr. Ram Manohar Lohiya National Law University (March 28-30, 2014). Dr. Sharma also chaired a session at the Conference.

Dr. Sharma was the Chief Guest on the occasion of World Earth Day celebrations at Vidyayan School, Sitapur (22 April 2014) where he also delivered a key note lecture on “The Good Earth, Greedy People: Impact of Climate Change”.

Dr. Sharma also delivered an invited talk on the Sustainable Ecotourism before a batch of tourist guides at Manyavar Kanshi Ram Tourism Institute at Chinhat, Lucknow (May 30, June 3, 2014).

Dr. Vimal Chandra Pandey, a Life member of ISEB, working as a DST-Young Scientist at CSIR-National Botanical Research

Institute has been awarded “Young Scientist Award” by Council of Science & Technology U.P., on behalf of Government of Uttar Pradesh. Dr. Pandey developed plant based packages as effective green technology for the remediation of fly ash disposal sites as well as fly ash contaminated sites. He searched potential plants for revegetation and restoration of fly-ash deposits of thermal power plants with special reference to raising rural livelihoods and improving local environment.

As part of its Earth Day Program on 22 April 2014, **the City Montessori School, Jopling Road Branch** invited International Society of Environmental Botanists (ISEB), to conduct an environmental awareness programme before its students. Ms. Kanti Srivastava, Convener, Environmental Awareness Programme ISEB led a team of volunteers comprising Drs. Shashi Dhawan and Nupur Srivastava, who delivered short informative talks on various aspects of Environment.

Mrs. Manju Nautiyal, Principal of the College, who presided over the hour long programme, thanked ISEB team for organizing this highly informative educational programme for her school children.

Dr. Kamla Kulshreshtha, Principal Scientist of CSIR-NBRI and an Executive councilor of ISEB delivered a talk, as a resource person, on “Biodiversity for society benefits at City Montessori School LDA Colony branch on 25th June, 2014. The program was organized under the aegis of UNESCO & SEEP.

Prof. H.N. Verma, former Professor & Head, Department of Botany and Pro-Vice-Chancellor, Lucknow University has been appointed Vice-Chancellor of Jaipur National University, Jaipur, India. An internationally renowned plant virologist, Prof. Verma is a Life Member, an Advisor and, a member of the Executive Committee of International Society of Environmental Botanists.

In Memoriam: A Tribute to Prof. Sagar Krupa

***Dr. María de Lourdes de la Isla de Bauer**

Programa de Hidrociencias, Colegio de Posgraduados, Montecillo, México

“Sagar V. Krupa is gone but his enthusiastic approach to science and life remains with us”

His background

Born in India, he showed as a young scholar a remarkable skill not only for learning but for applying his knowledge as he took his B. S. and M. S. in Botany at the Andhra and Madras Universities. Out of numerous competitors, he was selected as Research Fellow at Madras University during the years 1961-1965, and teaching assistant in the Plant Pathology Lab, 1962.

His spirit of looking for additional knowledge led him to apply and obtain

a scholarship to the University of Wisconsin in the United States in 1965 where he pursued an M.S. in Plant Pathology under the direction of Professor Luis Sequeira. It was there that he met Nancy, his life companion and a very important person in his life and career. They were married in 1967. He continued his studies in Sweden at the University of Uppsala, Institute of Physiological Botany, as a teaching assistant and research fellow under the direction of Professor Nils Fries, where

he earned a Ph.D. in Plant Physiology. He continued as a Postdoctoral Fellow and in 1972 received the highest scholarly degree of Docent from the University of Uppsala.

Returning to the United States, he became a Postdoctoral Fellow at the University of Minnesota in the Dept. of Soils. His talent was recognized by Dr. Al Wood, Head of the Dept. of Plant Pathology, who was to become another important person in Sagar’s life. That following year, 1973, he hired Sagar as a

Postdoctoral Fellow in Plant Pathology, assigned to an interdisciplinary project "The impact of air pollution on crops and ecosystems".

One year later he became Assistant Professor in the Plant Pathology Dept., and in 1979 an Associate Professor, and in 1985 Full Professor until his retirement in 2009.

Besides teaching, Sagar did extensive research while at the University of Minnesota, obtaining many grants in excess of 8 million dollars.

As one of his first achievements he organized a very successful workshop in 1974 in Minneapolis on Air Pollution sponsored by the University of Minnesota. Several well-known and prestigious scientists came from different parts of the U. S. and Canada. Among them, Dr. Allan Legge, with whom he later on organized, in 1980, the International Conference on Air Pollution in Banff, Canada.

International achievements

In the meantime, the critical levels of ozone in the metropolitan area of Mexico City were demonstrated by the use of plant as bioindicators. Thus, Dr. Krupa was invited in 1976 to come to Mexico to teach and to recognize the possible damages in the local conditions, specifically at the influenced wind movement areas already described by Jauregui, 1958.

Damage by ozone and PAN was found in the areas located Southeast and

Southwest of the city on vegetable crops like lettuce in Xochimilco and in Ajusco, the characteristic chlorotic mottle on the older needles was observed on *Pinus hartwegii*. This discovery was very interesting to Californian scientists like Dr. Paul Miller. After observations and some studies, it was concluded that the situation in the forests near Mexico City and San Bernardino Mountains in California, EE. UU. have similarities.

His way of teaching was remarkable and over several decades he taught almost every year a short course 1-2 weeks long in the different campuses of Colegio de Postgraduados. A special occasion was a Commemorative Workshop to celebrate 40 years of the institution (1959-1999). Its title was "GLOBAL CLIMATE CHANGE AND TERRESTRIAL ECOSYSTEMS". It drew 55 attendees of several institutions during two days. Professor Krupa gave splendid presentations on the topics:

- Air Pollution, the Driving force
- Responses of Agricultural Ecosystems
- Responses of Forest Ecosystems
- Uncertainties in the Knowledge

In the meantime, he helped students to pursue in the field of Air Pollution. In particular Tomás Hernández Tejada who had the opportunity to spend six months under his guidance at the Plant Pathology Department of Minnesota. This was the start of Tomás Hernández important contributions in the area.

His interest in Plant Pathology concerning biotic pathogens remained alive as shown by the research he conducted tracing the soybean rust arrival to America reporting its appearance in U. S. and Mexico.

He was very interested and successful in getting together the most brilliant scientists of the area, working on projects and attending and organizing meetings specially the Air Pollution Annual Workshops. He had the brilliant idea to celebrate in 2007 the Air Pollution Workshop (APW-39) in Guadalajara, Jalisco, Mexico, a beloved city of his and Nancy's. The meeting was very successful as the participants remembered it years thereafter. The wish to repeat it was with him during years and finally, as one of his last wishes, the APW 46 was celebrated in Guadalajara, Jalisco, April 2014. Most of his friends came, Allan Legge, Andrew McDonough, Anil Kumar Mishra, Carl Bernacchi, Cesareo Landeros, David Gay, Gary Lovett, Judi Kryzanowski, Kevin Percy, Lorenzo Cotrozzi, María de Lourdes de la Isla de Bauer, Mark Fenn, Matthew Landis, Patricia Romero-Lankao, Rainer Matyssek, Santiago Sánchez Preciado, Shaun Watmough, Sirku Manninen, S.T. Rao, Teis Mikkelsen and Viney Aneja.

It was both a sad and successful "farewell..."

Urban Green Space and Landscapes: Key to Clean and Healthy Environment

R.K. Roy, R. Rastogi, S. Singh and R. Prasad

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Urbanization is a global phenomenon. The migration of people from rural areas to towns and cities is a common trend for better livelihood and opportunities. In developed countries, the rate of urbanization is comparatively slow than the developing countries. In the last

decade, this kind of human migration has increased many folds. Urbanization, the spatial concentration of people and economic activity is arguably the most important social transformation in the history of modern civilization. The timing and speed of urbanization have

variations in different countries. The process of urbanization has taken place everywhere in an unstoppable manner. According to a report by United Nation, 61% of the population will live in urban areas by 2025 especially in the developing countries. This uncontrolled

*Prof. de Bauer is a member of International Advisory Committee of ICPEP-5. She had attended ICPEP-2 Conference at CSIR-NBRI Lucknow in February 2002. She has penned this article on the invitation of Environews.

Author offers special thanks to Mrs. Nancy Krupa for her help with information about Professor Krupa's early career.

urbanization has many fundamental, social and environmental consequences. In India, an estimated 340 million people (30% of the total population) live in urban areas. As per estimation, 590 million people (40% of the total population) will reach new towns and cities by 2030. If it is continued unabated, we will have to look for long term sustainability and future environmental consequences.

Landscapes and urban green space refer planning, development and plantation of trees and other greeneries for achieving specific purposes. The plantation pattern, selection of plant species and designing of green spaces vary according to the situation. Landscapes and urban green space plays a critical role in keeping our cities clean and healthy.

Importance of Landscape and Urban Green Space :

The consequences of rapid urbanization are quite prominent and have several adverse effects on environment. Development of urban green space and landscapes are one of the effective ways for improving air quality, aesthetics and environment. There are international norms for urban green space as a mandatory rule. In developed countries, the standard of green space is 20 sq.m. area per capita which helps maintaining a balance between CO₂ and O₂ for human well being. As per WHO, the need for green open space is a minimum availability of 9 sq.m per capita. There is wide variation both in coverage and per capita availability of green space globally. However, well planned cities have urban green space 20-40% of the total geographical area. Indian cities are far behind the standard recommended and adapted internationally. New Delhi, the capital city, has green cover about 20% of the geographical area which comes to about 20-22 sq.m. green space per capita. The value of green open spaces within cities for ameliorating local climatic conditions is widely appreciated. These were not only established for recreational needs but for ecological requirement as well. They perform many functions for

improving quality of life in the urban areas. Nevertheless, green spaces provide linkage between people and nature.

Efficacy and Environmental Benefits

- Urban green space development as Green belt serves as an effective means of mitigating industrial and urban pollution. Studies have revealed that a green area having 500 sq. m width surrounding a factory is capable of reducing SO₂ concentration by 70%.
- Woodland over a hectare absorbs 3.7 tonnes of CO₂ from atmosphere and supplies 2.5 tonnes of oxygen.
- Reduction of dust particles (27%) in London (Hyde Park) by a green area of 2.5 sq. km. was also reported.
- Trees also provide support to wild creatures, birds and biodiversity as a whole.

Social Benefits of urban green space

- Urban landscapes provide safe play space for children and contribute to physical, mental and social development.
- Plays an important role in the basic education of school children with regard to the environment nature.
- Landscape and urban green space provide a refreshing atmosphere with appropriate greenery in contrast to the structures of buildings.
- Provides healthy environment by improving quality of air, water and soil.
- Provides space for social activities, celebration and other performances.
- Provides a perfect outing place for elderly people and family as a whole.

Economic Benefits

- Reduces temperature effect and consequently reduces demand of air conditioning. The annual saving, thus made by a tree is estimated to be Rs. 10,000-12,000.
- The cost benefit ratio, a resident may receive back, is estimated to be around Rs. 1000 against annual investment of Rs. 500. Therefore, urban greeneries contribute

significantly to reduction in cost of environmental maintenance.

Urban Forest

An urban forest is a collection of trees that grow within a city, town or a suburb. In other words, it refers to growing of any kind of woody trees in and around human settlements. Urban forests play an important role in ecology of human habitats in many ways viz. filtering air, water, sunlight, provide shelter to animals and above all, recreational area for urban people. They moderate local climate, act as wind break and provide shade. Moreover, they are critical in cooling the urban heat island effect. Urban trees, shrubs and wildlife help people maintain their connection with nature.

Parks

Parks occupy a unique position in our social life and are a common facility to the community for pleasure and utility. Development of parks is the most common way of using urban open space. Usually parks contain all groups of plants. Besides, they are the good source of recreation, aesthetic and amelioration of environment. A park over an area of 1-2 hectare creates a cooling effect by 2°C than the surrounding area. Proper planning of parks by selecting perennial ornamentals having pollution tolerant capacity will further accelerate amelioration of environment. In old cities, there may be less availability of space for developing new parks. However, the available open space may be converted into green space. In case of new cities, making provision for development of parks is now mandatory.

Conclusion

Clean and healthy environment is a primary requirement for the urban people. The incessant increase of population pressure on cities and towns has made the environment more polluted. Proper planning of urban green spaces and landscaping with tolerant trees and other plants is an effective way for improving quality of urban life and environment.

Water, Excess or Shortage is Bad

V.K. Joshi

Former Director, Geological Survey of India, Northern Circle, Lucknow
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It is now well known that we are facing the perils of climate change. Our planet is presently in the midst of a tug of war between La Nina and El Nino. Till last year it was La Nina and what a havoc it created! The gruesome tragedy of Kedarnath is still fresh in mind. But geoscientists tell us that the mankind has been facing the wrath of the nature since times immemorial.

For example, there is a Belan River - a tributary of the Ganga River, lesser known to the common man, but a paradise for the geologists and archaeologists. Our ancestors of Paleolithic and Neolithic cultures lived there, but at two separate places in the same valley. What must be the reason for this shift? Geologists, like forensic scientists have hawk like eyes and a nose powerful enough to decipher the clues of the past floods and droughts.

M.R. Gibling of Dalhousie University, Nova Scotia, Canada, Rajiv Sinha and N.G. Roy of IIT, Kanpur, S.K. Tandon of University of Delhi and M. Jain of Risø National Laboratory, Radiation Research Department, Roskilde, Denmark, gathered the clues from Belan Valley and found that everything was almost frozen till about 18000 years ago, a period known as the Last Glacial Maximum (LGM). The freezing had shrunk all the rivers and howling winds carried lots of dust in their wake. The river valleys are ideal places for these wind borne sediments to be deposited. Once the atmosphere became warmer, the ice began to melt and the rivers, once again started their usual task of carrying sediments and depositing them in their flood plains during the monsoon. Thus, Belan valley has an

interaction of the river borne and wind borne sediments both, say Gibling et al.

Our ancestors knew the pulse of the rivers better and avoided the flood prone areas on the banks of the rivers. That could be one reason that the first rice growing habitation developed, away from the wrath of the floods, on the southern fringe of Ganga plains under the shadow of scarps of Vindhya mountain ranges in the Belan valley. Gibling et al. state that in this area, 20 m thick alluvium was deposited by a river which was meandering through the area. This alluvium is the storehouse of the Middle Paleolithic artifacts and has been dated between 85711 to 7278 kyr BP. It naturally implies that during these 78,000 years there was a sustained river activity in the area.

Around the Middle Stone Age, the community faced the constraint of sudden change in the course of the river. As the river abandoned its course and shifted to a newer reinvigorated course later, the farming and animal herding Neolithic community developed along the new course.

In short, the change in climatic conditions led to the change of the river course and forced the more advanced Neolithic community to shift to an area where the newly developed agrarian community could thrive.

This has been happening with the mankind since long. Last year, thousands of people of Uttarakhand became climate refugees in their own land and are still living in the refugee camps, waiting to resettle. Like excess of water, the shortage is equally dreadful. Floods are fearsome killers, but the droughts are worst. Past droughts are often

deciphered with the help of Phytoliths (Greek: Plant Stone). A German botanist, Struve reported them first time in 1835. Since then lots of research has been carried out on Phytoliths and they have been well classified.

Anju Saxena and Vandana Prasad, Scientists of Birbal Sahni Institute of Paleobotany, Lucknow with Prof. I.B. Singh of Centre of Advanced Studies in Geology, Lucknow University studied the phytoliths from the Lahuradewa Lake sediments (in Sant Kabirnagar district, U.P.) to reconstruct the past climate. On the basis of Phytoliths, Anju et al. found that between 10300 calibrated years before present (Cal. B.P.) and 9200 Cal. B.P. for nearly 1100 years Lahuradewa experienced a dry phase. Such droughts in the present times can be disastrous.

As said in the beginning, till last year, our planet was under the spell of El Nino, that brought excess rains in the Himalayas, leading to landslides and brought misery for the thousands. In Kedarnath area alone 122 landslides were recorded by David Petley, a Professor of Hazard Management in the Durham University, U.K. This year, the Australian climate experts have already reported that the La Nina effect has already started and the Indian Meteorological Experts expect less than average rainfall this year. Less rainfall can lead to drought. It is bad both for animal and plant life.

The floods and droughts affect the developed countries as well, but they are better prepared to deal with them. In a developing country like India, a lot needs to be done to tackle the onslaught of climate change.

Cyathea – A Tree Fern and Endemic Genus

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Pteridophytes are first vascular land plants on the earth and commonly known as botanical snakes which distributed in different geographical regions of the globe. They are widely distributed in tropical and temperate zones at higher altitudes. In India, this Pteridophytic flora is distributed in the Himalayas, Eastern Ghats and Western Ghats. In the Eastern Ghats of India, these beautiful Pteridophytic flora distributed Aruku, Paderu and G.Madugula divisions near

Visakhapatnam (AP). *Cyathea gigantea* (Wall.ex Hook) Holttum is a rare and endemic pteridophyte which occurs in Aruku, Paderu and G.Madugula regions in the Eastern Ghats of India. The genus *Cyathea* is only tree fern in the Pteridophytic flora and entered in the Red data book. During our field trips to this location we have noticed that these *Cyathea* plants occurs along the running streams and banks of the streams where continuous water sources is available. These beautiful

plants are destructed by the local people for extraction of tannins and alcohol. In our field studies we have encountered with tribal people and heads of the local communities simultaneously we have conducted several awareness camps and interaction programmes in local regions to inculcate the conservation and management strategies for proper maintenance of these interesting plants especially tree fern *Cyathea*.

NEWS & VIEWS

Nickel hyper accumulator plant

A recently discovered, plant *Rinorea niccolifera* devours nickel from the soil, according to a report from Luzon Island in the Philippines. This metal-munching plant could clean up pollution and even mine minerals from the soil. The plant accumulates nickel in its leaves at levels from 7,000 to 18,400 parts per million. This 8 meter tall plant grows in nickel-rich soil that cover less than 500 square kilometers of Luzon island nickel and other miner also attract people who strip-mine the area. Because of the mining threat to the plants tiny, fragmented range, it is regarded as an endangered species. The nickel-absorbing shrub is considered as a hyper accumulator; These plants absorb higher amount of heavy metals from the soil than most other plants: Long term or higher-level exposure to heavy metals such as nickel, cadmium and zinc, can cause health problems in people. Crops can absorb the metals from contaminated soils and store the toxins in edible portions. Hyperaccumulator plants could be an inexpensive way to vacuum heavy metals from potential farmland, in a process known as phytoremediation. After harvest, chemists could extract the metals from

leaves and shoots.

Source: Tim Wall, May 13, 2014

New Man-Made Gases that damages Ozone Layer

Scientists have detected four new man-made gases that damage the Earth's protective ozone layer, despite bans on almost all production of similar gases under a 1987 treaty, a study showed recently. The experts were trying to pinpoint industrial sources of tiny traces of the new gases, perhaps used in making pesticides or refrigerants, that were found in Greenland's ice and in air samples in Tasmania, Australia. The ozone layer shields the planet from damaging ultra-violet rays, which can cause skin cancer and eye cataracts, and has been recovering after a phase-out of damaging chemicals under the U.N.'s 1987 Montreal Protocol. In total, the scientists estimated more than 74,000 tonnes of the four had been released to the atmosphere. That is only a small fraction of the million tonnes of CFCs produced every year at a 1980s peak. A hole in the ozone layer was found in the 1980s over Antarctica but bans on damaging chemicals, for instance used in hairsprays, foams and refrigerants, means it is on target to recover in the next 50 years. HCFCs have often been

used to replace more damaging CFCs. The gases were detected earlier in Greenland and then in Tasmania, indicating they were produced in the northern hemisphere and then blown south. Research planes, taking air samples around the world, may be able to find the sources. While these newly discovered gases can, in theory, cause some damage to the ozone layer, their combined abundance is over 500 times smaller than that of the main ozone-destroying compounds in the 1990s. These new observations do not present concern at the moment, although the fact that these gases are in the atmosphere and some are increasing needs investigation.

Source: By Alister Doyle, Environment Correspondent

The Burning Earth

Australian ABC television recently showed a documentary called Earth on Fire, which should be an eye opener for all of us. The documentary drew attention to the sudden decimation of prime forest ecosystems by huge tree-killing fires. The footage from regions recently devastated show that what is happening to this planet cannot be reversed in our lifetime.

Fire is everywhere and it is only part of the devastation facing the earth. They are now called mega-fires and they are raging through forests and literally destroying them while desertification follows in their wake. The land in their wake is all but uninhabitable. Not only are they wiping out animals, birds, insects and other life but they are bringing the survivors to places of extreme stress and hardship.

No country is free of the great conflagrations of nature. Add to that the deliberate lighting of fires by mentally sick individuals who just want to see things burn. Australia has faced the worst of it in recent years with super-cyclones, extreme floods, mega-fires and almost intolerable heat,

Animals and plants affected now will not regrow for some 20 years or so. Many forests are losing even the seeds from which new plants can germinate. The birds which carried seeds into the regions to start them off in the first place are now not there. They too have, in many cases, become extinct.

Source: <http://EzineArticles.com>

Researchers put the crunch back into frozen vegetables

Researchers in Sweden have developed a method of freezing fresh vegetables that preserves their firmness and taste after defrosting. The team at Lund University says their method could allow farmers to freeze their produce for sale all year round, while producing crisp and tasty pre-frozen salads every time.

Old medicines and x-rays are able to be recycled

We have medicines at home or work but have no idea what they're for? Perhaps they're out-of-date or simply unwanted? With more than 500 tonnes of medicine finding its way into waterways and landfill each year, its correct disposal is both a human health and environmental issue. Evidence over many years confirms that medicines 'stored' in the home is just plain dangerous and is a key

source of poisonings of children, and a cause of confusion for the aged. Unwanted medicines are often flushed down the toilet, washed down the sink or put out with the garbage, which starts an unhealthy journey through the environment. Sewerage plants can't treat all the chemicals in waste-water. As a result, medicines can travel through the system and out into waterways where they can harm aquatic life. Fortunately there is painless remedy. Unwanted or expired medicines can be taken to any local pharmacy who will dispose of it safely - and for free. The service is run through the Return Unwanted Medicines (RUM) Project, which is funded by the national Department of Health and Aging.

Source: Author: Ryan Collins

The Human Impact on Climate Change

Scientists say that we have 10 years to change the way we live. If we fail to do so, we will alter the environment beyond repair and send it spiralling out of control. The world's ice caps and glaciers are melting, rapidly. Greenland's glaciers contain 20% of the world's freshwater supply, and the rate that it is melting means that by 2050, we could see the ocean increase by 7 meters. That means that many of the world's largest cities could be uninhabitable. Tokyo, and Dubai would be the hardest hit cities. If we look around we find that there is widespread droughts, and wildfires. Oceanic currents, along with wind streams are being altered. Storms are becoming stronger, more violent. Thousands of species are facing extinction. Humans have been on this planet for only 200,000 years and yet we have dramatically affected this planet. Since 1950 the world's population has nearly tripled, and with an increase in population of such a scale, the world's countries have had to increase drilling for oil, and an extreme increase of mining. By the end of the century, we will have exhausted earth's natural resources. It's a shame that so much money goes towards military

expenditures. The world's leaders focus too much on gaining power, and building up their military's when they should be devoting much of their time, effort, and money to researching renewable energies and ways to fix the numerous environmental issues that plague our planet. We live in the 21st century, yet we fail to realize the impact that our way of life alters the planet. The Sun provides the earth with enough energy in 1 hour to supply the world with electricity and energy for one whole year. The wind, and wind farms can generate huge amounts of energy as well. The scientists have developed, tested, and passed solar panels that can be placed on roads, yet the government passes it off stating that it would be quite expensive to install. It is unfortunate that world's leaders are not doing more to protect our planet.

Source: <http://EzineArticles.com>

Chinese man seeks divorce after smog drives family apart

A Beijing man is seeking to divorce his wife after she took their son to a tropical island province to escape the capital's notorious smog, saying the long-distance relationship had destroyed their marriage. The man, identified only by his family name of Wang, married his wife in 2008 and had a son two years later, the Beijing Times reported, in a story widely picked up by other Chinese media outlets online, including Xinhua news agency.

Their son developed serious health problems because of Beijing's air pollution and his wife took the son to the southern resort island of Hainan to escape the haze. Years of unfettered economic growth have taken their toll on China's environment and pollution is a major source of public dissatisfaction and unrest, especially smog in major cities. The government has said tackling pollution is a top priority, but has made little impact on the smog that blights the lives of millions.

Source: Ben Blanchard; Editing by Ron Popeski

Can coral save our oceans? Soft coral tissue may help protect reefs against the hazardous effects of climate change

Coral reefs are home to a rich and diverse ecosystem, providing a habitat for a wide range of marine animals. But the increasing acidification of ocean water is jeopardizing the calcified foundations of these reefs, endangering the survival of thousands upon thousands of resident species.

New research has uncovered the protective properties of soft coral tissue, which proved resilient when exposed to declining oceanic pH levels. The study provides insight into the changing face of coral reefs threatened by dropping

oceanic pH levels as a result of climate change and may provide a new approach toward preserving the harder, calcified reef foundations.

Acidification is caused by increased carbon dioxide emissions in the atmosphere due to global change, fossil fuel burning, and other pollution. These emissions dissolve in the ocean, resulting in a slight lowering of oceanic pH levels. This produces changes to ocean water's carbon content, destroying the calcification of reef-building stony coral. "The rise in temperature and ocean acidification are the main concerns of environmental change.

The value of reefs, the massive calcium carbonate constructions that act as wave breakers, and protect against floods, erosion, hurricanes, and typhoons. While alive, they provide habitats for thousands of living organisms, from sea urchins to clams, algae to fish.

The future of soft-coral reefs is still unclear. Soft corals are not primary reef builders, because their skeletons are slow to calcify. Stony corals provide the massive skeletons that create reefs. Soft corals are replacing these reef builders, because they are somehow able to survive and live under extreme environmental conditions.

Source: Science Daily

BOOK REVIEW

Fundamentals of Garden Designing, By Dr. R.K. Roy 2013

New India Publishing Agency, New Delhi, India

ISBN: 978-93-81450-30-7 (Hard Cover) INR 3600

www.nipabooks.com

This book contains technical information on various aspects of garden designing viz. principles, styles, features, types of gardens, special gardens, plants, maintenance calendar besides source of plant materials and firms who undertake jobs of garden development. All together, it contains 35 chapters on different aspects of garden designing. Thus, provides a comprehensive account on all relevant aspects in a concise and simple way. Sample designs/ drawings

and coloured photographs (900 nos.) have provided for better illustrations which make the book more useful. Each different features of the garden has been dealt separately with illustrations and photographs.

This book will fulfill dearth of technical and practical information on the subject under Indian conditions. Moreover, this will serve as a useful reference book for the students of Floriculture and Landscaping. Nevertheless, academicians, horticulturists, amateurs, home gardeners, professionals and plant lovers as whole will also be benefitted.

Reviewed by **Dr. S.S. Sindhu**, Secretary, Bougainvillea Society of India & Principal Scientist, CPCT, IARI, New Delhi.

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Managing Editor: Martin Lewis (<http://www.meetpie.com>)

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General Editor: Prof. Dr. Radu Sestras. (<http://notulaebotanicae.ro>)

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Editor: Kajsa Lindqvist. (<http://www.airclim.org/acidnews/index.php>)



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26-30 July, 2014; The Boise Centre–Boise, Idaho,
U.S.A
Contact: johanne@botany.org
Website: www.2014.botanyconference.org

4th Annual International Conference on Renewable Energy, Climate Change and Environmental management

13-18 August, 2014; Derbyshire, U.K
Contacts: Dr. Edgord Marks
Conference Secretary
Renewable Energy Experts
10 Birches Road, Allestree, Derby
Derbyshire, DE22 2HY, U.K
dr.edgarmarks@aol.com

3rd International Workshop on Minerals Processing and Beneficiation

11-14 September, 2014; Harare, Zimbabwe
Email: rungano.pu@gmail.com

National Seminar on Biodeterioration of Cultural Property & Conservation of Heritage Buildings

21-22 September, 2014; Vadodara, India
Contact: Prof. Arun Arya
Organizing Secretary,
Department of Botany, Faculty of Science
M.S. University of Baroda, Vadodara-390002, India.

Botanists of the Twenty-first Century: Roles, Challenges and Opportunities

22-25 September, 2014; Paris, France
Room IV, UNESCO Headquarters, Paris, France
Website: www.unesco.org/new/en/natural-sciences/environment/ecological-sciences/man-and-biosphere-programme/events-2014/botanists-of-the-21-century/

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International Conference on Antimicrobial Research

1-3 October, 2014; Madrid, Spain
Contact: Aurora Solano
ICAR 2014 Conference
Formatex Research Center, Zurbaran 1, 2, Office 1,
Badajoz, Badajoz 06002, ES
E-mail: info@icar-2014.org
Web: www.icar-2014.org

ICETB 2014

International Conference on Emerging Trends in Biotechnology

6-9 November, 2014; New Delhi, India
Contact: Prof. Indu Shekhar Thakur
Convener, ICETB 2014
School of Environmental Sciences
Jawaharlal Nehru University
New Delhi-110067, India
Email: indushekhart@gmail.com;
icetb2014jnu@gmail.com

First Global Soil Biodiversity Conference Assessing soil biodiversity and its role for ecosystem services

2-5 December, 2014
Palais des Congrès, Dijon, France
E-mail: gsbi1@dijon.inra.fr
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