ENVIRONEWS

INTERNATIONAL SOCIETY OF ENVIRONMENTAL BOTANISTS

Newsletter

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IN THIS ISSUE

SIXTH INTERNATIONAL CONFERENCE ON PLANTS & ENVIRONMENTAL POLLUTION (ICPEP-6)

(Pre-registration open. Detailed information available on our website)

Prof. S.K. Barik, Director, CSIR-NBRI & President ISEB
Dr. K.J. Ahmad, Secretary ISEB

(Jointly organized by International Society of Environmental Botanists (ISEB) & CSIR-National Botanical Research Institute (CSIR-NBRI), Lucknow, INDIA)

27-30 November 2018,
Venue: CSIR-National Botanical Research Institute,
Lucknow-226001, INDIA

Organizing Secretaries

Dr. R.D Tripathi
(Emeritus Scientist CSIR)
Additional Secretary, ISEB

Dr. Nandita Singh
(Consultant Scientist CSIR-NBRI)
Joint Secretary, ISEB

Dr. Vivek Pandey
(Senior Principal Scientist CSIR-NBRI)
Joint Secretary, ISEB

Website of the Conference: http://isebindia.com
Mailing address: Organizing Secretaries, ICPEP-6,
CSIR-National Botanical Research Institute,
Rana Pratap Marg, Lucknow-226001, India
Phone: +91-522-2297821/2297825/2297929/2297931;
Fax: 91-522-2205836/2205839
E-mail ID/online submission: icpep6@gmail.com

LETTERS

The UIA cordially invites you to send two representatives to its 5th Associations Round Table Asia-Pacific on Thursday 21 and Friday 22 September 2017 in Chiang Mai, Le Méridien Hotel, Thailand. The UIA Round Table is an opportunity to learn through networking and through practice, to meet other international associations and share experience and knowledge to help you run your organization better.

The registration fee for association representatives is 2000 Thai Baht. Delegates are responsible for their own travel and accommodation arrangements and expenses. For full details, please see the Round Table website (roundtable.uia.org).

To register, please go to the Round Table website (roundtable.uia.org) and log in: your username is D5971 and your password is VECDZWQF. You can use this to register up to two delegates; each of your delegates will need to log in and register separately. Should you wish to send more than two delegates, please contact us.

At roundtable.uia.org you will also find information about our Round Table Europe on 10 November 2017 in Brussels, at which you are equally welcome.

For over 100 years the UIA has been working to promote and document the work of international associations. We look forward to welcoming you at our Round Tables this year.

When you log in to register for a Round Table, you may also want to take the opportunity to check your association's profile in the *Yearbook of International Organizations*.

You may also be interested in attending Incentive Travel & Conventions, Meetings Asia (IT&CMA) from 26 to 28 September. IT&CMA will pay travel (to and from Bangkok) and accommodation (in Bangkok) for associations qualifying for "hosted buyer" status, and will take the Round Table dates into account when making the travel arrangements. For conditions and applications for "hosted buyer" status, please go to http://www.itcma.com/

Nancy Carfrae Coordinator,
UIA Associations Round Table
Haeundae, Busan, Korea
E-mail: nancy@uia.be

The IUBS Executive Committee meets in Paris on 6 and 7 July 2017. If you would like them to discuss a specific topic, please come back to me. The agenda will be sent to you in due course. On the other hand, IUBS is currently involved in 2 projects sponsored by ICSU (see short summaries below):

"TROP ICSU: Trans-disciplinary Research Oriented Pedagogy for Improving Climate Studies and Understanding" with IUBS as lead applicant. "A global approach to the gender gap in mathematical and natural sciences: how to measure it, how to reduce it?" with IMU as lead applicant. Please contact me if you already work on these topics and/or if you would like to be associated with these projects. In this case explain how you would like to contribute.

TROP ICSU project

Understanding the dynamics of Earth's ecosystem and identifying measures to sustain it for the future requires immediate action with multidisciplinary approaches. Research efforts to identify key factors that affect the biodiversity and ecosystem functions and services need to be scaled up substantially and rapidly, requiring a whole new generation of multidisciplinary scientists/policy makers/administrators, whose education should start now. Educating forthcoming generations about the causes and effects of global climate change is also imperative as implementing solutions depends on an informed public. In this context, we need to develop education and science communication modules in such a way that every future citizen would be better equipped to identify appropriate solutions for sustainable and equitable development. In this context, here this project aims to identify, through a consultative mechanism, most relevant curricula and efficient pedagogical tools, and outreach and citizen science programs to study the impact of climate change on biodiversity and ecosystem function and services and human health and diseases; and ways to address these problems in the coming years. Uniqueness of this proposal is our focus on those education and citizen-science modules that are locally rooted yet globally relevant for much wider outreach. The project envisages developing online learning materials such as lectures (videos embedded with animations), interactive exhibitions/museums, mobile apps etc.

Gender Gap project

Mathematical and natural sciences have long and honorable traditions of participation by highly creative women contributors. However, the percentages of women scientists remain shockingly low and there is a significant gender gap at all levels between women and men. Barriers to achievement by women persist, especially in developing countries. The project will produce sound data to support the choices of interventions that ICSU and member unions can feasibly undertake. It will provide evidence for informed decisions, including trends – since the situation for women continues to change around the world, with some negative developments – and will provide easy access to materials proven to be useful in encouraging girls and young women to study and work in these fields. Regional information about careers, jobs and salaries will be provided.

The Joint global survey is planned to reach 45,000 respondents in more than 130 countries using at least 10 languages, while the Joint study on

publication patterns will analyze comprehensive metadata sources corresponding to publications of more than 500,000 scientists since 1970. Contrasts and common ground across regions and cultures, less developed and highly developed countries, men and women, mathematical and natural sciences, will be highlighted.

***Nathalie Fomproix, Ph.D**
IUBS Executive Director
Bât 442, Université Paris Sud 11
91405 Orsay cedex, **France**
Website: www.iubs.org
E-mail: nfomproix@iubs.org

Note:** ***International Society of Environmental Botanists Lucknow has been recognized by IUBS, Paris as one of its Scientific members.

Greetings to you and the EnviroNews team. Recently, on 13th May 2017 I visited Eklavya Adarsh Awasiya Vidyalaya, Kalsi, about 50 kms from Dehradun on the occasion of their 7th Annual Day as Chief Guest. This is the only School (Class VI to XII) in the entire state of Uttarakhand that is under the Ministry of Tribal Affairs, Govt. of India. It was established only a few years ago, and I was impressed by the way the students from remote tribal belts were receiving a wholesome education with emphasis on overall development. One extraordinary thing I witnessed there that they have started the concept of Birth Day Garden. On his/her birthday the student plants a sapling and nurtures it for the remaining years that he/she is at this residential school. The garden was in an absolutely lovely condition with over 400 trees/ shrubs with many in fruiting condition (nurturing the nature for future).

Would you please consider giving some space in the EnviroNews for a brief write up by me and some pictures of the garden? If yes, then I will forward the same.

Dr. Lok Man S. Palni, FNASc, FNAAS, FNA, FISPM
Vice Chancellor, Graphic Era University,
566/6 Bell Road, Clement Town,
Dehradun 248 002, Uttarakhand. **India**
(Formerly Director: G.B. Pant National Institute of Himalayan Environment & Sustainable Development
Kosi-Katarmal, Almora)
E-mail: lmspalni@rediffmail.com

The recent massive landslides and flash floods in eastern Bangladesh resulting in unfortunate loss of precious human lives; and both private and government assets as well as local infrastructure should aware everyone regarding the danger of landslides across South Asia. The massive investments made in various South Asian countries by so-called real estate agencies and the push for infrastructural developments without keeping in mind the environmental sensitivity and the ecological vulnerability of the region has been the root cause of such anthropogenic disasters impacting human life devastatingly. The relentless illegal mining of sands in the river beds by illegal land mafias, encroachments into abandoned mines without any precautionary measures to secure them after mining extraction, rapid loss of vegetation and natural landscapes due to heavy socio-economic pressures from the real estate giants, corrupt political and failing administrative systems are responsible for massive landslides impacting natural ecosystems. The afforestation and social forestry programs across South Asia emphasizing heavily on planting indigenous trees and shrubs have been slowing down for decades and is showing the negative impacts on the local ecosystem. Under heavy anthropogenic pressures in vulnerable ecosystems and in absence of root binding effects of local trees; top soil are being eroded by wind and water and getting loose over time; and with heavy rain and floods, massive landslides have been adding tragedies to the life of helpless, poor rural communities in hilly and riverine areas. Active projects of planting local/indigenous soil binding tree species, bamboo forests and related plants should be encouraged and funded to hold the loose soil in hill slopes and illegal mining activities need to be strictly monitored to prevent massive landslides in future. Unless strict measures are adopted with sincere Environmental Impact Assessments made under proper supervision before any large real estate or infrastructural projects could be sanctioned; dark and gloomy days with more deaths and destruction are expected in the not so distant future.

Saikat Kumar Basu
UFL, Lethbridge AB **Canada**
E-mail: saikat.basu@alumni.uleth.ca

WELCOME NEW LIFE MEMBERS

Mr. Sheikh Adil Edrisi, Research Scholar, Institute of Environment & Sustainable Development, Banaras Hindu University, Varanasi.

sheikhadiledrisi@gmail.com

Dr. Pratibha Tripathi, National Post Doctoral Fellow (SERB-NPDF), CSIR-Central Institute of Medical & Aromatic Plants, Lucknow.

pratibhaa25686@gmail.com

Mr. Sudarshan P, Research Scholar, Central For Ecological Sciences, Indian Institute of Science, Mysore University, Bangalore.

bhat.sudarsharp@gmail.com

World Environment Day Celebrated at CSIR-NBRI

CSIR-NBRI, Lucknow celebrated World Environment Day on June 05, 2017 in collaboration with International Society of Environmental Botanists (ISEB), U.P. Council of Science & Technology (UP CST) and Economic Botany Information Service (ENVIS), NBRI Centre. On this occasion, Dr. Dinesh Sharma, Hon'ble Deputy Chief Minister, U.P. was the Chief Guest and Dr. P.K. Seth, Ex-Director, CSIR-IITR and Ex-CEO, Biotech Park; Lucknow was the Guest of Honour.

In his inaugural address, Prof. S.K. Barik, Director NBRI welcomed the Chief Guest, other dignitaries and a large number of students from local schools and colleges, and highlighted the history and importance of World Environment Day. Prof. S.K. Barik informed that CSIR-NBRI was continuously working for the safety of our environment. He also highlighted some of the multi-targeted programmes of CSIR-NBRI running for clean and green environment. Prof. Barik also discussed the developmental strategies of green belts along the rivers. He also informed about the recently developed low arsenic rice variety by NBRI scientists and suggested for its large scale uses in Uttar Pradesh. He also sought help and support from State Government for floriculture industry set up and herbal medical research.

Dr. Pankaj Kumar Srivastava, Senior Scientist informed about ENVIS-NBRI Centre supported by the Ministry of Environment & Forests, Govt. of India along with environmental conservation and awareness programmes being conducted by the ENVIS-NBRI, including newly developed android mobile application app Green Planner for citizens available at Google Play Store. He also made a reference of ISEB and its contributions since its founding in 1994. During the programme, an ENVIS-NBRI Newsletter "Indoor Air Pollution" and EnviroNews, a quarterly publication were released by the chief guest.

Dr. P.K. Seth in his presidential address appreciated that CSIR-NBRI was working for the safety of environment for the past six decades. He emphasized that India was the only country where the environment was linked to religion. Plants and rivers were worshiped in India for ages. He underscored the importance of organizing awareness programmes for clean and green environment; besides need for plantation of drought resistant and medicinal plants for the protection of environment.

Chief Guest of the function, Hon'ble Deputy Chief Minister, Dr. Dinesh Sharma in his address, emphasized on better harmony between environmental conservation and human life-style. Dr. Sharma said that our ancestors were very much aware about the importance of nature conservation and, therefore, they linked different plants and animals to various religious rituals. He called upon the audience to conserve nature and environment as a day-to-day need, not only just to celebrate as a special day. Dr. Sharma reminded about linking of each tree to each planet covering major nine planets of the universe. Dr. Sharma informed about a tree bank of 35000 trees that he initiated during his tenure as Mayor of Lucknow earlier. These trees were planted as a mission in the city with the help of students of schools, colleges, universities and Lucknow Municipal Corporation. Dr. Sharma appreciated the proactive role of institutions like NBRI in the State Government's efforts for development vis-à-vis environmental conservation through green technologies in collaboration with different state departments.

Students from major educational institutions (Saarthak Foundation, Ahsaas Organization, Integral University, Amity University, RLB, CMS schools) participated in the open-day programme at NBRI as a part of World Environment Day Programme.

The Chief Guest Dr. Dinesh Sharma planted a sapling of "Rudraksh" tree at NBRI lawn. Guest of Honour Dr. PK Seth also planted a sapling of 'Chandan' tree. Members of International Society of Environmental Botanists, CMS-Founder Dr. Jagdish Gandhi, Prof. RS Tripathi were present during the programme. In the end, Dr. R.D. Tripathi, Additional Secretary of ISEB proposed vote of thanks.

World Environment Day Program by CGES

On the occasion of the World Environment Day, 'Nirala Nagar Jan Vikas Samiti', Lucknow, in collaboration with Clean and Green Environmental Society (CGES) organized a Tree Plantation Programme at Shastri Park, Nirala Nagar, Lucknow. Residents of the locality and officials of CGES planted 21 indigenous trees in the park. On this occasion Prof. P.K. Seth, Vice-President, CGES; Dr. S.C. Sharma, Secretary General of CGES and Prof. S.K. Barik, Director CSIR-NBRI delivered talks on the Importance of Trees for Saving the Environment.

Dr. Virendra Nath former Chief Scientist & Emeritus Scientist CSIR-NBRI and a Life Member of International Society of Environmental Botanists (ISEB) has been elected as President of International Council for Biodeterioration of Cultural Property, Lucknow.

Dr Rana Pratap Singh, Professor, Department of Environmental Sciences and former Dean, Academic Affairs, Babasaheb Bhimrao Ambedkar University (A Central University) Lucknow has been awarded "Panjab Singh Vishishtha Krishi Vaigyanik Puraskar " instituted by Uttar Pradesh Academy of Agricultural Sciences. The award was given by Hon'ble Governor of UP Shri Ram Naik for Prof Singh's research and technological contributions on Sustainable Agriculture. Apart from his many outstanding achievements Prof Singh is a life member of International Society of Environmental Botanists (ISEB) and also a member of its Executive Body.

Environmental challenge and opportunity*

Prof. C.K. Varshney
Emeritus Scientist, Jawaharlal Nehru University, New Delhi, **India**
ckvarshney@hotmail.com

Human civilization has, made an impressive progress to achieve economic wellbeing and all-round development that has certainly made life a lot more comfortable. However, this progress has come at enormous cost to the environment that often negates the advantages of economic growth. The term environment refers to everything that is around us, land, water, atmosphere, plants and animal life. In fact, environment is the main supplier of vital resources that we need to survive. It is no wonder that the other planets have no life simply because their environments cannot sustain life. It is a truth that ecosystems and its peoples are bound together in a tenuous symbiosis. The industrial society is increasingly destroying this relationship giving rise to many complex environmental problems of far reaching consequences. In addition, the unintended and unanticipated environmental and social damage caused by the prevalent paradigm of economic development has resulted in complex environmental problems that seriously undermine food security, water security and biodiversity. The main problems threatening life support system of our planet are elaborated in the following paragraphs.

The biggest issue facing the environment is over population of humans. The global population has more than tripled in the last 60 years placing stress on every aspect of the environment. Ever increasing area of land is being taken up by urbanization and human settlements to accommodate the fast growing population.

Rising levels of carbon dioxide and other gases, such as methane, in the atmosphere create a 'greenhouse effect', trapping the Sun's energy and causing the earth and oceans to warm. The higher the amounts of greenhouse gases in the atmosphere, the warmer the earth becomes.

There is clear evidence to show that climate change is happening. Since the industrial revolution, atmospheric concentrations of greenhouse gases (GHGs) are now at their highest level for hundreds of thousands of years. There is an overwhelming scientific consensus that climate change is primarily due to the use of fossil fuels, which releases carbon dioxide and other greenhouse gases into the atmosphere. The CO_2 concentration in the atmosphere is now, and the average temperature at the earth's surface is now about 1°C higher over the last century. Ambient temperature data show that 13 of the 14 warmest years on record have occurred in the 21st century, and in the last 30 years each decade has been hotter than the previous one. Rising ambient temperature affect crop yields globally, with all other factors being equal. Some studies have estimated that the crop yields may drop by about 10 percent by 2050. Apple cultivation in Himachal Pradesh has suffered adversely from rising temperature, affecting livelihood of lakhs of farmers. For apple trees winter temperature and precipitation in the form of snow are critically important to ensure normal flowering and fruiting in apples. Apple trees requires over 1200 hr. of chilling for satisfactory flowering and fruiting. Relatively warmer December and January fails to provide the critical chilling requirements. Data of last thirty years show that apple crop is getting adversely affected in all apple growing regions (Shimla, Kullu, Lahaul and Spiti) as a result of relatively faster warming of the Himalayan region than most places in the world.

This year in early May, blistering summer heat melted the asphalt roads in Valsad, Gujarat, resulting into a life threatening situation for pedestrians, who found it difficult to walk as their shoes got awkwardly stuck in the melted asphalt and had to struggle to free their shoes.

Currently, one third of humans have inadequate access to clean, fresh water. The number is expected to increase up to two thirds by 2050. Some experts believe that in the near future water will become a commodity just like Gold and Oil. Some experts say that wars will be fought over who owns the water supply.

In India, water availability is becoming increasingly crucial because per capita availability of water in the country has sharply declined as a result of population growth. Most of our rivers are in varying degrees of decline and distress. Over seventy percent water bodies in the country have been polluted or drained. Large volumes of untreated effluents are drained into rives, and water bodies. Most of the Indian rivers are thoughtlessly used for disposing raw sewage and untreated effluents. It is obvious that water of most of our rivers is unfit for drinking, and in many stretches not even fit for bathing. Despite various efforts, pollution of Ganga and other rivers continue to remain a major challenge.

Sea level is rising: The latest measurements show that the average sea level is currently 50 mm higher than in 1993. According to a United Nation's forecast, sea levels are likely to rise well over 50 cm by 2100, posing serious threat to coastal communities. Half of the 10 largest cities in the world, including Mumbai, Kolkata, New York City, French Riviera and one-third of the world's 30 largest cities are already threatened by sea level rise.

The Maldives, a chain of 1,200 islands and coral atolls, about 500 miles from the tip of India, is one of the lowest countries on the planet, with an average land level of 1.5 m above sea level, may disappear, if the present pace of global warming continues unabated.

**Reproduced from Employment News, New Delhi*

The chemistry of the oceans is also changing as they absorb much of the excess carbon dioxide being emitted into the atmosphere. This is causing the oceans to become acidic more rapidly than at any point in the last 65 million years. Increasing acidity is highly damaging to marine food-chains and ocean productivity.

Climate change promotes melting of polar ice-caps, which in turn contributes to rise in sea level. As the Arctic warms, sea ice is rapidly decreasing. Over the past 20 years the ice sheets in Greenland and the Antarctic have shrunk, as have most glaciers around the world.

India has 5243 glaciers covering an area of 37579 km^2 and containing 142.88 km^2 of ice. The Gangotri glacier, the source of the Ganga is receding at a rapid pace. Some of the most devastating effects of glacial meltdown occur when glacial lakes overflow and burst and give rise to disastrous floods downstream. The 2013 Uttarakhand disaster resulted from heavy cloudburst coupled with collapsing of an upstream glacial lake. Episodes of extreme rainfall events and cloudburst cases have increased and they are likely to be more frequent in the coming years.

Floods have become more frequent and affect the maximum number of people in the world. Many of the fastest developing cities in coastal areas, means that more people, infrastructure, and buildings are vulnerable to the flooding caused by storm surges or cyclones, and sea level rise. Even if not on the coast, cities have sprawled onto floodplains and wetlands. There is simply more stuff, more people, more industries, more infrastructures and more investment in coastal areas than few decades ago. Globally exposure and vulnerability of coastal communities have increased manifold.

Changing rainfall patterns will affect water supplies. Too much rainfall in some areas, and not enough in others, will contribute to both flood and drought conditions. We are already seeing increasing numbers of heavy rainfall events, and expect this increase to continue, with greater risk of river and flash flooding.

Growing populations and rapidly expanding urbanization and infrastructure are making the societies more vulnerable to extreme weather events. More extreme weather events are being seen around the world. Heat waves have become more frequent and are lasting longer. Warming is expected to cause more intense, heavy rainfall events. Recent devastating floods in Chennai were to a large extent due to the building of the cyber city in a low lying area without worrying about the local ecological and hydrological features. Accordingly, a heavy spell of rain flooded the area causing enormous hardships to residents and office goers, apart from substantial economic loss to individuals, institutions, entrepreneurs and public exchequer. In future extreme events are expected to become more common, more intense and more frequent and this needs to take into account in future development.

According to the UN projection, the global population is expected grow from 7 billion in 2012 to 9.3 billion by 2050. In spite of growing economic prosperity and technological progress approximately 870 million people remain undernourished even today. The question of food security, hunger, malnutrition, poverty and parity are high on the global agenda.

India with a population of 1.2 billion is the second largest populous country of the world and likely to touch 1.6 billion by 2030, surpassing China. Despite economic growth and self-sufficiency in food grain production, high level of food insecurity and malnutrition persists in the country.

Forests are natural sinks of carbon dioxide and produce fresh oxygen, help in regulating temperature and rainfall, but getting destroyed without realizing that there is no substitute for the services they provide. Trees are now dying globally at a rate never seen before. Since 1990 half of the world's rain forests have been destroyed.

Currently, many plants and animals are in danger of becoming extinct, either from being forced out of their habitats by anthropogenic actions or by climate change. When a species become extinct, it has a knock on effect in the food chain upsetting the structure and function of ecosystem, which have developed through a long process of evolution. The biological, chemical, and physical interactions between the components of an ecosystem (e.g., soil, water, plants, animals and microorganisms) produce a variety of services in the form of oxygen needed for breathing and fuel combustion, clean water, carbon sequestration, soil fertility and control of soil erosion among others. Another critically important ecosystem service for humans is pollination. It is the transfer of pollen from the producing anthers to the receptive stigma which is an essential step for sexual reproduction leading to fruit and seed formation in flowering plants. Success of pollen transfer to stigma is directly related to yield for all crops in which the pollination is a prerequisite for sexual reproduction. Rapid and large changes in global temperatures, 4°C or more, above the pre-industrial temperature, could cause mass extinction of species and collapse of ecosystem services and jeopardize human survival.

The desperate scenario presented by the environment challenges can be reversed and turned into opportunity, provided urgent and concerted actions are taken simultaneously on multiple fronts. Environmental conservation and effective use of ecosystem services must receive highest priority and should be the under lying theme of all development activity. We have to make an all-out effort to decarbonize the economy, increase resource use efficiency, protect biodiversity and ecosystem services for the benefit of present and future generations. Paris climate agreement, and global agreement on sustainable development goals SGDs, are very encouraging developments. We must support these initiatives and resolve to protect Mother Earth – Our only home - from environmental abuse and commit to work for improving quality of life and human well-being.

Multiple benefits of herbal bath with Lemon

***Mahendraa Modi, IPS**
D.G. Training, Luckonw, U.P., **India**
mmodiips1986up@gmail.com

This article has been written in two parts. Part 1 consists of scientific composition and benefits of drinking lemon juice. The second part has explored a new world of benefits of having lemon bath as the increasing trend of global warming and diminishing rainfall demand this research.

Lemon juice contains Protein, fat and Carbohydrate and is full of calories and fibre. Lemon is also rich in minerals like potassium, sodium, calcium, phosphorus and magnesium. Lemon fulfills the mineral components normally deficient in RO water or rain water. Vitamins found in lemons are Vitamin A, Beta Carotene, Vitamins E, D and C.

Benefits of Lemon water: Lemon adds vitality and has incredible cleansing effects on the body and has the power to heal us. Hence, incorporate lemon water into our daily life. Experience after 14 days of having lemon juice and taking juice and lemon peel oil water bath.

Botanically, lemon is known as *Citrus limon*. It originated in India in the foot hills of Himalayas and the spread out. Two main types of lemon are Lisbon and Eureka. Lemons are rich in Vitamin C which is essential for normal growth and development. Vitamin C has a myriad of health benefits from protecting against pre natal problems, cardiovascular disease, cancer, eye diseases, skin wrinkles and immune system deficiencies .It is an antioxidant, and hence, helps protect cells from damage caused by free radicals.

Unique health benefits of Lemon:

1. The citrate of lemon water is a natural detoxificant and flushes out the unwanted toxins from the body. According to 2002 edition of 'European Journal of Nutrition', and 'Indian research Journal in 2005 edition of 'BMC Pharmacology hesperidin' lemon peels lower the blood and liver cholesterol and is beneficial to fatty lever disease.
2. Citrus flavonoids improve digestion with warm lemon water. Zest of the lemon improves the good bacteria in the gut.
3. Alkalize with Lemon water alkalinity neutralizes acid in the body. Lemon water helps the ph range to keep between 4.6 to 8.0 and thus neutralizes the negative effects. Achieving healthy alkalinity benefits the bone health, reduces muscle wasting, decreases chances of hypertension and strokes and also improves memory.
4. Weight loss/appetite suppressant-pectin and polyphenols found in lemons reduce excess weight and has also the appetite suppressing quality. The studies of Florida State University confirm it. Keep a record of your mood enhancement after 2 weeks after experiencing the positive benefits one experience from lemon.
5. Reduce wrinkles and improve your skin after having lemon bath. Lemon has anti-ageing properties. Lemon derived antioxidants are able to reverse the breakdown of collagen fibers in the skin. Collagen gives skin its strength structure and plumpness and protects the skin from toxins. Our body is exposed to drugs, radiation, pesticides, pollutants, solvents, alcohol, tobacco, smoke pollution and even foods we eat.
6. Add half or one lemon to one bucket full of water and take bath. The negative effects of environmental hazards will be washed off. The essential lemon oils coming out of the peels of the lemon has antimicrobial activities against bad bacteria, yeast and fungi. The sciatic nerve damage gets reduced through lemon use. Use of lemon oil regulates energy stores.

Advantages of Lemon bath

Discard LIRIL, forget BATH SOAP,
Refresh yourself with Lemon water!
Have eco-friendly, economic bath and conserve water.

1.3 billion family members of the Indian Nation and 7.65 billion world citizens need not spend their valuable money on purchasing bath soaps. Taking bath with lemon water will be suitable for the environment and socio economic condition of India and similarly placed people.

Have a lemon tree.

(1) (a) One lemon tree produces enormous lemons, enough to save the expenditure on bath soaps of at least two families. I have been (b) taking bath and (c) washing my face by lemon water only.

(2) Lemon tree grows in every district rather in every block/village of India and it grows any where easily.

(3) While taking bath with a soap you have to spend more water on washing the residues of the soap from the body. But if you take bath with lemon water you can save 50 to 70 percent of the quantity of water spent on having a soap-bath.

(4) It has been a problem to decompose the grey water (Soap water). One cannot recharge the grey water into the ground. This lemon-water-waste down the bath room can be recharged easily into the ground as this is eco-friendly. The soapy water acts as a film which hinders the speed of water recharging.

(5) After taking bath with a soap you have to spend more time in cleaning your ear off the residue of the soap. You get relieved of this problem when you use lemon water.

(6) There will be no need of acidic material used in decomposing this grey water. The acid acts as a poison to the environment. This grey water produced at present needs STPs (Sewage

**The author, a well known crusader of water harvesting, is Additional Director General of Police, U.P.*

treatment plants) for getting treated. One third of these expensive STPs in India are defunct. And their "treated" water is hardly useful for even taking bath.

(7) As and when there is little bath soap in use, we will be able to save the environment further from plastic and plastic-coated paper wrappers of the soaps. This will again help create an eco-friendly environment.

(8) Any manufacturing process may increase global warming. When soap manufacturing unit gets reduced, it will help mitigate global warming.

(9) Some soap factory owners may lobby against this move. But when 1.3 billion people get benefited, the closure of bath soap factories will need only a switch over to other professions or they can grow lemon trees to sell fresh lemon juices for the people.

(10) The lemon juice bath and oil from the peels of the lemon will remove toxic elements from the body. Lemon juice is a health rejuvenator.

(11) Precaution- Beware of synthetic lemon juice. Use only natural tree lemon.

(12) Additional uses of lemon water (i) Fresh lemon juice has a miraculous ability to kill cancer cells much more than chemotherapy. (ii) Lemon juice contains antimicrobial property, it can combat bacterial and fungal infections and it is also effective against worms and parasites. (iii) It regulates blood pressure and is an anti depressant, combats stress and nervous disorders.

(13) What about washing clothes with lemon water? My research on it is incomplete. But if you have put on your T-shirt, shirt or small clothes for only one day or got sweat wet after playing sports, just wash your clothes with lemon juice water. It is enough.

(14) (i) Lemon water bath will remove the dandruff from one's head. (ii) It helps remove skin diseases.

(15) Just take care to pour two mugs of plain water on your body after having lemon water bath.

(16) Some people take bath with imported soap. By having lemon bath one will save foreign exchange reserves.

(17) Lemon peels will turn into bio-fertilizer if you bury them in a pit. Do not transport them by dirt carrying municipal vehicle to the land fill.

(18) Cleanse your utensils with lemon peels.

(19) Let us plant lemon trees in every park, garden, barren land or agricultural field. This will enhance green belt.

(20) More honey bees will spread out new bee hives, thereby promoting production of honey.

(21) Farmers can earn money by selling their lemons.

Hence, I dedicate the findings of my own research, experience and thoughts to the environment loving people. Again I call- stop bath soap. Start lemon bath.

NEWS AND VIEWS

Banned pesticides continue to affect toxicity in streams

The green revolution in the 1940s produced many effective and apparently safe pesticides, including synthetic insecticides such as DDT. Many of these chemicals were later discovered to have toxic effects, such as carcinogenicity, and subsequently banned from use. Another important issue is persistence; their long lifetimes means some of these so-called 'legacy' pesticides can persist in the environment several decades after their use is prohibited.

Researchers examined the presence of both contemporary and legacy pesticides in 14 streams in Denmark, and used their results to predict the overall toxicity of the streams. They looked at both the influence of surface run-off and groundwater on concentrations in streams by taking samples in the streams shortly after periods of high precipitation, when surface runoff is high, and during a period of low precipitation, when groundwater was expected to be the largest source of inflow to the streams. Twelve of the streams were located in catchments where agriculture represents 80% or more of land use.

Water samples were collected from 2010 to 2012 mostly during May and June, the main periods when pesticides are applied to crops. The total toxicity was assumed to be the sum of the individual toxicities of all pesticides detected, neglecting any enhanced or reduced toxicity which may occur when different pesticides interact. A total of 32 pesticides were detected. Two of the four most commonly detected were dinitro-ortho-cresol and trichloroacetic acid.

The study indicates that, alongside contemporary pesticides, legacy pesticides, and the compounds produced as they break down, remain a hazard to aquatic environments. The researchers recommend that monitoring programmes which estimate the ecotoxicity of streams be adjusted to reflect this. Furthermore, they advise that a greater research emphasis be put on the analysis of groundwater, often presumed to contain low levels of pollution. They also highlight that pesticides bound in particular to suspended sediments were a major source of predicted toxicity and need to be further studied

Source: ***Science for environment policy***

Secrets of tea plant revealed by science

A team of research scientists from Kunming Institute of Botany, China has decoded the genetic building blocks of the tea plant, *Camellia sinensis,* whose leaves are used for all types of tea, including black, green and oolong. The research gives an insight into the chemicals that give tea its flavour. Until now, little has been known about the

genetics of the plant, despite its huge economic and cultural importance.

There are many diverse flavours, but the mystery is what determines or what is the genetic basis of tea flavours? Together with the construction of genetic maps and new sequencing technologies, the scientists are working on an updated tea tree genome that will investigate some of the flavours.

The Camellia grouping, or genus, contains over 100 species, including ornamental garden plants. But only *Camellia sinensis* is grown commercially for making tea. The researchers found that the leaves of the tea plant contain high levels of chemicals that give tea its distinctive flavour. They include flavonoids and caffeine. Other species of the Camellia genus contain these chemicals at much lower levels.

Overall, the findings from this study could have a significant impact on those involved in the breeding of tea but also those involved in breeding many plants used medicinally and in cosmetics, as the compounds that occur in tea are often associated with the biological properties of plants used medicinally or in cosmetics.

Decoding the genome of the tea plant took more than five years. At three billion DNA base pairs in length, the tea plant genome is more than four times the size of the coffee plant genome and much larger than most sequenced plant species.

The genetic knowledge could lead to ways to improve the quality and price of tea, by selective breeding of tea plants. This work gives plant breeders a "powerful new tool". Once we understand the basis for the flavours and the processing quality of the tea, we can then have genetic markers that breeders can look for when trying to produce new varieties. Six main types of tea are produced from *Camellia sinensis* - white, yellow, green, oolong, black and post-fermented. Each has its own aroma, taste and appearance. The distinctive flavours of these teas are created by their different chemical compositions. Knowledge of the genome of tea helped us understand how the plant evolved.

Another important finding is that the biochemical pathways involved in the synthesis of the compounds important in the taste of tea are also present in some of the ancestors of tea and have been conserved for about 6.3 million years. The first plants genome was sequenced more than 15 years ago. Since then more than 50 types of plants have been sequenced, including food crops such as the banana, potato and tomato.

Source: ***Helen Briggs; BBC News***

Was the Amazon once an ocean?

The Amazon rainforest is a treasure trove of biodiversity, containing 10% of the planet's species in its 6.7 million square kilometers. How it got to be that way has been fiercely disputed for decades. Now, a new study suggests that a large section of the forest was twice flooded by the Caribbean Sea more than 10 million years ago; creating a short-lived inland sea that jump-started the evolution of new species. But the new evidence still hasn't convinced scientists on the other side of the debate, who argue that it's hard to imagine a process that would cover such a large forest with an ocean.

Researchers generally agree that parts of the Amazon were once under water, but they don't agree on where the water came from. They argue that freshwater streaming down from the rising Andes sliced up the land below, dividing plants and animals into isolated groups that later turned into new species. The fast-growing mountains also created microclimates at different elevations, sparking speciation and funneling new plants and animals into the Amazon basin. However, when marine microorganisms were discovered in Amazonian sediments in the 1990s, some scientists hypothesized that the forest was once inundated by an ocean, which created new species as forest dwellers quickly adapted to the flood.

But proving either case—the river view or the ocean view—is tough. Rocks and fossils that could paint a definitive picture are exceedingly rare. Some scientists turned to a different kind of data: cores drilled into the jungle floor. Six centimeters wide and 600 meters deep, the cylindrical cores preserve a record of the region's past environments in the form of pollen, fossils, and sediments, going back tens of millions of years. They used two cores: one from eastern Colombia, and the other from northeastern Brazil.

They went through the cores layer by layer. Most of the remains came from land-dwelling species. But in two thin layers, they found marine plankton and seashells. The Colombian core even contained the fossils of an ocean-dwelling mantis shrimp and a shark's tooth. That was enough to convince them that the Caribbean Sea had reached down into the western Amazon of Brazil, Ecuador, and Peru twice. These seas didn't last for long. Colombia, which is closer to the Caribbean, was inundated for a longer period. Those floods could have been caused by the growing Andes. The mountains would have pushed down the rest of the continent as they thrust upward, letting seawater flow in. But that water would have been quickly displaced as freshwater and sediments flowed down the peaks and rebuilt the basin.

In geological time, these floods lasted a mere blink of the eye, but it's still a long time for a tree. Even these relatively short events would have transformed the region. The new work makes the case for marine flooding much stronger, and it makes the timing more definite, according to geologists and palynologists at the University of Amsterdam and Ikiam Regional University of Amazonia in Tena, Ecuador. For now, scientists will have to drill and study many more cores from across the region to solve the mystery of the Amazon's biodiversity.

Source: ***Lizzie Wade (in Science)***

Earth's forests grew 9% in a new satellite survey

The Age of Exploration may be long past, but even in the 21st century, our maps can still get a major update. Using satellite imagery, a new study has found

hidden forests all over the world—almost enough for a second Amazon—in areas with little moisture known as drylands. Past estimates of how much of the world's dry lands are covered in forests have run into lots of problems: For instance, the satellite images used to measure them are often so low-resolution that it's hard to figure out the difference between a tree, a shadow, or even a patch of dirt. To correct for that, an international team of researchers performed the first global study using a new set of ultra–high-resolution Google Earth images—in which each pixel represents a patch of ground less than a meter wide, as opposed to tens of meters. Hundreds of scientists and students then combed through 210,000 images and found that 'the worlds dry lands host 40% more forests than thought. That's more than a 9% bumping in total global forest coverage, or two-thirds the size of the Amazon.

A new study using high-definition satellite images has found 378 million additional hectares of forest around the globe — almost enough for a second Amazon.

The study will help researchers figure out how best to conserve and restore these forested areas. It will also help scientists make more accurate estimates of how much carbon dioxide Earth's trees are sucking out of the atmosphere — and how much of our fossil fuel emissions they'll be able to handle in the future.

Source: ***Patrick Monahan (in Science)***

Climate Friendly Farms: Agriculture Adapts to Global Warming

Agriculture may well be one of the industries hardest hit by the effects of global warming. The non-profit Natural Resources Defense Council (NRDC), a leading environmental advocacy group, reports that warming-related drought and flooding is already behind tens of billions of dollars in American agricultural losses annually. Given this growing threat, more and more farmers are looking to incorporate tools and techniques—let alone switch up what crops they grow—to be prepared for the big environmental changes already underway.

According to Washington State University's Center for Sustaining Agriculture & Natural Resources (CSANR), some of the most promising warming-friendly farming technologies and practices include conservation tillage (stirring up the soil less), precision agriculture (which employs information technology to monitor crop development, refine soil inputs and optimize growing conditions), improved cropping systems (refining the sequence of which crops follow each other on a given piece of land), and anaerobic digestion of organic wastes (via capturing methane waste and turning it into useable energy).

Climate change and extreme weather will likely have detrimental impacts on crop production, but farmers can use cover crops and other soil stewardship practices to make their farms more resilient to the climate change impacts already being felt and those likely to come in the years ahead. Such practices can also help to reduce and capture the greenhouse gas emissions that contribute to climate change."

NRDC analyzed the carbon capture and water-holding benefits of soil stewardship methods to increase soil organic matter in the 10 highest-value-producing agricultural states in the U.S. They found that using cover crops on just half of the acres devoted to the nation's two most ubiquitous crops — corn and soybeans — in those top 10 states could help capture more than 19 million metric tons of carbon each year and help soils retain an additional trillion gallons of water.

NRDC points out that besides saving taxpayer dollars in insurance payouts, expanding climate-friendly agricultural practices helps "ensure a reliable food supply for the nation even in the face of more extreme weather and climate risks."

Source: ***Roddy Scheer (In: Earth Talk)***

Noise pollution is invading even the most protected natural areas

The great outdoors is becoming a lot less peaceful. Noise pollution from humans has doubled sound levels in more than half of all protected areas in the United States—from local nature reserves to national parks—and it has made some places 10 times louder, according to a new study. And the cacophony isn't just bad for animals using natural sounds to hunt and forage—it could also be detrimental to human health.

Noise pollution—from honking cars to clanging construction equipment—can disturb sleep, cause stress, and impair concentration. In 1972, U.S. officials enacted the Noise Control Act, which gave the Environmental Protection Agency the authority to impose limits on noise from motor vehicles and machinery. But regulators have largely ignored noise in parks, wilderness, and other protected areas, which cover 14% of the country.

The U S scientists report that noise pollution doubled sound levels in 63% of protected areas and caused a 10-fold increase in 21%, the team reports today in *Science*. Such levels can harm wildlife and annoy visitors in natural areas. Generally, the more remote or restricted an area, the less noise. Parks and open spaces managed by local governments, often adjacent to cities, were the noisiest. State and federal lands allowing logging, mining, and oil and gas extraction were also noisy. National parks and wilderness areas were notably quieter but still not safe. Noise pollution doubled sound levels in 12% of all wilderness areas. Scientists were surprised to find such high levels of noise pollution in such high amounts of protected areas.

The excess noise can do more than just annoy park visitors. It can also undo the benefits of spending time in nature, like improved mood and memory retention. For plants and animals, the ruckus can disrupt entire communities. Some plants need silence for seed

dispersal—revving cars can scare away rodents that might otherwise do the job. Animals need silence to hear predators approaching or to communicate with their mates: A bird whose song would normally travel 100 meters would, with a 10-fold increase in noise, have its melody stifled to a 10-meter radius.

Many protected areas already use noise-reducing strategies, like operating shuttles to reduce traffic or concentrating highways and flight paths into "noise corridors".

Source: Ula Chrobak *(in Science)*

Good Reasons to go Solar Now

As a homeowner, we know that weighing the pros and cons of a particular home improvement project can be a daunting task. But converting our homes to solar power has many financial and environmental benefits. Whether it's to help improve the environment or to slash our energy expenses, solar power is a home upgrade that keeps on giving and giving. Considering the benefits it is now the time to go solar.

Decreased Energy Bills

Average American spends a whopping $114 per month just on electricity alone. Solar power helps put that money right back in his pocket because he will be able to generate free power for the life of his solar system, which is usually well over 25 years. In fact, some estimates say that the average residential solar array saves a homeowner more than $20,000 over 20 years.

Increased Property Value

According to a study in U.S.A. solar-powered homes tend to sell more quickly and for higher prices than traditionally-powered comparable homes, with an average-sized 3.6 kilowatt system increasing property values by roughly $15,000.

In U.S.A. solar panels installations increased by 70 percent from 2014 to 2015 alone, since 2006, photovoltaic solar panel cost prices have dropped by a whopping 73 percent, making an installation far more affordable for any family's renovation budget.

The environment is a fragile thing and it's up to all of us to help protect it. The average residential solar array will offset over 178 tons of carbon dioxide over the life of the system, not to mention reducing our need to source and burn harmful fossil fuels. Thanks to the millions of homes that have already made the switch to solar, over 37 million metric tons of carbon dioxide emissions have been offset, which is the equivalent to having planted 956 million trees!

Regardless of where we are, the sunny days of summer are fast approaching. Let us start saving money—and the planet—by converting our home to solar power!

Source: *Courtni Wisenbaker-Schee (In: Earth Talk)*

FORTHCOMING EVENT

Clean and Green Environmental Society (CGES), Lucknow is organizing National Conference on Climate Change, Environmental Pollution and Biodiversity Conservation in collaboration with CSIR-National Botanical Research Institute (CSIR-NBRI), Lucknow during 17-18 February, 2018.

Website: *cgesindia.org*

OBITUARY

ISEB deeply mourns the sad demise of Dr. Ms. Shashi Dhawan who passed away in a local nursing home on 18 April 2017 after a protracted illness. As one of the founder members and an Executive Councilor, she was actively involved in all activities of ISEB during her 22 years' long association with this Society.

Dr. Dhawan began her career as a Scientist at the National Research Laboratory for Conservation of Cultural Property (NRLC), Lucknow, a prestigious Institute of the country under the Government of India. A trained plant pathologist, she made outstanding contributions in the field of 'Conservation biology' including restoration of heritage buildings, old publications, documents and paintings. In view of her experience and expertise she was also deputed to several foreign countries for restoration work. She retired from NRLC as Head, Bio-deterioration Division.

She was one of the founders of International Council for Biodeterioration of Cultural Property, of which she was the President since 2015 till her death. Under the aegis of this organization, she successfully organized several International Conferences in India and abroad.

May her soul rest in peace.

CONFERENCES

2nd International Conference on Pollution Control and Sustainable Environment
05-06 October, 2017; London, UK
Contact: Conference Series Ltd
Kemp House, 152 City Road,
London EC1V 2NX, U.K.
E-mail: pollutioncontrol@conferenceseries.net
http://pollutioncontrol.conferenceseries.com

International Conference on Urban Planning and Architectural Design for Sustainable Development
30-31 October, 2017; Lecce, Italy
Contact: Hesham Hamdy
Email: upadsd2@ierek.com
Website: http://www.ierek.com/events/urban-planning-and-architectural-design-for-sustainable-development-upadsd/

4th International Conference on Green Energy & Expo
06-08 November, 2017; Las Vegas, USA
E-mail: greenenergy@conferenceseries.net
Website:
http://greenenergy.conferenceseries.com/

Third International Conference on Bioresource and Stress Management
08-11 November, 2017; Jaipur, Rajasthan, India
Contact person: Convener
E-mail: osbsmconf@gmail.com
Website: http://bsmconf.in

11th World Aqua Congress
09-10 November, 2017; New Delhi, India
Contact: Pragyya Sharmaa, Organizing Secretary,
World Aqua Congress 2017 Secretariat
E-166, Second Floor, Kalkaji,
New Delhi – 110019, India
E-mail: info@aquafoundation.in;
wac@worldaquacongress.org
Website: www.worldaquacongress.org

12th International and 5th Asian Congress on Environmental Mutagens (ICEM-ACEM 2017)
12-16 November, 2017; Seoul, Korea
Contact: ICEM-ACEM2017 Secretariat
1F Haeoreum Bldg., 16, Yeoksam-ro 17 Gil,
Gangnam-Gu, Seoul 06246, Korea
E-mail: info@icem2017.org;
Website: www.icem2017.org

National Conference on Climate Change, Environmental Pollution and Biodiversity Conservation
16-18 February, 2018; Lucknow, U.P., India
Contact: Dr. S.C. Sharma
Secretary General
Clean and Green Environmental Society
'Green Villa', 2/111 Vishwas Khand,
Gomti Nagar, Lucknow-226 010, U.P.
E-mail: scsharmagardener@gmail.com
Website: http://www.cgesindia.org/

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ISBN: 978-0-12-803433-0
Price: US $ 99.95

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Springer 2017
ISBN: 978-3-319-48438-9
Price: US $179.00

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(Ed.): Shree Nath Singh
Springer 2017
ISBN: 978-3-319-45155-8
Price: US $179.00

Impact of Biological Invasions on Ecosystem Services
(Eds.): Vilà, Montserrat, Hulme, Philip E.
Springer 2017
ISBN 978-3-319-45119-0
Price: US $159.00

Using Risk Analysis for Flood Protection Assessment
By Zeleňáková, Martina, Zvijáková, Lenka
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International Society of Environmental Botanists,
CSIR-National Botanical Research Institute,
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Tel: +91-522-2297821 (Direct) /
+91-522-2205831 to 2205835 (PBX)
Extn. 821, **Fax:** +91-522-2205836/2205839

E-mail: isebnbrilko@gmail.com /
isebmail@gmail.com;
Website: http://isebindia.com