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ANKUR

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INSIDE THIS ISSUE....

1.	PREFACE: ANKUR
2.	FROM THE EDITOR'S DESK
3.	PATRON'S MESSAGE Dr. Archana Mankad
4.	IN SITU CONSERVATION Dr. Archana Mankad
5.	IMPACTS OF OIL PALM CULTIVATION ON BIODIVERSITY AND THE URGENT NEED FOR CONSERVATION OF HIGH VALUE FORESTS Dr. Hitesh Solanki
6.	EX SITU CONSERVATION Dr. Himanshu Pandya
7.	ENERGY CONSERVATION Dr. Saumya Patel
8.	WASTE LAND AS A GREEN LAND Jahnvi Pandya
9.	SUSCEPTIBILITY OF OIL BEARING PLANTS Ancy Fernandes
10.	FRAGRANCE OF ROSES , HOW DO YOU FORGET THE IMPORTANCE OF NATURAL RESOURCES Milan Vala
11.	SALVATION OF AGRICULTURE Nikita Sapra
12.	MEDICINAL PLANTS: THE NEED OF HOUR Pujan Pandya
13.	FLOWING VISION - WATER Sanjukta Rajhans
14.	NATURE CONSERVATION AND ITS IMPACTS ON HUMAN HEALTH Shirin Qureshi
15.	FUNGI – A TRADITIONALLY NEGLECTED TAXON Suhani Parekh
16.	KEEPING NATURE IN OUR FUTURE Swati Jayswal
17.	LESSONS FROM NATURE Dr. Archana Mankad
18.	GLIMPSES OF GUBS ACTIVITIES



ANKUR

.....*Sprouting of thoughts*

Ankur is symbol of new beginning towards growth. And Ankur is here to introduce budding writers. It would represent interesting articles in Botany, Bioinformatics and Climate Change Impacts Management. Each seed has the innate potential to grow - blossom, and display its magnificence after its dormancy has been broken. Same way this news letter would provide a platform to young researchers to share news and views, promote awareness about the subjects and generate interest in related issues. Ankur would be taken care of by a team of dedicated Student Editors who would select and edit articles for online publication.

We wish Team Ankur all the best for this endeavour.





FROM EDITOR'S DESK....

Ankur is now six years old. This newsletter is intended to be published twice in a year. The growth and development of Ankur is a reflection of the growth and progress of the students of the department. This news letter will serve to reinforce and allow increased awareness, improved interaction and integration among all of us.

The journey began five years ago and now Ankur has blossomed and is spreading the fragrance to everyone around with the message that plants are significant and valuable. In this issue, we focus on conservation.

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PATRON'S MESSAGE

Domestication of plants resulted in their utilization and realization of their immense potential and so those with magical healing properties were revered and considered sacred. These perhaps were the beginning of conservation. Today the pace of development has taken a toll of our natural resources and the sooner we wake up to this emergency the better it would be for mankind. Plants have their unique ways of staying alive when conditions are not conducive to growth. But that may not be enough. Whether it's for food, clothing or home, plants are being exploited beyond their limits. Thus, pushing some of them over the edge of extinction. We may have already lost a lot. But it's still not too late.

Conservation is thus a priority area and of great concern for biologists all over the world. This issue of Ankur focuses on CONSERVATION and shares the anguish of all of us while showing us what is done and what remains to be done.

Dr. Archana Mankad
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IN SITU CONSERVATION

DR.ARCHANA MANKAD



Conservation of genetic resources in natural populations of plants or animals is referred to as *in situ* conservation. It helps in protecting endangered species in their natural habitats. This can be done either by protecting or restoring the natural habitat or preventing predation of species. In India about 4% of the total geographical area is used for in situ conservation. This is done by defining Biosphere reserves, National Parks, Wild-life sanctuaries and Biodiversity hotspots in the forest areas.

A Biosphere reserve is a very large area that is primarily focussed on protecting species for a very long time. Currently, there are 18 Biosphere reserves in India. A National park is an area dedicated to conservation of wildlife and its environment. Currently there are 103 National Parks in India. Wildlife Sanctuary is an area for the conservation of animals only. Currently there are 543 Wildlife sanctuaries in India. Hotspots, also referred to as Biodiversity hotspots are areas with endemic species and significant loss of habitat.

Besides these a gene sanctuary is an area where plants are conserved. These are part of biosphere reserves or national parks and are also referred to as Biodiversity Heritage sites. It includes wild germplasm of cultivated plants and so is believed to be significant. Further, a community reserve provides legal support to privately owned reserves or communities. Sacred grove is name given to areas or tracts of forest set aside because of religious beliefs and so are protected. *In situ* conservation helps populations recover within their environments, adapt and evolve. It is relatively cheap and convenient.



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1. Forest and Wildlife Statistics, 2004, MoEF
2. www.magicpin.in 2018



**IMPACTS OF OIL PALM CULTIVATION ON
BIODIVERSITY AND THE URGENT NEED FOR
CONSERVATION OF HIGH VALUE FORESTS**



DR. HITESH SOLANKI

Oil Palm is a tropical Palm tree known to be originated from Africa. Crude Palm Oil produced from Fresh Fruit Bunches (FFB) of Oil Palm and the palm kernel oil (PKO) produced from fruit's nut is used in the making of number of products. Palm Oil shares 40 percent of the world's trade in edible oils. The global demand for Palm oil is rising day by day. It is expected to reach 40 million tonnes per annum by the year 2020. In order to meet this demand, more and more areas are being used for its cultivation which in turn is adding pressure on High Conservation Value Forests and Biodiversity of South East Asia. According to the recent reports, the tropical forests are disappearing at 10-16 million hectares per annum during the last few decades. Malaysia and Indonesia together comprise 80 percent of World's palm oil production and 56 percent of Palm fruit harvest area. The environmental effects of oil palm production include loss of High Conservation Value Forests, Increased Forest Fires, Pesticide Use, decline in soil health and watershed benefits, pollution, biodiversity loss and habitat degradation of endangered species. The producers in Malaysia and Indonesia argue that palm oil cultivation is environmentally superior than alternate land use options for crops or vegetables whereas the CO₂ emissions are much higher which are released on burning of Peatlands also termed as Carbon Bomb. Deforestation in Indonesia and Malaysia has led to the loss of some of the wildlife. Of more than 400 land mammal species of Indonesia, 15 are critically endangered and another 125 threatened. Of Malaysia's nearly 300 land mammal species, 6 are critically endangered and 41 threatened. Moreover, certain animals, such as the orangutan, are only found in these countries; when their rainforest habitat vanishes, so will they. There is an increasing danger to the loss of the Sumatran tiger, Sumatran and Bornean orangutans, Asian elephant, and Sumatran rhinoceros. Also, High conservation value forests have been lost in the past few decades which inhabit a large number of flora and fauna. However, steps should be taken to reduce its impact on the environment.

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EX SITU CONSERVATION

DR. HIMANSHU PANDYA



Ex situ conservation refers to protecting endangered species outside its natural habitat. Botanical and Zoological Gardens are common examples of *ex situ* conservation for introduced or procured species being nurtured for awareness and educational purposes. Globally there are an estimated total of 2,107 aquaria and zoos in 125 countries and approximately 2,000 botanical gardens in 148 countries cultivating more than 80,000 taxa of plants.

Other methods of *ex situ* conservation include Cryopreservation- using liquid nitrogen; Seed banks – using temperature and moisture controlled environments; Tissue culture – for storage and propagation of clonal plants; Gene banks – for select progeny of stored species, Arboretum – for horticultural plants etc.

The recreation of original habitat is usually the biggest challenge in *ex situ* conservation strategies. This may halt or even sometimes alter the natural evolution and adaptation processes. Genetic diversity is also greatly compromised within captive populations. Inbreeding and high degree of homozygosity can threaten the survival and population sizes. Being cost intensive it depends on the financial resources of organizations and Governments determined to operate them.



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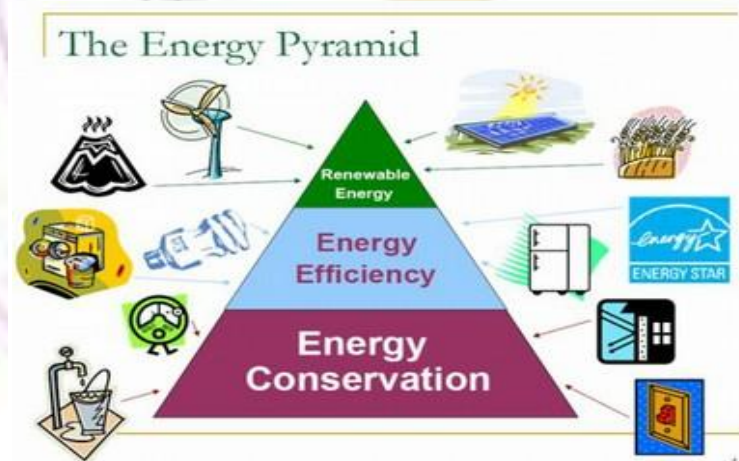
1. Photo courtesy: Wikimedia
2. <https://atlabg.org/>
3. CIMMYT, Mexico In Crop genebank knowledge base

ENERGY CONSERVATION

DR. SAUMYA K PATEL

Energy conservation is one kind of practice to reduce the energy consumption by using limited services of energy. This can be accomplished by using energy more efficiently or by reducing the amount of service used. Energy conservation is a fragment of the concept of eco-sufficiency. It decreases the energy services requirement and can result in increased environmental quality, national security and personal financial security and. It is at the upper side of the sustainable energy pyramid. It also lowers energy costs by preventing future resource depletion.

Some countries e.g. United states of America is practicing kind of energy or carbon taxes to motivate energy users to reduce their consumption. Carbon taxes can force consumption to alter to nuclear power and other energy sources that transmit different sets of conservational side effects and limitations. On the other hand, taxes on all energy consumption can reduce energy use across the board while reducing a broader array of environmental consequences arising from energy production. Like energy tax concept it can be also achieved by altering Building design (Passive solar design techniques), Transportation (walking and bicycling) and consumer products (using LED bulbs).



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WASTE LAND AS A GREEN LAND

JAHNAVI PANDYA

Definition : According to National Wastelands Development Board (NWDB) India, “waste land means degraded lands which can be brought into vegetative cover with reasonable effort and which is currently lying as underutilized and deteriorating land for lack of appropriate water and soil management or on account of natural cause”.

Main cause of formation of wastelands

Over utilization of forest products

- Over grazing by animals
- Side effects of projects development in that area
- Mis use of land very frequently



Classification of waste land

1) Culturable land

- These are cultivable wastelands which are not being utilized to their full potential and this land are being mismanaged due to various reasons which are any private business having being declared as notified forest area .
- Such type of waste land includes marshy land which have surface water logged and saline lands.
- We can also include wastelands based on ecological limitation such as forest degradation, shifting in cultivated area, sand dunes and mining soils.

2) Unculturable land

- These are the wastelands which are not available or used for cultivation.
- These type of land mainly include barren lands, rocky lands, sloping areas and also areas which covered by snow or glaciers.

Significance of wasteland

Formation of wasteland leads to the becoming worse of the ecological balance by adversely affecting the various components of the ecosystems directly or indirectly dependent on that land.

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SUSCEPTIBILITY OF OIL BEARING PLANTS

ANCY J. FERNANDES

Sustainability of the medicinal plants yielding oils has become essential for preserving the biodiversity levels. Every essential oil-yielding plant has been used worldwide for their medicinal property as well as aroma. Globally there has been a high scale demand for the plant based products over the synthetic products. Naturally obtained plant oils have been extracted from plant parts like leaves, flowers, fruits, seeds, wood and even roots. Due to this demand there has been an increase in the number of the 12.5% threatened species of plants. The IUCN has classified these threatened species of essential oil bearing plants into three divisions namely Critically endangered, Endangered and Vulnerable.

Threatened species	Plant Species	Scientific name, Vernacular name [Countries]
Critically Endangered	6	<i>Bursera graveolens</i> , Palo santo [Peru] <i>Nardostachys jatamansi</i> , Spikenard [India, Nepal, Bhutan, Myanmar, South West China] <i>Santalum album</i> , Sandalwood [India, Sri Lanka] <i>Commiphora wightii</i> , Guggul [India, Pakistan] <i>Abies alba</i> , Silver white fir [Belarus] <i>Aquilaria rostrata</i> , Agarwood [Cambodia, Iran, India, Indonesia, Singapore, Bangladesh, Thailand, Myanmar]
Threatened	7	<i>Juniper communis</i> , Juniper berry [Europe] <i>Aniba rosaeodora</i> , Rosewood [Peru, Brazil, Colombia, Ecuador, French Guiana, Guyana, Suriname, Venezuela] <i>Cedrus atlantica</i> , Atlas cedarwood [Algeria, Morocco] <i>Laurus nobilis</i> , Bay laurel [Albania, Slovenia] <i>Neocallitropsis pancheri</i> , Aucaria, Faux santal [New Caledonia] <i>Dalbergia abrahamii</i> , Rosewood [Madagascar] <i>Chamaecyparis formosensis</i> , Taiwan cypress [Taiwan]
Vulnerable	6	<i>Olea europaea</i> , Olive [Tunisia] <i>Prunus amygdalus</i> , Sweet almond [Pakistan] <i>Cadrela odorata</i> , Spanish cedar [Baruda, Argentina, Barbados, Bolivia, Brazil, /Colombia, Costa rica, Dominican Republic, Ecuador, Jamaica, Peru, and many other countries.] <i>Canarium luzonicum</i> , Elemi [Philippines] <i>Ocotea pretiosa</i> , Sassafras [Brazil, Argentina, Paraguay] <i>Fokienia hodginsii</i> , Siam wood [China, Laos, Vietnam]

There is a constant threat to the aromatic plants due to the increased demand of aromatherapy and the use of these oils as a preparatory base for various products. This counterclaim has led to the decreasing number of the plants species therefore; their conservation is important matter of concern.

Reference:

<https://www.kellyablard.com/conservation/conservation-of-essential-oil-and-carrier-oil-bearing-plants/>

FRAGRANCE OF ROSES, HOW DO YOU FORGET THE IMPORTANCE OF NATURAL RESOURCES

MILAN S VALA

The earth's natural resources include air, water, soil, minerals, fuels, plants and animals. Conservation is most essential and important thing for all living things. There are two types of natural resources. 1) Renewable resources 2) Non-renewable resources

There are many different resources we need to conserve it.

- **Forest:** Forest conservation is important because it provide habitats for plants and animals. They play important role which is beneficial for us like reduce global warming, they protect soil. They add nutrients into soil through leaf litter. They provide wood to people.
- **Soil:** Soil is play vital role for food production. Soil is important for to grow agricultural crops as well as to plants that grow in the wild.
- **Biodiversity:** Conservation of biological diversity to save species and plants from extinction and their habitats from destruction. Biodiversity provides immediate benefits to the society like recreation and tourism.
- **Fossil fuels:** Fuels which are produced from remain of ancient plants and animals. Fossil fuels including natural gases, petroleum oil and coal etc. Fuels are non- renewable resources. People used fuels various way to power vehicles, to produce electricity and to provide heat and cook also. Many petroleum products we use today including synthetic rubber, plastics, fabrics like nylon, medicines, cosmetics, cleaning products, waxes, medical devices.
- **Water:** Water is a renewable resource. More than 70% of earth's surface is covered by water. Only 2.5% of its fresh water. Out of that fresh water almost 70% permanently frozen in the ice caps covering Antarctica and Green land. 1% fresh water on earth available for people. People use water various ways drinking and irrigating crops etc.
- **Minerals:** Minerals help your body develop, grow and stay healthy. Some minerals used to maintain a normal heartbeat. Macro elements including calcium, phosphorus, magnesium, sodium, potassium, chloride and sulphur. This mineral require to body in large amounts. Trace elements require in very little amount. It including manganese, iron, copper, iodine, zinc, cobalt, selenium, fluoride.
- Some natural or man-made phenomena harm to natural resources like deforestation, industrial uses, pesticides, fertilizers, over grazing. So these all are responsible for reduce natural resource.
- Natural resources are the main sources of our daily requirements. We need to stop all types of wastage. Natural resources conservation is very essential not only for us but our next generation also. Natural resources are available in very limited amount. So we should follow 3R concept: REDUCE, REUSE and RECYCLE.

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SALVATION OF AGRICULTURE

NIKITA P. SAPRA

The study of climate is a complex field of investigation and in constant evolution but, since it is influenced by a great number of factors, it is not a static system and therefore it is difficult to forecast its future potential impacts with precision. However, it is obvious that climate is undergoing rapid changes, where socio-economic development is not corresponding to the limited natural resources. Thus, one of the greatest challenges is to respond to the need to produce enough food, feed and fiber in a sustainable way while satisfying the needs for a growing world population in a changing climate.

What is Conservation Agriculture?

The principles of Conservation Agriculture are as follows :

- No or minimum soil mechanical disturbance. In practice, this means no-till seeding and weeding.
- Permanent soil cover. In other words, it means to maintain crop residues and stubble in arable crops and to seed or preserve groundcovers between rows of trees in permanent crops.
- Cropping system diversification through rotations, sequences and associations involving annuals and perennials. In this way, pests and diseases are better controlled by breaking cycles that are maintained

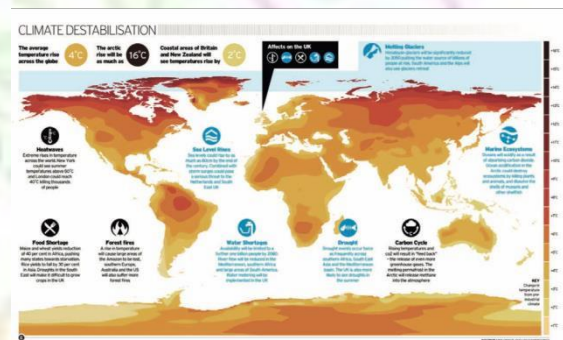


Figure showing global impacts of agriculture conservation showing

Key tools for Conservation Agriculture

1. Machinery

Since Conservation Agriculture avoids tillage, it is necessary to have adequate equipment to establish the crops in conditions with abundant plant residues. Therefore the development of specific machinery, especially for seeding, has had special relevance in the implementation of CA. One of the keys to success in Conservation Agriculture are the direct seeders (no-till drills) and its features, which allow farmers to establish the crops successfully under the divers conditions soil types of soils groundcovers. Enough weight to penetrate under compact soil conditions and cover crops.

- Possibility to regulate the rate and spacing of seeds of different size and ensure their adequate covering.
- Possibility to easily modify its settings to adapt to different crops and to apply fertilizers and plant protection products simultaneously.

2. Plant protection

- Conservation Agriculture principles namely crop diversity and rotation and enhanced soil and aboveground biodiversity, help control weeds, pest and diseases.
- However, some applications of crop protection products may be needed during the season. The numerous plough passes performed in tillage-based agriculture are replaced by an optimized use of phytosanitary treatments.
- For that reason, herbicides have been, and remain, a crucial element in the development of CA systems. The active ingredients used in the pre-seeding weed control are diverse, but normally glyphosate alone or in combination with other herbicides, such as hormonal ones are a common choice among farmers.

Source: www.fao.org/climatechange/35145-01475a57da304df922b9ea292fddc29fa.pdf

www.lifehelpsoil.eu/download/Conservation_Agriculture_climate_change_report.pdf

MEDICINAL PLANTS: THE NEED OF HOUR

PUJAN NAINESH PANDYA

According to World Health Organization around 80% of World Population depends on the Traditional Herbal remedies for their evolving health care needs. Throughout the globe the Indian Traditional system of medicine known as Ayurveda, Traditional Chinese Medicines and Traditional African Medicine system have served wide range of individuals for their primary prevention of various kinds of diseases. These Medicinal plants are the reservoir of varied active principles present in various parts of these plants. These active principles serves as a source of development for Small molecule drugs against specific diseases. Arteether, a potent anti-malarial drug derived from *Artemisia annua* L. Plant. Moreover, Tiotropium a potent drug for treatment of Chronic Obstructive Pulmonary disease which had been isolated from *Atropa belladonna* L. plant are some examples of potent drugs derived from the active principles of known medicinal plants.

In recent years these valuable natural resources have become endangered due to varied reasons including loss of habitats, rapid degeneration and industrialization. An urgent need for the conservation of these medicinal plants has arise with an increase in the demand of these natural resources. Right conservation strategies needs to be developed for their conservation which includes *In situ* conservation and *Ex situ* conservation. for the successful *In situ* conservation certain rules, regulations and compliances of these valuable medicinal plants in their natural habitats needs to be enforced. Strategic Development goals of Wild nurseries and natural reserves are the powerful practices which needs to be implemented for *In situ* conservation of these natural resources. Further, The *Ex situ* conservation techniques apart from the *In situ* conservation methods are also gaining a developmental thrust for sustainable development of conservation techniques of these medicinal plants. *Ex situ* conservation aims for cultivation and naturalizing of the threatened species for ensuring their productive survival. Development of Botanical gardens which includes cultivation of rare and endangered species of medicinal plants is an important aspect for the sustainability of these medicinal plants. Seed bank development for storage of huge chunk of genomic data of medicinal plants should be recommended further for preservation of the endangered and rare medicinal plant species.

Establishment of Around thirty Medicinal plants Conservation areas have been established by state forest department of southern India by the State forest Departments of the states like Tamil Nadu, Kerala and Karnataka. Different regions around the globe should further actively participate in the *In situ* and *Ex situ* conservation these medicinal plants for their better sustainability of medicinal resources.

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FLOWING VISION - WATER

SANJUKTA RAJHANS



Nature has gifted us many precious resources and water is the most important resource. It is vital for the survival of every living being. $\frac{3}{4}$ th portion of the earth is covered by water and $\frac{1}{4}$ th is covered by land. Around 97.3% of the water is present in the ocean and is saline. Only 2.7% of fresh water is available which is very crucial for the growth and survival of the living beings. Day by day the population of the world is increasing rapidly. The present scenario is that around 1.2 billion people lack access to water. It has been estimated that by 2025 the $\frac{2}{3}$ rd of the world's population will be facing water shortages. Pollution and deforestation have also contributed disturbance in the water cycle which in turn has made great variations in the pattern of annual rainfall. Thus conservation of water has become the top most priority for all of us. Conservation is the practice of sustainable use of the resources i.e., creating balance between today's need while saving for the future as well. The best way to conserve water is to reuse it again and again. For example the water used for washing dishes can be used again to water the garden plants. The grey water can be used to flush the toilets. Switching on to waterless car washes, skipping showers from time to time, using less electricity can save lots of water. In the lawns watering must be avoided on the windy days. Putting a layer of mulch around the trees can save around 1000 gallons of water per month. In the agricultural fields irrigation hours and frequency can be reduced. Drip irrigation methods can be opted over the general methods of watering. In the public areas initiation for repairing the leaky taps must be taken. Rain water harvesting is another method to conserve water. Construction of dams and hydropower stations will help in checking floods and regulate the supply of water for various purposes. Outreach campaigns and educating people about water conservation should be made compulsory. After all drop by drop saving will provide assurance for the future supply of water.

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Photo courtesy: Wikimedia

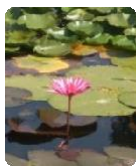
FUNGI – A TRADITIONALLY NEGLECTED TAXON

SUHANI GIRISH PAREKH

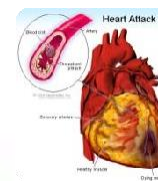
Conservation is a major concern at this moment as scientists and environmentalists recognize the importance of natural habitat and the importance of flora fauna and micro organisms present there. Significant decline in the number of species and in the occurrence of species of fungi was detected in the 1960s in several countries mainly in Europe. Fungal conservation should also be an important part of the worldwide conservation of various taxa. Fungi are seldom legally protected as most of them are counted as pathogens. But this should be kept in mind that they are excellent decomposers, are used extensively in fermentation processes, have mutualistic relationship with other organisms benefitting them eventually. Air pollution, soil modification, accumulation of heavy metals, fragmentation of habitats is found important causes that threaten the habitat of fungi. The main threats and causes of decline in fungi worldwide can be categorized either from global, or specific or local problems. Air pollution globally is a major cause through greenhouse effect producing slow climate change. Such changes affect the climate sensitive species or may lead to the development of alien species which would become competitors to the native species. In modern agriculture increasing uses of chemical treatments results in various kinds of environmental modification. With the goal of removal of pathogenic species, it also harms the species that are beneficial to the plants. The balance between parasitic fungi, mutualistic fungi and their host might also get disturbed. If fungal species will not be conserved, ultimately the environment will be harmed in one way or another. As fungal conservationist, we cannot manage global warming or global forest felling nor can we influence the politics that affect the agricultural practices. But we can popularize the value and quality of fungi and can use it as a tool to force its natural conservation. For example in Slovakia (a country in Europe), 52 fungal species have been given 'special legal status' to prevent them from damage to their habitats. To give species a special status, first tool is preparing checklist of fungi that are present which most of the countries of the world are lacking. The second tool is mapping. The idea of fungal diversity will be obtained by this tool providing an account of rare species, widely distributed species etc. Third tool is preparing red data list with the help of checklist and mapping programmes. The red data list comprise of the species that are near to threat and which should be conserved to prevent their harm. By following these steps, with efforts and continuous eye on the checklist, the fungal species can be conserved.

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NATURE CONSERVATION AND ITS IMPACT ON HUMAN HEALTH



SHIRIN QURESHI

Nature has a direct influence on human health. Researchers have found that more than two-thirds of the people choose a natural setting to retreat when stressed. Viewing scenes of Nature, reduces anger, fear and stress and increases pleasant feelings. Exposure to Nature makes one feel better emotionally, it contributes to physical wellbeing, reducing blood pressure, heart rate, muscle tension and the production of stress hormones. It may even reduce mortality according to public health researchers. Research done in hospitals, offices and schools has found that even a simple plant in a room can have a significant impact on stress and anxiety. ⁽¹⁾ Another study also showed that more than 3,000 children living in southern California over eight years found that those who lived closer to parks and recreation sources had lower Body Mass Indexes (BMI) at the age 18 than those who lived further away. In fact, it was estimated that if all the children had matching access, nearly 10% would see their BMIs move from overweight to normal and 2% would move from obese to overweight. As a part of city planning, simply adding a park in an urban area could impact a child's health. ⁽²⁾ Another research in Mind shows 95% of the people interviewed said that their mood improved after spending time outside, changing from depressed, stressed and anxious to calm and balanced. Furthermore, time in nature improves our focus and refreshes us. Research on children with ADHD shows that time spent in nature increases their attention span later. ⁽¹⁾ A study by Robertson Cooper showed that in the workplace employees demonstrate a 15% increase in reported well-being when exposed to natural elements such as greenery and sunlight. Study at the University of Oregon found that nearly 10% of employee absences can be attributed to architecture with no connection to nature, such as windows or views of trees and landscapes. When considering how to improve employee productivity and reduce absenteeism-key challenges that impact company bottom lines including more windows, natural light, providing open air spaces for walking, adding greenery on company campuses can make a notable difference. ⁽²⁾ Exposure to plants and flowers nourishes our health and wellbeing. ⁽³⁾ A policy needs to be made to improve the green spaces which create a livable environment incorporating nature in urban settings, shapes development and planning with health and well-being as it will pay a meaningful dividend as we move forward in creating a culture of health across the nation. ⁽²⁾

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KEEPING IN NATURE IN OUR FUTURE

SWATI JAYSWAL



“Biodiversity”, the name itself suggests the biological diversity. It includes all the living organisms along with their habitats, where they live. Biodiversity is so important because it provides our main needs. In addition to that it includes cultural, recreational and spiritual nourishment. So that, we can maintain our personal life as well as social life. Now a day, the level of biodiversity is decreasing because of degradation, fragmentation and loss of habitat, spreading of invasive species, unsustainable use of natural resources, change of climate, inappropriate fire regimes and changes within aquatic environment and water flows. We should conserve it because of its benefits. Without biodiversity existence of our lives is not possible. There are two methods to conserve biodiversity. They are :- i) in -situ method and ii) Ex-situ method. In In-situ method the conservation of species is carried out within their natural habitats. While in Ex-situ method it is done outside of their natural habitats. In In-situ method first we have to find out the area with high biodiversity means the area, in which numbers of plants and animals are present. After that this area should be protected in the form of natural park/sanctuary/biosphere reserve etc. Ex-situ method can be done by forming gene banks, seed banks, zoo and botanical gardens. In recent years, collection of In-vitro plant tissue and microbial culture and captive breeding of animals and artificial propagation of plants, with possible introduction into the wild can be done. We can also recover the number of endangered species. Along with that we can maintain domesticated plants which cannot survive in nature unaided. It increases public awareness with the help of bringing members of the public into contact with plants and animals; they may not normally come in contact with. Thus, conservation of biodiversity is the proper management of the biosphere by human beings in such a way that it gives the maximum benefits for the present generation and also fulfills the needs of future generation.

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Image source: -

[http://www.uniindia.com/cms/gall_content/2017/5/2017_5\\$largeimg12_May_2017_092446637.jpg](http://www.uniindia.com/cms/gall_content/2017/5/2017_5$largeimg12_May_2017_092446637.jpg)

GLIMPSES OF ACTIVITIES OF GUJARAT UNIVERSITY BOTANICAL SOCIETY

The Inauguration of Gujarat University Botanical Society was held on Friday, 3rd August 2018. It marks the beginning of the activities of GUBS. Honourable Vice Chancellor, Gujarat University, Prof. Himanshu Pandya was the Chief Guest and inaugurated the GUBS events for the year 2018-19. All faculty members and Visiting faculties were present along with many invited guests. The programme started with a recap of last year's events in the form of a video show. Dr. Archana Mankad welcomed all and gave a quick overview of GUBS activities. This year Dr. Saumya Patel as Professor- In- Charge would lead the students and coordinate various events. Dr. Saumya introduced the new TEAM GUBS and requested Pandya Sir to coronate the Office Bearers with badges. The incoming new students were also welcomed. The programme ended with Vote of Thanks by Secretary GUBS, Ms. Mansi. The Master of Ceremonies was Ms. Lovely Jain from Bioinformatics. Everyone enjoyed piping hot meals and the informal introduction followed with creative games and ice breaking session planned for the freshers by the seniors.



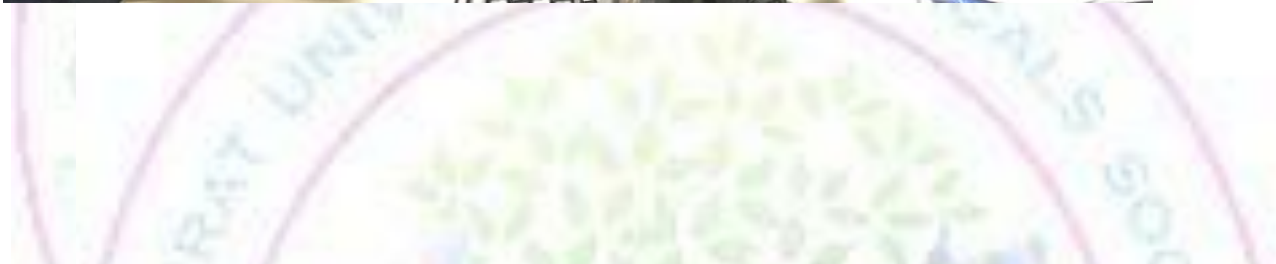




The students of Climate change visited Bhaskaracharya Institute for space applications and Geoinformatics (**BISAG**). It is situated on the outskirts of Gandhinagar and is a state of the art institute, being the center for geoinformatics application it focusses on R&D using remote sensing and data analysis. It generates data for the government, students and researchers. It also houses the famous educational studios where educational programmes for schools and colleges are recorded. The group was accompanied by Mr. Pathik Bhatt, Research Scholar from Climate change. Dr. M.H.Kaluburne led the group through an informative presentation highlighting the activities of BISAG. It included awareness of remote sensing, geographic information system(GIS), Global Navigation Satellite System (GNSS). BISAG has been developing various kinds of software depending on the need of information and promotes training to young learners for the use of those software for social welfare. The various objectives of BISAG include- Visualization, Governance, Services, Developing and Planning, Decision making etc. Remote

sensing has many applications not only in agriculture, forestry, climatology fisheries, coastal zone management etc but also in health, urban planning, landuse and degradation. The visit was planned to orient the semester III students towards the thrust areas of research so that they can identify their interest and pursue their dissertations in the next semester.









The students of Climate Change Impacts management visited **GERMI** in July 2018. The visit was coordinated by Dr. Kunal Shah at GERMI. The students got an opportunity to see the various projects underway at GERMI. Mr. Nirmal Desai and Mr. Pathik Bhatt accompanied the students. Gujarat Energy Research & Management Institute (GERMI) is a centre of excellence in industry learning and has set up to develop human resource assets to cater to the petroleum and allied energy sectors, improve knowledge base of policy makers and technologists and provide a competitive edge to leaders to compete in the global arena. GERMI promoted by Gujarat State Petroleum Corporation Ltd. (A Govt. of Gujarat Undertaking). GSPC is a fully integrated energy company having a presence in various operations like Exploration & Production, Transportation of Gas, and Power Generation, IT services. It is one of the fastest growing state owned companies and has excellent support from Gujarat Govt. as well as from Central Govt. For a nation that was one of the first to discover oil and which in the last couple of decades has become the fastest growing discoverer of fossil energy resources, India is also on the threshold to become one of the largest global markets. The need for a resource centre was anticipated to keep pace with the fast developing and competitive energy industry, to pace the future and to continuously build requisite intellectual capital and human resource capital. GERMI has already established a specialised technology & management institute focusing on the Oil & Gas Sector and is actively pursuing initiatives in the areas of research and alternative energy resources.

The students of Climate Change Impacts management visited **GEMI** in July 2018. The visit was coordinated by Dr. Natasha Khatri at GEMI. The students got an opportunity to see the various state of the art labs used in environmental assessment at GEMI. Mr. Nirmal Desai and Mr. Pathik Bhatt accompanied the students. The group also visited **GPCB** with the help and guidance of Member Secretary, Shri K.B. Vaghela at GPCB. There the students got a unique opportunity to see the labs and projects going on at GPCB. Such visits generate interest among the students as they explore their subject in the real world and so appreciate its significance.

The students of Horticulture Science and Garden Management visited Hydroponics unit at ESSAR – Nandniketan, Surat. This is a novel unit set up by ESSAR illustrating women empowerment since all the tasks from production to marketing is allocated to women. They produce tomatoes and cucumbers with utmost care and precision under the supervision of expert horticulturists.



At surat, the group also got a chance to visit a famous bungalow which is demonstrates Zero garbage.



Earlier in the day the students of horticulture science and garden management also visited Anand agricultural University and NRC-Medicinal plants at Boriyavi. Both the visits improved the understanding of various agrotechniques used in cultivation of plants. Horticulture science is a field based course and so whatever is delivered in class would always need field based supplementary learning for better understanding.







The Botany students visited Ayurvedic Garden at Gandhinagar. The garden houses medicinal plants and has an arboretum of medicinal trees. Shri Yogi and Mrs. Krishnaben guided the students there and explained various ways of cultivating the plants for optimum medicinal value.

SCIENCE EXCELLENCE 2018 (SCIXL-2018)

The seed of SCIXL-2018 was sown in 2008. The event supported by GUJCOST every year was the seventh in the series. Our Hon. Vice Chancellor and Patron SCIXL Dr. Himanshu Pandya displayed a lot of enthusiasm and support throughout the preparation of SCIXL. Dr. Archana Mankad, Professor and Head, Botany Department and Secretary General SCIXL-2018 generated a lot of enthusiasm and interest among students. Her total involvement and guidance led team of all involved and made the whole event a big success.

REGISTRATION:

The state level Paper (Oral and Poster) Presentation Competition in 20 science subjects at 4 levels- UG / PG / M.Phil.- Ph.D. / Faculty was organized on Thursday, 20th September 2018, at Department of Botany, Bioinformatics & Climate Change Impacts Management, School of Sciences, Gujarat University, Ahmedabad- 380009. More than 1200 participants actively interacted during the daylong event. Of these, 912 were UG and PG students, 192 were M.Phil.-Ph.D., and 83 Faculty participants. The subjectwise–levelwise-categorywise online registration had begun about two

months prior to the actual event. All registered participants received the seminar kit along with CD which included abstracts of papers to be presented in a particular subject.

INAUGURATION:

Dr. Hitesh Solanki, Professor, Department of Botany, Bioinformatics & Climate Change Impacts Management and Coordinator SCIXL welcomed the guests and spoke about SCIXL. The event SCIXL2018 was inaugurated by Dr. B.V.Patel, Director EMMRC and Dr. P. M. Patel, Registrar, Gujarat University. Our Hon. Vice Chancellor and Patron SCIXL, Dr. Himanshu Pandya was on official duty and had conveyed his best wishes for the grand success of this Mega Event of the University. Dr. Bharat Maitreya delivered the formal vote of thanks. Dr. Nainesh Modi anchored the Inauguration with fine grace and poise.

VISITING BEES:

The participants had come from almost all over Gujarat- from most universities and colleges. After registrations all enjoyed hot samosas with Tea/Coffee at the food plaza.

PRESENTATIONS:

Each subject Department was equipped for the oral and poster presentations and material for Poster display like thermocole sheets etc, in advance. The panel of Judges were separate for Oral and Posters Presentations. The ORAL PRESENTATIONS began at the respective subject departments starting from UG level followed by PG level. Alongside the POSTERS were displayed. The students made impressive oral presentations and were evaluated by a panel of Judges based on the content, presentation, creativity and defence by the student.

GREEN LUNCH:

The GREEN LUNCH at FOODPLAZA was enjoyed by all. The volunteers from Botany Department ensured that the arrangements and distribution was orderly and timely. The green Lunch included Hot and tasty Mung dal halwa, cutlets, chole, puri, mixed vegetable, dal-rice appropriate with the season alongwith usual accompaniments.

PRESENTATIONS:

Post lunch session was predominantly for the research scholars and the results were compiled by the coordinators at the Botany Department. The Judges chose the best presentations to be awarded prizes.

VALEDICTORY FUNCTION:

The Valedictory function was chaired by the Prof Rajshri Bhatt at Zoology Department, Prof.B.V.Patel at Physics Department and Prof. H.A.Solanki at Botany Department. Dr. Bharat Maitreya at Physics department, Dr. Nainesh Modi at Zoology Department and Dr. Hitesh Solanki

at Botany Department welcomed the guests and the Judges were presented Mementos for their valuable contribution throughout the day. Then the Prizes were announced and the winners received cash prizes and certificates from the dignitaries on the dias. The programme was anchored by Ms. Deepti Sharma at Zoology Department, Ms. Swati Jayswal at Physics Department and Ms. Snigdha Dixit at Botany Department.

SCIXL 2018: Some Memorable moments











The members of GUBS celebrated Garba with the usual gusto. The event also provided an opportunity to members to showcase their creativity and compete for prizes in Aarti thali competitions. There were prizes for best dress, best dance and best couple to encourage the spirit of competition among the *khelaiyas*.





The members participated in an awareness programme on **Sexual Harassment at Workplace** organized by WDC-ICC with StreeChetana, at the Senate Hall. The programme was inaugurated by **Hon. Smt. Vibhavariben Dave, Minister, Women & Child Development, Education(Primary and Higher Education) & Pilgrimage.**

The members participated in an Interactive Session on Stress management called ***Don't Worry Be Happy*** organized by WDC-ICC with Konnect Women Empowerment Circle (KWEC) , at the Senate Hall. The programme was inaugurated by **Honourable Smt. Bijalben Patel, Honourable Mayor, Ahmedabad Municipal Corporation.**

The members actively participated in an awareness cum interactive session on Career counselling by Gujarat University Placement Cell.

The members enthusiastically participated in weekly activities which included fun games like Director's Choice, Quiz, Treasure Hunt and 'who am I' the guessing game.

Selected students participated in a week long workshop on web page design at the Department. A workshop to guide into basics of web development using PHP and MySQL with intensive practicals.

