

ACCRESCENT

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ISSUE 4





Prof. C. Sheela Reddy
Principal

శ్రీ వేంకటేశ్వర కళాశాల
Sri Venkateswara College
(University of Delhi)
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From the Principal's Desk

I am happy to know that the Department of Botany is releasing the Fourth edition of its Annual Magazine 'Accrescent'. Accrescent covers diverse aspects of Plant Sciences presented in a lucid manner, making it easy to understand and appreciate by both botanists and non-botanists alike.

The magazine provides an insight into a range of topics such as an obligate parasite *Rafflesia*, exobiology, UN decade on ecosystem restoration, electric vehicles etc. A detailed report of visit to Mother Dairy, Patparganj is also included.

I congratulate the faculty members, students and editorial team of the Department of Botany, Sri Venkateswara College for continuing with glorious tradition of documenting cutting edge research in Plant Sciences.

C. Sheela Reddy
PRINCIPAL

Proud History.....Promising Future

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Message from Teacher -in-Charge

"Good things remain good only because they are always scarce."

I am exhilarated in establishing the fourth issue of 'Accrescent', the annual departmental magazine of the Botanical Society of Sri Venkateswara College.

Accrescent acts as a medium for students to manifest their creative skills combined with their indepth profound understanding of Botany. The efforts taken to bring about innovative content is appreciable.

I take this opportunity to thank our respected principal, Prof. C. Sheela Reddy for her inspiration and kind support.

I also express my heartfelt gratitude to Dr. Pooja Gokhale Sinha and Dr. Sunita Yadav for their guidance, the editorial team for their relentless efforts, the young budding writers from our own department for their valuable articles and all those who have been a part of Accrescent 2022. I am glad to pen for this wonderful magazine as an appreciation of the commendable efforts put forth by the team for its grand release.

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Message from Teacher Editors

We are delighted to announce that the Department of Botany is releasing the fourth edition of its annual magazine Accrescent. Accrescent meaning denotes continuous growth represents the spirit of department that has continuously grown in academic and outreach endeavors.

The magazine is a compilation of creative ideas of our students and touches upon issues such as ecosystem depletion and pros and cons of using e-vehicle. Year after year Accrescent has grown and given a platform for students to express their creativity. Plants form the core of existence of life on earth and the magazine highlights interesting areas of plant biology such as Astrobotany, Biomimicry and RuBisCo.

LETTER FROM THE EDITOR



Dear Readers,

The fundamental way of expressing our knowledge, experience and life style is to document those in an articulated manner. It can be journal, monuments, paintings, manuscripts, inscriptions and many more which have been started from ancient time.

By writing, a person can express it's feelings, can never be afraid of any judgmental comments and can get opportunities and that is why it is said that **"The pen is mightier than the sword"**.

It is only the written text that can show the past, present and future in one place and here we are delighted to introduce the 4th issue of our departmental magazine, 'Accrescent'. Hope you will enjoy reading this magazine as much as we did making it.

Happy Reading!

Sukeerti

Editorial Team Head



About INVOLUCRE & ACCRESCENT

The Department of Botany, Sri Venkateswara College, University of Delhi is named after a membranous envelope, which is 'Involucre'. Involucre is a whorl or rosette of bracts surrounding an inflorescence, especially a capitulum or at the base of an umbel.

The society conducts several academic and outreach programs that revolve around the contemporary issues such as environment, biodiversity, ethnobotany and conservation.

The society release an annual magazine each year by the name of 'Accrescent', it means growing continuously or growing larger after flowering. When a flower blossomed, it grows continuously likewise by reading our magazine, the area of knowledge keeps on growing.



Sources:

Flower: <https://tinyurl.com/7sxj3s2a>

Pine: <https://tinyurl.com/3hvc8b4r>

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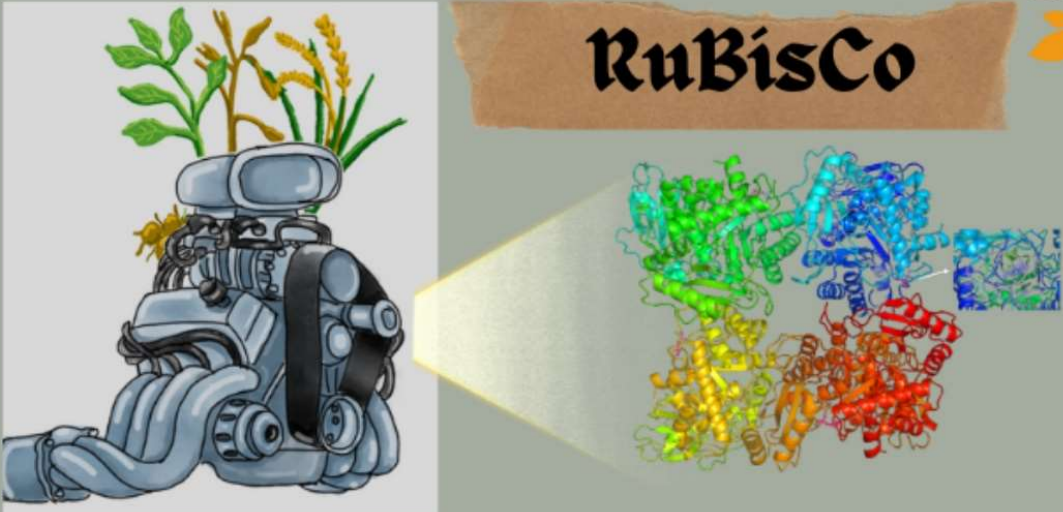
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- Status of water pollution in Yamuna: Recent Advances in Research Methodology
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Source: <https://pin.it/7a9c8th>



RuBisCo

Image Source: <https://upload.wikimedia.org/wikipedia/commons/5/50/SpinachRuBisCO.png>

Carbon is important for all the living systems and life could not exist without it. Thus, carbon is crucial to life. All of our molecular machines are engineered around the central system of organic carbon. Unfortunately, the carbon within the earth and atmosphere is latched in extremely oxidized forms, like carbonate minerals and CO_2 gas. To be useful, this oxidized carbon should be "fixed" into additional organic forms, wealthy in carbon-carbon bonds, and embellished with hydrogen atoms. Powered by the energy of sunlight, plants perform this central task of carbon fixation. Within plant cells, the protein Ribulose biphosphate carboxylase/

oxygenase (RuBisCO) forms the bridge between life and lifeless, making organic carbon from the inorganic dioxide within the air. RuBisCo was formerly known as carboxydismutase. It is one of the most abundant protein in the biosphere and a key enzyme in the global carbon cycle. More than 90% of the inorganic carbon that is converted into biomass is fixed by the enzyme RuBisCo. RuBisCo is found in all three domains of life: Archae, Bacteria, and Eukaryotes. There are four different kinds of RuBisCo that are known to fix CO_2 , in photoautotrophs, form one is present which fixes CO_2 . RuBisCo takes CO_2 and attaches it to ribulose



bisphosphate (sugar chain with 5 carbon atoms) then cleave RuBP (ribulose bisphosphate) into two molecules of 3-Phosphoglycerate (PGA). PGA is an intermediate in metabolic pathways like glycolysis and Calvin cycle. RuBisCo as the name suggests has both carboxylase and oxygenase activity. Binding of carbon-dioxide and oxygen is competitive.

Apart from above mentioned functions, RuBisCo is of potential interest for human consumption due to its high nutritional value. It contains high amount of essential amino acids and is rich in vitamins, minerals, anti-oxidants and

macro-nutrients. RuBisCo protein can be extracted from almost all green crops. Due to its properties, RuBisCo is of great importance for food applications. It can not only be used as protein source but also as an emulsifier, foaming and gelling agent. Therefore, it can be used as substitute for wheat or eggs. This makes RuBisCo perfect for very different people such as pregnant women, sportsmen, celiac and dairy/egg intolerants and it is also suitable for vegans, Kosher and Halal. Therefore, plant RuBisCo is predicted to be a large supply of food protein within the future.

By
Shrashti Lavania
B.Sc. (HONS.) BOTANY, Year III

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Image source: <https://lazypenguins.com/15-strangely-beautiful-flowers/>

Rafflesia : An Obligate Parasite

By
Ishika Sharma
B.Sc. (HONS.) BOTANY, YEAR III

The genus *Rafflesia* is enigmatic but it is well known for its gigantic flowers and floral features. There are several floral features of *Rafflesia* common to carrion flower, like vivid dark colour and pungent floral smell. It is a holoparasitic plant entirely dependent on other plants for food needs. They are also long being regarded as a typical example of brood and food site mimicry system. It's not just the physical appearance of *Rafflesia* that makes it different from the other flowers rather it has a very unique pollination mechanism displaying thermogenesis. This helps it to potential enhance the emission of its scent that results in more flies entering the floral chamber.

Enormous Yet Slow

Rafflesia is quite large and so is its growth period, it takes 18 months for its tissue within the vine to grow up to a small brown bud. The bud further takes 6 to 9 months to mature and gain the weight and size similar to that of a cabbage, which later opens in a couple of hours. The total time taken by the plant to bloom is far more than the time its bloom takes to disappear.

Pollinators and A Hundred more visitors

Rafflesia's reproduction rate is relatively low this is due to the unbalanced sex ratio in nature. The low reproductive capacity may also be due to the characteristic of the flower that is classified as unisexual which enhance requirement for the helpers, the pollinators.

It is a well known fact that most entomophilous flowers are visited by several pollinators but as we talk about the world's biggest flower the list of visitors is also gigantic. A total of 403 calliphorid flies belonging to two sub families, 5 species were sampled from male flowers belonging to *Rafflesia cantleyi*. And the study shows that a single bloom of *Rafflesia* gets at least a hundred visitors within a couple of days. Many experiments suggest that the flowers achieve pollinator specialization via floral volatiles thus behaving as the oviposition sites for more specific species.

Not just this the flower utilizes the pollination services of only few sarcophagid and muscid fly species, despite the abundance of other flies in and around the niche. Though there are various studies being carried out but our knowledge of pollination biology of this enigmatic plant genus is still very limited.

Interestingly, like most carrion flowers *Rafflesia* also mimics a wide range of tropical niches which are mostly occupied by necrophilic and coprophilous insects. Though the blooms of almost all the species resemble each other but only a subset of these flowers have been regarded as true carrion mimicking flowers.

Rafflesia baleiti: The new member

It is important to read about this member of *Rafflesia* genus since it is quite unique. Its flowers are bisexual i.e. they can act as male or female flowers while the other members of the genus are unisexual. This beautiful flower is named after Mr Danilo Baletei, a mammalogist native to Bicol region who first discovered and collected the species. The host plant of the species is *Tetrastigma magnum*. The flowers of this species last just for 5 days before senescence. The plants were observed only on roots and prostrate vines of the first plant that are across 0.7-1 cm in diameter and are buried in the soil at 2.5 to 3 cm depth.

Considering the area of 15 ×60 m there can be the presence of just 20 buds, 3 full blooms and a few senescent flowers . These flowers makes the portion of forest quite inaccessible and not vulnerable to slash and burn. *R. baletei* is also a putative close ally of *R. tengkuadlini*.

Facts:

- 1.*Rafflesia* was first discovered by French naturalist Louis dechamps in Java.
- 2.It was named after Sir Thomas Stanford Raffles.
- 3.*Rafflesia arnoldii* is known as queen of parasitic organisms.
- 4.It is endemic to Malaysia, Thailand, Indonesia and Philippines.
- 5.*Rafflesia manillana* is the smallest species of *Rafflesia* genus having around 20 CM diameter flower and bucks the trend of its flowers being large.

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ASTROBOTANY

An Unexplored discipline of Exobiology



Why not a field which questions the existence of life on other planets? So, exobiology fills in the gap by forming a bridge between astronomy and biology by finding extraterrestrial life in the universe. Exobiology is made up of three words, Exo comes from Greek origin meaning external while bios mean life and logia means to study, hence called the study of life external to Earth (Cockell, 2001). It is an interdisciplinary field that studies the origin, evolution, and future of life in the universe. If you are a sci-fi enthusiast, you might have heard about the movie Avatar, which highlights the flora of Pandora, a fictionalized biodiversity but how concrete is the existence of plants growing on other planets? There is a sub-discipline of botany that deals with the study of plants and their interaction in the universe called astrobotany. So now we can say that the survivability of plants (under some controlled conditions) on other planets can create a possibility of the existence of humans too. And maybe that's the reason spaceflight crews are searching for a way out to grow plants in outer space.

A list of plants grown in outer space can be categorized based on the purpose of the study (Astro botany, 2021):

RESEARCH PLANTS

- *Arabidopsis thaliana*: In 1982 aboard Soviet Salyut 7, *A. thaliana* became the first plant to flower in space. This plant was chosen because of the short life cycle and important genomic data can be extracted and most importantly small in size. This plant was then grown for research purposes in other space missions too.
- *Brassica rapa*: It was a joint venture between NASA (American space agency) and the Roskosmos (Soviet space agency), grown on the Soviet space station in 1977.

SUSTENANCE PLANTS

- *Triticum aestivum* (Wheat): The super-dwarf variety of wheat has poor agronomic traits and is small in size but it can be grown in a confined area like spacecraft hence being valuable for the research study. It was planted in 1995 on MIR.
- *Oryza sativa* (Rice): Gravitropism and root orientation were examined in Saturn V space station under the supervision of



students from Nebraska on Skylab.

ORNAMENTAL PLANTS

- *Zinnia*: In the International Space Station, *Zinnia* bloomed in the VEGGIE plant production unit in 2016 under the supervision of Scott Kelly.

Now we got to know that these plants have been grown in space but the reason behind the success of the development of plants need to be focused upon. There is a vegetable production unit in the space station called VEGGIE. The goal of veggie is to assist NASA in studying plant growth in microgravity while also providing fresh food to astronauts and improving their pleasure and well-being aboard the orbiting laboratory. Veggie gardens are normally the size of a carry-on bag and hold six plants. Each plant is grown in a "cushion" containing clay-based growing medium as well as nutrients (Heiney, 2021). Water, nutrients, and air must be distributed in a healthy balance around the roots, which is where

the pillows come in handy. Because of the way fluids in space tend to create bubbles, the roots would drown in water or be devoured by air otherwise. Plants in absence of gravity, use other factors like light to grow. Light-emitting diodes (LEDs) provide a spectrum of light to grow appropriately. The veggie room glows magenta-pink as plants reflect green light and use red and blue light wavelengths. On successive research studies, Advanced Plant Habitat (APH), a veggie-like growth chamber is being used for plant research in a space station. It uses porous clay substrate and LED lights providing water, nutrient, and oxygen to plant roots. It is enclosed and mechanized with cameras and sensors, therefore, being different from veggie and it doesn't need much attention from the crew. Also, it has a wide range of LED, along with red and blue lights, it has far red, white light, and infrared too for night-time imaging. When a harvest is ready for research, the crew removes samples from the plants, freezes or chemically fixes them to preserve them, and sends them back to Earth for scientists to study so they may learn more about how space influenced their growth and development (Heiney, 2021).



I think that astrobotany is an emerging field and in the future, we will have another planet equivalent to Earth as our home. And our upcoming home planet will surely have space gardens as it is the only survival aid to sustain livelihood. The legacy of cultivation will continue even in space and it will mark the first space civilization (Astro botany, 2021).

BY
K. MANSI RAO
B.SC. (HONS.) BOTANY YEAR III

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SOURCE: Astronaut Scott Kelly nursed dying space zinnias back to health on the International Space Station. He photographed a bouquet of the flowers in the space station's cupola against the backdrop of Earth and shared the photo to his Instagram for Valentine's Day 2016.
Credits: NASA/Scott Kelly



SOURCE: Zinnia plants from the Veggie ground control system are being harvested in the Flight Equipment Development Laboratory in the Space Station Processing Facility at Kennedy. A similar Zinnia harvest was conducted by astronaut Scott Kelly on the International Space Station.
Credits: NASA/Bill White

ELECTRIC CAR



Image source: Electric Car Vector Illustration 179688 Vector Art at Vecteezy

E-Vehicles: A Wise Choice?

By
Rhythm
B.Sc. (HONS.) BOTANY, YEAR III

E-Vehicles also known as electronic vehicles is one of the amazing thing in this era, which when strikes my mind, make me perplexed that 'Is it really worth buying?'. When I ponder over its pros and cons then I found

Pros

- Zero emissions
- Currently buying incentives
- Ease and affordability
- Environmental friendly
- Reduce import oil bill
- Cheap transportation technology

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Cons

- Lack of battery charging infrastructure
- Charging time
- Battery range
- Speed limit

If we see things from environmental point of view then Electronic vehicles need a source for electricity and in India largest source of electricity is by coal thermal power plants which constitutes about 75% of the total energy production(data mentioned in www.coal.nic.in) which means another source for Carbon emissions. However in the countries like USA, Switzerland these emissions will be comparatively less because their dependency on coal power plants is less but many researches say that still it cause 17-30% less carbon emissions as compared to petrol and diesel vehicles. Also, 2nd controversy is about the battery waste or e-waste which again questions the sustainability. A good research is still required in this field.

If e-waste problem can be solved in coming days and if e-vehicles can be connected with solar power then it will be a good initiative to cut the carbon emissions and also many countries have taken a pledge in COP26 that they will phase out the fossil fuels vehicles by 2040 to cut carbon emissions.

So if this is the case then it will be a successful model to be considered. To achieve COP26 goal for increasing non-fossil fuels capacity by 2030, Indian government have taken various initiatives out of which one of the contribution is to increase the e-vehicles to reduce the net carbon emissions and for that many steps were discussed and to make it affordable our finance minister Nirmala Sitaraman has also mentioned about 'Better Swaping Facilities' in our budget 2022-23.

So Go Ahead take a wise choice for your environment! Good Luck!

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The UN Decade on Ecosystem Restoration



Earth is the only known planet in the universe where life resides. Living beings can be of the smallest size like bacteria to 380.3 feet high Redwood plants to mobile organisms like humans and animals. They, along with the physical environment forms an Ecosystem. From the habitat of wild plants and animals to various food webs and nutrient cycles is the importance of the ecosystem. But recently, conserving the ecosystem is the biggest concern of the century. The reason for this is climate

change. Also, about half of the world's GDP (Gross Domestic Product) is directly dependent on nature, but the overuse of natural resources has disturbed the depletion and restoration ratio. Already about 40% of the world's population suffers due to ecosystem depletion with close to 20% of countries at risk of ecosystem collapse. Various NGOs, National and International organizations are involved to restore ecosystems while the damage is still being caused by climate

change and various human activities. Ecosystem restoration is the process of reversing the degradation of ecosystems to regain their ecological functionality. Keeping this in mind, The United Nations, an international organization for maintaining international peace and security announced the plans on UN decade on ecosystem restoration during the Bonn challenge 3.0 in March 2018. Later on, during the 73rd session of the UN general assembly in September 2018, 71 countries supported the proposal of El Salvador on the UN decade on ecosystem restoration, and on 1st March 2019, the UN general assembly officially adopted the resolution declaring 2021-2030 will be the UN decade on ecosystem restoration just like the UN decade on biodiversity 2011-2020. At that time the director-general of the Food and Agriculture Organization of the UN (FAO), José Graziano da Silva said that

"The UN decade on ecosystem restoration will help countries race against the impacts of climate change and biodiversity loss."

The UN defines ecosystem restoration as

"The process of halting and reversing degradation, resulting in improved ecosystem services and recovered biodiversity."

In practice, the restoration process can involve different transition states, depending on what type of degraded ecosystem has to be restored such as-

- An existing degraded natural ecosystem like forest might be restored by removing pollutants or restoring key megafauna such as deer.
- A modified degraded ecosystem such as farmland might be restored by restoring hedgerows which can help improve soil quality or might transform it into a fully natural ecosystem.

To approach restoration, one can do regenerative agriculture (focuses on the interconnection of farming system and the ecological system as a whole) or rewilding (aimed to restore and protect natural processes and wilderness areas). The UN decade on ecosystem restoration runs from 2021-to 2030 and is similar to other nature-related international decades. The decade was launched on World Environment Day i.e., 5th June 2021. It is controlled by two UN agencies- UNEP (United Nations Environment Program) and FAO (Food and Agriculture Organization). Besides these two, CIFOR (Centre for International Forestry Research), IUCN (The International Union for Conservation of Nature), and GLF (the Global Landscapes Forum) are the other key bodies in this. According to the UN, around 2 billion hectares of degraded lands have the potential for ecosystem restoration.

The UN decade aims to prevent, halt and reverse the degradation of ecosystems on every continent and in every ocean. Achieving the Bonn Challenge, a global

goal to bring 350 million hectares of degraded and deforested landscapes into restoration by 2030, could realize up to \$9 trillion in net benefits. The decade is established in order to-

- Prioritize ecosystem restoration from the global to local level
- Address current developmental challenges due to land degradation, biodiversity loss, and climate change vulnerability
- Foster, a holistic approach to achieving international commitments and national priorities
- Enhance co-operation and resource mobilization to countries and jurisdictions to meet national goals and international commitments
- Encourage partnerships and investments
- Promote co-operation between fund providers, civil society, governments, and the private sector
- Raise awareness of the importance of functional and healthy ecosystems for human wellbeing and development

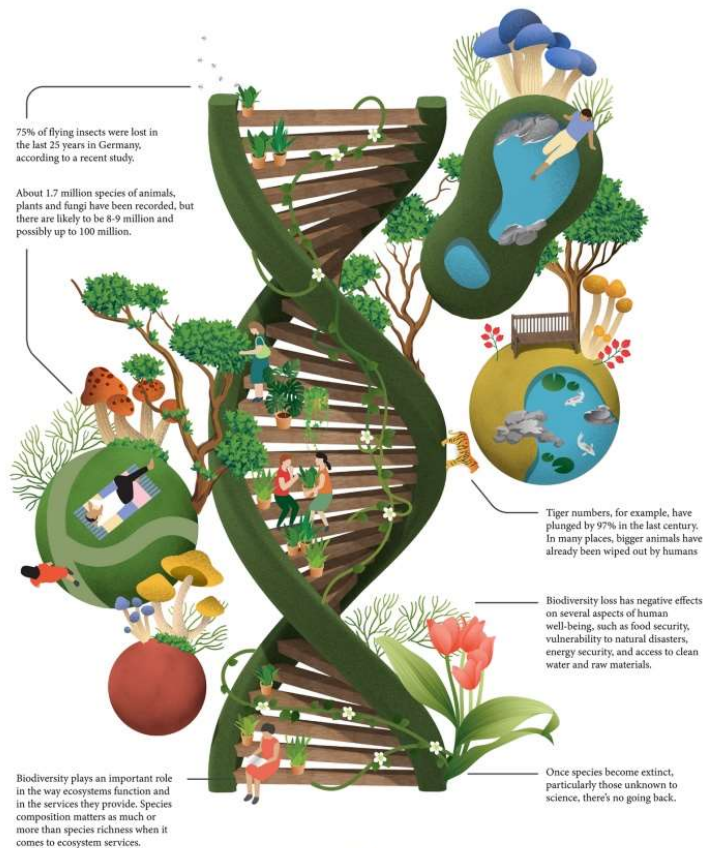
It has been said that ecosystem restoration will contribute to all 17 Sustainable Development Goals (SDGs), especially

- Zero Hunger (SDG 2)
- Clean water and sanitation (SDG 6)
- Affordable and clean energy (SDG 7)
- Responsible consumption and production (SDG 12)
- Climate action (SDG 13)
- Life below water (SDG 14)
- Life on land (SDG 15)

- Partnerships for the goals (SDG 17)

Some of the recent restoration implementers are-

- Gondwana links restoring ecosystem connectivity in Australia- They are partnered with UNEP and are reconnecting ecosystems from the wet forests in the Southwest to the Woodlands and mallee near the dry inland of existing conservation areas in Australia. Around 15,500ha are under restoration. Additional benefits are mitigating climate change, advancing climate adaptations, and safeguarding biodiversity.
- Krishi Avam Paristhitiki Vikas Sansthan (KRAPAVIS) has initiated a movement to revitalize and conserve *Orans*, a sacred grove in Rajasthan, India. KRAPAVIS is taking into account the significance of *Orans* in the ecology and culture in the state and has succeeded to restore 140 *Orans* covering an area of over 4000 ha.
- Seeding 100m trees to restore Borneo's rainforests- 620ha land are under restoration and the referring partner is Restor. Their mission is to restore degraded forests by planting fast-growing tree species and cash crops in the agroforestry systems. Besides minimizing climate change and safeguarding biodiversity, they are also supporting livelihoods by ensuring that farmers' sustainably harvested forest products reach the right markets and recruit new farmers every year for the



Source: <https://tinyurl.com/2p96xwcc>

initiative.

- Project seagrass: making waves to save our seas- Europe partnership with Project seagrass uses a mix of cutting-edge technologies to assess sites and plan field trials to ensure restoration of 10ha oceans and coasts in North Wales.

Besides this, the UNEP has started to explore how restoring ecosystems in Bhutan is helping to reduce human-wildlife conflict and conserve the Royal Bengal tiger as we hit the year of the tiger on 1st February 2022. These are the small and latest initiative taken by the UN in co-operation with other organizations.

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By

Sukeerti

B.Sc. (HONS.) BOTANY Year III



Source: <https://tinyurl.com/mr2269ja>

SIMARD'S EXPERIMENT: THE FIRST JIGSAW PIECE FOR DECODING THE LANGUAGE OF TREES

By
Jessica
B.Sc. (HONS.) BOTANY, YEAR II

You might have seen many movies where seemingly inanimate objects such as trees would magically talk and share wisdom with the main characters of the story. Now, what if I tell you that it is true? That trees do talk and are very social creatures just like us humans! Indeed unlike the movies, they cannot talk to us but rather have conversations with each other. But the question is how do they talk to each other? The answer lies underground in their roots. A tree's massive canopy enraptures us so much that we fail to see the entire picture. Most of the important metabolic functions take place via roots under the land.

With the help of mycorrhizae (fungi), trees are able to pass on excess food, nutrients, water and even defense signals to their kin or seedlings. Ecologist Suzanne Simard and her team were the one behind this great discovery. When she was still in school, scientists had discovered that pine seedlings could transfer carbon to one another. But they thought this was only possible in laboratories. Simard thought otherwise. Having spent most of her childhood being surrounded with trees she believed the same would be possible in nature too. No one believed her and called her crazy but she remained adamant. Eventually when she got older she went on to conduct some experiments deep in the forest. Due to limited research funding she had to conduct experiments with the cheapest items and gadgets.

She grew 80 replicates of three species (240 plants in total): paper birch, Douglas fir, and western red cedar. She figured the birch and the fir would be connected in a belowground web, but not the cedar. That is because birch and fir have similar types of mycorrhizae present in their roots and cedar does not.

She and her team put on their white paper suits, respirator. They covered all the trees with the plastic bags so that the gases cannot escape out. They injected the plastic bags with tracer isotope carbon dioxide gas, carbon-14 in all of the birch trees. They injected the fir trees with carbon-13 carbon dioxide gas to check whether a two way communication was possible too. Then she covered the fir tree so that it could not conduct photosynthesis. She waited for an hour so that the trees would use up all of the CO₂ provided through photosynthesis. The food produced should contain the carbon isotopes which would make it easy to track their path throughout the tree. Their main aim was to check whether the two trees would share resources or not. She first ran the geiger counter (a device for measuring radioactivity by detecting and counting ionizing particles) over the Birch leaves. The geiger counter reacted with a sharp high pitched sound indicating that the birch had taken up the radioactive gas. Then she went over to the fir tree and repeated the same steps. The apparatus reacted again indicating the presence of the radioactive gas carbon-14. Simard was thrilled and stated that the sound of the geiger counter was simply music to her ears.

As she had suspected, the geiger counter did not react to cedar. It was not connected into the web interlinking birch and fir. She checked all the replicates and got the same result.

It turns out the two species were interdependent. This ground breaking discovery made ecologists question whether the notion “Survival of the fittest” is what is prevalent in communities or not. The results of the experiment indicate that communities that choose cooperation are more stable and better equipped to handle whatever mother nature throws on them.

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MEDICINAL PLANTS - HOMEMADE WEAPON TO FIGHT COVID-19

Medicinal plants are the elemental unit of ancient medication system in Asian nation. These ancient medic used from centuries to cure folks. The utilization of healthful plants has raised throughout the COVID-19 pandemic as a personal behaviour (not beneath the management of government). Heaps of misinterpretations of the utilization of healthful plants to treat or forestall COVID-19 are spreading throughout completely different countries to seek out the promising treatment of this respiratory disorder virus, which require to be managed proactively. During this context, a quest was required to document healthful plants used, their priority of use in society,



Source: <https://tinyurl.com/4exhwb2>

their standing of cultivation, and also the supply of data folks follow to use them. This study aimed to document this standing of healthful plant use and build vital suggestion to the involved authorities. The main background of this study is that coronavirus (COVID-19) has caused a worldwide chaos wherever there was a complete lockdown of the whole planet as well as the collapse of the health system in several developed, developing and under-developed countries. This case has caused a public health system and until date no decisive/ absolutely potent treatment is being confirmed to date. The present study focuses on the importance of ancient, cultural and generations history with regard to the employment of importance and significance of medicinal plants, particularly to seek out a technique to fight the new virus. Thus, to perceive the importance of ancient medication, information that wants a lot of attention and analysis to counter-attack the occurrence particularly in medically weak health systems.

The new corona virus outbreak “COVID-19” is a respiratory disease that has affected the whole planet and it is recorded as one of the fastest spreading disease in the modern times with a high death rate.

Now as the COVID -19 comes under the SARS (SEVERE ACUTE RESPIRATORY SYNDROME) this virus as soon as enter the host body (here, Humans) try to invade upper and lower part of respiratory system that include alveoli along with the upper part of trachea creating a conjugation and inflammation thus, reducing the air flow in respiratory system and in turn reducing blood oxygen level. Moreover, ruining the stats of body. In the present scenario, the best will be putting interest into practice on the traditional knowledge associated with the use of medicinal plants in particular as a strategy to mitigate the impacts of COVID-19 . Recent report indicates that in the world 390,000 plant species are identified, where as 60,000 have been exclusively used as a medicinal plant and around 26,000 of those have direct scientific evidences and confirmed through cultural practice in different geographical regions . More importantly, the use of medicinal plants across countries and trading them has raised in recent decades internationally with a net revenue that has tripled over time 1.3 that was in 1998 to 3.3 billion USD in year 2018. The growth on use of the medicinal plants has responded very well recently to meet the

economic challenge of many recently during the current pandemic.

Keeping the problem in mind, the main players (Doctors) suggest the intake of one of the most widely spread medicine which is found in every house of INDIA i.e. turmeric power obtained from a medicinal plant, *C. longa*. Turmeric powder can be drink with pinched hot water as it boost the immune system to be active and work more efficiently. Other than that black pepper (*Piper nigrum*), clove (*Syzygium aromaticum*) are also being used.

By

Akshat Batra

B.Sc. (HONS.) BOTANY, YEAR I

References:

·<https://pubmed.ncbi.nlm.nih.gov/33832492/>

·<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8557979/>



Source: <https://tinyurl.com/yc3x5556>
<https://backgarden.org/turmeric-for-plants/>



Source: <https://tinyurl.com/yfh6kdsx>

By

Chandrashu, Dipti, Akriti

B.Sc. (HONS.) BOTANY, YEAR I

Innovation is a part of humanity however it's also important for nature. Innovation has two oldest paperwork: "evolution and natural selection". they have opened a brand-new area in technological know-how: biomimicry. Biomimicry came from the Greek word (bio method existence, mimics imply imitate). "BIOMIMICRY is a practice that learns from and mimics the techniques discovered in nature to remedy human design challenges-and locate hope." The goal is to create products, processes and rules in a new way to remedy the hassle of the human we are grappling with.

Biomimicry deals with 3 types in nature:

- coping shape and form
- coping a manner like photosynthesis in a leaf
- Imitating at an environment level - like constructing a nature- stimulated metropolis

Biomimicry visible nature as:

- A version - It research nature's models and imitates them as idea for designs or methods with the goal of solving human problems
- A measure - It makes use of ecological requirements to decide the rightness of human innovations
- A mentor - It's miles a new manner of gazing, assessing and valuing nature

EXAMPLES OF BIOMIMICRY

1) Environmental-pleasant sun Cells stimulated through Photosynthesis (Dye-Sensitized sun Cells)

Dye-Sensitized solar Cells (DSSCs) contain a porous layer of titanium dioxide nanoparticles protected in a dye that absorbs incoming photons from the sun as flowers absorb mild for photosynthesis. The excited electrons inside the dye are then amassed for powering a load. An electrolyte answer replaces misplaced electrons back to the absorbent dye so the cycle can hold. DSSCs are normally considered much extra environmentally benign than traditional sun cells due to the fact they use exceedingly non-poisonous materials. they're additionally able to produce the identical quantity of electricity as a silicon-based solar mobile whilst reducing their existence cycle surroundings effect.

2) Green gas introduction stimulated by means of vegetation

The photocatalyst can spoil down water into hydrogen fuel. It incorporates nanoparticles that generate advantageous and terrible charges in presence of water and mild. similar to the oxygen in photosynthesis, these prices simultaneously break the water molecule to supply hydrogen and oxygen. The hydrogen shops strength inside its bond that may be used later as a gas to generate smooth power. The gadget suggests a 4.2% sun to chemical electricity conversion efficiency, higher than all previous technology.

3) Low- electricity Chemical Reactions inspired by using Photosynthesis

New Iridium has created a suite of organic chemicals that allow photocatalysis, or light-driven chemistry, putting off the want for a wide type of chemical reactions, lowering prices and paving the manner for green chemistry. With products currently being used by pharmaceutical and chemical companies, New Iridium is working toward growing a platform that mimics photosynthesis by means of the usage of light electricity to transform water and CO₂ chemical strength.

IMPORTANCE OF BIOMIMICRY

1) In nature there's no waste, everything is a nutrient this is recycled and reused infinitely. Mimicking these herbal designs and tactics can help people propel toward technology that sustainably use and maintain power, reject pollution, reuse materials and paintings as a device to create situations conducive to life.

2. seeking to nature for proposal can help the fashion designer by "Nourishing curiosity". dressmaker is innately curious, and biomimicry gives the possibility to learn about lifestyle's water, electricity and material use strategies, and broadens the layout answer space to convey new way to the design table.

Biomimicry makes use of actual living structures to inspire the layout and fabrication of the subsequent stage era of substances which can solve problems as nature does from healing wounds to preventing infections, possibly, "growing" rockets and cars.

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- 3) <https://www.medicaltechnologyschools.com/biological-sciences/what-is-biomimicry>
- 4) <https://hospitalityinsights.ehl.edu/what-biomimicry>

SECTION

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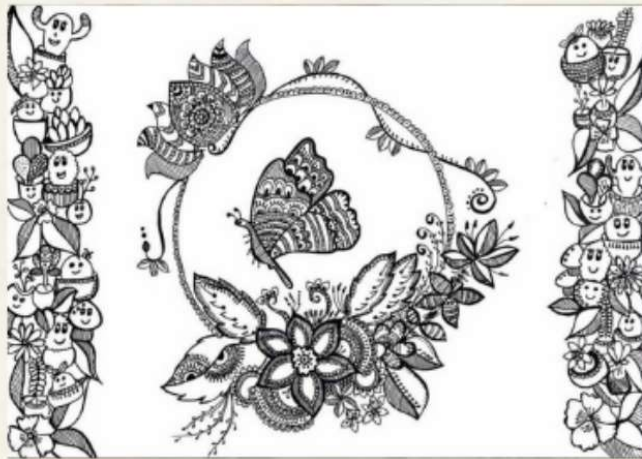
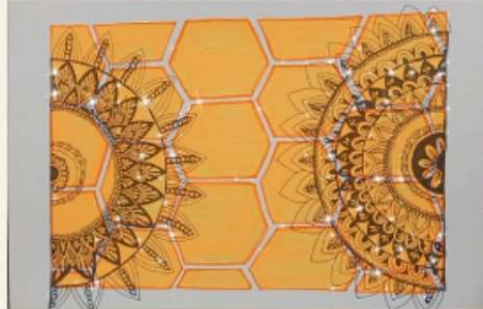
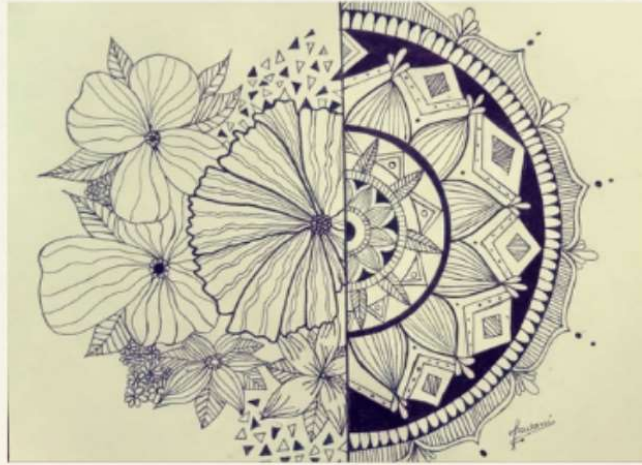


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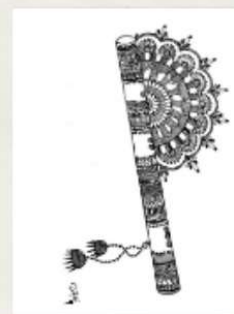
DOODLE/PHOTOMOSAIC

BY: AYUSH SEMWAL , ISHIKA CHAUDHARY, K. MANSI RAO (B.Sc. (HONS.) BOTANY, YEAR III)

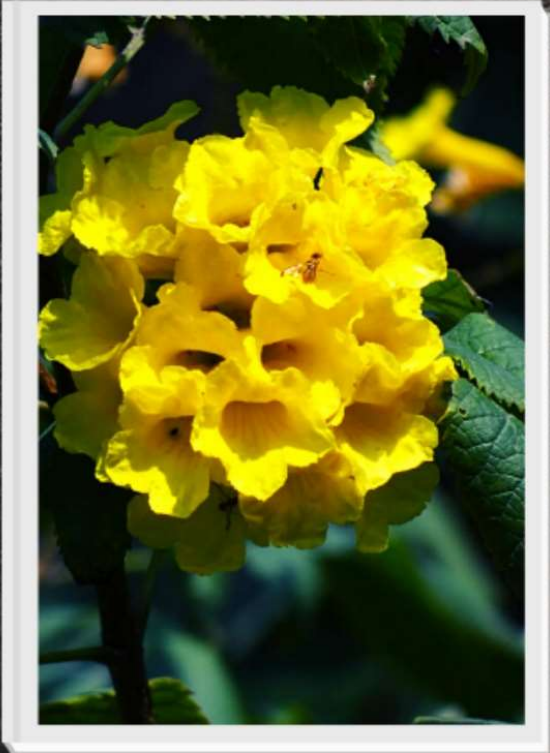
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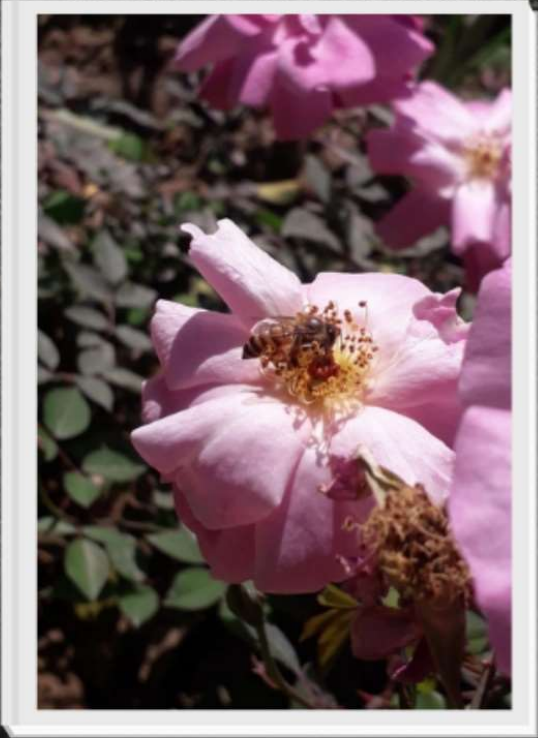
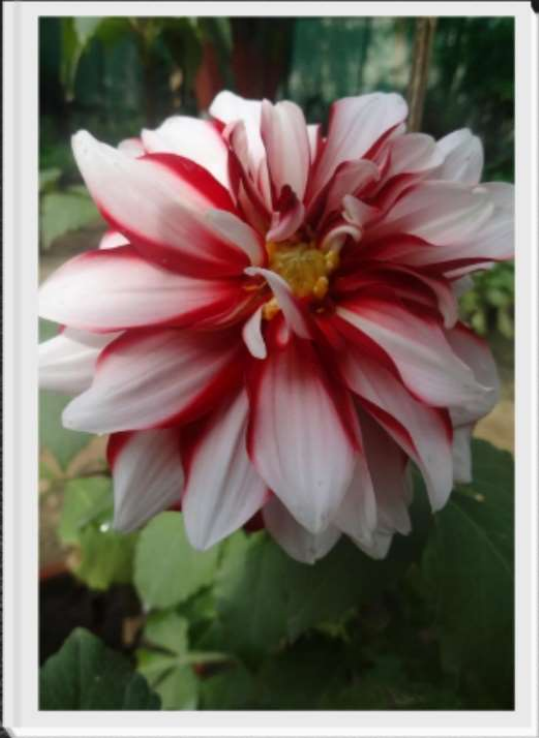


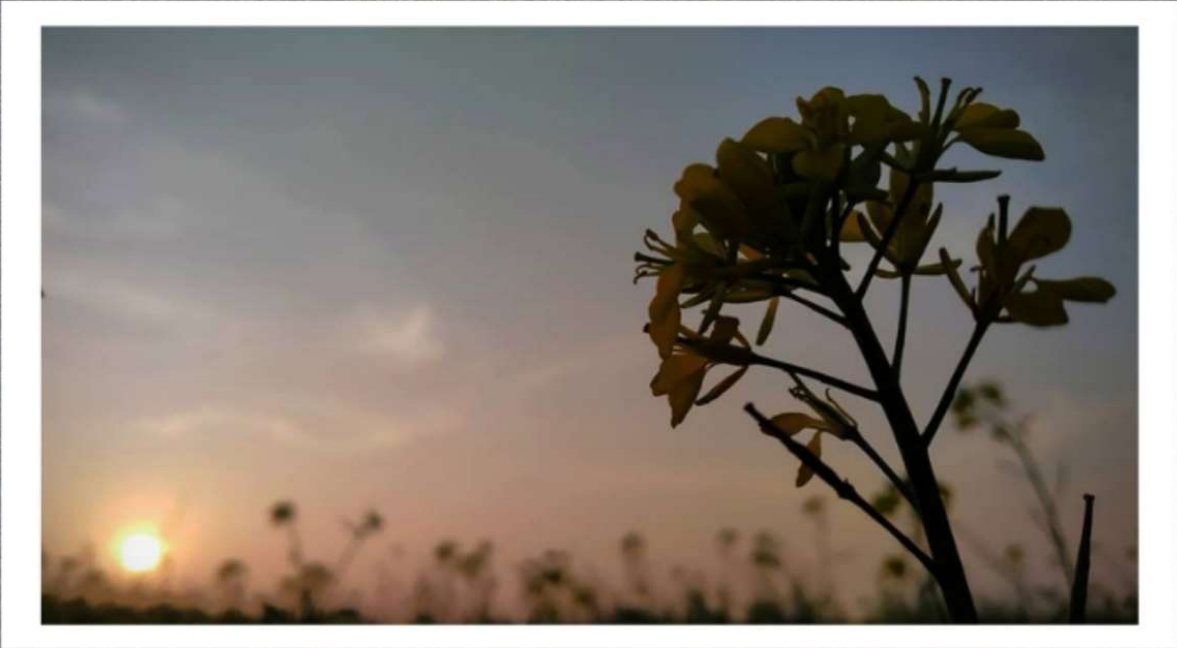
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BY: PAWANI, DIPTI, SUKRITI (B.Sc. (HONS.) BOTANY, YEAR I)









By:

Prarthna Jain, Priyanshu Shanker, Priya Maurya (B.Sc. (HONS.) BOTANY, YEAR I) and
Minal Anand (B.Sc. (HONS.) BOTANY, YEAR II)

Page 29




SECTION: QUIZ/WORD GAME

Source: <https://tinyurl.com/2ambh278>

QUIZ

1. Who is known as the Father of Botany?
 - a. Theophrastus
 - b. Aristotle
 - c. AP de Condolle
 - d. Carl Linnaeus
2. What family does rice belong to?
 - a. Brassicaceae
 - b. Poaceae
 - c. Umbelliferae
 - d. Fabaceae
3. Which flower absorbs water from its petals?
 - a. Water lily
 - b. *Hydrilla*
 - c. *Hydrangea*
 - d. *Vallisneria*
4. Select the odd one out.
 - a. Tobacco
 - b. Potato
 - c. Tomato
 - d. Onion
5. I'm the King of Spices. Who am I?
 - a. Cardamom
 - b. Black pepper
 - c. Mint
 - d. Saffron



6. Which part of Saffron is used in Kashmiri delicacy?

- a. Petals
- b. Root
- c. Sepals
- d. Pistil

7. Viruses are infectious agents discovered by Dmitri Ivanovsky in 1892. They are made up of ____ and ____.

- a. nucleic acid and proteins
- b. carbohydrates and proteins
- c. Nucleic acid and lipids
- d. Lipids and proteins

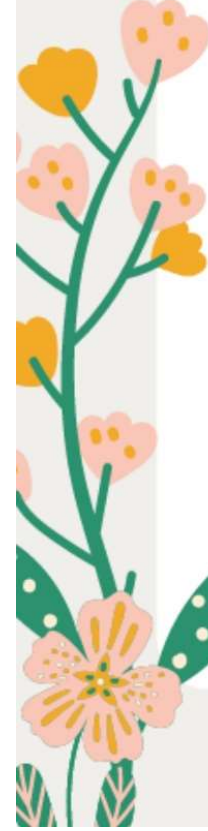
8. Imperfect fungi is _____.

- a. Ascomycetes
- b. Basidiomycetes
- c. Deuteromycetes
- d. None of the above

9. It is said that keeping a ripe banana with other unripe fruits causes the unripe fruits to ripen. Which hormone causes this phenomenon to occur?

- a. Gibberellin
- b. Auxin
- c. Ethylene
- d. Cytokinin

10. Which part of *Cinchona* is used in the treatment of malaria?

- a. Bark
 - b. Leaves
 - c. Roots
 - d. None of the above
- 

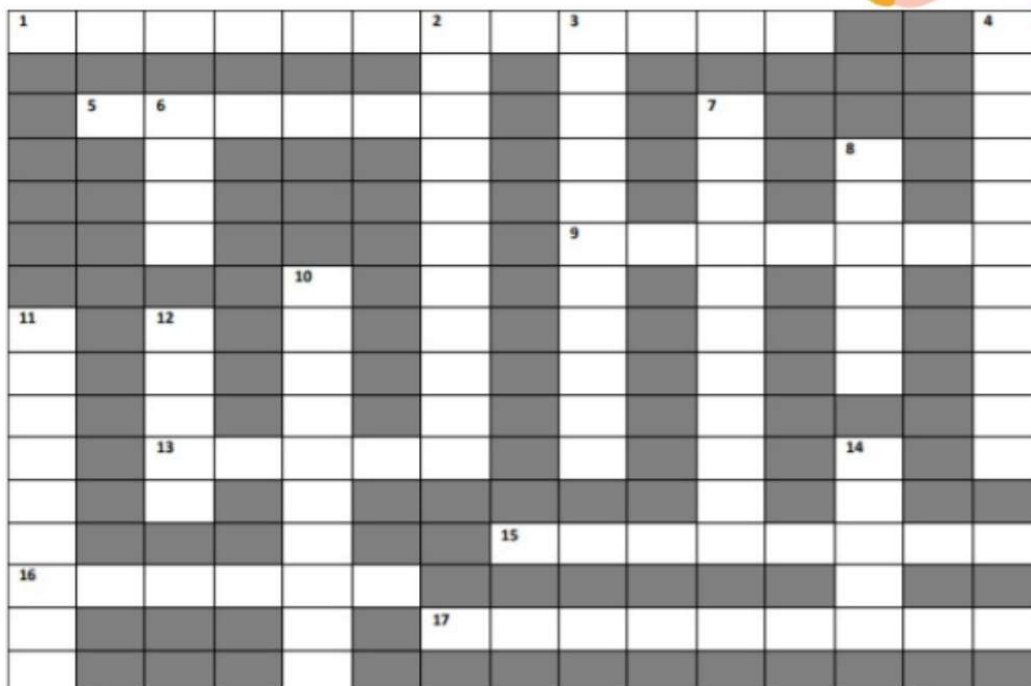
By

Aalokita Kesrwani, Jessica Kannanthanam, Nipun Kumar Verma, Priya Yadav
(B.Sc. (HONS.) BOTANY, YEAR II)

Page 31



Word Game



1. Organelles, the sites of photosynthesis
2. Butterflies, wind, or hummingbirds, are
3. Plants with flowers and fruits are known as
4. Plant life cycle features an "alternation of _____."
5. A plant that lives for a single season
6. Acorns and pecans, for example.
7. The green pigment that facilitates photosynthesis
8. Cactus spines and flower bracts are modified _.
9. Small openings in the underside of leaves
10. A plant that bears seeds but not fruits or flowers.
11. Trees that drop their leaves.
12. The main reproductive unit of seedless plants
13. These absorb water and minerals from the soil.
14. A fruit is the ripened _____ of a flowering plant.
15. Unlike animal cells, plant cells are characterized by an outer _____.
16. In photosynthesis: carbon dioxide + water → sugar + ?
17. A moss or liverwort, informal.

By

Sanjana Garg

B.Sc. (HONS.) BOTANY, YEAR I

Page 32



Source: <https://wallpapercave.com/w/wp6157858>

SECTION: POEM

सूरज
की
उग गए हैं सूरज
कयी चेहरे मुस्कुराय
सूरजमुखी का फूल भी
अब खिलखिलाय

उग गए हैं सूरज
कई चिड़िया चेहचहा ऐ
बगिया में भी अब
कोयल की कूक कूक गुंजाय

उग गए सूरज
की जानवर सज गए
फूलों की खुशबू से
सारा जग महकाएं

उग गए सूरज
की पेड़ झनझनाए
हवा भी अब अपना
मधुर गुन गुनगुनाएं

उग गए सूरज
की नदियां लेहराए
झरने का पानी भी
झर झर बरसाएं

उग गए सूरज
की चेहरे मुस्कुराय
सूरजमुखी का फूल भी
अब खिलखिला ए

By
Chandranshu Bhushan
B.Sc. (HONS.) BOTANY, YEAR I

Page 33

Image: Bună Dimineața - Ganduri in cuvinte (codarean.com)

A world devoid of greens

Think of earth without the green
It does sound like a daunting dream
Where will birds have their nests?
Where will weary travelers sit for rest?

Will the flowers again bloom
Everywhere would be pall of gloom
Will we procure food, air and water
Alas Earth would not have that to offer

The lesson before us is undeniably clear

Being Green is life and to which we must adhere

Let everyone understand and affirm an oath

Make the world a greener abode.

By

Prakriti Bhandari

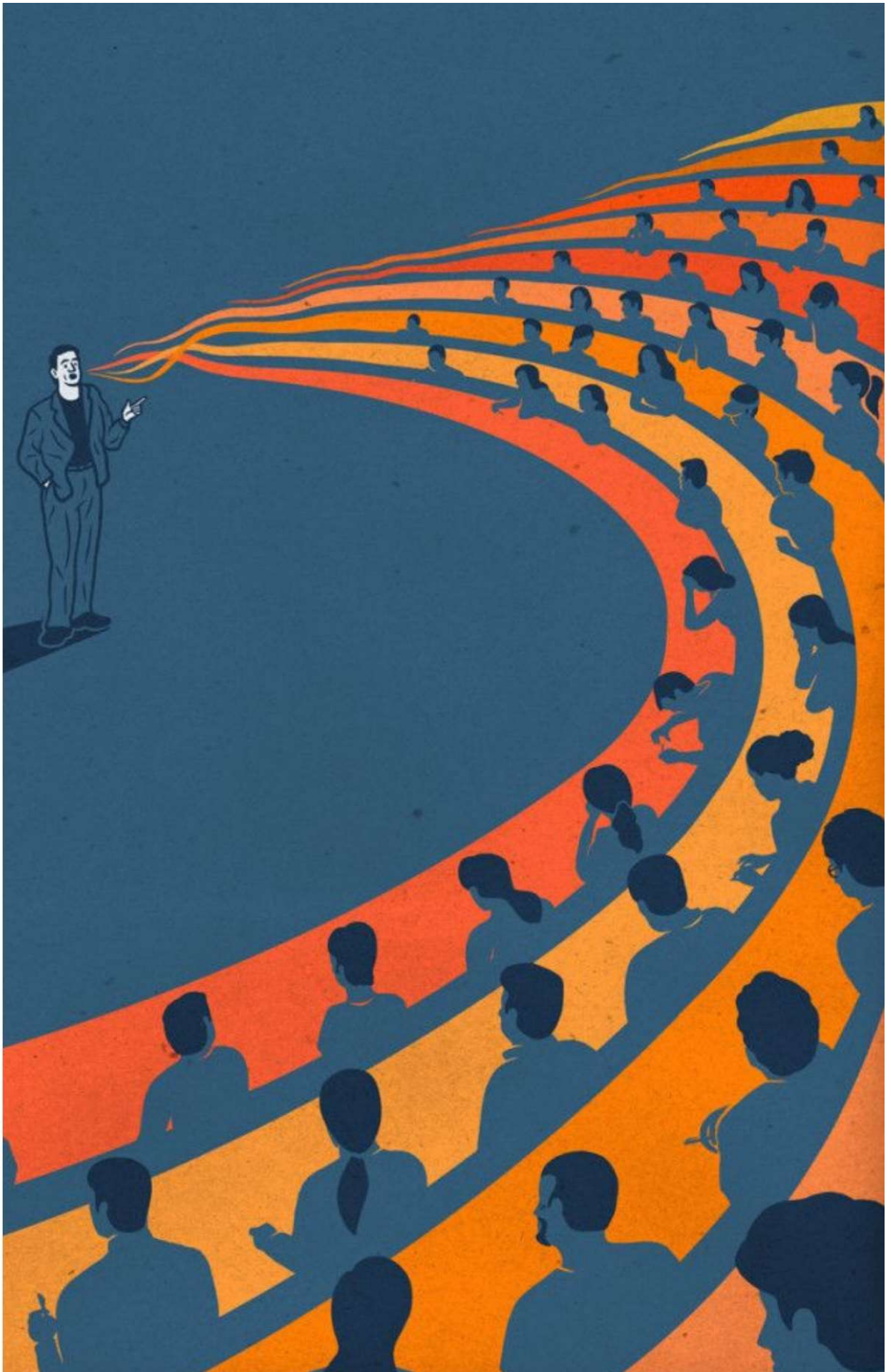
B.Sc. (HONS.) BOTANY, YEAR III

An ode to hometown

Away from the incessant chaos,
the same monotonous routine.
Away from the gallons of stress,
into the way of heavenly bliss.
Soaking the purity it holds,
with every step I secure.
Praying for the moment to last forever,
a glimpse of it is the ultimate cure.
Exhilarating, Ecstatic and Enchanting
State of mind,
In my hometown,
I can be one of the mighty kind.

By
Prakriti Bhandari
B.Sc. (HONS.) BOTANY, YEAR III

SECTION: DEPT. LECTURES



Source: <https://pin.it/3sacXd5>

Status of Water Pollution in Yamuna: Recent Advances in Research Methodology

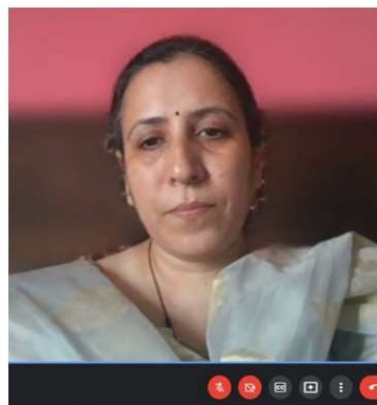
1) Background:

An inaugural lecture for Involucre, Botanical society, Sri Venkateswara College, was organised on 12th November, 2021. Dr. Pamposh Bhat, Assistant Professor, University School of Environment Management, Indraprastha University was the chief guest and held a talk on “Status of water pollution in Yamuna: recent advances in research methodology”. Due to COVID-19 restrictions the whole event was held virtually on google meet platform. The event commenced at 3 p.m. and was concluded by 5 p.m. Second- and third-year students of B.Sc. (Hons) Botany course participated in this event. Our principal, Prof. C. Sheela Reddy graced the occasion with her presence during the event.

Sources: <https://tinyurl.com/yw84zb27>
<https://tinyurl.com/48xm8rxv>
<https://tinyurl.com/4jp2sz2v>
<https://tinyurl.com/ywfv4nc>

2) Reception and Event:

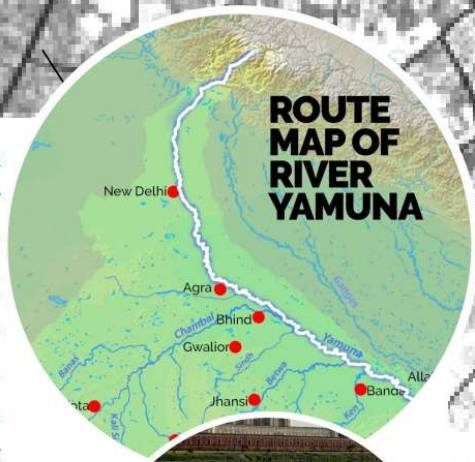
The event commenced with Saraswati Vandana, followed by an introduction to the department and its journey from its foundation to this diamond jubilee year of Sri Venkateswara College by Dr. Kalyani Krishna, convener. Then principal ma'am gave her warm greetings to the Involucre team and welcomed the guest speaker Dr. Pamposh Bhat. She also spoke a few words about the significance of Yamuna River and the need to protect its depleting health. Succeeding this, Dr. Shuka Saluja, teacher in charge, Department of Botany apprised everyone with the journey and achievements of the guest of honour. Dr. Pamposh Bhat gave her wishes to the department and the college and specially thanked Dr. Pooja Gokhale Sinha, co-convener for organising this talk. She then delivered an interactive talk on "Status of water pollution in Yamuna: recent advances in research methodology".



Dr. Pamposh, Guest Speaker



She firstly gave a brief overview on Yamuna's geography and biodiversity and then discussed the reasons for increasing pollution and depleting biodiversity. She also explained the role of 'National River Conservation Directorate' and 'Yamuna Action Plan'. She shared her research about the river and, status of the wetlands and pointed urbanisation and industrialisation of Delhi as the main cause for depleting river health. She shared solutions to revive the rivers health; protecting wetlands, overexploitation of water by dams and aquifers, cleaning the river and sustainable development of infrastructure. Her lecture was followed by a question answer session in which students and teachers of the department participated enthusiastically. The online session was favoured by the audience. The event was thought-provoking and suitable considering the current situation. It was evident that the lecture piqued the audience's interest as many questions were raised at the end. The audience



Sources: <https://tinyurl.com/yw84zb27>
<https://tinyurl.com/48xm8rxb>
<https://tinyurl.com/4jp2sz2v>
<https://tinyurl.com/ywfjv4nc>

consisted of the college's experienced staff and inquisitive students.

3) Future scope:

In spite of the event being conducted virtually, a positive response was observed. Involucres, the botanical society at Sri Venkateswara College has conducted many such sessions to spread awareness and disseminate valuable knowledge among the masses. It has done so in the past and will continue to do so in the future.

By
Nipun Kumar Verma
B.Sc. (HONS.) BOTANY, YEAR II

"आहार : SURPLUS FOR YOU SURPRISE MEAL FOR THEM "

An outreach program by Involucre, Botanical society of Sri Venkateswara College, DU

Involucre, Botanical society of Sri Venkateswara College commemorates the 60 glorious years of the college with the launch of our toolkit titled, "आहार: Surplus for you, surprise meal for them." The basic idea behind the toolkit is to increase awareness regarding food waste minimization. This toolkit also aims to showcase concrete examples of good practices to reduce food wastage at the commercial as well as domestic level. Pope Francis has rightly mentioned, "Throwing away food is like stealing from the table of those who are poor & hungry". In recent years, food waste has become a widely-recognized global shame. This wastage not only has an enormous impact on the global economy and food availability but also has major environmental impacts. Food wastage is linked to climate change, biodiversity loss, and pollution.

This situation is worrisome as current trends show that a rise in population and consumer preferences will further increase demand for food. Until now the focus has been on increasing production through scientific & technological interventions. However, not much attention has been paid to minimize wastage which is too large to be ignored.



Source: : https://www.ammonitepress.com/wp-content/uploads/2019/12/breathe-mindfulness-journal_sp2.jpg

Google Calendar - Week of 2 Jan... Meet - SEMINAR (INVOLUCRE) x

meet.google.com/nfa-rqnz-jgg?authuser=0

Rhythm Taneja is presenting

Toolkit: Food Waste Minimization

Contributors

Patron: Prof. C Sheela Reddy
Teacher In charge: Dr. Shukla Saluja
Faculty Coordinator: Dr. Pooja Gokhale Sinha

Student Coordinator Outreach Program: Mahek Agarwal

Toolkit Team:

- 1) K. Mansi Rao
- 2) Jessica Kammantham
- 3) Nipun Kumar Verma
- 4) Bhavya Birla
- 5) Priya Yadav
- 6) Minal

15:26 | SEMINAR (INVOLUCRE)

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18°C

15:26 07-01-2022

Google Calendar - Week of 2 Jan... Meet - SEMINAR (INVOLUCRE) x

meet.google.com/nfa-rqnz-jgg?authuser=0

Rhythm Taneja is presenting

Food Wastage in India

India is ranked at 101st in the 2021 Global Hunger Index (GHI)

Nearly 40 per cent of the food produced in India is wasted every year due to fragmented food systems and inefficient supply chains – a figure estimated by the Food and Agricultural Organization (FAO). This is a misfortune that happens even before the food arrives to the purchaser. There is also a significant amount of food waste generated in our homes. As per the Food Waste Index Report 2021, a staggering 50 kg of food is thrown away per person every year in Indian homes. This excess food waste usually ends up in landfills, creating potent greenhouse gases which have dire environmental implications.

The astonishing statistics of food waste attributed to households and their irresponsible consumption patterns mean that change needs to begin in our own homes.

- 1 **Pre-Consumption Losses:** Nearly 40% of the food produced in India is wasted every year due to fragmented food systems and inefficient supply chains. This is the loss that occurs even before the food reaches the consumer.
- 2 **Food Wastage At Households:** There is also a significant amount of food waste generated in our homes. As per the Food Waste Index Report 2021, a staggering 50 kg of food is thrown away per person every year in Indian homes.
- 3 **Supply-Chain Management Issues:** Key issues in food supply chain include inefficiency of government programs, lack of transparency in revenue generation, insufficient storage facilities, and lack of comprehensive and accurate inventories.
- 4 **Impact of The Pandemic:** In the wake of the lockdown imposed last year, surplus stocks of grain—pegged at 65 lakh tons in the first four months of 2020—continued to rot in godowns across India. Access to food became extremely scarce for the poor, especially daily-wage laborers.

15:26 | SEMINAR (INVOLUCRE)

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Taking into account the global scenario, the report by the United Nations Environment Program (UNEP), has estimated that, nearly 17% of all food available for consumption was wasted in 2019. Roughly, one-third of the edible parts of global food produced for human consumption is estimated to be lost or wasted, and these losses have been valued at 1 trillion USD. Food waste is concentrated in industrialized countries, where more than 40% of the food losses and waste occur at retail and consumer (households and retails) levels and private households are responsible for the largest share. The present situation in India is no different, India is ranked at 101st in the 2021 Global Hunger Index (GHI). Nearly 40% of the food produced in India is wasted every year due to fragmented food systems and inefficient supply chains. This is a misfortune that happens even before the food arrives at the purchaser. There is also a significant amount of food waste generated in our homes. The astonishing statistics of food waste attributed to households and their irresponsible consumption patterns mean that change needs to begin in our own homes.

Moreover, the pandemic has aggravated the situation in India. The nationwide lockdown in the country led to the rotting of surplus grains in warehouses. Focusing on ground level, the toolkit incorporates sound and comprehensive suggestive strategies for food waste minimization at both, the commercial and household level. Another aspect of this outreach program is the collaboration of NGOs with eateries (restaurants & eateries) so that all the extra food left at the eateries could be distributed to needy people through the NGOs. The network of NGOs makes it easier to reach out to people in need. The agenda behind this move is to ensure that no food goes to waste and food wastage is reduced. Through the medium of Google forms, we aim to create awareness regarding waste segregation into biodegradable and non-biodegradable. Also encouraging practices like reusing, recycling, and eco-friendly practices such as vermicomposting.

By
Mahek Agarwal
B.Sc. (HONS.) BOTANY, YEAR III)

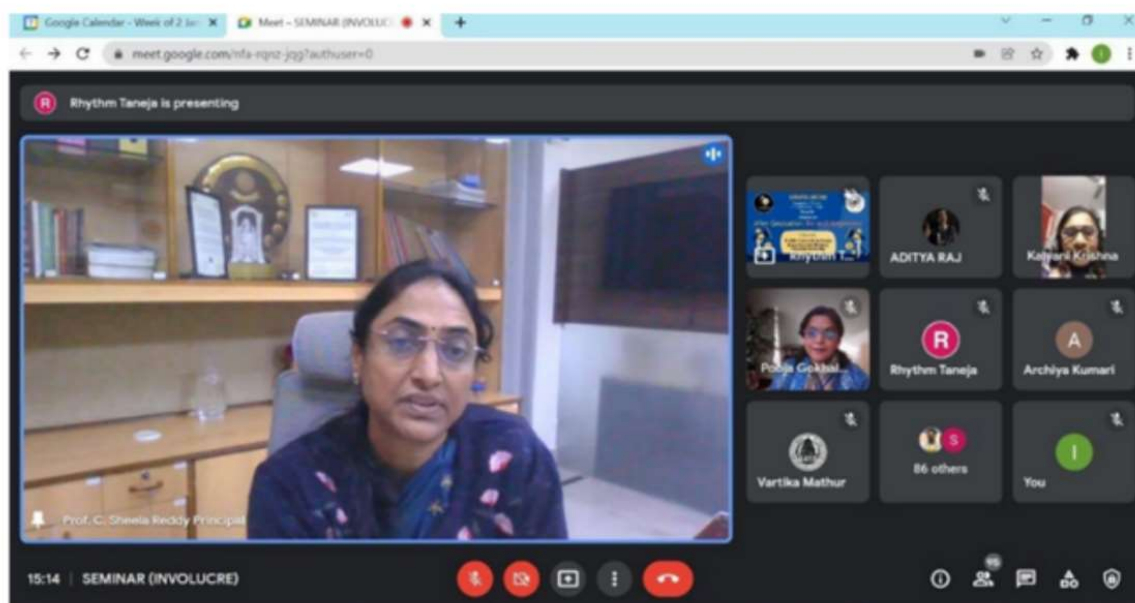
AFTER GRADUATION: BE AN ENTREPRENEUR



Background:

A Webinar was organised on 7th January 2022 by 'Involucre', Botanical Society, Sri Venkateswara College. Prof. Krishnendu Acharya, Department of Botany, University of Calcutta, was the speaker and delivered a talk on "After Graduation: Be an Entrepreneur". "आहार-Surplus for you, Surprise meal for them", the community outreach program initiated by the Department of Botany, Sri Venkateswara College, was highlighted in the beginning of the event.

Due to COVID-19 restrictions, the event was held virtually on the Google Meet platform. The event commenced at 3 PM and concluded by 5 PM. The students of B.Sc. (Hons.) Botany course and other related courses participated in the event. Around 100 participants attended the event. Our principal, Prof. C. Sheela Reddy and Vice Principal, Dr. S Venkat Kumar graced the occasion with their august presence during the event.



Reception and Event:

The event commenced with invocation of Saraswati Vandana, followed by an introduction to the Botany Department of Sri Venkateswara College and its journey from foundation to Diamond Jubilee year by Dr. Kalyani Krishna, Convener.

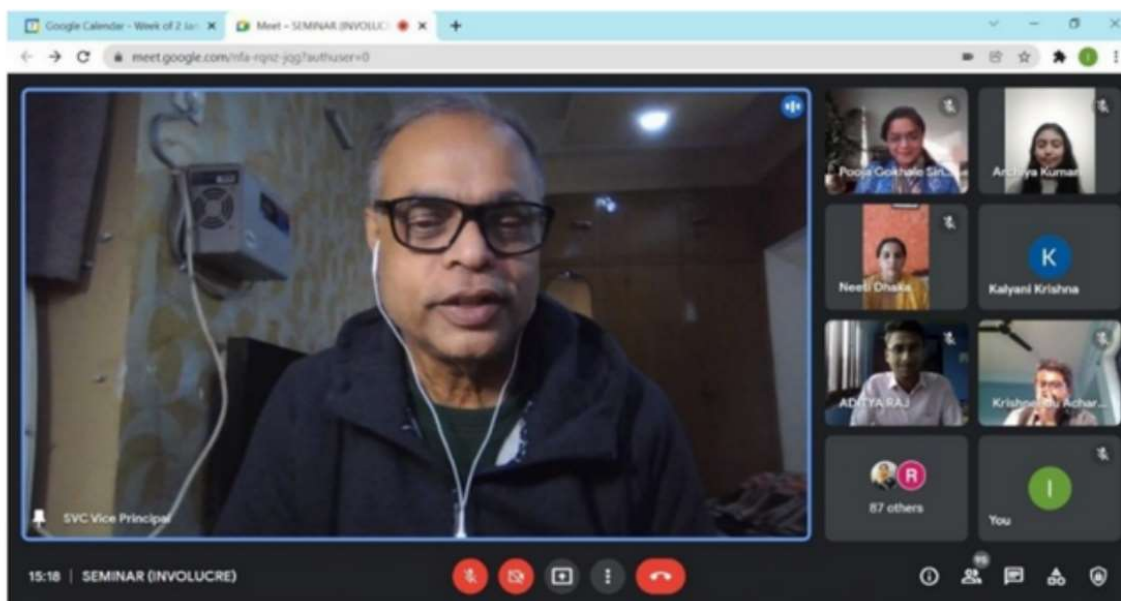
entrepreneur and emphasized setting up of new and innovative start-ups. Dr. Pooja Gokhale Sinha, Event Coordinator, informed about the toolkit for “आहार: Surplus for you, Surprise meal for them”, the community outreach initiative of

"Investments in agriculture are the best weapons against hunger and poverty, and they have made life better for billions of people."

- BILL & MELINDA GATES FOUNDATION

Then, Respected Principal greeted the 'Involute' team and warmly welcomed the Guest Speaker, Prof. Krishnendu Acharya. She also spoke about the significance of entrepreneurship in India. Thereafter, Respected Vice-Principal addressed the gathering and shared his considered views on the differences between a businessman and an

Department of Botany. Subsequently, Dr. Shukla Saluja, Teacher-in-charge, Department of Botany apprised about the track record and achievements of the Guest of Honour and invited him to address the students. Prof. Krishnendu Acharya thanked the Department of Botany and specially Dr. Pooja Gokhale Sinha, Co-Convener for organising this talk. He then delivered



an interactive and encouraging talk on “After Graduation: Be an Entrepreneur”. He gave a brief overview of the depleting economic situation worldwide and how entrepreneurship is opening the doors to numerous job opportunities that can sustain thousands of families. He

He enumerated several entrepreneurship offers that could provide multiple jobs for the masses, which include the development of Polyhouse systems, roof top organic farming in urban areas, and production of microgreens and mushrooms. His research has provided a platform for

To be an entrepreneur, you don't need high educational degree but must have a fixed mindset to do what you want!

elucidated on the various aspects of entrepreneurship that are not restricted to expertise in sciences only but also incorporate the knowledge of various other fields as well. He shared his research about the laboratory instruments and soil supplements which he has created at half the price from those available commercially and the same can be utilized to promote organic farming.

farmers, even blind people, labourers, and many such people who had the determination to fulfil their vision. His lecture was followed by a question answer session in which students and teachers of the Department participated enthusiastically. The toolkit for “आहार-Surplus for you, Surprise meal for them”, the community outreach initiative by the department of Involucre was highlighted.



This initiative under Dr. Pooja Gokhale Sinha is focused on spreading awareness about the need to reduce food wastages domestic/ commercial level and linking restaurants/ large scale kitchens having surplus food on daily basis with NGOs dedicated to providing food to needy people. Proposing Vote of Thanks, Dr. Pooja Gokhale Sinha expressed gratitude to the Guest of Honor for his illuminating talk which would certainly guide the students in making a suitable career decision. Dr. Kalyani Krishna and Dr. Pooja Gokhale Sinha concluded the event by thanking all present and making the event a grand success.

The online session was favored by the audience. The event was thought-provoking, inspiring and suitable considering the current situation. It was evident that the lecture piqued the audience's interest as many questions were raised at the end. The audience

consisted of the college's experienced staff and inquisitive students. In spite of the event being conducted virtually, a positive response was observed. Involucure, the botanical society at Sri Venkateswara College has conducted many such sessions to spread awareness and disseminate valuable knowledge among the masses. It has done so in the past and will continue to do so in the future.

By:

Prakriti Bhandari

B.Sc. (HONS.) BOTANY, YEAR III



MARCH 2022

FIELD TRIP REPORT

Report by:
Shrashti Lavania
B.Sc. (HONS.) BOTANY, YEAR III



Source: <https://www.financialexpress.com/wp-content/uploads/2021/05/Mother-Dairy-plant-file-photo.jpg>

**PLACE: MOTHER DAIRY PLANT
PATPARGANJ, NEW DELHI
DATE: MARCH 10, 2022
TIME: 9:30 AM**

Batch of 6th semester of Department of Botany along with faculty Dr. Pooja Gokhale Sinha and Dr. Satish Kumar visited Mother Dairy Plant. Visit was aimed to provide an industry exposure to the students. The tour begins at around 9:30 am. One of their team members accompanied us there. First, he explained us about Mother's Dairy journey, importance of milk and every process which is followed there. After that he showed us a short film and presentation providing a deep insight into the journey of the venture and its establishment into a successful company. The presentation gave knowledge about how mother dairy was established as a cooperative unit collecting milk from farmers in rural areas and marketing it in urban areas. We got to know about all the steps starting from milk collection from farmers to distributing milk to far off places. After presentation we had a doubt clearing session. Then students actively walked through the plant with the official who explained whole process of manufacturing and packaging of milk and milk products.

There were large silos for storing milk, which were cleaned with the help of machines. Other than this we also saw rain water harvesting and solar discs there. They also manage waste in which water used in the production process is filtered and let out in open areas for plants. Later on the visitors were given refreshments in the form of ice creams and had a photo session. Overall, it was an education-cum-fun experience for the students. We all felt pride about the indigenous local brand which is serving us so well which manages everything so nicely. Super thanks to our department, our teachers who organized such a knowledgeable trip.

The Legacy of Mother Dairy:

·Mother Dairy was commissioned in 1974 as a wholly owned subsidiary of the National Dairy Development Board. It was an initiative of Operation flood, the world's biggest dairy development program that was launched to make India a milk sufficient nation.

- Following the success of Operation flood, Mother Dairy has not evolved to become a national Player.
- Today, Mother Dairy is a lifeline for farmers and consumers across the country.
- Company manufacturers, markets and distributes milk and milk products including fresh Dairy, sweets, ice creams, ghee etc. The product family also includes edible oils, fruits and vegetables, pulses, fruit juices, jams and pickles.

The excursion was full of values that gave us an advantage of exploring field related to dairy and understand the environment of the dairy plant.



ANSWERS FOR QUIZ :

1-a Theophrastus

2-b Poaceae

3-c *Hydrangea*

4-d Onion

5-b Black pepper

6-d Pistil

7-a Nucleic acid and proteins

8-c Deuteromycetes

9-c Ethylene

10-a Bark

Word Game Answers

¹ C	H	L	O	R	O	² P	L	³ A	S	T	S				⁴ G
						O		N							E
	⁵ A	⁶ N	N	U	A	L		G		⁷ C					N
		U				L		I		H		⁸ L			E
		T				I		O		L		E			R
		S				N		⁹ S	T	O	M	A	T		A
					¹⁰ G	A		P		R		V			T
¹¹ D		¹² S		Y		T		E		O		E			I
E		P		M		O		R		P		S			O
C		O		N		R		M		H					N
I		¹³ R	O	O	T	S		S		Y		¹⁴ O			S
D		E		S						L		V			
U				P				¹⁵ C	E	L	L	W	A	L	L
¹⁶ O	X	Y	G	E	N							R			
U				R		¹⁷ B	R	Y	O	P	H	Y	T	E	
S				M											



1. Chloroplasts
2. Pollinators
3. Angiosperms
4. Generations
5. Annual
6. Nuts
7. Chlorophyll
8. Leaves
9. Stomata
10. Gymnosperm
11. Deciduous
12. Spore/Sporangia
13. Roots
14. Ovary
15. Cell wall
16. Oxygen
17. Bryophyte

EDITORIAL TEAM



2021-22

Left to Right:

Jessica, Nipun, Monika, Divya, Simran, Mansi, Mahek, Dr. Pooja Gokhale Sinha, Dr. Shukla Saluja, Dr. Kalyani Krishna, Dr. Sunita Yadav, Rythm, Ishika, Sukeerti, Prakriti, Stanzin, Aalokita



SOURCE: https://www.instagram.com/p/CU2d_JCB3OK/?utm_medium=copy_link

"Environment is the invisible hand that
shapes human behavior."

- JAMES CLEAR (ATOMIC HABITS)

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