BLOSSOM

NEWSLETTER (ISSUE 1, 2022)

DEPARTMENT OF BOTANY

বৰপেটাৰোড় হাউলী মহাবিদ্যালয়

B.H. COLLEGE

ESTD. 1966



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SOME SURPRISING FACTS OF NATURE

Ditishmita Das

B. Sc. 6th Sem (Hons.)

- **RAREST FLOWER IN THE WORLD**



Middle mist Red flower is the rarest flower in the world. It can be found only in London and Zealand. This belongs to *Camellia* genus.



- **GHOST ORCHID**

Dendrophylax lindenii is known as the 'ghost orchid'. It's bracts are scarious. The roots are camouflaged on the tree that the flower may seem to float in mid-air hence known as the 'Ghost orchid'.

- **HAPPIEST FLOWER**

The *'Sunflowers'* are known as the happiest flower in the world. The yellow petals surrounding a brown center symbolize optimum and long life.





- **LARGEST FLOWER IN THE WORLD**

Rafflesia arnoldii is the largest flower in the world. It is found in the rainforests of Indonesia. The flower grows to a diameter of 3.3 feet.



- **SMALLEST FLOWER IN THE WORLD**

Wolffia globasa or water meal is the world's smallest flower. It is bright oval green plant. It is about the size of a grain.



- **TIGER ORCHID IN THE WORLD**

Grammatophyllum speciosum is known as the tiger orchid. It is also called giant orchid. It is native to Myanmar, Thailand and Malaysia.

- **UGLIEST ORCHID IN THE WORLD**

Gastroda agnicellus is considered to be the Ugliest orchid. It is found in Madagascar. The flower has a noticeable musk rose- like scent.



DEAD MAN'S FINGER'S FUNGUS

Doli Sutradhar

B. Sc. 6th Sem (Hons.)



Xylaria polymorpha the fungus that causes 'Dead Man's Finger's is a saprobic fungus. These are black and club shaped with a white interior. They grow from stumps and buried deadwood of broad-leaved tree. It usually arises in tufts of 3 to 6 'fingers' that are often bent. These are wood-rotting fungi but they specialize in consuming neither the soft cellulose nor lignin but rather the polysaccharides. They are commonly found in U.K., Ireland, Europe and North America.

THE DIVERSITY OF WHEAT AND RICE IN INDIA

Hakimuddin SK

B.Sc 6th Sem (Hons.)



India is mainly an agricultural country. Agriculture accounts for approximately 33 percent of India's GDP and employs nearly 62 percent of the populations. After India's independence, one of the main challenges facing the country was that of producing enough food for the increasing Population. As only limited land is fit for cultivation, India has to strive to increase yields per unit area from existing farm land. The development of several

high yielding varieties of wheat and rice in the mid-1960s, as a result of various plant breeding techniques led to dramatic increase in food production in our country. This phase is often referred to as the Green Revolution.

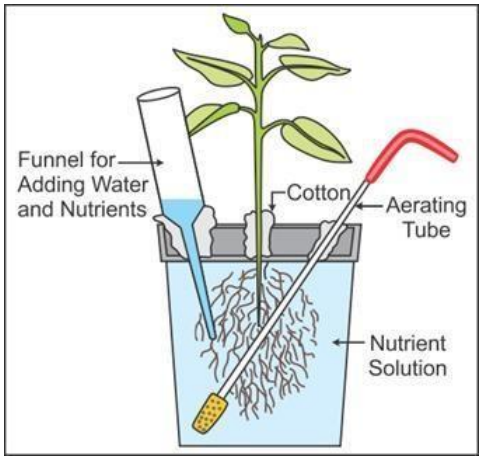
During The period of 1960 to 2000, wheat production increased from 11 million tonnes to 75 million tonnes, while rice production went up from 35 million tonnes to 89.5 million tonnes. This was due to the development of semi- dwarf varieties of wheat and rice. In 1963, several varieties such as Sonalika, Kalyan Sona, which were high yielding and disease resistant, were introduced allover the wheat growing belt of India.

Rice is an important food grain, the presence to which goes back thousands of years in Asia's agricultural history. There are an estimated 200,000 varieties of rice in India alone. The diversity of rice in India is one of the richest in the world. Basmati rice is distinct for its unique aroma and flavour and 27 documented varieties of Basmati are grown in India. Better-yeilding semi-dwarf rice varieties Jaya and Ratna were also developed in India. Thus plant breeding is the most practical means to improve public health which leads to biofortification.

HYDROPHONICS

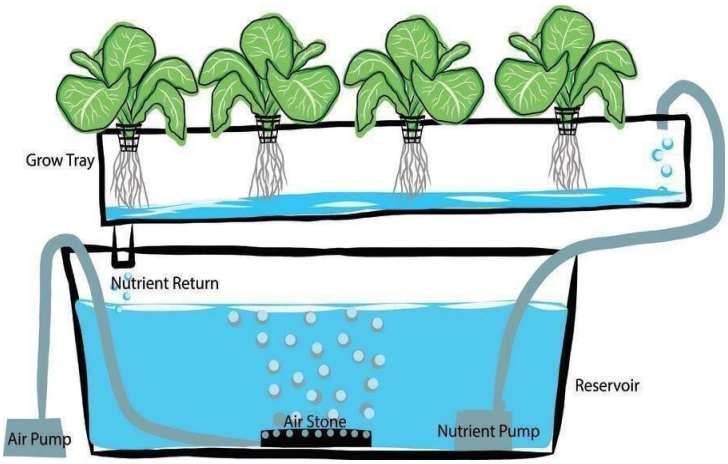
HEMANGA CHOUDHURY

B.Sc 6th Sem (Hons.)



In 1860, Julius Von Sachs, a prominent German botanist, demonstrated for the first time, that plants could be grown to maturity in a defined nutrient solution in complete absence of soil. This technique of growing plants in a nutrient solution is known as **hydroponics**. Since then, a number of improvised methods have been employed to try and determine the mineral nutrients essential for plants. The essence of all these methods involves the culture of plants in a soil-free, defined mineral solution. These methods require purified water and mineral nutrient salts. By this method, essential

elements were identified and their deficiency symptoms discovered. Hydroponics has been successfully employed as a technique for the commercial production of vegetables such as tomato, seedless cucumber and lettuce.



Solution culture is being used for raising flowers and vegetables at home. Plants are raised in small tanks. They are filled up with a solution containing appropriate quantities of all mineral elements. The solution is changed from time to time. It has a mechanism for aeration and circulation. Iron is added as Fe-EDTA otherwise it gets precipitated especially in alkaline pH. The agent which keeps metals in the soluble state is called chelating agent or ligand. EDTA (Ethylene diamine tetra-acetic acid) is one such agent. Fe-EDTA complex is called **chelate**. Hydroponics is useful in areas having thin, infertile and dry soils. They conserve water. Additionally hydroponics can regulate pH optimum for a particular crop, control soil borne pathogens, avoid problems of weeding and obtain consistently better yield. Out of season vegetables and flowers can also be obtained. The cost of setting up a hydroponic system is very high.

TISSUE CULTURE

Markand Al Barik

B.Sc 6th Sem(Hons.)



Tissue culture (TC) is the cultivation of plant cells, tissues, or organs on specially formulated nutrient media. Under the right conditions, an entire plant can be regenerated from a single cell. Plant tissue culture is a technique that has been around for more than 30 years. Tissue culture is seen as an important technology for developing countries for the production of disease-free, high quality planting material and the rapid production of many uniform plants.The term "tissue culture" was coined by American pathologist Montrose Thomas Burrows.

❖ **Using tissue to preserve endangered plant species**



Tissue culture is not only an effective propagation method, but it is also beginning to play an important role in biodiversity. Rare and endangered plants can, thanks to tissue culture, begin to find some reprieve in a world where civilization seems to continually encroach on their natural environment. Aside from reducing species extinction, tissue culture is being used by plant curators around the world with other specialized products to encourage the growth of many rare and difficult to find plants. By using tissue culture techniques, the propagation of rare and notoriously difficult to grow plant species can be made more possible.

❖ **Applications of tissue culture**

1. Tissue culture method is used to obtain the clones of a plant in a method called micropropagation.

2. It helps in the conservation of endangered species.

3. Tissue culture is used in the production of the same copies of the plant that produce good quality flowers, fruits etc.

4. In the absence of seeds and pollinators, many plants are produced by tissue culture.

5. The whole plant can be regenerated that is genetically modified by a single cell by culturing it in a nutrient medium.

6. Transmission of diseases, pathogens and pests are eliminated by production of plants in sterile condition.

7. Plants such as orchids and nepenthes that have very low chances of germinating and growing from seed can be produced by tissue culture.

❖ **How tissue culture works?**

Tissue culture involves the use of small pieces of plant tissue (explants) which are cultured in a nutrient medium under sterile conditions. Using the appropriate growing conditions for each explant type, plants can be induced to rapidly produce new shoots, and, with the addition of suitable hormones new roots. These plantlets can also be divided, usually at the shoot stage, to produce large numbers of new plantlets. The new plants can then be placed in soil and grown in the normal manner.

KUNGFU

Tanisha Kashyap

B.Sc 4th sem(Hons.)

State Level BRONZE MEDALIST, 2016



In general, kung fu/kungfu, refers to the Chinese martial arts also called wushu and quanfa. In China, it refers to any study, learning, or practice that requires patience, energy, and time to complete. In its original meaning, kung fu can refer to any discipline or skill achieved through hard work and practice, not necessarily martial arts. The Chinese literal equivalent of "Chinese martial art" would be. There are many forms of kung fu, such as Shaolin Kung Fu, Wing Chun, Tai chi, etc., and they are practiced all over the world. Each form of kung fu has its own principles and techniques, but is best known for its trickery and quickness, which is where the word kung fu is derived. It is only in the late twentieth century that this term was used in relation to Chinese martial arts by the Chinese community. The Oxford English Dictionary defines the term "kung-fu" as "a primarily unarmed Chinese martial art resembling karate" and attributes the first use of "kung fu" in print to Punch magazine in 1966. This illustrates how the meaning of this term has been changed in English. The origin of this change can be attributed to the misunderstanding or mistranslation of the term through movie subtitles or dubbing. Martial arts play a prominent role in the literature genre known as wuxia. This type of fiction is based on Chinese concepts of chivalry, a separate martial arts society and a central theme involving martial arts. Wuxia stories can be traced as far back as 2nd and 3rd century BCE, becoming popular by the Tang dynasty and evolving into novel form by the Ming dynasty. This genre is still extremely popular in much of Asia and provides a major influence for the public perception of the martial arts.

Martial arts influences can also be found in dance, theater and especially Chinese opera, of which Beijing opera is one of the best- known examples. This popular form of drama dates back to the Tang dynasty and continues to be an example of Chinese culture. Some martial arts movements can be found in Chinese opera and some martial artists can be found as performers in Chinese operas.

ASTROBOTANY

Afrida Rahman

B.Sc 2nd semester (Hons)

Astrobotany is the study of plants in outer space. It includes the study of how plants grow and thrive in space, and how they can be used to improve life on other planets. Astrobotany can also help us better understand how plants grow on Earth. Studies have shown that plants can grow differently in space, due to the lack of gravity and other environmental factors. Astrobotany can also help us develop methods for growing plants in space, which is important for long-term space travel. Some plants have been found to be more resistant to radiation and other environmental hazards in space. Astrobotany can also help us understand the potential for plant life on other planets. It can also help us develop strategies for using plants to improve the environment on other planets. Astrobotany is an important field of study for anyone interested in space exploration or the study of plants. It is a rapidly growing field, and offers many opportunities for research and exploration.

THE FOREST MAN OF INDIA

Henasri Das

B.sc 2nd Semester (Hons.)

Jadav Payeng known as “The Forest Man of India” takes us through his journey of grit that saw a desert turning into a forest. His story has inspired a trilingual film starring Rana Daggubati. He belongs to the Mishing tribe in Assam, India. In 2012 Jadav built a house at No. 1 Mishing Gaon near Kokilmukh Ghat and shifted to this house with his family. One day 16 years old Jadav Payeng was walking along the Shoals of the Brahmaputra River. Here he saw many snakes slithering on the sand bar. Floods has washed these snakes on to the river banks. Due to the intense heat and the absence of trees the snakes due in a few days time, Payeng wept when he saw this. There was on island a few kilometres from the banks of the river Brahmaputra. Payeng single handily started planting bamboo there as only bamboo trees could survive in the sand bars. In 1980, Payeng got a job to reforest 200 hectors of land with the Assam Forestry Division. Although the project ended in five years, he stayed on and now the forest is 1000 hectares. This land was known as “ArunaChapori”. It is now home to thousands of species of trees, flowers and bamboos groves. A herd of elephants visits the forest every year and stays here for a few months. Payeng has specially planted banana trees for these elephants. The forest is now known as “Mulai forest” as Mulai is Jadav Payeng’s nick name.

World's First Honeybee Vaccine

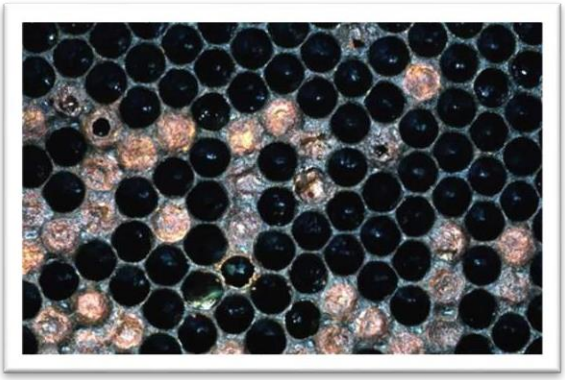
Diju Choudhury

M.Sc. 2nd semester (Life Sciences)

DHSK College, Dibrugarh

(Batch 2019-2022)

In America, a huge number of the honeybee population is affected by a bacterial disease known as American foulbrood (AFB). It is the most severe bacterial disease that affects honey bees. AFB's causative agent is Paenibacillus larvae. AFB kills infected honey bee larvae; however, it eventually leads to the collapse of the entire colony when left untreated. The AFB scale is very hard for the bees to remove and can infect colonies for years to come. This is why some states have a "burn only" policy, but others allow the use of antibiotics to control the disease. But antibiotics are expensive, have limited effectiveness and take lots of time and energy for beekeepers to apply.



Bee colony affected by American Foulbrood (AFB)

Hence To combat the disease, the U.S. Department of Agriculture approved for use of the **world's first honeybee vaccine** (January 2023), developed by Dalan Animal Health. Diamond Animal Health, a manufacturer that is collaborating with Dalan, holds the conditional license.

The vaccine, which contains killed whole-cell *Paenibacillus larvae* bacteria, is administered by mixing it into queen feed which is consumed by worker bees. The vaccine is incorporated into the royal jelly by the worker bees, who then feed it to the queen. She ingests it, and fragments of the vaccine are deposited in her ovaries. Having been exposed to the vaccine, the developing larvae have immunity as they hatch. Pivotal efficacy studies have indicated that oral vaccination of honeybees may reduce larval death associated with American Foulbrood infections caused by *P. larvae*. According to the company, the vaccine is not genetically modified and can be used in organic farming.

RECENT DISCOVERIES IN NATURE

Dhyandeep Nath

ALUMNI
(2018-2021 Batch)

Uvariopsis dicarpio (Annonaceae) a new tree species. It is a critically endangered narrowly endemic plant species found in Ebo forest Cameroon. It was the first new plant species described in 2022 characterized by unisexual usually cauliflorous flowers with a uniseriate corolla of 4 petals and 2 sepals and was named after American actor Leonardo Dicarpio by botanists from Royal Botanic Garden Kew.

ENDLESS

Bidismita Das

ALUMNI

(2017-2020 Batch)

Everything was outrageous

Desolate the peace at a once

While in the cramped corner

An indigent soul still hope

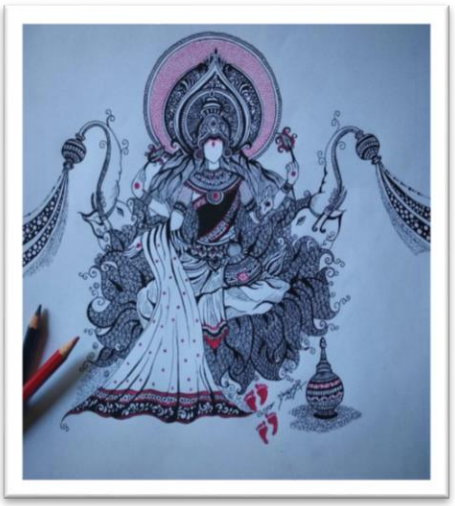
For a blissful life

With dreams again!!

Some Mandala arts by Alumni



Gitumani Roy



Dhyandeep Nath



Dhyandeep Nath

DEPARTMENTAL ACTIVITY

FAREWELL MEETING OF OUR FOUNDER HEAD





To bid adieu to our respected Founder Head Mrinal Kanti Bhowmick Sir who served the Botany Department of B. H. College, Howly for 31years. The Department of Botany organized a farewell meeting on 3rd Jan, 2020. The Principal, all the teaching and non-teaching staff, students were present. He was associated with almost all the developmental works of the College apart from his academic activities. His dedication towards teaching and other curricular activities draws respect from the students as well as from colleagues.

WALL MAGAZINE

All students of the department actively participate and published wall magazine every year. Some photographs of the wall magazine:



2019



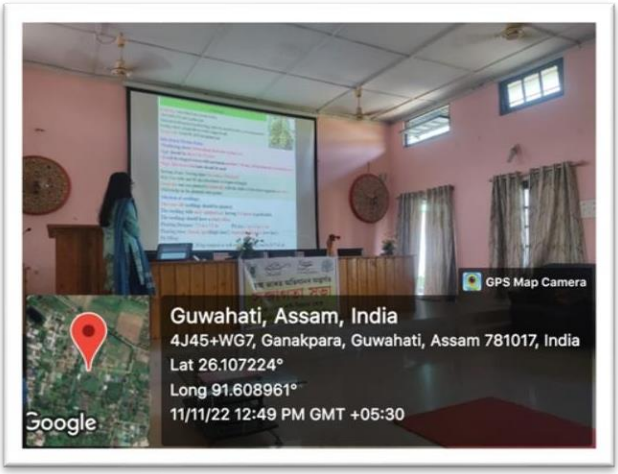




FIELD TRIP

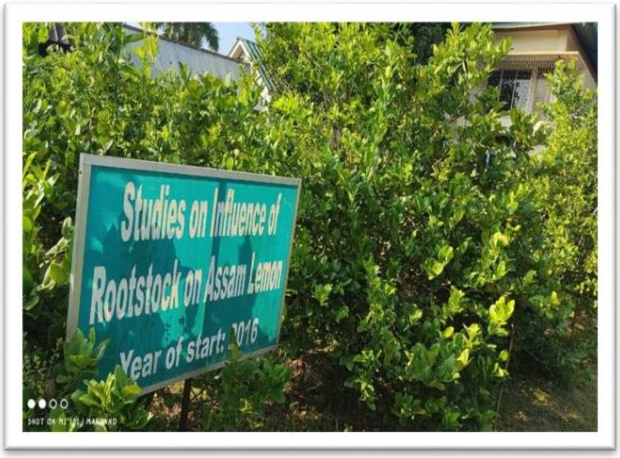
A field trip to Kahikuchi Horticultural Research Station, Guwahati was organized on 11th November, 2022 and took part in an awareness programme under Swaccha Bharat Abhijan organized by Kamrup Agricultural Science Centre, AU, Kahikuchi Campus. Dr. Dorodi P. Duarah (Subject Matter Specialist Horticulture) presented on the topic





"Nursery management on Horticultural Crops". They also demonstrated the process of cutting and grafting technique of different horticultural crops. Student visited the production unit of Dragon Fruit Block, Black Pepper Unit, Cutting Unit, Chocolate Fruit Unit, Nursery section.





DEPARTMENTAL SEMINAR OF STUDENT



One day seminar presentation was conducted on 22nd December, 2022 in the department on various topics related to the syllabus. The 5th semester student presented on topics entitled Development of embryo, endosperm and their type, Pollination, its types and contrivances, Process of phloem loading and unloading, Photomorphogenesis, Process of transpiration and their types, Artificial methods of propagation. All the students of othersemester attended and all the faculty members were present to evaluate.





FACULTY PARTICIPATION

Mr. Promod Chandra Borah attended in

- Online workshop on **"Climate Change Impact on Agriculture and Biodiversity in North EastIndia"** from 1st- 5th March, 2022.
- International Online Conference on "**Environment Development and Sustainability"** from 24th -30th March, 2022.
- International Short-term Training Programme on "**Conservation of Sustainable Goal (SDGs) forEnvironment conservation"** from 24th-30th June, 2022.

Dr. Biju Borkataki attended in

- One week FDP on **"Moodle Learning System"** from 19th- 25th June, 2022 organized by B.H. College with course material supplied by Spoken Tutorial Project, IIT Bombay, 2022.
- Participated in an International Conference on "**Environment Development and Sustainability"** on 29th- 30th March, 2022 organized by Department of Botany and IQAC Athalye-Sapre priti College (Autonomous), Devrukh in collaboration with Srutidnyan Sankalp Society, 2022.

- One week International FDP on "**Emerging Trends & Technologies in Data Science**" from 24th to 29th August, 2022 organized by Department of Computer science and Engineering, GMR Institute of Technology, Rajam, Andhra Pradesh, 2022
- Online Workshop on "**Climate Change Impact on Agriculture and Biodiversity in NorthEast India**" from 1st to 5th March, 2022 organized by DST Centre of Excellence, Department of Environmental Science, Tezpur University, Assam, 2022.

Ms. Seema Khakhalary attended in

- Hands-on-Training on **"DNA Barcoding"** organized by InBOL (Indian Barcode of Life) Healthcare, Kolkata from 25th March, 2022 to 1st April, 2022.
- "**Online Research Methodology Workshop**" from 5th November to 6th November, 2022.
- Online lecture on **"In-silico approach for understanding the molecular mechanism of diseases"** delivered by Dr. Reshmi Ramakrishnan, Structural Biology and Engineering Unit King Abdullah University of Science and Technology Jeddah, Saudi Arabia. Organized by Advanced Level State Biotech Hub, AAU, Khanapara, Guwahati-22 on 22nd Dec, 2022.
- Presented a paper entitled **"Nutritional profile of *Blumea lanceolaria* (Roxb.) Druce an ethnomedicinal plant of North East India"** in 2nd International Conference on Biodiversity: Exploration, Exploitation and Conservation for Sustainable Development (ICB-2023) from 10th - 11th Feb, 2023.

FACULTY ACHEIVEMENTS

Ms. Seema Khakhalary has published two research papers in UGC Care listed Journal and one Book Chapter in 2022.

RANK HOLDER OF THE DEPARTMENT

Ms. Damini Kothari *(B.Sc 1st Class 1st position in 2006)*

Ms. Rashmi Hussniara Begum *(B.Sc 1st Class 4th position in 2006)*

Ms. Juri Ujir *(B.Sc 1st Class 4th position in 2006)*

Ms. Seema Mandal *(B.Sc 1st Class 5th position in 2007)*

Ms. Purabi Das *(B.Sc 1st Class 10th position in 2010)*

Ms. Beauty Rani Basumatary *(B.Sc 1st Class 2nd position in 2021)*

"A WINNER IS A DREAMER WHO NEVER GIVES UP"--NELSON MENDELA.

STUDENTS ACHEIVEMENTS



Our alumni Dr. Daimalu Baro currently working as an Assistant Professor in Tinsukia College. He obtained his Ph.D degree from Gauhati University in 2018. He has published twelve research papers, three book chapters and one book tiltled "Flora of BTAD" in 2018.



Ms. Rashmi Husniwara Begum qualified SLET-2019 in Life Science. She is working as an Assistant Teacher in Janapriya Higher Secondary School, Barpeta.

Our alumni Ms. Khusbu Agarwal qualified SLET-2021 in Life Science. She completed her Post Graduation from the Department of Botany, Gauhati University (2014-2017 batch). She has recently joined as an Assistant Professor on 24rd September, 2022 in the Department of Botany, Jorhat Kendriya Mahavidyalaya.



Our alumni Trishna Roy Prodhani (Batch: 2014-2017) qualified CSIR-UGC NET December, 2019. She is currently working as an Assistant Professor in the Department of Botany, Abhayapuri College.



Presently, our alumni Beauty Rani Basumatary is pursuing M. Sc in the department of Botany, Gauhati University. She got 1st Class 2nd position in B.Sc in 2021.



Salma Aktar got 1st Class 1st position in M. Sc Botany, Gauhati University (2020-2022).

