

# **BLOSSOM II**

## **NEWSLETTER**

### **(ISSUE 2, 2024)**

# **WELCOME TO THE DEPARTMENT OF BOTANY**



## **EDITORIAL BOARD**

### **TEACHER IN-CHARGE:**

Ms. Seema Khakhalary  
Assistant Professor

### **Design & Graphics:**

Mehamadul Hussain

### **Students Actively Involved:**

Susmita Mashahary,  
Abhijit Sanyashi,  
Kiran Pathak,  
Phulkan Swargiary

### **MENTOR:**

Mr. Promod Chandra Borah  
Assistant Professor

Dr. Biju Borkataki

Assistant Professor

Dr. Purobi Sarmah Baruah

Assistant Professor

## **Message From The Principal's Desk**

It gives me immense pleasure that the Department of Botany is coming up with their second issue of their newsletter “**BLOSSOMII**” for the academic session 2023-24. The department of Botany has four faculty members who specialize in different fields of plant sciences. The newsletter will help them in bringing out the artistic side of students and faculty members. I wish them all the best.



**Principal**

**Dr. Bhushan Chandra Pathak**

## ABOUT THE DEPARTMENT

With the opening of science stream in 1988, the Botany department came into being. Late **Mrinal Kanti Bhowmick** was the founder teacher of the department. Promod Chandra Borah was the second incumbent to join the department and continued to work till date. Currently it is a full-fledged department with four regular teachers; they are **Promod Chandra Borah, Dr. Biju Borkataki, Dr. Purabi Sarmah Baruah and Seema Khakhalary**. The department has a well academic tract record producing more than 240 graduates, among them **Damini Kothari became the university topper in 2006 when she got 1<sup>st</sup> class 1<sup>st</sup> position in B.Sc. final exam**. Final examination in 2022, Salma Akhtar a student of 2020 batch got 1<sup>st</sup> class 1<sup>st</sup> in M.Sc. final examination in 2022. Beauty Rani Basumatary got 1<sup>st</sup> class 2<sup>nd</sup> position in B.Sc under Gauhati University in 2023.

- ❑ Year of establishment: 1988
- ❑ Intake capacity: 50
- ❑ Course Offered: **HS COURSE and UG (HONOURS AND GENERIC)**.
- ❑ **Add-On-Certificate Course:** The Department of Botany introduces an add-on-certificate course on “**Mushroom Cultivation**” from the session **2022-2023**.
- ❑ Total no of teaching faculty: 04 (Sanctioned: 03 and non-sanctioned: 01)
- ❑ Students and Teacher ratio: 1:12
- ❑ Total no. of classroom with size in sq. meter: 01 Nos, 28.59 sq. meter
- ❑ Total no. of laboratory with size in sq. meter: 02 Nos, 55.51 sq. meter & 46.97 sq. meter
- ❑ No. of ICT equipment's available: 01
- ❑ No. of Books in College Library: 523
- ❑ No. of Books in Departmental Library: 350
- ❑ No. of Donated books by the students: 20

## VISION

- ❖ To motivate the students to enrich their knowledge about the secrets of life sciences.
- ❖ To make the students to understand the inter relation of plant science with the environment and other living organisms.
- ❖ To gather knowledge from microorganisms to higher plants and their inter relationships and the new branches of botany along with different tools used in plant science, environmental pollutions and control measures etc.

## MISSION

- ❖ To impart knowledge in plant sciences and its different branches of botany like biotechnology, bioinformatics, molecular biology, taxonomy, genetics, ecology etc. through teaching and learning.
- ❖ To provide knowledge of applied botany keeping the employment entrepreneurship in mind.

## FACULTY PROFILE

NAME	Qualification	Designation	Specialization	Experience in Years
Promod Chandra Borah	M. Sc, M. Phil, B.Ed	Assistant Professor	Microbiology	27
Dr. Biju Borkataki	M.Sc, Ph.D	Assistant Professor	Plant Physiology And Biochemistry	28
Dr. Purabi Sarmah Baruah	M.Sc, M. Phil, Ph.D, B.Ed	Assistant Professor	Mycology and Plant Pathology	13
Seema Khakhalary	M.Sc, CSIR-UGC NET	Assistant Professor	Mycology and Plant Pathology	2

## Students Progression To Higher Education In The Year 2023:

Name of student who enrolled for higher education	Program graduated from	Name of institution joined	Name of program admitted to
Hussiniara Parbin	B.Sc in Botany	Gauhati University	M.Sc In Botany
Dhalina Mushahary	B.Sc in Botany	Bodoland University, Kokrajhar	M.Sc In Botany
Ananya Sen	B.Sc in Botany	North Bengal University, Siliguri	M.Sc In Botany
Hakimuddin Sk	B.Sc in Botany	NEHU, Shillong	M.Sc In Botany
Rongina Boro	B.Sc in Botany	Science College, Kokrajhar under Bodoland University	M.Sc In Botany
Rukhsahana Ahmed	B.Sc in Botany	Rangia College, Gauhati University	M.Sc In Botany
Dhitismita Das	B.Sc in Botany	USTM, Meghalaya	M.Sc In Botany
Nishanta Dutta	B.Sc in Botany	Science College, Kokrajhar under Bodoland University	M.Sc In Botany
Hemango Choudhury	B.Sc in Botany	B. Baruah College, Under GU	M.Sc In Botany
Jesmina Parbin	B.Sc in Botany	IGNOU, Guwahati	M.Sc In Environmental Science
Lingma Mushahary	B.Sc in Botany	IGNOU, Guwahati	M.Sc In Botany

## WORKSHOP CONDUCTED BY THE DEPARTMENT

The Department of Botany organized one day training programmed on **“Mushroom Cultivation”** on **1<sup>st</sup> April, 2023**. Prof. (Dr.) Sandeep Das, Professor and Head, Dept. of Biotechnology, Bodoland University, Kokrajhar was invited as Resource Person for the programmed.



**Alumni Association Committee, Department of Botany** in collaboration with the department of Botany, B.H. College, Howly organized a long day programmed on **“Plant Taxonomy”** on **16/08/2023**. **Mr. Sangwrang Basumatary, Ph.D Research Scholar, Department of Botany, Bodoland University, Kokrajhar** was invited as Resource Person of the programmed.



A one day long workshop on “Organic Farming” was organized on **29<sup>th</sup> September, 2023**. **Dr. Arup Kumar Deka, Head, KVK, Howly** was invited as Resource Person for the programmed.



## **AWARENESS PROGRAM CONDUCTED BY THE DEPARTMENT**

An Awareness Program On “Deforestation and Its Impact On Environment” organized by the Department of Botany on **19<sup>th</sup> September, 2023**. **Mr. Ananda Khataniar, Brand Ambassador, Forest and Environment, Govt. of Assam and also Director of Green Mission, Bajali** was invited as Resource person of the programmed.



## FIELD TRIP

A field trip to **Kahikuchi Horticultural Research Station, Guwahati** was organized on **11<sup>th</sup> November, 2022** and took part in an awareness programmed 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**”.



A field trip to **KVK, Howly** was organized on **23<sup>rd</sup> April, 2023**. Dr. Arup Kumar Deka (Senior Scientist and Head), KVK, Howly Barpeta. A hands- on- practical session on mushroom cultivation was carried out by Dr. Kuldeep Talukdhar, Subject Matter Specialist (Scientist), KVK, Howly.



## EDUCATIONAL TOUR

An educational tour was organized to **Saralpara, Bhutan Border** on **19<sup>th</sup> Feb, 2023**. During the tour, different plant species were collected and preserved as per syllabus. Most of the students from all semester were participated. Prof. Promod Chandra Borah coordinated the tour programmed.



An Educational tour was organized to **Daffodil Nursery, Dhupguri Pachim Nagaon** on **15<sup>th</sup> Sept, 2023**. Total 38 students of 5th semester participated in the tour. It is the biggest nursery of North East India spread over 40 bighas which is located about 160km from the B.H. College, Howly.



# BEST PRACTICES SUCCESSFULLY IMPLEMENTED BY THE DEPARTMENT

## CLEANLINESS DRIVE CONDUCTED BY THE DEPARTMENT:

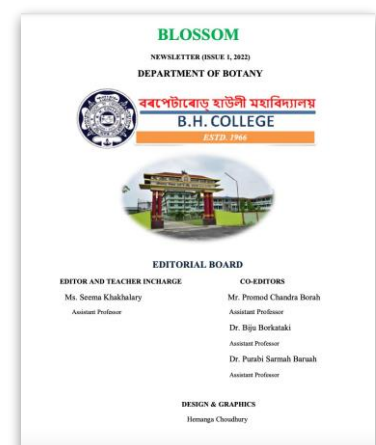
The Department of Botany organized a cleanliness drive in the college campus on **16<sup>th</sup> February, 2024** to raise awareness on the importance of the cleanliness of their surroundings among the students.



**WALL MAGAZINE:** The Department of Botany published wall magazine every year on **28<sup>th</sup> February** on the occasion of **National Science Day**. The theme of the wall magazine is in accordance with the theme of **National Science Day**. The Wall Magazine Competition is being organized by Science Forum, B.H. College, Howly. The Department **got 1<sup>st</sup> Prize in 2017** in an Inter-departmental Wall Magazine Competition.



The **Department of Botany** published **Newsletter** from the year 2023. The purpose of publishing newsletter and wall magazine is to provide specialized information to the audience. These are the reflections, pride and holistic nature of the students. This will enhance the quality and quantity analysis among the students through department.



# Students Article:

## The cost–benefit model for botanical carnivory

Abhijit Sanyashi,  
B.Sc 6<sup>th</sup> Sem

**T**he cost–benefit model for the evolution of botanical carnivory assumes that the traps represent a significant cost for the plant, and that this is outweighed by the benefits from increased nutrient uptake from prey. Pavlovič & Saganová summarized results from a wide range of studies and conclude that traps have lower rates of photosynthesis than leaves, and that leaves have higher rates of photosynthesis after feeding. They also note that prey digestion, water pumping and electrical signalling in the traps represent additional carbon costs via increased rates of respiration and decreased rates of photosynthesis. Against these, jasmonate signalling and the inducibility of digestive systems optimize enzyme production in response to prey capture. The similarities between inducible defence mechanisms and botanical carnivory are highlighted.



*Example- Pitcher Plant*

# Special Issue on Halophytes and Saline Adaptations

Imdadul Khan,  
B.Sc 6<sup>th</sup> Sem

**M**ost of the water on Earth is seawater, each kilogram of which contains about 35 g of salt, and yet most plants cannot grow in this solution; less than 0.2% of species can develop and reproduce with repeated exposure to seawater. These 'extremophiles' are called halophytes.

Improved knowledge of halophytes is of importance to understanding our natural world and to enable the use of some of these fascinating plants in land re-vegetation, as forages for livestock, and to develop salt-tolerant crops. Annals of Botany has recently published a Special Issue on Halophytes and Saline Adaptations, in which the evolution of salt tolerance in halophytes, their life-history traits and progress in understanding the



molecular, biochemical and physiological mechanisms contributing to salt tolerance are summarized in 16 papers by leading researchers in the subject. In particular, cellular processes that underpin the ability of halophytes to tolerate high tissue concentrations of Na<sup>+</sup> and Cl<sup>-</sup>, including regulation of membrane transport, their ability to synthesize compatible solutes and to deal with reactive oxygen species, are highlighted. Interacting stress factors in addition to salinity, such as heavy metals and flooding, are also topics gaining increased attention in the search to understand the biology of halophytes, and are addressed in this Special Issue.

# Orchids Plant

Anjalu Boro,  
B.Sc 6<sup>th</sup> Sem

**O**rchids are a diverse and widespread family of flowering plants, known for their stunning and often intricate blooms. They belong to the Orchidaceae family, which is one of the largest families of flowering plants, with over 28,000 currently accepted species. Orchids are found on every continent except Antarctica, thriving in a wide range of habitats, from tropical rainforests to arctic tundra. Orchids are characterized by their unique floral structure, which typically consists of three sepals and three petals. One petal, called the lip or labellum, is often highly modified and serves as a landing platform for pollinators. Orchids have evolved various strategies for pollination, including mimicry of insects or specific flowers, attracting pollinators with fragrance, or utilizing wind dispersal. Many orchids have specialized relationships with fungi, forming mycorrhizal associations in which the fungi help the orchid obtain nutrients from the soil. This makes orchids particularly sensitive to changes in their environment, including habitat destruction and climate change. Orchids are highly prized for their beauty and diversity, leading to extensive cultivation and hybridization. They are popular as ornamental plants in gardens, as well as for cut flowers and indoor decoration. Orchid enthusiasts, known as orchidologists or orchid growers, often dedicate themselves to the cultivation and study of these fascinating plants.



# The Impact of a Clean Environment on Health and Well-being

Saleha Khatun,  
B.Sc 6<sup>th</sup> Sem

**A** clean environment is not merely an aesthetic luxury; it is a fundamental necessity for human health and well-being. The effects of a clean environment ripple through every aspect of our lives, from physical health to mental clarity and social cohesion.

First and foremost, a clean environment significantly reduces the risk of various diseases and health complications. Clean air, free from pollutants and harmful particles, reduces respiratory issues such as asthma and lung infections. Access to clean water prevents waterborne diseases like cholera and dysentery. Proper sanitation facilities reduce the spread of gastrointestinal infections. By ensuring access to clean air, water, and sanitation, a clean environment forms the cornerstone of public health initiatives worldwide.

Moreover, a clean environment contributes to mental well-being. Studies have consistently shown that exposure to natural environments, free from pollution and clutter, reduce stress, anxiety, and depression. Green spaces promote relaxation and psychological restoration, fostering a sense of tranquility and inner peace. In contrast, polluted or cluttered environments can exacerbate mental health issues and impair cognitive function.



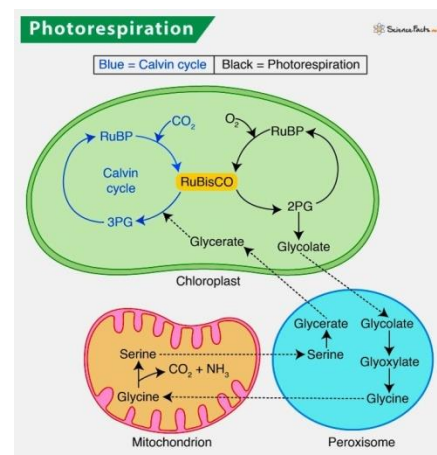
# Photorespiration

Tanisha Kashyap,  
B.Sc 6<sup>th</sup> Sem

**P**hotorespiration is a complex metabolic process occurring in plants, involving various organelles such as chloroplasts, peroxisomes, and mitochondria. Unlike dark respiration, where carbohydrate oxidation occurs solely in the mitochondria, photorespiration oxidizes ribulose biphosphate (RuBP) by oxygen in the presence of sunlight, releasing CO<sub>2</sub>.

This process, prevalent in C<sub>3</sub> plants and minimal in C<sub>4</sub> plants, is also known as the C<sub>2</sub> photosynthetic carbon oxidation cycle or cycle C<sub>2</sub>, named after its initial product, phosphoglycolate. Although photorespiration doesn't yield ATP or

sugars, it's essential for nitrate assimilation and cellular redox homeostasis. However, it's considered wasteful, with about 25% of carbohydrates fixed by photosynthesis lost through reoxidation to CO<sub>2</sub>. While reducing photorespiration may seem beneficial, it's intricately linked to nitrogen assimilation and various physiological processes, influencing plant growth, environmental responses, and programmed cell death. Therefore, its role in plant metabolism underscores its significance in understanding plant physiology and biochemistry.



# Plant Diversity Hotspots Around the Globe

Kiran Pathak,  
B.Sc 6<sup>th</sup> Sem



**B**iodiversity hotspots are regions of exceptional ecological importance that harbor a wealth of plant species found nowhere else on Earth. The Amazon Rainforest, spanning nine countries in South America, is renowned for its unparalleled botanical diversity, housing an estimated 390 billion individual trees belonging to over 16,000 species. Meanwhile, the Cape Floristic Region of South Africa boasts a stunning array of endemic plant species, with over 9,000 plant species, 69% of which are found nowhere else on the planet. Despite their ecological significance, biodiversity hotspots face myriad threats, including deforestation, habitat fragmentation, and climate change, underscoring the urgent need for conservation efforts to safeguard these invaluable botanical treasures.

# Exploring Medicinal Plants and Herbal Remedies

Mehamadul Hussain,  
B.Sc 6<sup>th</sup> Sem



**T**he rich tradition of herbal medicine spans cultures and continents, with numerous plant species revered for their therapeutic properties. Ginseng (*Panax* spp.), a perennial herb native to Asia and North America, is renowned for its adaptogenic properties, which are believed to enhance resilience to stress and promote overall well-being. Echinacea (*Echinacea purpurea*), commonly known as purple coneflower, has long been used in traditional Native American medicine to boost the immune system and alleviate symptoms of the common cold. Chamomile (*Matricaria chamomilla*), with its delicate flowers and soothing aroma, is prized for its calming effects and is often brewed into teas to promote relaxation and improve sleep quality.

# The Fascinating World of Carnivorous Plants

Phulkan Swargiary,  
B.Sc 6<sup>th</sup> Sem



**C**arnivorous plants have captivated botanists and enthusiasts alike with their extraordinary adaptations for capturing and digesting prey. Among these remarkable species, the Venus flytrap (*Dionaea muscipula*) stands out as an iconic example. Native to the wetlands of the southeastern United States, the Venus flytrap lures unsuspecting insects with its vibrant red coloration and sweet nectar. Upon contact with trigger hairs located on its leaves, the plant snaps shut with lightning speed, ensnaring its prey within specialized trapping structures. Digestive enzymes then break down the captured insect, allowing the plant to absorb essential nutrients like nitrogen and phosphorus, which are typically scarce in its boggy habitat.

# Conservation Corner: Protecting Pollinators

Bapon Barman,

B.Sc 6<sup>th</sup> Sem

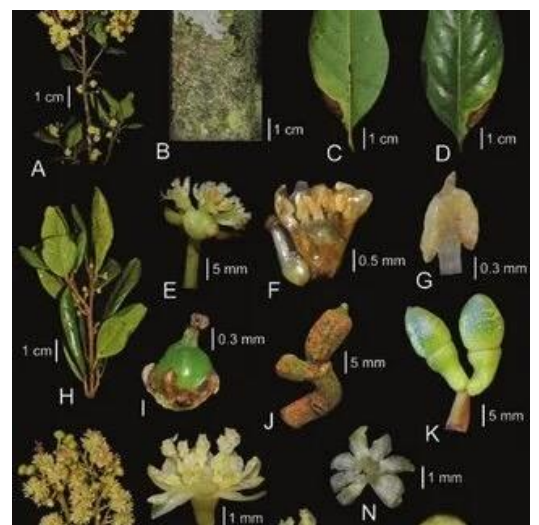


**A**s the world celebrates the beauty and diversity of plants, it's crucial to remember the vital role of pollinators in sustaining ecosystems and food production. Pollinators such as bees, butterflies, and birds play a crucial role in the reproduction of flowering plants, facilitating the transfer of pollen from one flower to another. However, these essential creatures are facing numerous threats, including habitat loss, pesticide use, and climate change. To safeguard our pollinators and ensure the continued health of our planet, conservation efforts must be prioritized. By creating pollinator-friendly habitats, reducing pesticide usage, and raising awareness about the importance of pollinators, we can all contribute to preserving these invaluable species. Together, let's work towards a future where pollinators thrive and our plant communities flourish.

# Andrographis thieniensis

Mahinur Parbin,  
B.Sc 4<sup>th</sup> Sem

**A** *Andrographis thieniensis* is a lesser-known species of the *Andrographis* genus, a group of plants known for their medicinal properties. Native to the tropical regions of Southeast Asia, particularly Thailand, this species has gained attention for its potential therapeutic benefits. Traditionally used in Thai folk medicine, *Andrographis thieniensis* is believed to possess anti-inflammatory, antipyretic, and immune-boosting properties. Its leaves and stems are often brewed into teas or prepared as herbal remedies to treat various ailments, including fevers, infections, and digestive issues.



While research on *Andrographis thieniensis* is still limited compared to its more well-known relative, *Andrographis paniculata*, preliminary studies suggest promising pharmacological activities. Scientists are investigating its potential in treating conditions such as respiratory infections, inflammatory disorders, and even certain types of cancer. As interest in natural remedies continues to grow, *Andrographis thieniensis* presents an intriguing avenue for further exploration and research. With its rich medicinal heritage and therapeutic potential, this lesser-known species may hold valuable insights into the diverse pharmacological properties of plants.

# Medicinal Plants As Food Additives

Susmita Mashahary,  
B.Sc 6<sup>th</sup> Sem



**N**utrition and diet play a significant role in promoting and preserving health during the course of a person's life. Chronic conditions including diabetes, heart disease, obesity, hypertension, chronic inflammation and cancer may be prevented and treated with a plant-based diet. Food additives are compounds that are added to food in order to improve its colour, flavour, texture or freshness. Certain additions have been around for generations; pickling (with vinegar), salting (for bacon), canning (sweets), and utilizing sulphur dioxide (for wines) are a few examples.

The introduction of processed meals in the latter part of the 20th century led to the introduction of numerous plant-based additives into the food business. Since their antibacterial ( bactericidal and fungicidal) qualities, medicinal aromatic and spice plants are important food additives since they produce highly valued preservatives for fresh vegetable or meat preparations as well as canned goods .

## OTHER ACTIVITIES BY STUDENTS

**Departmental Fresher's day** was celebrated on every year. It was celebrated to extend a kind welcome to new comers, enhance their feeling and motivate juniors. The inauguration of the event started by paying tribute to our founder and former head **Late. Mrinal Kanti Bhowmick Sir.**



**FAREWELL PROGRAMME:** A farewell ceremony was arranged for the outgoing final semester students of the Botany department on **27<sup>th</sup> April, 2023** by 2<sup>nd</sup> and 4<sup>th</sup> semester students of the department.



**Teachers Day** was celebrated on 5<sup>th</sup> September, 2023 in the Botany department to mark the birth anniversary of Dr. Sarvepalli Radhakrishnan. The teachers were felicitated by the students of department. They paid respect and tribute to their teachers. The students also gave speech on the role of teachers in their lives.



## Extra-Curricular Activities

The students of Botany department participated in the cultural rally in the College Week, 2024 representing the theme “INDIAN CULTURE”.



Botanical Forum, Department of Botany, Gauhati University organized **Prof. H.K. Baruah Memorial Essay Competition** for Degree Students on the topic "**Importance of Botanical Knowledge in our Daily Life and Scientific Progression**". Three students of our department took part in the competition on **19<sup>th</sup> October, 2023**. Susmita Mushahary of B.Sc 5<sup>th</sup> Semester, Trisha Modak of B. Sc 3<sup>rd</sup> Semester (Hons.) and Pranjal Das of B.Sc 1<sup>st</sup> Semester (Hons.) represented the Botany Department, B.H. College, Howly. **Prabal Das**, a student of 2<sup>nd</sup> semester owned the **Second Position**.



**Mainuddin Ali and Shahidul Islam of B. Sc 5<sup>th</sup> semester** won the First prize in Quiz Competition in the College Week, 2024.



**Miss Barasha Boro**, a student of B. Sc 2<sup>nd</sup> semester has crowned the title of Miss B.H. in the College Week, 2024.



## Some snapshots taken during the practical class of Add-on- Course “Mushroom Cultivation”

