



ANTHEIA



ARBORETUM

Monthly newsletter

World Bamboo Day

LOVE GREEN



BE LIKE BAMBOO, THE HIGHER YOU GROW
THE DEEPER YOU BOW



SEPTEMBER EDITION 2022

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World Bamboo Day

By : Aditi Asthana 2nd year

World bamboo day celebrated on September 18, is an initiative to raise awareness about bamboo and sustainable use of it. Bamboo where it grows naturally is exploited very frequently without any care about its sustainability.

The world bamboo organisation was formed on September 18, 2009, during the 8th world congress in Bangkok, almost 100 countries were present that day. This organisation seeks to raise awareness about the potential of bamboo.

Every year this day is celebrated with a specific theme. In 2021 the theme was #PlantBamboo, it is Time To Plant Bamboo". The decade 2021 to 2030 is declared a Decade of Ecosystem Restoration by the United Nations and as a member of UN's Global Compact world bamboo organisation endorses this purpose.

This day is celebrated by raising awareness on protecting natural resources and the environment, achieving sustainable utilisation of bamboo, and promoting new bamboo cultivation for new industries in regions around the world and promoting traditional uses locally to promote the local economy.

BAMBOO NOW is the theme. #BambooNow #BambooisGrowing #KeepBambooStrong.

Sources:<https://worldbamboo.net/world-bamboo-day>





World bamboo day history and significance

By : Archana Singh 2nd year

World Bamboo Day was founded by Kamesh Salam , the former president of the World Bamboo Organization in 2009 at the 8th World Bamboo Congress held in Bangkok.

The World Bamboo Organization was formally recognized on 18 September 2009 during the 8th World Bamboo Congress in Bangkok. Delegates from nearly 100 countries attended the event and agreed to declare September 18 as World Bamboo Day, which was unanimously supported by all participants. In addition, this day is also designated as the Royal Thai Forestry Day. In 2009, on this day, the Deputy Governor of Bangkok as a representative of the Royal Thai Government, Mrs. Susanne Lucas, Executive Director of the WBO, and Mr. Kamesh Salam, the President of the WBO, along with others, declared the day as World Bamboo Day.

According to Thailand's Royal Forestry Department, this dedicated day is gaining popularity worldwide. The whole day is about bamboo: sustainability, environment, ecology, science, architecture, art, music, food, housing, habitat, restoration, aesthetics, economy, use and everything in between. It's about connections and networks, about marketing and about the future of our world.

World Bamboo Day is a day of celebration to raise global awareness of bamboo. Where bamboo grows naturally, bamboo has been an everyday feature, but its use has not always been sustainable due to exploitation. The World Bamboo Organization aims to highlight the potential of bamboo - to protect natural resources and the environment, ensure sustainable use, promote new bamboo cultivation for new industries in regions around the world, and also support traditional uses locally for community economic development.



Botanical aspects of bamboo & properties of bamboo.

By: Vanshika 2nd year

Bamboo is one of the most special grass plants. It is fascinating due to their unique properties. Bamboo belongs to the family Poaceae (Gramineae), also called the family of grasses. Most bamboo species grow in warm to moist and tropical regions. They are one of the most abundant plants in tropical and subtropical regions.

What makes them unique from other species of the grass family are their various characteristics. Bamboos consist of some of the fastest growing plants due to the unique rhizome dependent system. Such characteristics like fast growth, high biomass, tolerance for marginal land and yield in a short time and high efficiency in a few years allowed bamboo to be identified as a superior herb.

Bamboos are segmented, consisting of typical hollow, woody stems called culms which sprout from underground stem portions called rhizomes. These culms emerge in the spring season while the rhizomes expand throughout the year. On further growth culms are divided into nodes and nodes are separated from each other by internodes. The woody stem resembles the characteristics of some herbaceous grasses but the leaf blades have a distinctive internal organisation of tissues, including cells like arm cells and fusoid cells which are not found in other grasses. These leaf blades are basally narrowed to form a stalk-like connection with the leaf sheath. These are called the herbaceous bambusoid grasses. The fast and exclusive growth of the stem is related to the involvement of Non- structural carbohydrates (NSC). These NSC's are a good source of carbon and play a vital role in determining time period of shoot growth. Bamboo forests are classified as Non-Timber Forest Products (NTFP) i.e. useful substances or commodities obtained from forests other than Timber.

Various species of bamboo exist around the world.

Bamboo classification or taxonomy is complicated because little information is recorded about these plants. China has more than 500 species in 39 genera, making it one of the countries with native bamboo, which is called "The Kingdom of Bamboo".



Source : roundglassliving



Bamboo forests are considered renewable bioresources having a very high CO₂ fixation rate. They can absorb 3.73 cubic metre CO₂ in one day, making them good candidates for global warming reduction and climate change. These are the most economical forest plants and are beneficial for mankind in various ways.

In various parts of Asia this herb has various local names such as “Friend of People” “Wood of the poor” or “The brother”. Bamboos have been an integral part of our survival and culture for a very long time in countries like China, Japan, India, countries of southeast asia and South America. There happens to be a huge versatility in their usage including preparation of various handicraft items like different types of baskets for storage and various other purposes, utensils, ornaments, bird cages and large fish traps used by fishermen. Bamboo was also an important part of various construction activities like making bridges, pipes and construction of houses.

Various primitive technologies like the production of blowpipes and animal traps were done using bamboo sticks. The living bamboo provides edible shoots, fences, windbreaks, ornamentals and a means to counter erosion in some conditions.

In recent years, the advancement of technology has created ways for the entry of bamboo in various industries. Now a days they cover a wide range of human needs starting from environmental protection to catering daily usage items for households.

SCHEMES TO PROMOTE PRODUCTION OF BAMBOO

By : Anshika Tripathi 2nd year

- Bamboo is a versatile group of plants which is capable of providing ecological economic and livelihood security to the people. Till recently it has remained confined to the forest two third of the growing stock located in the North Eastern states. The importance of the crop as a source of raw material for industrial as well as the domestic purposes with its growing demand all over the world necessitated. Its cultivation in farm as well.



- Department of Agriculture and cooperation(DAC), Ministry of Agriculture and farmers welfare is implementing 100% centrally sponsored scheme called National Bamboo Mission for integrated development of horticulture (MIDH) in which national bamboo mission (NBM) is being implemented as a scheme.
- The mission aims promoting holistic growth of bamboo sector by adopting area based regionally differentiated strategy and to increase the area under bamboo cultivation and marketing.
It also aims to increase the availability of quality planting material by supporting the setting up of new nurseries and strengthening of existing ones. some of the main objectives of this mission are to promote the growth of the bamboo sector as an area based recently differentiated strategy, to increase the coverage of area under bamboo production, to promote marketing of bamboo and bamboo based handicrafts and to generate employment opportunities for skilled and unskilled persons.
- The mission focuses on the development of bamboo in States where it has a social commercial and economical advantage particularly in the North Eastern region and States including Madhya Pradesh, Maharashtra, Chhattisgarh, Odisha, Karnataka, Gujarat, Tamilnadu, Kerala etc.
- Capital investment subsidy scheme for bamboo industry.
- The state level bamboo Development Agency has started releasing 50% off the grand amount to the Eligible Financial Institutions as an advance after reviewing the project scrutiny note form as per the requirement and norms of National bamboo mission. The state level bamboo Development Agency disperses the outstanding grant amount of 50% to The Eligible Financial institute after conducting and inspection and Recommendation of the project.



Bamboo as bush frog's breeding site

By : Sneha Mahto 3rd year

Amphibians exhibit extraordinarily diverse sets of reproductive strategies among vertebrates. A novel reproductive mode where adult frogs enter hollow internodes of bamboo via a small opening, deposit direct developing eggs, and provide parental care.

The species of frogs that exhibit this behaviour, *R. chalazodes*, was thought to be extinct for over 100 years until it was rediscovered recently in the wet evergreen forests of the Kalakad Mundanthurai Tiger Reserve in the Western Ghats.

In this study, Mr Seshadri K S, a PhD student, and Assistant Professor David Bickford from the Department of Biological Sciences at the NUS Faculty of Science, discovered the reproductive strategy of *R. chalazodes*. The reproductive mode of *R. chalazodes* described here can be summarized as male parental care for direct developing eggs laid inside a hollow bamboo internode without stagnant water and with a narrow entry/exit opening. Frogs only utilize bamboo with openings.

Adult males start vocalising early in the evening and they enter bamboo *Ochlandra travancorica* via a small opening, which is usually less than 5-10 mm long and 3-4 mm wide. They continue to call from inside the bamboo. The female follows the male inside and then lays 6-7 eggs inside. These eggs directly develop into froglets. There is no tadpole stage in these frogs. The male stays inside the bamboo, taking care of the eggs. Other females may choose to mate with the male, and deposit 5-8 eggs on their own. The eggs are few in number but are quite large for such a small frog, measuring an average of 5 mm in diameter.



A month later, their round see-through eggs hatch directly into mini versions of their parents, instead of tadpoles. Until they leave, their doting dad guards them round the clock, forgoing his hunt for food. He eats insects that stray into the bamboo cavity – things like ants and flies. While daddy does his duty, he aggressively croaks to warn other male frogs against stepping on his patch. And with good reason: rival males can make a quick meal of his eggs. They are hungry and, it turns out, cannibals. Eggs, as is obvious, are rich in nutrients and if left behind by their dad, have little chance of survival.



Scientists recently uncovered these aspects of the bamboo-breeding frogs using an endoscope – a medical device typically used to peer inside our bodies.

Threats from habitat loss: Among bamboo nesting frogs, only *R. chalazodes* is critically endangered with small populations occurring in fewer than five localities. The bamboo species (*O. travancorica* and *O. setigera*) are also endemic to the Western Ghats but commonly found along streams in higher elevations irrespective of the barriers. However, bamboo nesting frogs are threatened by overharvest of bamboo outside of protected areas for paper and pulp. Often, harvesting coincides with the breeding season of these frogs and viable populations can be decimated. Since the frog only breeds in bamboo internodes, unregulated overharvest of bamboo might destroy breeding habitats and negatively impact long-term viability of populations. It is imperative that further studies be initiated for developing frog-friendly harvest techniques involving companies and managers for conserving these unique frogs.

However, this discovery is just the beginning. It has opened a whole new world of questions that are waiting to be answered. As to what transpires inside the bamboo internode, it's still a mystery.

Riddles related to World Rhino Day

By: Palak 3rd year



1. I am gray but that doesn't mean I'm old
I have thick skin but I'm not a butternut squash.
I like to play in mud but I'm not a pig
I live in Africa but I'm not a giraffe
I have a horn but I'm not a unicorn.

2. I had four of my brothers, but we don't live together.
I am the biggest one, with one horn but not a unicorn.
Assam is where I live and my brothers are at a risk of their lives.



3. This is a big animal
Indonesia is where it is found
It has thick gray scaly skin
And on its head there is a horn.

4. Indonesia is where I live,
I am the smallest one with two horns on my head
I have very thick and long hairs but I am not a sheep.

Mail your answers to : antheia.botany@mirandahouse.ac.in

Feedback form

<https://forms.gle/CUM5wCyZPbHEU4B9A>

Editors of the Month

1. Samridhi Upadhyaya
2. Lenthoibi Thokchom
3. Vanshika
4. Shailza Bhati