Antheia

ARBORTEUM

THE MONTHLY NEWSLETTER

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What's Inside

World Mangrove Day

World Mangrove Day or the International Day for the Conservation of the Mangrove Ecosystem is celebrated on 26th July every year. The General Conference of the UN Educational, Scientific, and Cultural Organization (UNESCO) adopted this practice in 2015 to raise awareness on the importance of mangrove ecosystems and to promote their sustainable management and conservation. The first official celebration of this day was held on the 26th of July 2016.

World Mangrove Day is important because it aims to focus globally and encourages people to celebrate as well as come forward with solutions to preserve mangroves. As it is becoming an urgent imperative to prevent the destruction of mangrove ecosystems, and it is equally necessary to increase mangrove forest cover. It is not just about mangroves being destroyed, it is also about ecological degradation - through siltation, changes in water salinity, and pollution. Preserving biodiversity is an absolute necessity.

Sadly, due to various threats, we don't have enough mangrove ecosystems worldwide. They represent less than 1% of tropical forests. When it comes to total forest estates, mangroves are only about 0.4%, and the figures keep decreasing alarmingly. Therefore, World Mangrove Day is important to recognize, celebrate, and come up with solutions to preserve and protect these valuable gifts of Nature.

Mangrove Ecosystem

A mangrove is a shrub or tree that grows in coastal saline or brackish water. The term is also used for tropical coastal vegetation consisting of such species. Mangroves occur worldwide in the tropics and subtropics and even in some temperate coastal areas, mainly between latitudes 30°N and 30°S, with the greatest mangrove area within 5°N of the equator.

Mangrove plant families first appeared during the Late Cretaceous to Paleocene epochs, and became widely distributed in part due to the movement of tectonic plates. The oldest known fossils of mangrove palm date to 75 million years ago.

Economic and Ecological importance :-

“Mangroves are magical forests where we discover nature's secrets.They straddle the connection between sea and land and nature and humans.Mangrove forests nurture our estuaries and fuel our nature."

Mangrove forests capture large amounts of carbon dioxide emissions and other greenhouse gases from the atmosphere, and then store them in their carbon-rich flooded soils for millennia.

This is an important ecosystem service as we face climate change. This buried carbon is known as “blue carbon” because it is stored underwater in coastal ecosystems like mangrove forests, seagrass beds and salt marshes.

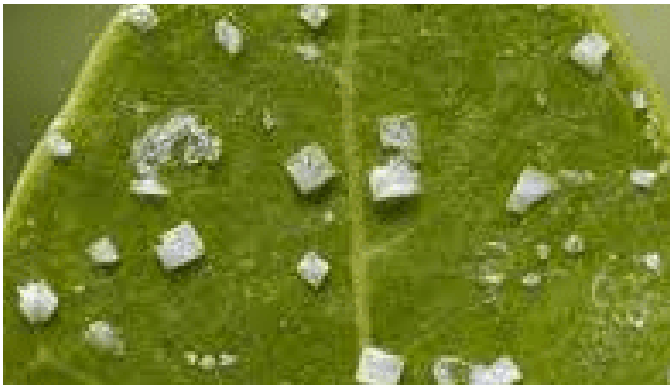
Mangrove forests also provide habitat and refuge to a wide array of wildlife,invertebrates or vertebrates. Estuarine habitats with coastal mangrove shorelines and tree roots are important for spawning and nursery territory for juvenile marine species including shrimp, crabs, and many sport and commercial fish species such as redfish, snook and tarpons. Branches of the mangroves act as bird rookeries and ting areas for coastal wading birds including egrets, herons, cormorants and roseate spoonbills. In some areas, red mangrove roots are ideal for oysters, which can attach to the portion of the roots that hang into the water.

Endangered species such as the smalltooth sawfish, manatee, hawksbill sea turtle, Key Deer and the Florida panther rely on this habitat to complete their life cycle.

Mangrove forests provide nature experiences for people such as birding, fishing, snorkeling, kayaking, paddle boarding, and the therapeutic calm and relaxation that comes from enjoying peaceful time in nature. They also provide economic benefits to communities as a nursery for commercial purposes.

ADAPTATIONS EVOLVED IN MANGROVES

Mangroves are vital and robust. The mangrove species are adapted to deal with the severe environmental conditions in multifarious ways.



Adaptation for Salt: Salt is made up of sodium and chlorine. Sodium and chlorine can be toxic in plants and to avoid these elements different strategies can be used. Some mangrove species filter out salt through their roots. Other species have special glands on their leaves that actively secrete salt, e.g. Kandelia. Salt can be stored in aging leaves that fall off together with the old leaves. The mangroves absorb salt in their bark that will eventually shed.

Breathing roots: Oxygen is required by underground tissues of any plant but mangroves have specialized above ground roots called the breathing roots or pneumatophores that take up the oxygen from the atmosphere. These roots have numerous pores through which oxygen enters the ground tissues. Pneumatophores also provide mechanical support to the trees. Cable roots stay within a few centimeters of the soil's surface for stability and access to oxygen. Knee roots are a type of horizontal root that periodically grow vertically and then, in a near hairpin loop, grow back down—similar to the look of a bent knee.

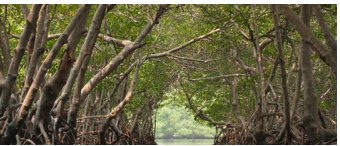
Stilt roots: These roots emerge from the stem and branches and get into the soil some distance away from the main stem. These roots are endowed with several pores through which atmospheric oxygen enters into the roots. Stilt roots help them to withstand the destructive action of tides, waves and storm surges.

Adaptations for germination and dispersal of seeds: It is postulated that saline water, saline soil with little or no oxygen is not a conducive environment for the seeds to germinate and flourish. To overcome this mangrove species have a unique way of reproduction which is known as vivipary. In this the seed germinates and develops into seedlings while seeds are attached to the parent tree. These seedlings are called propagules.

Adaptations to absorb and conserve water: The sea water poses problems for the plants to obtain water for their use. Since water is difficult to obtain, the mangrove plants have developed special measures to conserve water. Thus, many of them show xerophytic adaptations:

-The root system of all mangrove plants are widespread, shallow to enable them to take rapid advantage of the freshwater provided by the summer rains.

- leaves covered with thick cuticle well protected stomata.
- thick fleshy leaves and they are reduced in area to store water and reduce water loss by transpiration.



Adaptation to tile lower temperature: Distribution of mangrove plants is limited by low temperature. These plants are found only in tropical areas.

94th Foundation Day of ICAR

ICAR ,The Indian Council of Agricultural and research institute that coordinates the agricultural education and research in India is celebrating its 94th foundation day on 16 July 2022. It is the largest network of agricultural research and education institutes in the world. It was established on 16 July 1929 as a registered society under the Societies Registration Act, 1860 in pursuance of the report of the Royal Commission on Agriculture. The ICAR has its headquarters at New Delhi.

The Council is the apex body for coordinating, guiding and managing research and education in agriculture including horticulture, fisheries and animal sciences in the entire country. With 97 ICAR institutes and 45 agricultural universities spread across the country this is one of the largest national agricultural systems in the world.

The ICAR has played a pioneer role in Green Revolution and subsequent developments in agriculture in India through its research and technology development that has enabled the country to increase the production of food grains by 4 times, horticultural crops by 6 times, fish by 9 times (marine 5 times and inland 17 times), milk 6 times and eggs 27 times since 1950-51, thus making a visible impact on the national food and nutritional security. It has played a major role in promoting excellence in higher education in agriculture. It is engaged in cutting edge areas of science and technology development and its scientists are internationally acknowledged in their fields.

The mandate of the Indian Council of Agricultural Research is: To plan, undertake, aid, promote and coordinate education, research and its application in agriculture, agroforestry, animal husbandry, fisheries, home science and allied sciences.

To act as a clearing house of research and general information relating to agriculture, animal husbandry, home science and allied sciences, and fisheries through its publications and information system; and instituting and promoting transfer of technology programmes. To provide, undertake and promote consultancy services in the fields of education, research, training and dissemination of information in agriculture, agroforestry, animal husbandry, fisheries, home science and allied sciences. To look into the problems relating to broader areas of rural development concerning agriculture, including postharvest technology by developing co-operative programmes with other organizations such as the Indian Council of Social Science Research, Council of Scientific and Industrial Research, Bhabha Atomic Research Centre and the universities. To do other things considered necessary to attain the objectives of the Society.

Organisation chart.

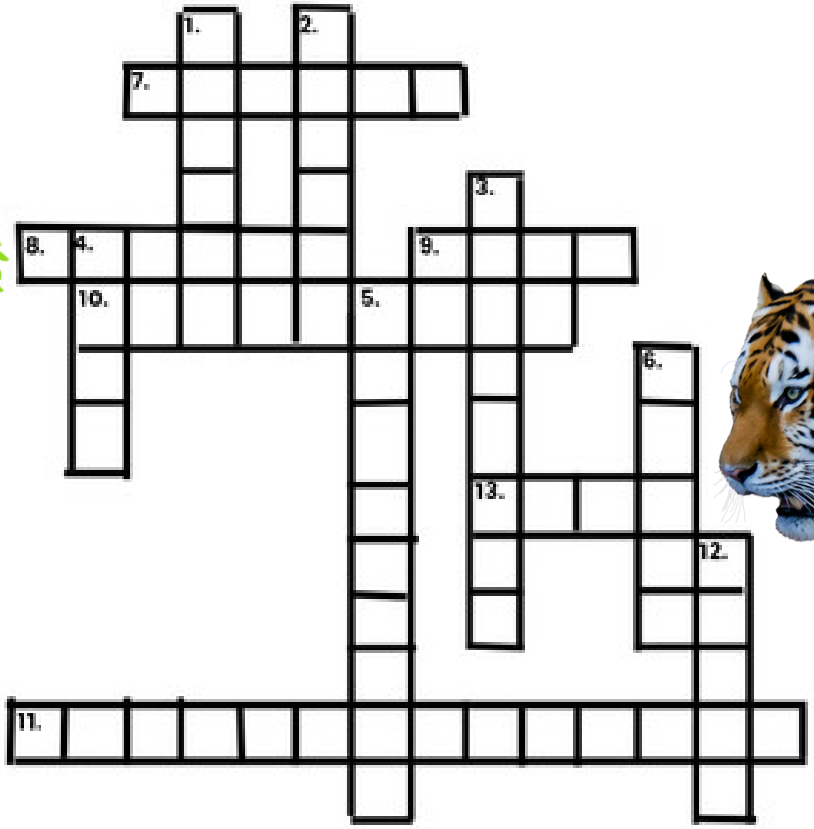
The Indian Council of Agricultural Research (ICAR) and the National Agricultural Research and Education System at large, are determined to harness the advances of science for the welfare of society. The Council is committed to transform itself into an organization engaged fully with the farmers, industry, entrepreneurs and consumers at large.

To keep pace with the changing environment, the ICAR has been updating its visions and strategies from time to time. The first systematic effort to envision the challenges and opportunities, and formulate its own strategy was undertaken in the last year of the 20th century by preparing the 'Vision 2020 document'. The next attempt was after five years by bringing out the 'Perspective Plan' and the 'ICAR Vision 2030', coinciding with XI plan. 'ICAR Vision 2050', provides the strategic framework for innovation-led inclusive and sustainable agricultural growth in the country.ICAR is the backbone of nation's agricultural wealth

Crosswords

INTERNATIONAL TIGER DAY

IN THE WORLD,POPULATION OF TIGERS IS CONTINUOUSLY DECLINING AND TO CONSERVE TIGERS 13 COUNTRIES ACROSS THE WORLD CAME TOGETHER AND A TIGER SUMMIT WAS HELD IN SAINT PETERSBURG.AFTER THIS TIGER SUMMIT EVERYYEAR INTERNATIONAL TIGER DAY IS CELEBRATED TO RAISE AWARENESS FOR TIGER CONSERVATION.SO ON THE OCCASSION OF INTERNATIONAL TIGER DAY A CROSSWORD PUZZLE IS GIVEN BELOW:-



ACROSS

7.When International Tiger Day is celebrated?
8.World's largest cat
9.Which body part of tiger is mostly used for medicines and tonics
10.Tiger belongs to which family
11.Scientific name of tiger
13.Which institution declared tiger as endangered species?

DOWN

1.When Project Tiger started in India?
2.Where Tiger summit held?
3.Cause of tiger extinction
4.Name of International organization involved in tiger protection
5.Functioning of tiger in an ecosystem
6.Subspecies of tiger recognized by IUCN
12.Which country has largest tiger population?

Mail us your answers at Antheia.botany@mirandahouse.ac.in. And the first correct entry will be declared as the winner and will be given social media shout-out!

Bonsai

A tree in a tray

Bonsai is a kind of horticultural art form, originally derived from ‘pun-sai’. The Chinese had started the art ‘pun-sai’ in which they grow dwarf trees in containers. The word “Bon-sai” is a Japanese term which means “a tree which is planted in a shallow container” (“Bon” is a thin/shallow bowl or ceramic container and “sai” is a tree which is planted.) During the Kamakura period, the Pun-sai art form was reconstructed under the influence of Japanese Zen Buddhism, popularly known as Bonsai.

The art of bonsai can be traced back to China. Bonsai is not a genetically dwarf plant. It is a replication of nature in miniature form. Trees that grow in crevices of high mountains or in between the walls of our roofs remain dwarfed throughout their life. Chinese believed that miniature objects contain magical and mystical powers in concentrated form. It was widely spread by Buddhists monks who wanted to bring outdoor plants inside their temples.

Any tree or shrub can be turned into bonsai. Some plants which are widely used are Ficus sp., Crassula (Jade plant), Carmona (tea plant), Schefflera, Calamondin, Sand pear, Bougainvillea, Jasmine, Pomegranate, Chinese elm, Rosemary etc.

To grow a plant into bonsai. First, we need a shallow pot with at least one drainage hole at bottom. Pots are usually earthenware. They are available in various shapes and sizes like oval, rectangular, round or square.

Secondly, appropriate application of techniques like shallow planting, pruning, defoliation, grafting, and root reduction, along with wiring the trunks and branches into desired shapes. Pruning and wiring must be done carefully. Jade plant branches are too soft hence, pruning is done instead of wiring. These all help to create the look of a mature tree in miniature.

Bonsai must be repotted once in a while depending on the extent of root growth along with gradual root pruning (during transplanting). Water with hose sprayer or fill the pot with water up to the rim on a daily basis. Bonsai-specific liquid fertilizer should be given twice a month. Bonsai can be kept indoors or outdoors. Outdoor bonsai plants are evergreen or deciduous plants and indoor plants are generally tropical trees.

Bonsai is known as a living art form because more than soil, it needs patience. Patience is the most important tool to grow a bonsai. Pruning and repotting in subsequent years is needed to sustain bonsai for centuries. It is often passed on as a family heirloom. “Time spent with Bonsai is never wasted”

Quintessence

Every one of us tries to be good to every single person around the world. That no one should have a bad impression of me and I have to impress every existing person in life. But is it true?
No, not really! There will always be only a few people who would like you for what you are and the rest would just comment and pass by. But, you shouldn't doubt yourself for what others say about you. Just remember, that you are enough and you shall prevail in any circumstance so be happy, surround yourself with optimistic people and flow in a sink with your heart and brain.

Feedback Form

https://forms.gle/Xy5TToP4wZaEDLuh7

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