

THE GREEN ARCHIVE

*National Wildlife Week at
DBS Page 3*

*World Food Programme bags
the Nobel Prize Page 6*

*The Primacy of Sacred
Forests Page 9*

CICADAS: VIOLINS WITH WINGS

Rahul Tharun

B.Sc. Forestry I Year

Cicadas are essentially violins with wings. A significantly large portion of their body is empty, which serve as amplifiers to the sound produced by specialized membranes called ‘Tymbals’. The sound is produced by the males of the species to attract females for mating. Each species has a unique song that attracts the females of the same species only, which is an intriguing fact, considering there are more than 3000 species of cicadas. Cicadas belong to the super-family Cicadoidea and are morphologically distinguished by their stout bodies, broad heads, clear-membrane wings and large compound eyes.

Cicadas can be roughly classified into two types, Perennial and Periodical cicadas. Periodical cicadas are mysteriously fascinating as they spend most of their lifetime underground, somewhere between 13 and 17 years, feeding on plant sap from the roots of the forests and emerge only once from the soil mainly to mate. Once out of the soil their life span is rather short, around 4 to 6 weeks. The emergence is considered a unique natural phenomenon and this year 2020 is expected to witness one such emergence since the last one, recorded at 2003.

Perennial cicadas contrary to their name live from 3 to 5 years. Like their periodical counterparts, these cicadas



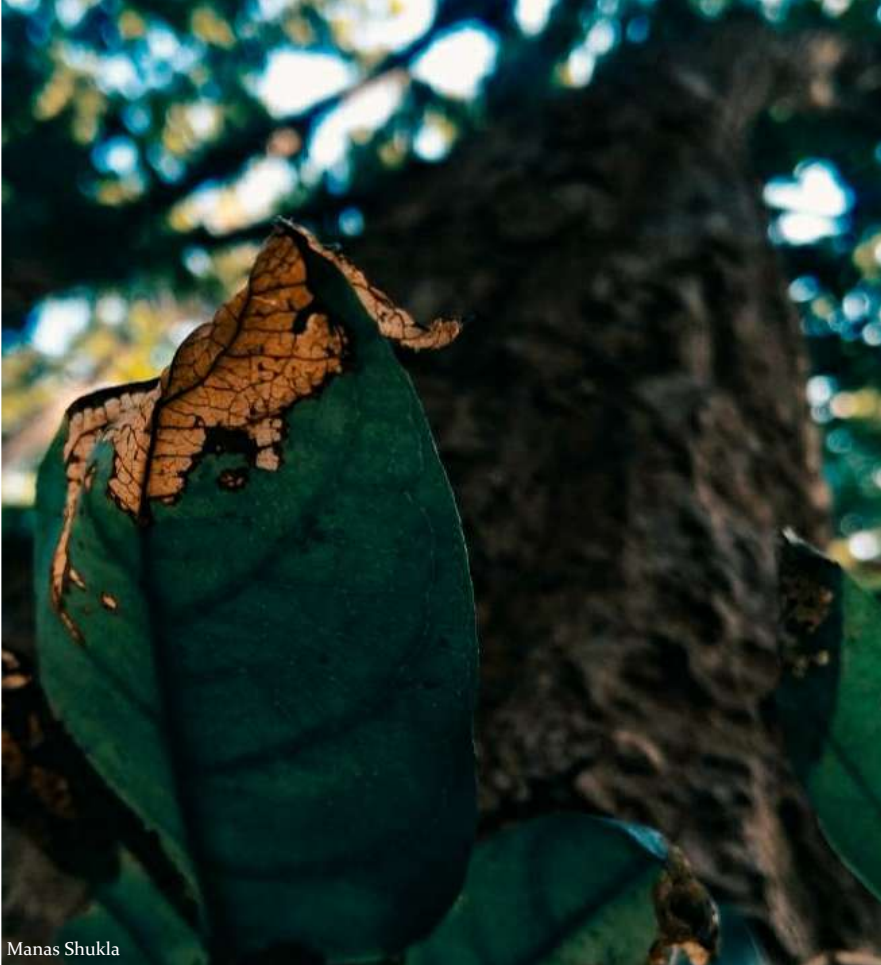
spend their juvenile phase underground coming to moult into adults and to mate. But their arrival is not synchronised, making their arrival less notable than that of periodical cicadas.

While perennial cicadas can be found throughout the world, periodical cicadas are limited to parts of North America. Periodical cicadas are often mistaken for locusts because of their swarming nature, and are considered pests. But they are not as destructive as locusts, although large swarms of up to 15 lakh individuals can overwhelm young trees, they don't feed on them, just lay eggs on tree barks. A single female has the capacity to lay up to 400 eggs. They use a sharp appendage to slit a small portion off of the stem of young branches, and lay eggs in them. This causes the branch to wither and brown, a process known as flagging. So older trees are left

with little damage only.

As for their environmental benefits, cicadas serve as a permanent food source for many of their predators, and the nymphs help aerate the soil. The play a vital role in returning nutrients to the soil. A cicada's primary source of nutrition is plant sap, or in other words xylem fluid, which has a very low concentration of minerals. Since attracting the females by “singing” is very exhausting, cicadas have developed a specialized digestive that enables them to take in large quantities of cell sap and excrete it quickly through external ducts. This helps reduce the temperature of the surrounding atmosphere, also in keeping their body temperature down. So the next time you take a stroll into the woods and u feel raindrops falling on a sunny day, you know who to thank.

EDITOR'S DESK



Manas Shukla

“

*Lo! I am come to autumn,
When all the leaves are gold;
Grey hairs and golden leaves
cry out, ”
The year and I are old.*

As autumn slowly takes over, the aforesaid words of G. K. Chesterton have become something I cannot shake my mind off. It's bizarre how time seemed to be frozen during the pandemic lockdown, and yet it feels as if it were yesterday that we were sent home from college. Seven months, gone in a whiff.

Despite being timeless, the period between spring and

autumn of 2020 felt productively engaging nonetheless. The month of October blasted off with the online programme of the National Wildlife Week, organised by our very own Forestry Department. The event, which went on for six consecutive days, took place on a scale larger than anticipated, and we got to notice avid participation from the freshers in great profusion. They did not let the distancing obstacles of COVID-19 deprive us of their talents. There is no doubt, of course, that the future of our Department is being passed on to responsible hands. This was followed by

the Agriculture Department hosting a webinar on the occasion of World Food Day, making extensive efforts to spread the awareness of the global food crisis and sustainable use of agriculture. A poster making competition was also conducted, where the participants got to show off their artistic talents.

Aside from the occasional events, the college carried on the weekly Thursday activities, with a declamation contest on food security, followed by a Group Dancing Competition in the third week of the month. Overall, the month of October was quite enthralling in nature, and we got to see immense participation from everyone.

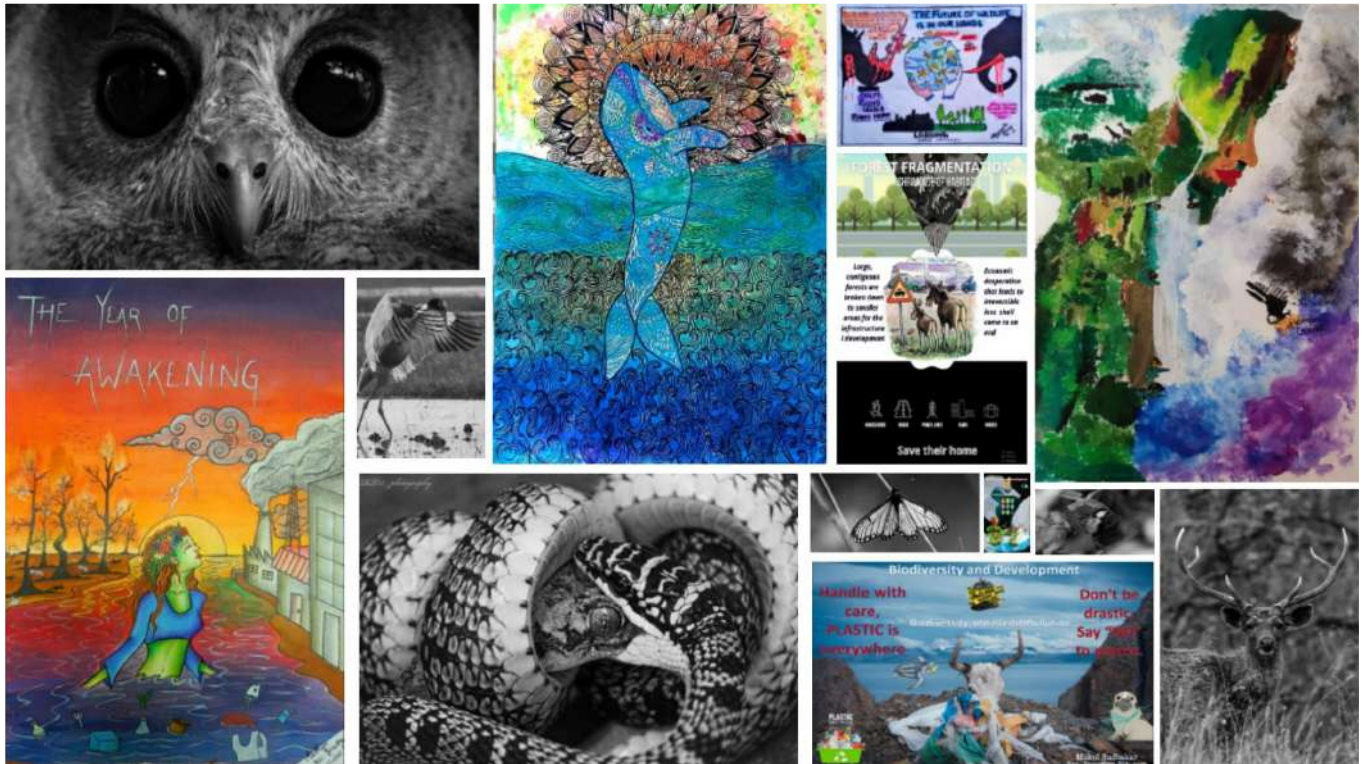
The credit also extends to our efficient faculty members, who seamlessly interacted with the students and instilled them with deep motivation to participate in the events and discover their potential.

Upon its release during the Wildlife Week event, first edition of The Green Archive received amiable appreciation from everyone. We thereby make it our objective to live up to the expectations, and keep on improving over time. We aim to leave no stone unturned in delivering our best, even in today's age of behedged social interactions. Here is a refined, more elegant second edition. Keep learning!

Manas Shukla
Editor-In-Chief

ROAR AND REVIVE!

THE NATIONAL WILDLIFE WEEK PROGRAMME AT DBS



Manas Shukla

B.Sc. Forestry III Year

With its seventh consecutive month, the pandemic seems to be deafening the interest of students in online education. Consequently, the Forestry Department at Doon Business School decided to stir up the monotony.

A chain of events in the form of webinars were hosted for six successive days, from October 5th to 10th, in the light of the annual National Wildlife Week. The theme followed by National Wildlife Week 2020 was "Roar: Roar and Revive". The events were organised in a diversified way, comprising of photography, poster-making, quiz and essay-writing competitions, along with other unique events like Friday Forum Discussion and Backyard Bird

Count, which helped to incorporate maximum participation from the students.

The Department went the extra mile, and invited esteemed guests such as the retired Uttarakhand Principal Chief Conservator of Forests (PCCF) Dr. R. S. Rawat; Dr. V. P. Uniyal from the Royal Entomological Society; Nikunj Jambu from Foundation of Ecological Securities (FES); Dr. Anant Pande, Ankita Sinha Nilanjan Chatterjee from Wildlife Institute Of India; Gitanjali Katlam from Jawaharlal Nehru University (JNU) and Deepika Chettri from Uttarakhand Biodiversity Board (UBB).

Each guest had their own inimitable and insightful perspectives on wildlife in general, and made sure that each and every person who attended the webinars had some

important knowledge and lessons to bag with them at the end of the day. From the speed of the camera shutter to the irreplaceable importance of mosquitoes in the ecosystem, students got to learn a variety of things.

The students of Forestry Department, under the guidance of the Chairman Mohit Aggarwal, Head of Department Dr. M. C. Porwal, the Principal Dr. I. J. Gulati, Dr. Monideepa Mitra and other faculty members, successfully executed this week long programme, which proved to be a much-needed diversion from the weary routine. The students were, once again, reminded that the fields of Forestry and Wildlife have many fascinating specifics which can draw the passion out of them.

THE CONSTRAINTS OF ORGANIC FARMING YOU NEVER PAY ATTENTION TO



Source: Unsplash

Abantika Das

B.Sc. Agriculture II Year

We are all fascinated by the term "organic", right? So much that we are even willing to pay thousands behind any so-called organic product which might cost you a few rupees in any kirana store. But why is there such a craze about it and what is it, actually?

Organic farming is an agricultural system that is supposed to avoid the use of chemicals such as pesticides and chemical-induced fertilizers etc. Thus, the produce obtained will be toxin-free and safe to consume. The main objective is sustainability, protecting the environment, and promoting health. In simple words, the principal goal of organic production is to develop

enterprises that are sustainable and harmonious with the environment.

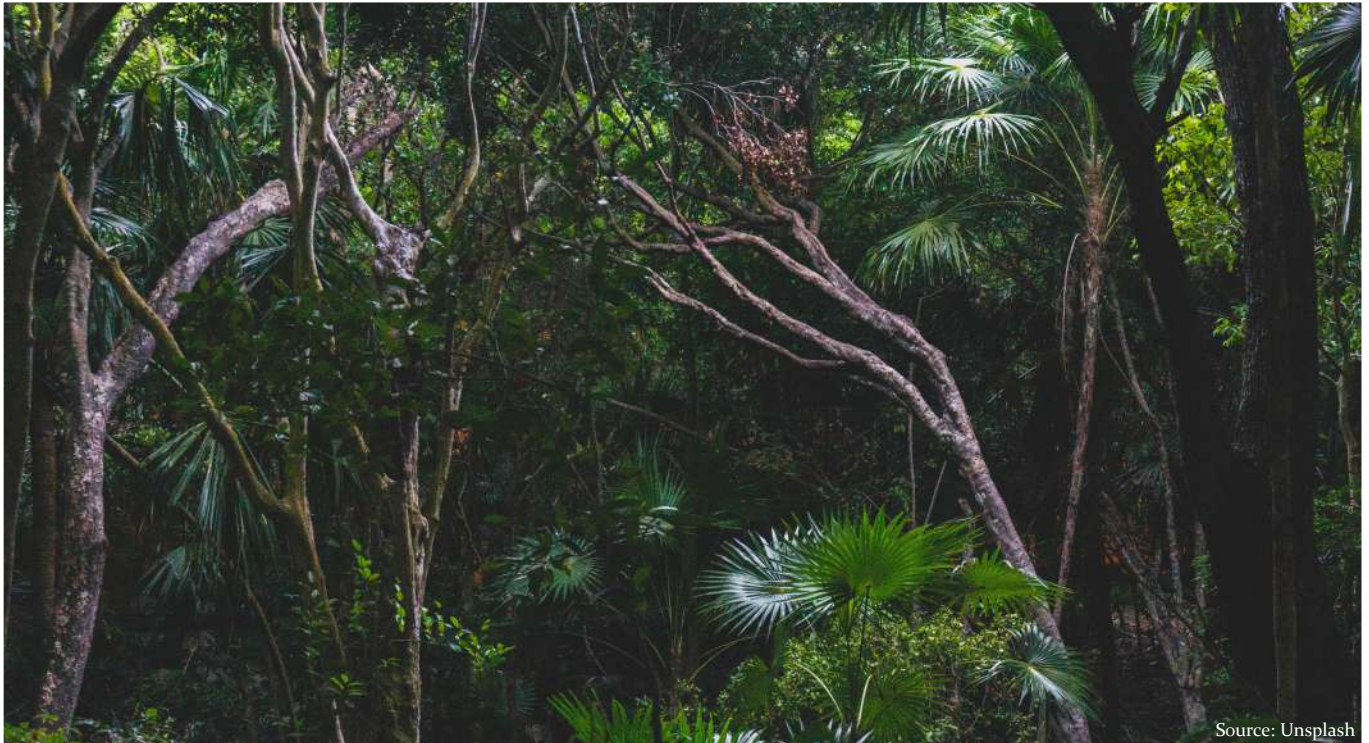
Yes, there are a lot of perks and benefits in this form of farming. It helps you to maintain your health as well as your environment without any degradation. But what about the problems and constraints involved in here?

Firstly, the farmers have to put a high input in terms of capital. Secondly, even after high input costs in many cases, the growers will experience a low yield. This happens because the soil involved will take some time to adapt. In some cases, it can even take years. Next, will be the shortage of biomass. The available organic matter will never be enough to meet the requirements. Even experts and well-informed farmers are not sure whether all the

nutrients with the required quantities can be made available by the organic materials.

So, what we can do is, instead of switching to the licensed organic farming we can make some changes in our conventional method of farming. In India, organic farming is usually observed amongst a small proportion of farmers in the form of the traditional farming system, and they use local or owned farm renewable resources and carry on with the agricultural practices in an environment which is ecologically friendly. We can take notes from that and have our kitchen garden which will help us to save expenditure on the purchase of fruits and vegetables, and most importantly, we will be getting highly nutritious fresh fruits and vegetables.

THE REMARKABLE PLANTS OF THE AMAZON VALLEY



Source: Unsplash

Mayuri
B.Sc. Agriculture II Year

There are a number of reasons as to why the Amazonian forests are so popular. We all are very well aware about its unparalleled biodiversity. Researchers have always kept it possible to keep us humans connected to all the facts Amazon rainforest carry. But are we really aware about all the facts?

Regardless of all the efforts, the richest treasure of the Amazon's biological diversity has been ignored. Alwyn Gentry, a renowned American botanist, found nearly 300 different species of trees growing on one - hectare plots he studied in the Peruvian region of the Amazon.

All of these plants were found to have a trunk diameter

greater than 10cm. Moreover, this study did not include the smaller, understory plants, vines, epiphyte, etc., nor the vast numbers of fungi, insects, animals and other organisms in this richly biodiverse region. Botanists Scott Mori and Alexander De Oliveira further reported even greater numbers of different species in the central Amazon valley of Brazil.

It is scientifically proven that medicinal plants from the Amazon, including Cat's claw, Dragon's blood and Ayahuasca, provide numerous health benefits. Imagine what would be life without chocolate, a product of the sacred plant *Theobroma cacao*, that originates from the Amazon?

Other plants such as *Astrocaryum*, *Bactris gasipaes*,

Hevea brasiliensis, *Oenocarpus bataua*, etc. are some of the most useful plants of Amazon valley helpful for industrial, agricultural and commercial purpose.

Among these "green treasures" are a variety of different plants that hold significant value, and if utilized sustainably they could become the base for a future utopia.

In conclusion, the plants of the Amazon have always provided its inhabitants with products important for their livelihood. Undoubtedly, one could refer to them as a "Green Treasure". Amazon is home to the most species on earth despite the human assault, and we should cherish rather than destroy this precious environment.

WORLD FOOD PROGRAMME

COMBATING HUNGER TO NOBEL PEACE PRIZE 2020



Source: Getty Images

Wanishree Jha

B.Sc. Agriculture II Year

“It was hunger which entrenched humanity and, it can terminate it too.” This is for the first time that any organisation, rather than an individual, has been honoured with The Nobel Peace Prize. Their magnanimous efforts definitely deserve recognition for liberating millions of people from hunger.

World Food programme is the world’s largest humanitarian organisation which has been working since a way long to liberate hunger from the areas where difference of opinion is unable to provide a course for life. Established in 1961 as a food-assistance branch of United Nations, with its headquarter in Rome. The organisation

believes in sustainability and aims to achieve “zero hunger” by 2030. Feeding almost a billion people in 88 countries, it volunteers mostly the countries facing any natural calamities or regional conflicts, and food shortage.

David Beasley, who resides as the executive director of WFP urged the billionaires to save and donate a few for millions as the number of people marching towards starvation has jumped from 135 million to 270 million since the COVID-19 pandemic. “I don’t get to hang around with that crowd. I am hanging around people who are starving to death,” Beasley said.

The countries where humanitarian crises are worsening include Yemen, Africa’s Sahel region, Congo, Syria, Nigeria, Ethiopia and

South Sudan.

Activities of WFP:

- Programmes such as P4P (Purchase for Progress) trained 800,000 farmers from 20 countries to improve agricultural practices, and post-harvest technologies in the year 2008.

- From providing food to the Syrian refugees in 2017 to feeding 12 million Yemenis a month in 2020, WFP has always responded to many such cause and aids with scrutiny of United Nations.

- In India it focuses on providing technical assistance to the government which aims to meet food and nutrition safety to their target population.

HERE IS WHY YOU SHOULD SWITCH TO LOCAL FOOD CULTIVATION

Sonakshee Jha

B.Sc. Agriculture II Year

Who doesn't find it convenient to step into a supermarket and get all the necessary commodities ranging from clothing to vegetables under a single roof? It becomes even more alluring when you find some new unique vegetables or fruits or even the same as your local stores, but vibrantly coloured, pleasantly packed in fancy containers, fresh looking and sometimes even nicely chopped, and in this era, what else would a busy city dweller wish for?

These days, via news reports, articles, food bloggers etc. we're encouraged to *eat the rainbow*, meaning a diverse array of colourful plant foods, from around the globe which is said to be full of different types of phytochemicals, vitamins, minerals and antioxidants. Also, this nutritional advice probably supports only the food industry, neither our health nor the environment seems to be benefitted.

Whatever environment we live in, the local, seasonal foods should always be enough, and in the past, they always were. There were no proper transportation or storage systems back then to provide people with the rainbow foods from around the world and it's also not a secret that the previous generations were much



Source: Unsplash

healthier than us and also lived longer lives.

Not flavours, rainbows, antioxidants, polyphenols or any other perky food chemicals from the latest 'superfood'. When it comes to

food, nutrients are what matters, and they are found in your local environment. Calories, naturally, come along with nutrients, but strangely, at odds with nature, nutrients don't always come along with

the calories in our modern world, and that's exactly where the problem lies beyond the scope of any article.

Locally grown foods are generally cheaper because they involve less or sometimes no middlemen, and since it doesn't have to travel far, it's fresh and thus healthy too. And most importantly low on deadly disease-causing chemicals because it's generally cultivated in small amounts. Local food also improves rural and small-town economics, it not just provides more on-farm employment,

but supports many local businesses on which farmers directly or indirectly depend.

Choosing locally grown food is also related to the sustainable agriculture system. Buying locally grown food is more environmentally responsible because to make an out season, out of range vegetable or fruit available at a place, a lot of resources right from packaging, processing, transportation to refrigeration is needed, contributing a major part in waste production, carbon emissions and energy use.

The advantages of adopting a local food system are diverse and plenty and the standout winner during this global pandemic is simple; security. Local food systems are a lot more secure and less likely to collapse in difficult times like these.

On one hand, we're eating nutritious healthy food which is sustainable and secure, and on the other, we're also contributing towards the betterment of the environment. What's better than that?

STEPPING TOWARDS A CLIMATE RESILIENT FUTURE



Source: Pinterest

Suprabha

B.Sc. Agriculture II Year

History stands as evidence to the fact that as long as human beings have been alive on Earth, the planet has never run sustainably. There has always been some turbulence, or say, side effects of human deeds. We have a

habit of inventing problems and then running in pursuit of solutions, creating more problems along the way.

Recently, an ambitious piece of legislation was formulated in the Republic of Ireland, that is, the Climate Action and Low Carbon Development Amendment,

with a vision to establish a carbon free and neutral climate by the end of the year 2050. It is not something new, but rather a revised version of a similar law which was attempted to be initiated in the year 2015. There is no need to dive deep into the law as one can clearly sense about it by the headline.

Not only the society of Ireland but also the economy and natural resources are facing diverse impact of climate disruption. Human activity dominates it drastically. Warming of atmosphere have provoked more towards intense storms, increased sea and river water levels, risk of new pests and diseases, change of distribution and life cycle events of plant and animal species on land and in the oceans. The new amendment

has come up with the stronger strategy and tight policies which are intact to it. The Carbon Budgets and updating of Annual Climate Plan every 10 years is expected to play its own significant role in mitigating the situation.

For a healthier, prosperous and more secure future we

local people need to take the stewardship of the environment. This planet is like our home too, and other existing beings are our family. Just like your home, if you would not care about construction and maintenance it will definitely collapse. Similarly, we can see the

ecological foundations crumbling around us. The planet is suffering and nature has given us it's awakening call. If there is a right time to act, it is now. Even miniscule day to day efforts, which go overlooked, can be a great step towards a utopia.

THE PRIMACY OF SCARED FORESTS



Source: Unsplash

Ryan Wilmer Jedidiah
B.Sc. Forestry II Year

Sacred woodlands are placid or preserved patches of verdure or forested areas uncovered on the outskirts of townlet, metropolia or grasslands that are economized by societies by commemorating them to regional folk divinities or ancestral spirits. Locals acknowledge that these forests

belong to divinities and their vandalism could incite them, a hypothesis that has functioned well as a means to protect these small patches of forest.

Sacred groves play a substantial role in preserving biodiversity by endorsing and safeguarding a range of birds and animals. They also help in soil and water conservancy. The forests of sacred groves are found to have a vaster watershed value in phrases of

water yield and quality than other types of landscapes. Ponds, streams or springs found in the sacred groves serve as water citations for the province around the year even when other water sources go dry. The vegetative cover, on the other hand, helps in , enriching the wide range of the requisite nutrients.

The study showed that the water samples of all the three sacred groves conformed

to the WHO norms for potable water and was of much better quality than that of water from the adjacent locales. This is because Oak-dominated forests support better growth of ground vegetation than Deodar forests. Lesser foliage makes the soil in the deodar forests much more vulnerable to erosion. The study capitalizes valuable information on the role of sacred groves in bolstering high-quality water resources that serve to meet the drinking water needs of local communities in times of water scarcity.

Contact us at:

Department of Forestry,
DBS School of Agriculture and Allied Sciences,
Doon Business School Group.
Address: Mi-122, Behind Pharma City, Selaqui,
Dehradun, Uttarakhand 248001.
E-mail: thegreenarchive@doonbusinessschool.com

