



BIODIV News

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A Quarterly e-Newsletter



Aerial root system of Banyan tree
(*Ficus benghalensis*)

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Editorial

Esteemed Readers,

This is the International Year of the Bat. And so is next year. The United Nations Environment Programme declared 2011-2012 as the official, worldwide celebration of the amazing flying mammals. The Year of the Bat offers an unprecedented opportunity to educate millions of people about the benefits of bats and the threats they face. Bats carry a negative image. They are associated with such things as witchcraft. The main task in the Year of the Bat is to highlight, with scientific evidence, that the bat plays a vital role in the ecosystem.

In 1972, India instituted the Wildlife Protection Act (WPA) to protect its fauna from indiscriminate harm. Ironically, one of the categories (Schedule V) created by this act explicitly identifies fruit bats, along with rats and mice, as vermin —totally without protection. Two bat species were added to Schedule I, on April 1, 2003 (The Wroughton's free-tailed bat (*Otomops wroughtoni*) and Salim Ali's fruit bat (*Latidens salimalii*).

2011 also happened to be the International year of Forest Biodiversity. One of the many habitats of bats are large trees too. With this in mind, we have made an attempt to discuss bats, their habits and habitat which I hope the readers will find useful.

By 2050 our population will touch 1.8 billion. With one-third the land area of the United States, India has nine times the human density. So many people cannot help but leave a broad and deep footprint on the landscape. The challenge of providing basic necessities for this enormous population is daunting, and it is increasingly difficult to justify conservation of natural resources in the face of abject poverty, hunger, and the desperate need for more space. The conservation challenges that lie ahead make those of the twentieth century pale by comparison.

– Editor

1- Banyan tree at Pariyar, Unnao



A view of the aerial roots of the Banyan tree (*Ficus benghalensis*) at Pariyar, Unnao

A huge colony of Flying foxes is found on this tree in a large social group. This space is also shared by other birds like crows, Blue jay, Myna etc.

Bargad Tree at JankiKund, Pariyar :

The Banyan tree is the National tree of India. It is considered sacred and is called “Vat Vriksha” in Sanskrit. God Shiva as Dakshinamurthy is nearly always depicted sitting in silence under the banyan with rishis at his feet. It is thought of as perfectly symbolizing eternal life due to its seemingly unending expansion. In Hindi language, it is known as Bargad, Vatavriksh, and Barh.

Classification :

Kingdom : Plantae; **Division :** Magnoliophyta; **Class :** Magnoliopsida; **Order :** Urticales ; **Family :** Moraceae; **Genus :** *Ficus*; **Species :** *benghalensis*. Other names: Bargad, Bor, Ber, Ala and Pedda mari, Nayagrodha, Ala mara, Bar, Vad, Vatnam, Bahupada, Peddamarri, Al are the other names used for the Banyan tree. Indians call it a wish fulfilling tree.

Description: Banyan tree is a huge tree with very extensive branches. It is said that at one time more than 10,000 people can sit under its shade at one time. It is an evergreen tree. Its branches spread out and send trunk like roots to the ground in order to support itself. It grows to a height of more than 21 meters and lives for many years. The leaves are 10-20 cm long and has many aerial roots. The leaves are broad, oval and glossy. White milky fluid oozes out of leaves, if broken. It can grow in to the gaint tree covering several hectares.



Bat babies in tree hollow



Bat babies closeup



Bee hive on the tree

Other Species: *F. aurea*, *F. benghalensis*, *F. citrifolia*, *F. macrophylla*, *F. microcarpa*, *F. pertusa*, *F. rubiginosa* are the other related species of the Banyan tree.

Location: Found in almost all the parts of India, Banyan tree is the National tree of India. It is grown throughout the sub- Himalayan region and in the deciduous forests.

Cultivation methods: Banyan tree is easily propagated by root tip cuttings or the eye cuttings. Cut a piece of the stem about half an inch below and above the leaf. Insert the stem piece and a little of the leaf stalk into the rooting medium. To reduce

evaporation from the leaf surface, you can roll the leaf and secure with a rubber band. In a couple weeks roots and a new shoot will start developing. It can grow in any type of soil.

Medicinal uses:

The Banyan tree also has several medicinal properties. Its leaf, bark, seeds and fig are used for the variety of disorders like diarrhea, polyuria, dental, diabetes and urine disorders. The wood of the Banyan tree is used in making door panels, boxes and the other items. Its bark is used for making paper and ropes. The milky latex that comes from its leaves and stems is used in many Ayurvedic medicines.

Other uses:

In India its edible leaves are used as the plates. It is planted for the soil conservation. Wood is used for well curbs, door panels, boxes, furniture etc. It is suitable for paper pulp. The wood of the aerial roots is stronger and is used for the tent poles and cart yokes.

Cultural importance:

Banyan tree is respected and is considered as sacred by the people in India. In the sacred Hindu Book 'Bhagwad Gita' Lord Krishna has sung praises on the Banyan tree. People in India grow Banyan tree closer to the Peepal tree. As Banyan tree is considered as the male plant closely related to the Peepal tree. It symbolizes Trimurti with Vishnu as the bark, Shiva as the branches and Brahma as the roots. Indians considered Banyan tree as 'Kalpa Vriksha' the tree that fulfill all your wishes. The mighty Banyan Tree is considered as immortal and has always been the focal point for the village communities in India. It is probably the biggest and friendliest of all trees. Banyan tree is the tree of knowledge and tree of life.

2- Indian Flying Fox (*Pteropus giganteus*)



Adult Bats bathing Sun on a winter morning

A huge colony of Flying foxes is found on the Bargad tree at Janaki kund (Unnao district) in a large social group. This space is also shared by other birds like crows, Blue jay, Myna etc.

Classification:

Kingdom: Animalia; Phylum: Chordate; Class: Mammalian; Order: Chiroptera; Family: Pteropodidae.

Distribution:

This bat is widely distributed in South Asia (Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, Sri Lanka, China, Myanmar and Cambodia)

Habit and Ecology:

This species roosts in large colonies of hundreds to thousands of individuals on large trees in rural and urban areas, close to agricultural fields, ponds and by the side of roads. It feeds on a wide variety of fruits and flowers, both wild and cultivated. A single young is born between April to early June. It travels long distances, up to 150 km to and from its roost, a night in search of fleshy berries. Colonies usually have a permanent roost with one or two temporary roosts that individuals shift to depending on season and other unknown factors.

Conservation status:

This is listed as vermin under Schedule V of the Indian Wildlife (Protection) Act. In the IUCN Red List it is classified being of “Least Concern” (LC). This could be due to its wide distribution, a tolerance of habitat modification.

3- About Bats

Bats, also known as flying foxes are mammals which can fly. They belong to the Chiroptera order and form the second largest group of mammals. Around 1116 species of bats have been reported worldwide and since they prefer warm climate, they do not occur in the Polar Regions. These belong to 202 genera and 18 families. Present checklist shows 117 species and 100 sub species under 39 genera and 8 families. (By Simmons, 2005)

Indian Diversity of Chiroptera

World Chiroptera data after Wilson and Reeder, 2005 Global

Families	No of Genera		No of Species	
	World	India	World	India
Pteropodidae	42	8	186	14
Rhinolophidae	1	1	77	17
Hipposideridae	9	2	81	13
Megadermatidae	4	1	5	2
Rhinopomatidae	1	1	4	3
Craseonycteridae	1	0	1	0
Emballonuridae	13	2	51	6
Nycteridae	1	0	16	0
Myzopodidae	1	0	1	0
Mystacinidae	1	0	2	0
Phyllostomidae	55	0	160	0
Mormoopidae	2	0	10	0
Noctilionidae	1	0	2	0
Furipteridae	2	0	2	0
Thyropteridae	1	0	3	0
Natalidae	3	0	8	0
Molossidae	16	3	100	4
Vespertilionidae	48	21	407	58
TOTAL	202	39	1116	117

About 70% of bats feed on insects and similar creatures (insectivores) while the rest feed on fruits (frugivores). They play a major and important role in the ecosystem by helping to keep the insect population under control, pollinate flowers and distribute seeds of various plants.

Bats fall under two main categories -

Two bat species to Schedule I, which mandates the greatest protection. The additions took effect April 1.

MEGABATS (MEGACHIROPTERA)

Mega bats are usually large sized (though there a few of them that are smaller than the micro bats) with well-developed eyes and small ears. Their eye sight is so good that they do not depend on echolocation for navigation and finding food. They feed on fruits, nectar and pollen. Mega bats belong to the *Pteropodidae* family which is further divided into 7 subfamilies.

MICROBATS (MICROCHIROPTERA)

Micro bats on the other hand are relatively smaller with small eyes and large ears. They have poor eyesight and hence have to use echolocation. These types of bats mainly feed on insects and small creatures

South Asia has 123 species of bats, and almost all of them reside in India. They account for one-fourth of India's mammal fauna and more than one-tenth of the world's bat species. Bats' role in pollination, seed dispersal, and pest control remains mostly undocumented, although their economic benefits must be enormous in a largely agrarian country like India.



Wroughton's free-tailed bat
(*Otomops wroughtoni*)



Salim Ali's fruit bat
(*Latidens salimalii*)

Protected species of bats in India are only two. One is the small Salim Ali's fruit bat (*Latidens salimalii*); it is placed in Schedule 1 of the Indian Wildlife Protection Act. The generic classification of "fruit bats" still remains in Schedule V. Thus, *Latidens* has the dubious distinction of having the highest level of protection while still being classified as vermin.

The other protected species is Wroughton's free-tailed bat (*Otomops wroughtoni*), an insectivore. In India it is found only in Barapede caves in Belgaum district and in Meghalaya in a cave near Nongrai village. It is listed as critically endangered species due to habitat loss and a restricted range. Protecting the bats of India requires action on multiple fronts and at all levels. Grassroots education is vital and needs significant support.

List of Families:

1. Pteropodidae, 2. Rhinolophidae, 3. Hipposideridae, 4. Megadermatidae, 5. Rhinopomatidae, 6. Emballonuridae, 7. Molossidae, 8. Vespertilionidae.

List of Genera:

1. Cynopterus	11. Hipposideros	21. Hesperoptenus	31. Falsistrellus
2. Eonycteris	12. Megaderma	22. Scotoecus	32. Hypsugo
3. Latidens	13. Rhinopoma	23. Scotomanes	33. Ia
4. Macroglossus	14. Saccolaimus	24. Scotophilus	34. Tylonycteris
5. Megaerops	15. Taphozous	25. Nyctalus	35. Myotis
6. Pteropus	16. Chaerephon	26. Pipistrellus	36. Miniopterus
7. Rousettus	17. Otomops	27. Scotozous	37. Harpiocephalus
8. Sphaerias	18. Tadarida	28. Barbastella	38. Murina
9. Rhinolophus	19. Arielulus	29. Otonycteris	39. Kerivoula
10. Coelops	20. Eptesicus	30. Plecotus	

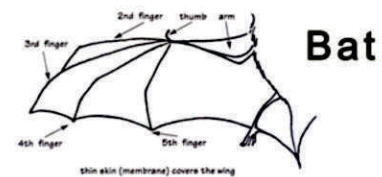
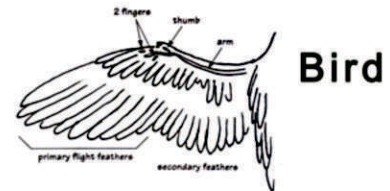
4- Bat Facts

How are bats different from birds?

They belong to different animal classes; birds are in a class called Aves while bats are in the class Mammalia. Bats are mammals, just like humans, which means that all bats are warm-blooded, have hair, bear live young, and feed their babies (called “pups”) milk. The body of birds is covered with feathers. The body of bats is covered with fur. Birds have a beak, they don't have teeth. Bats have teeth.

Bats and birds both can fly, yet they developed this ability independently. If one looks closely at a bat's wing, one will see it is a membrane, or skin, that is almost transparent. It is stretched over the short bones of the bat's arm and the long extended bones of its hand, so that the bat actually flies with its fingers. The important function of the long fingers of the bat's hand is to support and spread out its wing.

The bat's wing is similar to the structure of the human hand. The birds, in contrast, have a forearm and short hand bones that support its many feathers. Together, these produce the characteristic up and down flapping.



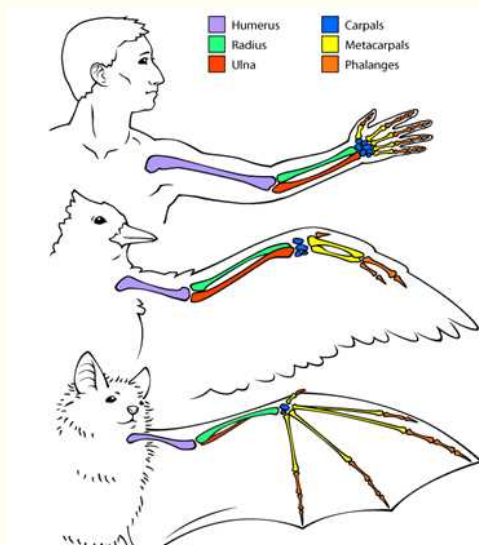
How are bats and birds similar?

Both have light bone structures. Both have modified hand structures that serve as wing bones. A keeled sternum serves as a point of attachment for flight muscles.

BATS and BIRDS



Human, bird, and bat bone comparison



A bat's wing has very similar bones to the hand and arm of a human, with skin stretched between the very long finger bones and the body to form the wing membrane.

Bats are the only mammals that can fly.

How do bats move around in the dark?

Many people think bats are blind, but in fact they can see almost as well as humans.

However, at night, their ears are more important than their eyes - they use a special sonar system called 'echolocation', meaning they find things using echoes.

Bats use a special sonar system called echolocation. These bats make high frequency calls either out of their mouths or noses and then listen for echoes to bounce from the objects in front of them. As bats fly they make shouting sounds, which are too high for most humans to hear (although sometimes children are able to hear them). The echoes they get back from their shouts give them information about anything that is ahead of them, including the size and shape of an insect and which way it is going. They are able to form pictures in their brains by listening to reflected sounds just like we form pictures in our brains by interpreting reflected light with our eyes. In this way, bats are able to comfortably move around at night, avoiding predators, maneuvering around obstacles, locating their food, and capturing insects in total darkness.

Why do bats hang upside down?

Unlike the bodies of other animals, a bat's body is best adapted for hanging upside down. Its hind limbs have rotated 180 degrees so that its knees face backwards.

This rotation aids in the bat's ability to navigate in flight and to hang by its feet. Bats actually have specialized tendons that hold their toes in place so that they are able to cling to their roosts without expending any energy. In fact, bats must flex their muscles in order to let go of the roosting surface. These adaptations are quite helpful for a flying mammal since bats only need to let go of the roost in order to drop into flight. Hanging upside down also provides bats with roosting space away from predators in safe places on the ceilings of caves, in trees, and buildings that few other animals can use because they have not evolved to hang upside down by their feet.

What do bats eat?

There are over 1,100 different species of bats in the world, living on every continent except Antarctica. Each one has developed special adaptations for how it lives and what it eats. For example, 70% of all the bats in the world eat insects and many of them use echolocation in order to find food and move around in the dark. Many small insectivorous bats can eat more than 1,000 mosquito-sized insects in one hour. These bats are able to eat so much because they have high metabolisms and expend lots of energy in flight.

Frugivorous bats living in tropical climates have very good eyesight and sense of smell for finding ripe fruit to eat. In the desert, there are nectar-feeding bats which have long noses and tongues for harvesting nectar from flowers, as well as special enzymes for digesting the high-protein pollen that accumulates on their faces. Carnivorous bats have sharp claws and teeth for catching small vertebrates such as fish, frogs, birds, or rodents. A few Latin American bats, the vampires, eat only blood.

How do vampire bats suck blood?

Vampire bats do not actually suck blood. They lap it up like a dog drinking water from a bowl. To begin feeding, the bat first must prick the animal with its two large front teeth, often in the foot or leg of a sleeping mammal or bird. An anticoagulant in the vampire's saliva causes the blood to flow without clotting, allowing the bat to lick up its nutritious, protein-filled diet. Vampires take only 2 tablespoons of blood while the host animal continues to sleep. There are just three species of vampire bats in the world and they all live in Latin America. They are very gentle creatures and will adopt orphans and regurgitate and share food for a member of the colony who could not find a meal the night before. The anticoagulant from these bats' saliva has been synthesized and is now used in medication for human heart patients, showing that even vampire bats can be helpful to humans. However, when these bats feed on livestock, they can spread diseases and must be controlled.

How long do bats live?

The oldest bat caught in the wild was a banded myotis which was 39 years old at the time of recapture. To put this in perspective, a bat living longer than 30 years is equivalent to a human living longer than 100 years. Bats, for their size, are the world's longest-lived mammals. Yet unlike other mammals of their size, bats have very low reproductive rates, females of most species producing just one pup per year.

Where do bats live?

Not all bats spend their days roosting in caves. Some roost in trees, abandoned mines, buildings, bridges....the list goes on and on. Actually, the variety of bat roosts reflects the amazing diversity of bat species. Bats are highly opportunistic and have adapted to their environments in creative ways in order to take advantage of the many shelters available to them. Many bat populations are threatened due to loss of their specific roosting habitats. Scientists have studied the roosting requirements of a number of bat species in order to provide appropriate artificial homes for bats.

What are flying foxes?

The common name "flying fox" refers to a group of bats living in the Old World tropics of Australia, Africa, Asia, and the South Pacific Islands. These bats received their common name because their faces resemble those of little foxes. They have large eyes because they do not use echolocation. Instead, they depend on vision and their keen sense of smell to find ripe fruit. Flying foxes help the ecosystems in which they live by pollinating many flowers and spreading seeds to new locations, especially aiding in rain forest regeneration.

What is guano?

Guano is the collective term used for bat or bird droppings or feces. For many years, people all over the world have been using guano to fertilize their crops. Today, scientists also are able to extract enzymes from bacteria which live only in guano in order to make laundry detergents and other valuable products. Bat droppings in caves support whole ecosystems of unique organisms, including bacteria useful in detoxifying wastes, improving detergents and producing gasohol and antibiotics.

As primary predators of night-flying insects, bats play an essential role in maintaining forest health. Many bats can eat nearly their own body weight in insects each night. These include moths, beetles and other destructive pests. Although long neglected in forest-management planning, bats are essential to the health of forest ecosystems, fulfilling the same roles by night that birds do by day. Helping bats is a wise investment in America's forests.

Habitats required by bats have three basic components: resources for roosting, foraging and drinking. Bats forage along forest edges, over riparian areas (land adjacent to and influenced by bodies of water), along forest roads and trails and in natural forest gaps or harvest-created openings. Feeding strategies vary greatly among forest dwelling species. Some forage around ground-level shrubs, while others prefer to forage under the tree canopy, in the canopy or above it. Bats need clean, pooled, open bodies of fresh water that are large enough to enable drinking on the wing and without obstructions from vegetation, fencing or other objects.

Bats and Forests

Some forest bats roost exclusively in the foliage of living trees; these are often referred to as "tree bats." Other species roost under loose, peeling bark or crevices of dead trees. Others will also use cavities in healthy trees or in those that are damaged or dying.

Roost trees are often located along the edges of forests or in open forest stands, where they generally receive greater solar heating and have a less - obstructed flight approach. Some of the forest bats that roost under bark, in cavities or in lightning-strike crevices in dead trees also use these same features in healthy living trees or those that are damaged or dying.

Bats have also been found roosting under bridges and in old buildings and cisterns. Foliage-roosting (or "tree") bats roost exclusively in the foliage of a wide variety of living trees, both evergreen and deciduous. They often choose dominant or co-dominant, large-crowned trees, roosting in locations that offer suitable temperatures, humidity and protection from bad weather and predators.

Several species of bats that roost in trees from spring through autumn spend their winters in caves, mines and other geologic features, such as cliff-face crevices, rock outcrops, rock shelters and boulder fields. Bat roosts in geologic features are easily disturbed or destroyed.

The greatest threats are disturbance from human commercial and recreational activities. All bats naturally arouse periodically during hibernation, but forced arousals due to disturbance cause them to use fat reserves that may be required for survival. Disturbance at maternity sites can cause females to abandon their young.

Caves, mines, cliff faces, rock shelters and talus slopes often provide essential roosts that should be identified and protected during land alterations. Habitat surrounding important caves and mines, which may include an entire watershed, should be carefully managed to avoid negative impacts. Timber harvests near caves and mines should be conducted carefully to avoid impacting roost environments by changing airflow patterns, sun exposure, humidity,

Forest-management practices that create small forest openings may foster development of suitable foraging habitat and may even enhance roosts located along forest gaps and edges. Bats often forage along edges between intact forests and cut areas. Smaller harvest areas increase edge habitat per unit area, promoting plant and insect diversity that is beneficial to bats and other wildlife. However, some bat species cannot forage in the middle of large regenerating stands. Roost - tree loss should be minimized when creating openings so that the loss of roosts doesn't offset the benefits of increased foraging habitat.

Ponds, seasonal pools, standing water offer important drinking and foraging resources for forest bats. Along with riparian zones, beaver ponds are among the most valuable aquatic resources, as they provide drinking, roosting and foraging habitat in close proximity. Forest-management practices that eliminate or limit access to water or degrade water quality through siltation can negatively affect bats.

Enjoy your bananas, mangos and guavas - and thank the bats that help bring these and many other fruits and vegetables to your table. In deserts and rainforests all around the world, bats are essential to the health of entire ecosystems. Most flowering plants cannot produce seeds and fruit without pollination - the process of moving pollen grains from the male part of the flower to the female part. And bats are essential pollinators of an incredible variety of plants, many of great economic and cultural value, including wild bananas, balsa, abaca, coconut palms, ceiba (kapok) and baobab trees. If we lose our bats, we jeopardize the ecosystems upon which many human economies are based.

5- Bat Untruths

- Bats do NOT get caught in people's hair
- Bats DO NOT ordinarily carry rabies....there are more instances of dogs and cats with rabies than bats.
- Bats are not blind. The term "blind as a bat" isn't really accurate. Bats have perfectly good eyes for seeing in the daylight.
- Bats DO NOT suck blood. Only 3 species of vampire bats that live in Central and South America feed on blood. Vampire bats almost never feed on human blood. They much prefer the blood of cattle, horses, pigs and birds.
- Bats DO NOT attack people. They are afraid of humans, viewing us as predators and will avoid us when possible.
- Bats are NOT dirty.
- Bats are NOT evil.

6- Conferences, Trainings, Tours

1. Bioved Research Institute, Allahabad and Chitrakoot District. Dates 09-10 October, 2011.: Shri . R.K. Dubey, ACF, visited the Bioved Research Society, Allahabad and Baihar Village in Chitrakoot to assist villagers in making of the PBR in this village.
2. Chitrakoot , 16 October, 2012: Shri R.K. Dubey , ACF visited Chitrakoot to guide local authorities for plantation of plants related to Ramcharitmanas.
3. National Consultation cum Workshop on People's Biodiversity Register at Bangalore. 22-23 December, 2012.: Shri. R.K. Dubey , ACF attended this meet.
4. 22nd All India Congress of Zoology and National Seminar on Recent Advances in Biological Sciences: Biodiversity and Human Welfare jointly organized by Department of Zoology, University of Lucknow, Lucknow and Zoological Society of India, Bodh Gaya during December 29-31, 2011. Dr. R a m J e e Srivastava, Senior Scientist attended the three day national seminar on Recent Advances in Biological Sciences: Biodiversity and Human Welfare during December 29-31, 2011 at Lucknow. The objective of the seminar was to discuss on major issues like Biodiversity, Biotechnology, Ecophysiology including Human Welfare.

7- 6th Board Meeting - Date 29-11-2011

One Board meeting was held during the period under report on 5th December 2011. In this meeting, confirmation of the minutes of the previous meeting was done first, followed by the discussions on the progress and follow up actions on the directions given in the previous meetings. In addition, a review on the progress of various activities of the Board was presented by Pratibha Singh, DCF.



The following decisions were taken at the 6th Board meeting:

1. Approval of draft of Annual report 2010-2011
2. Audited financial report of 2010-2011 presented before Board.
3. Approval of expenditure of the Board upto 30th Sep, 2011
4. Approval of budget and expenditure for the year 2010-11 by the Board.
5. Approval of proposed budget for 2011-2012

6. Approval was given for making 1000 copies of the book “Conservation of potential wetlands in District Sitapur-A first hand impression” by the Board.
7. Permissions sought / Approvals given:
 - i. Under Sec 6 of Biological Diversity Act and Rule 18 of Biodiversity Rules, 2004, Dr Nahid Ali from Indian Institute of Chemical Biology, Calcutta had sought permission from NBA for use of blood from people infected by a strain of *Leishmania donovani* - strain AG83 for research. NBA had sought consent of UPSBB for this , the same was given.
 - ii. Under Sec 41 (2) of the Biological Diversity Act, 2002, Dr R.K. Gupta from CSIR sought permission of use of plant material collected from NBRI campus for research- *Tribulus terrestris*, *Phyllanthus emblica*, *Zingiber officinale* and *Tinospora cordifolia*. NBA had sought consent of UPSBB for this , the same was given.
 - iii. Under Sec 3 of the Biological Diversity Act, 2002 and Rule 14 of Biodiversity Rules , 2004 , Dr. Cecile Berthouly-Salazar, Department of Botany and Zoology, Matiland, South Africa had sought permission from NBA for the collection and use of feathers of Myna (*Acridotheres tristis*) . NBA had sought consent of UPSBB for this. Since this bird is a scheduled bird (Schedule 4) under Wildlife Protection Act , 1972 permission from the Chief Wildlife Warden of UP under Sec 12 of WLP Act, 1972 is needed before grant of permission. The same was communicated to NBA.
 - iv. Central Potato Research Institute (ICAR) had sought permission for field trials of 7 transgenic strains of *Solanum tuberosum* sub sp *tuberosum* - SP951, SP 904, KB/SP 951, KB/SP 904, KJ/SP 951, KBRB and KJRB at Modipuram , Meerut campus from Principal Secretary , Horticulture. The agriculture department referred the same to the UPSBB. It was decided to refer the matter to National Biodiversity Authority.
8. A booklet of Biodiversity of Uttar Pradesh is to be prepared. A request was made to all concerned Departments (Agriculture/ Horticulture/ Fisheries/ Animal husbandry/ Environment / Forest) are to prepare a 20-25 page write on Biodiversity found in the State of UP in their respective fields and send the same to the Board office at an early date.

Newspaper Clippings

(i) International News



14 Dec. 2011: About 208 new species have been discovered in the Greater Mekong region.

14 Dec. 2011: The presence of Dolomite in fossil reefs and its absence from modern reefs has baffled scientist from long. Now it has been found that large quantities of dolomite are backed inside a 'reef builder' species of red algae Hydrilithon on kodes. So dolomite is also present in modern reefs but is hidden **within these algae**.

Newspaper Clippings

(ii) National News

THE HINDU • FRIDAY, OCTOBER 21, 2011

GM crops have not lived up to their promises, say NGOs

Their report says the crops fail to increase yields, let alone solve hunger, soil erosion and chemical-use issues.

John Vidal

Genetic engineering has failed to increase the yield of any food crop but has vastly increased the use of chemicals and the growth of "superweeds," according to a report by 20 Indian, southeast Asian, African and Latin American food and conservation groups representing millions of people.

The so-called miracle crops, which were first sold in the U.S. about 20 years ago and which are now grown in 29 countries on about 1.5bn hectares of land, have been billed as potential solutions to food crises, climate change and soil erosion, but the assessment finds that they have not lived up to their promises.

The report claims that hunger has reached "epic proportions" since the technology was developed. Besides this, only two GM "traits" have been developed on any significant scale, despite investments of tens of billions of dollars, and benefits such as drought resistance and salt tolerance have yet to materialise on any scale.

Insect control claim

Most worrisome, say the authors of the Global Citizens' Report on the State of GMOs, is the greatly increased use of synthetic chemicals, used to control pests despite biotech companies' justification that GM-engineered crops would reduce insecticide use.

In China, where insect-resistant Bt cotton is widely planted, populations of pests that previously posed only minor problems have increased 12-fold since 1997. A 2008 study in the *International Journal of Biotechnology* found that any benefits of planting Bt cotton have been eroded by the increasing use of pesti-



Bt cotton hybrid Brahma BG-II grown in Coimbatore as part of an experiment. - PHOTO: K. ANANTHAN

cides needed to combat them.

Additionally, soya growers in Argentina and Brazil have been found to use twice as much herbicide on their GM as they do on conventional crops, and a survey by Navdanya International, in India, showed that pesticide use increased 13-fold since Bt cotton was introduced. The report, which draws on empirical research and companies' own statements, also says weeds are now developing resistance to the GM firms' herbicides and pesticides that are designed to be used with their crops, and that this has led to growing infestations of "superweeds," especially in the U.S.

Ten common weeds have now developed resistance in at least 22 U.S. states, with about 6m hectares of soya, cotton and corn now affected.

Consequently, farmers are being forced to use more herbicides to combat the resistant weeds, says the report. GM companies are paying farmers to use other, stronger, chemicals, they say.

"The genetic engineering miracle is quite clearly faltering in farmers' fields," add the authors.

The companies have succeeded in marketing their crops to more than 15 million farmers, largely by heavy lobbying of governments, buying up local seed companies, and withdrawing conventional seeds from the market, the report claims. Monsanto, Dupont and Syngenta, the world's three largest GM companies, now control nearly 70 per cent of global seed sales. This allows them to "own" and sell GM seeds through patents and intellectual property rights and to charge farmers extra, claims the report. The study accuses Monsanto of gaining control of over 95 per cent of the Indian cotton seed market and of massively pushing up prices. High levels of indebtedness among farmers is thought to be behind many of the 250,000 deaths by suicide of Indian farmers over the past 15 years.

The report, which is backed by Friends of the Earth International, the Center for Food Safety in the U.S., Confederation Paysanne, and the Gaia foundation among others, also questions the safety of GM crops, citing studies and reports which indicate that people and animals have experienced apparent allergic reactions.

But it suggests scientists are loath to question the safety aspects for fear of being attacked by establishment bodies, which often receive large grants from the companies who control the technology.

Company disputes findings

Monsanto disputes the report's findings: "In our view the safety and benefits of GM are well established. Hundreds of millions of meals containing food from

GM crops have been consumed and there has not been a single substantiated instance of illness or harm associated with GM crops." It added: "Last year the National Research Council, of the U.S. National Academy of Sciences, issued a report, *The Impact of Genetically Engineered Crops on Farm Sustainability in the United States*, which concludes that U.S. farmers growing biotech crops 'are realising substantial economic and environmental benefits — such as lower production costs, fewer pest problems, reduced use of pesticides, and better yields — compared with conventional crops'." David King, the former U.K. chief scientist who is now director of the Smith School of Enterprise and the Environment at Oxford University, has blamed food shortages in Africa partly on anti-GM campaigns in rich countries.

But, the report's authors claim, GM crops are adding to food insecurity because most are now being grown for bio-fuels, which take away land from local food production.

Vandana Shiva, director of the Indian organisation Navdanya International, which coordinated the report, said: "The GM model of farming undermines farmers trying to farm ecologically. Co-existence between GM and conventional crops is not possible because genetic pollution and contamination of conventional crops is impossible to control."

"Choice is being undermined as food systems are increasingly controlled by giant corporations and as chemical and genetic pollution spread. GM companies have put a noose round the neck of farmers. They are destroying alternatives in the pursuit of profit." (John Vidal is environment editor of the Guardian.) — © Guardian Newspapers Limited, 2011

21 Oct. 2011: A report by 20 Indian, South East Asian, African and Latin America food conservation groups have said that genetic engineering has vastly increased the use of chemicals and the growth of 'Super Weeds'. They have said that co-existence of GM and conventional crops is not possible because genetic pollution and contamination.

Newspaper Clippings

DELHI
THE HINDU • SATURDAY, OCTOBER 22, 2011

As the Yamuna ebbs away, water-birds give Delhi a miss

Gaurav Vivek Bhatnagar

NEW DELHI: The depleting water levels of the Yamuna, brought about by the twin impact of less water flow into Delhi and a mechanical fault with the Okhla barrage, have had a tragic effect on the fish in the river and on the arrival of migratory birds at the Okhla Bird Sanctuary.

According to avid bird-watchers, this year could prove to be particularly bad for the arrival of migratory birds at the sanctuary since the river has almost dried up at the point where it leaves Delhi. Also the fish, which are now confined to the small pools, are quickly dying.

"The water levels at Okhla Bird Sanctuary have never been this low. The reason is that very little water is entering Delhi. Also, due to the repairs being carried out at the barrage the gates remained open and the water which should have been retained in the sanctuary flowed out," says Asian Waterbird Census coordinator Tarun K. Roy who has been following the situation closely.

He adds that while some local migratory water-birds like brahmyn ducks, northern shovelers, pied avocets, whiskered terns, green sandpipers, wood sandpipers and ruffs had been spotted at the sanctuary in



NO SHOW THIS YEAR: Spot billed ducks at the Okhla Bird Sanctuary in Delhi on January 23 this year.

the first week of October, they are quickly vanishing from there due to the sharp fall in availability of water.

The sanctuary on the Delhi side of the Yamuna is almost non-existent now due to rampant encroachment by illegal colonies. It is on the other side of the Yamuna that the sanctuary supports some bird life. Incidentally, this area is located barely a couple of kilometres from the Dalit Prerna Sthal, which was inaugurated recently by U. P. Chief Minister Mayawati.

"On this side too, the small fish are almost dead and only a few large ones remain in the small pools that now exist. The birds are fast exiting the area," says Mr. Roy.

Having carried out the bird cen-

sus on behalf of Wetlands International's South Asia Division for many years, he is concerned that the arrival of the migratory birds from abroad this winter may be affected by the water crisis.

"Already about a dozen resident water-bird species like the Indian moorhen, purple swamphen, little grebe and marsh harrier, have given Delhi a go-by. And it now seems that birds like the Eurasian wigeon, tufted pochard, comb duck, bar-headed geese and grey leg geese which come in from abroad may also give the Okhla sanctuary in Delhi a pass on not finding water here," Mr. Roy warns, demanding a minimum water level in the sanctuary that could support fish and bird life.

22 Oct. 2011: Low water level at Okhla Bird Sanctuary has resulted in less fish being available for migratory birds, because of which there is decline in arrival of birds.

Newspaper Clippings

MONDAY, OCTOBER 24, 2011

THE HINDU

Bharatpur farmers take to a new cash crop

Chicory farming spreading rapidly thanks to its good yield and remunerative prices

Special Correspondent

JAJPUR: Farmers growing chicory on a large scale in Weir tehsil of Bharatpur district in Rajasthan are earning profits by supplying their produce to coffee manufacturers across the country under prior agreements, thanks to support from the corporate social responsibility wing of a pharmaceutical major.

From modest beginnings in Bhitauli and Mangren villages, chicory farming is rapidly spreading to the surrounding areas with the agriculturists in half-a-dozen villages adopting it because of its good yield and remunerative prices, popularising it as a cash crop. The farming began in 1996 following an initiative by Lupin Human Welfare & Research Foundation.

Though chicory is a perennial plant chiefly grown in northern Europe, its farming is gaining popularity in India and in African countries. Each part of the plant is used thanks to its many health benefits. Indian chicory powder is used to protect the skin, boost the immune system and reduce indigestion and gastroenteritis problems.

Instant chicory powder is used as an additive in coffee to



Chicory farming is becoming popular in Rajasthan's Bharatpur district. Chicory powder is largely used in the manufacture of coffee. - PHOTO: ROHIT JAIN PARAS

cut down the caffeine content without making much difference to the taste of the beverage. Finely-roasted chicory powder or cubes have a very strong flavour, and its rich taste and health benefits have made it popular among coffee connoisseurs.

Lupin Foundation executive director Sita Ram Gupta said

here on Sunday that the chicory powder manufacturers also supply chicory products to the medical industry, besides the huge demand from coffee manufacturers.

With chicory manufacturing becoming a big business in the country, the foundation has taken the lead in training farmers and helping them understand

the cultivation process of the plant as well as ways to scale up productivity to meet the growing demand.

Farmers usually enter into written agreements with coffee manufacturers before taking up cultivation. Mr. Gupta pointed out that while chicory farming started in Bharatpur district in 1996, it was discontinued for some time following termination of contracts between agriculturists and manufacturers. However, farmers in Bhitauli and Mangren have been selling the produce mainly to the traders and manufacturers in Gujarat on a regular basis. The crop's annual value in the district is estimated to be between Rs.1.50 crore and Rs. 2 crore.

Chicory requires heavy soil and temperatures ranging from 10 degree Celsius to 20 degree Celsius.

The seeds are imported from the US and France, and big manufacturers such as Nestle, Hindustan Lever and Tata Tea have made them available to farmers. Separate contracts are signed for purchase of dry and moist crops at different prices.

Mr. Gupta said the sowing generally begins in the second week of October and the crop is

ready by March and is by the first week of April. For one hectare of land, 150kg to 200kg of seed is required, while fertiliser are added to the soil in accordance with the requirement.

The roots of plants are the main product utilised for a variety of purposes. The leaves, rich in vitamins C and E, are used for medicinal applications, while the roots are dried and ground into a fine powder.

With the demand for chicory increasing across the country, its farming is being promoted in Punjab, Gujarat, Haryana and Himachal Pradesh, where loans on easy terms are provided to farmers.

The Gujarat Government has even started giving subsidy to promote chicory farming.

Mr. Gupta suggested State Government join hands with organisations like Lupin Foundation to encourage farmers by purchasing the produce themselves, which can yield bigger profits, and spread the area under farming through technological applications. In addition to Bharatpur, chicory farming can be taken up in several eastern and southern districts in the State.

▼
24 Oct. 2011: Farmers of Weir tehsil of Bharatpur district in Rajasthan are earning profits by growing chicory and supplying them to coffee manufactures. Chicory powder is used as an additive in coffee to cut down caffeine content without making much difference to the taste of the beverage. The seeds are being imported from USA and France by Nestle, Hindustan lever and Tata tea are being made available to farmers. The Gujarat Government is giving a subsidy to promote Chicory farming.

Newspaper Clippings

THE HINDU • FRIDAY, OCTOBER 28, 2011

Nilgiri langurs continue to be hunted: WII

Ignatius Pereira

KOLLAM: Nilgiri langurs (*Trachypithecus johnii*) continue to be hunted for the preparation of crude medicines despite the implementation of the Wildlife Protection Act, 1972. Prior to the Act coming into force, these primates were ruthlessly hunted to the brim of extinction.

According to a National Studbook on Nilgiri langurs published in May this year by the Wildlife Institute of India and the Central Zoo Authority, poaching continues to be a main threat to Nilgiri langurs. The studbook says the primates were being hunted mainly for their pelt, blood, flesh and organs to produce crude medicines and even so-called aphrodisiacs.

Before the Act came into force, such medicines were freely available with traditional medicine practitioners in Kerala and the products were even advertised. 'Karingkorangu Rasayanam' was one of the leading products available then. Later the Kerala Forest Department launched a publicity campaign to save the Nilgiri langurs.

Though the campaign produced desirable results, the langurs are still not free from poaching; medicines brewed



ENDANGERED: A pair of Nilgiri langurs in the Edamalayar forests in Kerala. - PHOTO: C. SURESH KUMAR

from the flesh, blood and organs of these primates are available illicitly and are said to be very costly. Habitat destruction, which includes construction of hydroelectric projects, is another threat to the primates, according to the studbook.

Red list

The glossy black Nilgiri langurs with a reddish-brown crown are colobines endemic

to the southern part of the Western Ghats from Kanyakumari in Tamil Nadu through Kerala up to the Coorg Hills in Karnataka. The studbook, authored by Manjari Malviya, Anupam Srivastav, Parag Nigam and P.C. Tyagi, says the present Nilgiri langur population in the wild can touch 15,000. They find a place in the red list of the International Union for Conservation of Nature that

includes vulnerable animals.

About 45 per cent of their diet comprises tender leaves of 115 species of flora, out of which 58 species are trees. They also feed on fruits, flowers, buds, seeds and bark. In fact, they eat up the largest number of plant species among all primates in the Western Ghats. Hence, habitat destruction even on a small scale would hit them very hard.

▼
28 Oct. 2011: The Wildlife Institute of India says that poaching continues to be the main threat to Nilgiri langurs. These langurs are hunted for their pelt, blood, flesh and organs to produce crude medicines and aphrodisiacs.

Newspaper Clippings

THE HINDU • SUNDAY, NOVEMBER 16, 2011

New found bacteria get Indian nomenclatures

CCMB researchers discovered the bacteria over the past decade from diverse habitats

Indibacter alkaliphilus a bacteria isolated from Lonar Lake, named in honour of India

- Tolerates 8% salinity
- Tolerates high alkalinity (pH12)
- Could be used in biotech industry for starch hydrolyses

Source: CCMB website

Y. Madhavan

HYPERBARIUM Indibacter Alkaliphilus, Indibacter Alkaliphilus, Bacillus (Aryobacter, Springbacterium) Antarctica – don't get intimidated by the high-sounding scientific names. If you notice closely, many of them are associated with India.

Named in honour of the country, the imposing Himalayas, Aryobacteria and the icy continent of Antarctica, these are among the 70 bacteria discovered from diverse habitats ranging from the cold regions of Antarctica, Arctic, stratosphere and ancient Lonar Lake (in Maharashtra) that was formed when a meteorite hit the earth billions of years ago and the deep sea.

Led by Dr. S. Shrivastava, Director, Centre for Cellular and Molecular Biology (CCMB), the researchers have discovered these bacteria over the past decade, including the this year.

The majority of the microbes, however, were from the said habitats and are considered unique because of their ability to survive at temperatures below the freezing point of water.

Excellent model systems

With their ability to survive, grow and divide in freezing climates, these psychrophilic or cold-loving bacteria serve as excellent model systems to understand molecular basis for cold adaptation.

They could be used to generate an enzyme or bio-molecules with application in biotech, industry, medicine and agriculture. For instance, in the pharma industry such enzymes could help in crystallising, and in agriculture, the low-temperature growing bacteria, when added to soil, have shown improved yields of plants growing in cold regions.

Dr. Shrivastava told The Hindu, the genes involved in protein synthesis and amino acid metabolism were found to be essential for the survival of the micro-organisms at temperatures below 35 degree Centigrade.

However, the absence of the genes had no impact on their survival at temperatures above 35-degree-C.

Cold-loving bacteria

Bacillus farosensis, one of the seven bacteria isolated from stratosphere (20-50 km altitude) was named in honour of ISRO, which funded that part of the project, while another microbe from a Himalayan glacier was named after CCMB's Choolia Choolia.

Another microbe from Antarctica was christened as Archaeobacter Gangotriensis in memory of Debi Prasad Gangotri, the first Indian research station set up on the icy continent.

This for Bhargava

Dr. Shivaji said the bacteria, which were isolated from atmosphere, were found to be highly resistant to ultraviolet rays when compared to normal bacteria.

Their thin membrane structure, too, was quite different from the terrestrial microbes.

Such studies on microbes from extreme habitats would eventually become a bio-resource for the country to generate enzymes and bio-molecules.

19 Nov. 2011: Researchers from the Centre for Cellular and Molecular Biology discovered a new bacteria over the past decade. This Bacteria has been named in honour of our country- "*Indibacter alkaliphilus*".

DELHI

THE HINDU • SATURDAY, DECEMBER 3, 2011

ENDANGERED SPECIES

Olive Ridley turtles fall prey to trawlers

100 carcasses found washed up near rookery on Odisha coast

Sib Kumar Das

BERHAMPUR: In an alarming development, carcasses of Olive Ridley turtles have started appearing in large numbers close to the coastline of the Rushikulya rookery in Ganjam district of Odisha.

Fishermen from the Gokharkuda and Nulia Nuagoan villages attributed the phenomenon to unchecked activity of fishing trawlers in the area.

On Friday morning, around 100 carcasses of the endangered species were found on the beach near Gokharkuda and Nulia Nuagoan.

The Rushikulya rookery coast is one of the major nesting sites for the Olive Ridley turtles. And with their mating season about to start, they have started reaching the shore there, according to Rabindranath Sahu of the Rushikulya Sea Turtle Protection Committee (RSTPC), an organisation of local villagers involved in conservation of turtles. This year, the Olive Ridley turtles had arrived slightly ahead of schedule.

According to Mr. Sahu, the turtles were falling prey to fishing trawlers that were coming too close to the coastline.

As the trawlers were allegedly not using the Turtle Excluder Device (TED), their gill nets throttled the turtles to death, according to Mangaraj Panda, a social activist working with the fishermen community.

Last week, four traditional fishermen were injured in an altercation that broke out over some trawlers found fishing too close to the coast. These trawlers had destroyed the nets of the fishermen. Trawlers had to keep a distance of 10 km from the coastline, but they were fishing as close as 1 km, according to Mr. Panda.

Despite the restrictions in place since November 1 and owing to lack of patrolling in the region, trawlers from Andhra Pradesh and other areas of Odisha were indulging in fishing, killing turtles, say fishermen.

Mr. Panda and Mr. Sahu said they had never seen such a large number of carcasses of Olive Ridleys on the rookery coast.

The activists demanded strict action against the erring trawlers, and sought intensified patrolling near the rookery coast to check the entry of trawlers there.

GRIM PICTURE: Carcasses of Olive Ridley turtles were washed ashore near the Rushikulya rookery in Ganjam district of Odisha on Friday. - PHOTO: LINGARAJ PANDA



03 Dec. 2011: About 100 Carcasses of Olive Ridley turtles were found on beaches of Ganjam district of Orissa. These turtles are falling prey to fishing trawlers not using Turtle excluder devices (TED).

Newspaper Clippings

(iii) State News

TIMES CITY
THE TIMES OF INDIA, LUCKNOW | THURSDAY, OCTOBER 13, 2011

100 ghariyals to be released in Hastinapur, Katarniaghat

TIMES NEWS NETWORK

Lucknow: With 90% of the ghariyal hatchlings born during June surviving at the ghariyal rehabilitation centre in Kukrail, the chances of ghariyal population declining in the centre remains a remote possibility, even as the centre braces to release its two-year old ghariyal population in the wild this winter.

More than 100 reptiles will be released in Hastinapur and Katarniaghat. "The post-release monitoring has shown good results for Hastinapur. We monitor the stretch with WWF-India," said Eva Sharma, conservator, endangered species division, UP. Ghariyals are critically endangered with not more than 200 breeding adults left in the country. The new ones hatching at the centre add a glimmer of hope. The breeding adults at the rehabilitation centre had laid eggs in April this year. The eggs were put under incubation for safe hatching and after 60 days some 100-odd hatchlings were born. The



Kukrail rehabilitation centre has five breeding adults. The 1978 born ghariyals, which include four adult females and an adult male have bred from year to year at the centre and added to the population of the critically endangered reptiles.

Every year, the centre gets three to four nests in separate enclosures where the breeding adults are kept. The breeding adults play a major role in giving the ever-depleting ghariyal population a needed boost, as they lay 150 to 160

The centre releases ghariyals in the wild every year after artificially rearing them. In January-February, 2011, as many as 224 ghariyals were released. Out of which 150 were released into Hastinapur sanctuary and 74 in Katarniaghat

eggs every year. The centre releases ghariyals in the wild every year after artificially rearing them. In January-February, 2011, as many as 224 ghariyals were released. Out of which 150 were released into Hastinapur sanctuary and 74 in Katarniaghat.

The centre, at present, has 168 young reptiles, which will find their way into rivers this winter season. The centre started functioning in 1977 and till now 5,172 ghariyals have been released by it.

13 Oct. 2011: The Ghariyal rehabilitation Centre in Kukrail released 100 Ghariyals in Hastinapur and Katarniyaghat. The breeding centre has 5 breeding adults which lay by 3-4 nests.

THE TIMES OF INDIA, LUCKNOW
THURSDAY, OCTOBER 20, 2011

LU students mull 'restaurant' to raise vulture population in UP

Isha Jain | TNN

Lucknow: Concerned over the steep decline of vulture population in the state, researchers of Lucknow University's Zoology department have come up with the idea of 'vulture restaurant', a place which would offer 'good' food to the scavenger.

The study carried out by Prof Amita Kanujiya and Sonika Kushwaha, a research scholar of LU's Zoology department has proposed the concept of vulture restaurant. "The practice of purchasing sick and infirm cattle for skin and meat by slaughtering agents has led to the shortage of food for the vultures," said Sonika.

Giving an example of Bundelkhand region, Sonika explained that how drastic climatic changes during the past 10 years have resulted in the near extinction of vultures. The farmers in the region have faced drought since the past five to six years and were therefore, forced to reduce the number of cattle. Hence, the availability of food to vultures also rolled down substantially.

The researchers also attributed the change in cattle-

Protective Steps

- ▶ In-situ conservation of vultures
- ▶ Establishment of vulture restaurants (animal dumping sites/vulture feeding stations)
- ▶ Make nesting sites available for their survival
- ▶ Egg fall/destruction can be minimized by using nets around/below the nest to catch/hold the egg and place it back in the nest



keeping pattern and the disposal of dead cattle as factors responsible for the food shortage.

"The dead cattle, which were earlier left for the vultures to feed, are now buried. Hence, it is difficult for them to survive without the food," said Sonika. To note, vul-

tures depend on carnivores' kills in the forest areas and on cattle flesh in unprotected areas for the food. The deterioration of both has led to scarcity of food for them. The Egyptian vultures in particular depend on slaughter houses and bone mills for their food.

Experts have also cited habitat destruction through devastation of feeding sites and cutting of trees used for nesting as another major cause for the declining vulture population.

"We have found that many sites, where vultures used to feed in the past are now housing under-construction building," the research team members said.

The vulture restaurant will also provide hygienic food to the vultures. As per the forest officials, the food will be free from diclofenac. "The concept involves asking villagers to bring the body of a dead animal to the site where vulture restaurant will be set up. In turn, they will be compensated for not using diclofenac and making available food for the vultures," said a forest official. Diclofenac is one of the major reasons for the spurt in

vulture deaths. At present, the vulture restaurant in Nawalparasi, Nepal is a huge success. As per the study, the Bird Conservation Nepal reported that by providing drug free food at the site, the number of nesting pairs increased from 17 in 2005 to 32 in 2007. In India, Surat Nature Club in 2009, started a 'vulture feeding site' in Hazira, Gujarat, which offers hygienic food to the vultures. In 2010, the Maharashtra government opened a 'restaurant' to provide food to the scavengers. Sonika shared that the dumping site in Jorbeer, Rajasthan abodes nearly 4,000 vultures every year just because there is enough food.

"There are nearly 2,100 vultures left in the state. And there are only some areas where the vultures exist. The study done by the researchers is to assist the conservationists in healthy management of vulture population. Carried out in various districts of Jhansi, Jalaun, Lalitpur, Mahoba, Banda, Bahraich, Maharajganj, Unnao, Lakhimpur, Gonda, Kanpur and Faizabad, the objective is to help increase the vulture population.

20 Oct. 2011: The Zoology Department of Lucknow University is carrying studies on Vultures in UP in the districts of Jhansi, Jalaun, Mahoba, Banda, Baharaich, Gonda, Faizabad and Unnao. They say about 2100 vultures are left in the state.

लखनऊ, 26 अक्टूबर 2011 दैनिक जागरण | 7

जैव प्रौद्योगिकी खाद्य संकट का समाधान

• राष्ट्रीय वनस्पति अनुसंधान संस्थान ने मनाया 58 वां वार्षिक दिवस

लखनऊ, 25 अक्टूबर (संवाद सूत्र) : बदलती जलवायु, कम होती भूमि की उर्वरता व पानी की कमी समेत तमाम कारक खाद्यान्न की उत्पादकता को प्रभावित करते हैं। आने वाले समय में खाद्यान्न संकट को स्थिति से इकार नहीं किया जा सकता। इसके लिए वैज्ञानिकों द्वारा विभिन्न तकनीकों का विकास किया जा रहा है। प्रारम्भ में पौधों की अच्छी किस्मों के लिए 'चयन एवं संस्करण विधि' का प्रयोग होता था। बाद में 'ऊतक संवर्धन (कृत्रिम तरीके से पौधे उगाने) विधि' ईजाद हुई। जरूरत है ऐसी तकनीक कि जो पौधों की उन्नत किस्मों के साथ ही ज्यादा से ज्यादा पैदावार करने में भी सहायक हो। जैव प्रौद्योगिकी इस दिशा में एक मजबूत विकल्प है। यह खाते जवाहर लाल नेहरू विश्वविद्यालय के कुलपति प्रो. सुधीर



सीएसआइआर के वार्षिक दिवस समारोह में लोगों को संबोधित करते मुख्य अतिथि पदमश्री प्रो. सुधीर कुमार सोपोरी ने कहा। वो मंगलवार को एनबीआरआई के 58 वें वार्षिक दिवस समारोह में व्याख्यान दे रहे थे। प्रो. सोपोरी ने अपने शोध कार्य के बारे में बताया कि ग्लोसिका पौधे (जिनसे तेल निकलता है) और चावल के जीन ग्लोसिऑक्जिलेट 1 और 2 को जीन इंजीनियरिंग विधि से तंबाकू के पौधे में डालकर पैदावार का अध्ययन किया। शोध से मालूम चला कि दोनों जीनों को मिलाने से नाइट्रोजन क्लोराइड की अधिकता होने पर भी तंबाकू की अच्छी और ज्यादा पैदावार हुई। यही प्रयोग चावल के साथ भी किया। इस अवसर पर निदेशक डॉ. चंद्र शेखर नीटपाल ने संस्थान की उपलब्धियों के बारे में बताया। कार्यक्रम की अध्यक्षता भारतीय कृषि अनुसंधान संस्थान के प्रो. अनुपम वर्मा ने की। पांच कर्मचारी सम्मानित- वार्षिक दिवस के अवसर पर उत्कृष्ट काम करने वाले पांच कर्मचारियों को सम्मानित किया गया। इसमें माली हरि राम, सेवानिवृत्त टेक्नीशियन केएस पांडेय, तकनीकी अधिकारी गिरसारी, जनरेटर ऑपरेटर विजय कुमार और तकनीकी अधिकारी डीके पुरुषोत्तम शामिल थे।

26 Oct. 2011: The 58th Annual day of CSIR was celebrated at NBRI. The Vice-Chancellor of JNU, Prof. Sudhir Kumar Sopory was the Chief guest at this function and he said that Biotechnology was the solution to the food security problem.

29 Oct. 2011: *Ocimum basilicum* is being cultivated by farmers in Lucknow/Barabanki and is locally being called "Tulsa". It contains the chemical methyl eugenol. Basils usually contain various essential oils that contribute to their scent.

लखनऊ, 29 अक्टूबर 2011

लखनऊ जागरण

राजधानी आ पहुंची 'तुलसा'

सीमागत

• कम लागत और मेहनत में तैयार होगी यह फसल

राम धरेश्वर यादव

गोसाईगंज, 28 अक्टूबर : इस या सुगंध से इस्तेमाल होने वाले तेल के लिए मेथा की खेती करने वाले राजधानी के किसानों को नया और बेहतर विकल्प मिल गया है। लागत दो या छेती की प्रदर्ति, दोनों ही मामलों में किसानों को मेथा के मुकाबले तुलसा में अधिक आराम है। बागवानी में तुलसा को सफल खेती के बाद अब राजधानी के किसान भी इसे मेथा के बदले खेती से अपना रहे हैं।

एक दशक से भी अधिक समय पहले राजधानी में जब मेथा में दरतक की कीमतें किसानों ने इसे खुले दिल से अपनाया था। अब तुलसा इसी राह पर है। किसान इसे भी अपना रहे हैं। फसल के मामले में तुलसा किसी मामले में मेथा से कमजोर नहीं है। एक बीघे में मेथा का तेल पचीस से तीस लीटर निकलता है, जबकि तुलसा में यही



लहलहा रही तुलसा की फसल

आराम

पैदावार करीब 40 लीटर तेल प्रति बीघे की है। कोमल का थोड़ा उबार-चढ़ाव जरूरत है। पिछले साल तुलसा का तेल 1200 रुपये लीटर और मेथा का तेल आठ सौ से हजार रुपये के बीच था लेकिन इस वर्ष भाव बढ़ल गए। आज मेथा का तेल 1200 रुपये लीटर और तुलसा का तेल 800 रुपये प्रति लीटर है। फसल तैयार होने के मामले में भी

तुलसा बेहतर साबित हो रही है। मेथा की फसल याड़े तीन महीने में पकती है लेकिन तुलसा तीन महीने में ही फल देने को तैयार हो जाती है। फसल के दौरान भी तुलसा के लिए अधिक मेहनत नहीं करनी पड़ती। मेथा के लिए कुरिया व डीएपी के साथ खात खात सिंचाई भी करनी पड़ती है लेकिन तुलसा में न ज्यादा उबरक करे जरूरत है,

कहते हैं किसान

पहली बार तुलसा की खेती करने वाले गोसाईगंज के मोहम्मदपुर गरीबी गरीब के किसान रामनागर वर्मा, भदुआ के किसान रामकुंवर यादव व रसूलपुर के ईशरती बताते हैं कि इस तुलसा की खेती की जरूरत है, यह आराम वाली पानी पूजा वाली तुलसी नहीं है। इसकी पौध तैयार होने के बाद अमरस में रोपाई की जाती है, जो अक्टूबर में तैयार हो जाती है और फटाई कर मेथा की तरह उबल कर तेल निकाला जाता है। मोहम्मदपुर गरीबी के राम सागर वर्मा ने बताया कि तुलसा के लिए पानी की कम जरूरत होती है, इसलिए यह उन खेती में ही लगाई जानी चाहिए जहां पानी न रुकता हो क्योंकि बरसात में फसल नष्ट हो सकती है। किसान बताते हैं कि तुलसा की बहुत तुलसा भी कहा जाता है। इसका वनस्पति शास्त्र में इस्लाम नाम असीमम पैनीसिडम बताया गया है। बताया जात है कि इस तुलसा के तेल में मिथिलन वीरकाल होता है। इसका इस्तेमाल दवाइयों में भी किया जाता है।

न पानी की। विभिन्न जिलों से होकर बागवानी के बाद किए गए से मेथा की फसल राजधानी पहुंची थी उसी तरह से तुलसा भी राजधानी में आमद दर्ज करवा चुकी है। तुलसा की खेती भी विकसित मेथा की तरह की जाती है। प्रदोसी जिला बागवानी में हो रही तुलसा की खेती अब राजधानी के किसान भी करने लगे हैं।

Newspaper Clippings

 CITY pioneer

LUCKNOW TUESDAY | NOVEMBER 1, 2011

Endangered species of fish found in Gomti

SHARMILA KRISHNA ■ LUCKNOW

Torrent Catfish (*Amblyceps mangois*), an endangered species of fish, has been found in river Gomti. These were found during an ongoing research being funded by the Biodiversity Board and being carried out by the National Bureau of Fish Genetic Resources.

Deputy Conservator Forest Biodiversity Board Pratibha Singh while talking to 'The Pioneer' said that the species distribution was found in river Gomti, Ganga and Ram Ganga which is the first time ever.

"This species of fish was threatened because of pollution and conditions not being genial for survival. The presence of fish in Gomti has not been documented earlier," she said.

Singh said that the Research "Fish Biodiversity in Fresh Water" was being carried out under the guidance of Dr UK Sarkar of the National Bureau of Fish Genetic Resources. The project budgeted at ₹14 lakh will take two years to complete. It was started in March 2011.

The sites in Gomti that were chosen for sampling were in Lucknow, Pilibhit, Mishrik, Sultanpur, Kaithi, Jaunpur, Hardoi and Rehmankhara.



■ The sites in Gomti that were chosen for sampling were in Lucknow, Pilibhit, Mishrik, Sultanpur, Kaithi, Jaunpur, Hardoi and Rehmankhara

■ Samples will be taken from a total of 32 rivers

■ A total of 2,580 individual species have been examined and there are almost 73 species from 22 different species

Samples will be taken from a total of 32 rivers which included 14 sites in Ganga, six sites in Yamuna, three sites in Ram Ganga, seven sites in Ghagra, Rapti, Son, Chambal, Ken, Dhasan, Hindon, Jundi, Kali, Majal, Varuna, Tansa, Sorha, Tal and Narora reservoirs.

"A total of 2,580 individual species have been examined and we have found that there are almost 73 species from 22 different species. Out of these,

43 species were found in Ganga, four were found in 11 rivers. A total of 37 species of food fish and 18 of ornamental ones were found," Singh said.

"The research is being carried out to document the diversity of fish in Uttar Pradesh. If we know what we have in terms of various species only then we can save them. This is the baseline data that is being prepared," said Singh.

► **01 Nov. 2011:** Torrent Catfish "*Amblyceps mangois*" has been found in the river Gomti by Scientists by NBFGR. The presence of this fish in Gomti was not documented earlier.

Newspaper Clippings

लखनऊ, 4 नवंबर, 2011

रेड
अलर्ट

खतरे में डॉल्फिन

नजर कमजोर होने के बावजूद बेहद
फुर्तीली और आमतौर से गंगा में रहने वाली
डॉल्फिन की संख्या अब केवल 1800 रह गई है...

हट्टा-कट्टा शरीर। वजन 150 किलो से भी अधिक, लेकिन बेहद फुर्तीली। पर नजर बेहद कमजोर। ये हैं गंगा की डॉल्फिंस, जिसे सोंस या अंधी डॉल्फिंस भी कहा जाता है। भारत, नेपाल, बांग्लादेश की नदियों में रहने वाली डॉल्फिंस

की संख्या में पिछले कुछ वर्षों में जबर्दस्त कमी आई है। इसे देखते हुए इंटरनेशनल यूनिफन फॉर कन्जर्वेशन ऑफ नेचर ने इसे विलुप्तप्राय जीव घोषित कर दिया है। अब इनकी संख्या करीब 18 सौ ही है। गंगा की डॉल्फिंस भारत के



सात राज्यों, जैसे- असम, उत्तर प्रदेश, मध्य प्रदेश, राजस्थान, बिहार, झारखंड और पश्चिम बंगाल आदि राज्यों में पाई जाती हैं। गहरे पानी में रहने वाली ऐसी डॉल्फिंस के शरीर पर बड़े फ्लिपर मौजूद होते हैं। ये उन्हें तैरने में मदद करते हैं। मजेदार बात यह है कि ये एक माछड ही तैरती हैं, ताकि फ्लिपर से निचले सतह वाला भीचड़ हटा सके, और वहां छिपे छोटे-छोटे जीवों का शिकार कर सके। अपने शिकार को ये अनोखे तरीके से पकड़ती हैं।

इनके मुंह से निकली अल्ट्रासोनिक आवाज शिकार तक पहुंचती है। इसके आधार पर दिमाग में शिकार की इमेज बनती है और ये उन्हें पकड़ने की कोशिश करती हैं। लगभग 30-120 सेकंड के बीच गहरे पानी से निकलकर ये सतह लेने के लिए सतह पर आती हैं।

04 Nov. 2011: The total population of the gangetic dolphin is said to be 1800.

Newspaper Clippings

THE TIMES OF INDIA, LUCKNOW
SATURDAY, NOVEMBER 26, 2011

Sarus nestings puzzle ornithologists

Faiz Rahman Siddiqui | TNN

Kanpur: In what has come as a surprise to ornithologists, pairs of Sarus (Grus antigone) have laid eggs in the month of November in Etawah. The discovery assumes significance as the state bird usually breeds during the monsoon season, which is from July to October. Researchers till date have not reported any such identification of Sarus nesting in the region in November.

"This is the time when we usually come across three-four months old Sarus chicks foraging in the fields for food along with adult Sarus. But nests with eggs were never found in the month of November in the past," said Dr Rajiv Chauhan, secretary, Society for Conservation of Nature.

"It is interesting to find that Sarus is re-

nesting in the region. We have only a few reports of the bird breeding twice, including from Kota in Rajasthan and Kheda in Gujarat where they are found in good numbers," said UP's principal chief conservator of forests B K Patnaik.

"I have instructed my officials to rush to Mansai village in Sadanpur in Etawah to take note of the development," he added.

This unnatural breeding only reflects at either change in climatic condition or in their nesting behavioral pattern. It is very important to understand the delay in the breeding pattern to design management strategy for the conservation of the endangered species. "The delay in breeding pattern here will definitely have a lower chance of safeguarding eggs and further raising chicks successfully, which is a major cause of concern," Chauhan added.

"Like with the sighting of this nest, we also came across a pair of adult Sarus with one chick each in the semi-harvested paddy fields near Sadanpur village about half-a-kilometre from recently identified nesting site in Masnai village," said Kanika Srivastava, a post graduate student of Dayal Bagh university, Agra. She is working for Sarus conservation in the region.

"This fresh discovery has left us wondering and now we are trying to ascertain the possibility of more such nestings in the region," added Rupendra Singh, a local of Sadanpur village. Sarus bird is currently listed in the Schedule IV of the Wildlife (Protection) Act, 1972. IUCN (Red List) classifies Sarus (Grus antigone) as vulnerable. Today, their breeding populations are confined only in states like Gujarat, Rajasthan, Madhya Pradesh and Uttar Pradesh.

26 Nov. 2011: Sarus cranes laying eggs in November in Etawah have puzzled many as these birds usually breed from July to October.

संखनक, 6 दिसंबर 2011 दैनिक जागरण | 5

छिपी हैं 2.5 अरब वनस्पतियां

• एनबीआरआई में पादप वर्गिकी पर कार्यशाला शुरू

संखनक, 5 दिसंबर (जागरण संवाददाता) : कुदरत ने पेश-पेशों के रूप में 2.5 अरब ऐसी वनस्पतियों का खजाना दिया है जिसे अब तक खोजा भी नहीं जा सका है। जैव विविधता का यह खजाना किन्हीं भी देश के लिए खतरनाक है। भारत में संरक्षित देश इसके अधिक से अधिक इस्तेमाल करें।

राष्ट्रीय वनस्पति अनुसंधान संस्थान (एनबीआरआई) में पादप वर्गिकी की विधि एवं दृष्टिकोण विषयक कार्यशाला का उद्घाटन करते हुए उक्त जानकारी बंगलूर स्थित भारतीय राष्ट्रीय विज्ञान अकादमी के डॉ. राघवेंद्र राव ने दी। पादप वर्गिकी एवं जैव विविधता विशेषज्ञ डॉ. राघु ने कहा कि यद्यपि इनके पादप प्रजातियों की खोज हो चुकी है फिर भी 2.5 अरब प्रजातियों की वैश्विक स्तर पर खोज होना बाकी है।

भारत के संदर्भ में उन्होंने बताया कि यहां आबादी से पूर्व प्रजातियों का भव्यतापूर्ण सर्वेक्षण किया गया लेकिन अभी भी 30 प्रतिशत का पता लगाना बाकी है। डॉ. राघु ने बताया कि जैव विविधता कोषण के बाद दुनिया के विभिन्न देशों



कार्यशाला में विद्वानों ने बटि अपने अनुभव

द्वारा जैव विविधता के अंकलन को अधिक महत्व दिया जाने लगा है। यह तथ्य है कि भविष्य में इनके देशों का सर्वेक्षण होगा जो जैव विविधता में धनी होंगे। इसे देखते हुए पादप वर्गिकी विषय आज अत्यधिक महत्वपूर्ण हो गया है। उन्होंने उम्मीद जताई कि यह कार्यशाला पादप वर्गिकी के विशेषज्ञ तैयार करने में मददगार साबित होगी।

एनबीआरआई के निदेशक डॉ. सीएस नैटियाल ने कहा कि दस दिवसीय इस

कार्यशाला में पादप जगत के विभिन्न समूहों की वर्गिकी पर चर्चा युक्त प्रतिभागियों को लाभांशित करेगी। डॉ. नैटियाल ने जैव विविधता के अध्ययन, वर्गीकरण संशोधन, संरक्षण, जलू जैव वर्गिकी, आरकोडिंग, डिजिटलइजेशन के बारे में प्रतिभागियों को बताया। उन्होंने कहा कि संस्थान में उच्च एवं निम्न पादपों के 2,70,000 नमूने संस्थान के पादपालय में संरक्षित हैं। इस अवसर पर डॉ. पीबी खरे व डॉ. डॉकि-उप्रेती भी मौजूद थे।

06 Dec. 2011: The NBRI organized a workshop on "Methods and Approaches in Plant Systematics". The NBRI herbarium has a collection of over 2, 70,000 specimens.

Newspaper Clippings

16 दैनिक जागरण रजि. नं. एल.इ.व्य.एन.पी. 134

सोनांचल में टमाटर पर आई आफत

मुसीबत

- दो रुपये का भाव मिलना मुश्किल
- किसानों को मौसम ने रुताया

सोनांचल, 20 दिसंबर (जाका) : पिछले डेढ़ दशक में सोनांचल के किसानों ने टमाटर के बड़े उत्पादक के तौर पर देश में ही नहीं बल्कि नेपाल, पाकिस्तान और बांग्लादेश में भी अपना उष्ण बजाया है। कारमा के प्रसिद्ध टमाटरों की लासिबल है कि यह अधिक दिनों तक रखने पर खराब नहीं होते हैं। सोनांचल में अलग-अलग यह है कि उचित थोक भाव न मिलने से क्षेत्र में जहां तक खेतों को मेहनत से लेकर पैदों के नीचे टमाटरों को ऐसे ही रहने के लिए छोड़ा जाने लगा है।

दरअसल सोनांचल के टमाटर उत्पादकों के लिए यह खोजन शुरू से ही चलने वाला साबित हुआ। अगस्त और सितंबर के जिस माह में फसल लगाने का क्रम शुरू हुआ था उसी बरस मौसम को एक के बाद एक कई मार से किसान परेशान होने लगे। भारी बरसात के चलते शुरूआती दौर में ही फसल कई बार बर्बाद हुई। इस वजह से ही कई किसानों ने नररी में ही लगातार खेप हो जाने से टमाटर उत्पादन से तोबा कर लिया। बाद में मौसम संपला तो कुछ किसानों ने हिमालय जुटाई और दो-तीन बार की मेहनत के बाद किसी तरह से खेती जारी रखी। खेती पिछड़ने की वजह से सोनांचल के जो टमाटर नवंबर माह के पहले सप्ताह से ही बाजार में आने लगते थे उन्हें आने-आते एक माह चिल्लभ हो गया। इस बीच उत्तराखंड के हनुमान आदि क्षेत्रों के टमाटरों ने बाजार में अपनी जगह बना ली। इस वजह से दिल्ली, कानपुर, लखनऊ व गोरखपुर आदि बड़े शहरों से आने वाले थोक व्यापारियों ने कारमा क्षेत्र से दूरी बना ली। दिल्ली के बड़े व्यापारी जो सोनांचल के टमाटरों को पड़ोसी देशों तक सप्लाई किया करते थे। अब बाहरी व्यापारी सोनांचल की तरफ रुख ही नहीं किए तो टमाटर उत्पादकों की उम्मीदों पर पानी फिर गया। फिलहाल टमाटरों का थोक भाव दो रुपये प्रति किलो भी मिलना मुश्किल हो गया है।

20 Dec. 2011: Tomatoes of Karma region of Sonbhadra district have a longer shelf life. But these days due to a bumper crops the farmers are not getting a right price for their produce.

लखनऊ, 23 दिसंबर 2011

लखनऊ जागरण

पान बचाने आगे आए वैज्ञानिक

रुमा सिन्हा

लखनऊ, 22 दिसंबर : किसान के मेहनत से पैदा हुई पान की खेती अब बर्बाद नहीं होगी। राष्ट्रीय वनस्पति अनुसंधान संस्थान (एनबीआरआई) ने सीएसआइआर-2008 कार्यक्रम के तहत पान की खेती को बचाने का बौद्धिक उद्योग है। संस्थान मॉडल बरेजा तैयार करने के साथ किसानों को उच्च गुणवत्ता के रोग मुक्त पौध उपलब्ध कराएगा। यही नहीं सिंचाई कंच की जाए और पादप रक्षा रसायनों का कंच और कैसे प्रयोग किया जाए इसके लिए कैलेंडर भी जारी किया जाएगा।

एनबीआरआई ने प्रयोगशाला से बाहर आकर किसानों तक पहुंचने की कोशिश में महोबा व नोवा के पान किसानों से सहायता मिलायी है। पान की खेती में हो रहे लगातार नुकसान से ब्रत करीब 7 हजार किसानों को वैज्ञानिकों ने आश्वासन दिया है कि अब उनकी फसल बर्बाद नहीं होगी। एनबीआरआई के निदेशक डॉ. सीएस नौटियाल ने बताया कि किसान जो बरेजा तैयार करते थे वह 'फाइटेथोरा फगस' के चलते साल दो साल में ही खराब हो जाता है जिससे पान की फसल को भी नुकसान पहुंचता है। कई बार तो पूरी फसल ही चौपट हो जाती है। संस्थान ने इससे निपटने के लिए मॉडल बरेजा तैयार करने की पहल की है। इसमें सामुदायिक आधार पर दो विधवाओं और सीमांत किसानों के साथ अन्य कारगरों को जोड़ा जाएगा।

डॉ. नौटियाल ने बताया कि पान किसान हतोत्साहित है। कारण यह है कि खेती में आने वाली लागत व फसल खराब होने से होने वाला नुकसान के चलते किसान धुंध है। बरेजा तीन साल तक काम आता है लेकिन फफूंद के चलते दो साल भी नहीं चल पाता है। वैज्ञानिकों ने बताया कि बांस से तैयार बरेजा में कोई रोग नहीं होता दरअसल पान की पौध में मौजूद फाइटेथोरा फफूंद के कारण बरेजा भी प्रभावित हो जाता है। इसके लिए एनबीआरआई पान की रोग मुक्त पौध पौध तैयार कर किसानों को उपलब्ध कराएगा। पान के लिए आवश्यक तापमान को बनाए रखने के लिए 25 से 30 सिंचाई की जाती है। अज्ञानता के चलते अध्याधुन सिंचाई व जरूरत के समय रसायनों का इस्तेमाल न किए जाने से फफूंद तेजी से फैलता है। संस्थान द्वारा इसके लिए कैलेंडर भी तैयार कर किसानों को दिया जाएगा।

23 Dec. 2011: Betel leaves are being cultivated in Mahoba district of UP with technical inputs from NBRI. The fungus Phytophthora causes damage to betel plants which are irrigated over 25-30 times. NBRI has made efforts to give resistant plants to farmers.

अपना सपना
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Phone : 0522-2306491, 4006746

Email: upstatebiodiversityboard@gmail.com

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