



IFGTB NEWS



Quarterly Newsletter on societal applications of research Interventions in Forestry, Genetics and Tree Breeding from the Institute of Forest Genetics and Tree Breeding, Coimbatore.

(A national institute of the Indian Council of Forestry Research and Education, Ministry of Environment, Forest & Climate Change, GOI)

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Gass Forest Museum

From the Director's Desk

Scientific Institutions tasked with research in their core area also have social obligations to promote scientific spirit, environmental conservation and sustainable utilization of resources. The World Environment Day (WED) provides an ideal global platform to work with people with these sustainable goals. The theme of WED 2023 focussed on solution to plastic pollution under the campaign #BeatPlasticPollution. ICFRE-IFGTB put the theme into action by conducting a mass cleaning drive in the inter-state highway connecting Coimbatore and Anaikatty which passes through a sensitive forest area. Waste generated by human particularly plastic waste has become a major threat to the wellbeing of wildlife. Plastic used for wrapping food also attract wildlife to the human dwelling places leading to conflicts. The Thadagam valley frequently witnesses dangerous encounters between elephants and people in the recent years. The collection of more than one tonne of plastic waste from a short stretch of a highway highlights the extent of negative impact on environment caused by humans. ICFRE-IFGTB will continue to work with forest department, other research organizations and NGOs to protect the environment of Coimbatore and the surrounding areas. Apart from a report on observation of WED 2023 and various activities under Life style for Environment programme, this issue of IFGTB News reports new research information on important tree species. I am happy to bring out the latest information on ICFRE-IFGTB's work and look forward to receiving your valuable feedback.



Dr. C. Kunhikannan
 Director, ICFRE-IFGTB

Expression of albinism and inbreeding depression in seedlings of *Chloroxylon swietenia*

R. Archana, V. Sivakumar, A. Nicodemus, T. Yuvaraj and M. Vairavan

Albinism (Alb) in plants is the absence of chlorophyll pigment in leaves which leads to reduced photosynthesis and survival. It is a strong manifestation of inbreeding depression (ID) causing reduction in vigour and fitness of the individual formed through self-fertilization. But ID is required to maintain reproductive systems and the continuous evolution of the species. The main causes of Alb and ID are the presence of recessive deleterious alleles, low pollination activity, genetic mutations in chlorophyll pathway genes, reproductive isolation in mother trees and the formation of chromosomal aberrations during cell division. Alb is mainly governed by a single recessive gene and two dominant genes at both loci are required for the expression of green phenotype and complementary gene action.

Albino seedlings indicate high rate of selfing and inbreeding in some populations of *Chloroxylon swietenia*

Chloroxylon swietenia is a medium-sized timber species recently selected for domestication and tree improvement. Germination studies were conducted with seeds collected from Hosur, Dharmपुरi and Chettinad in Tamil Nadu. A high rate of albino seedlings (3 in 100) with reduced vigour was observed in Dharmपुरi followed by Chettinad seed source (one in 100). This observation indicates a higher rate of selfing in Dharmपुरi and Chettinad seed sources compared to Hosur source. Accumulation of recessive deleterious allele can be avoided by collecting seeds from populations where random mating is promoted by the activity of pollinators during the flowering season. As Alb and ID reduce the genetic diversity, population viability and increase the extinction risk of a species, further intensive novel genetics studies are needed to understand the causes of albinism in *C. swietenia*.

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Pest alert: Ambrosia beetle infestation in Casuarina

Ashrith, K.N., Jacob, J.P. and Rajesh, C.

Ambrosia beetle, *Xylosandrus* sp. (Coleoptera: Curculionidae: Scolytinae) infestation was noticed on Casuarina seedlings in the Silviculture nursery at ICFRE-IFGTB, Coimbatore. Adult beetles are tiny and females bore into the main stem of seedlings, excavate tunnels and introduce ambrosia fungus before laying eggs to produce a brood. Eggs, larvae and pupae are found together. Infested seedlings often die from boring damage, ambrosia fungus, or infection by a secondary pathogen. The pest caused severe damage during the month of July resulting

Ambrosia beetle infestation is reported for the first time in Casuarina.

in mortality of 10 per cent of seedlings raised in the nursery.

The ambrosia beetles may be monitored by using 70% ethanol bait to attract and trap the adults. Heavily infested seedlings or plant parts should be removed and destroyed. Seedling should be free from abiotic stresses like drought, injury, nutrition, etc. Pyrethroids such as Permethrin 25% EC, Perkill™ 2 ml/L or Bifenthrin 10% EC, Markar™ @ 1.5 ml/L can be applied to control the pest and may have to be reapplied every two to three weeks while beetles are active.

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WORLD ENVIRONMENT DAY 2023

Mass Cleaning Drive in Anaikatti Road

ICFRE-IFGTB observed the World Environment Day 2023 by taking up a mass cleaning drive in the Mankarai – Anaikatti ghat section of the Coimbatore – Anaikatti Road. This area falls under elephant corridor and frequented by other wild animals too. Providing an important inter-State connection between Tamil Nadu and Kerala, this road gathers litter frequently by the passing vehicles. In line with UN declaration, Ministry of Environment, Forest and Climate Change observed the World Environment Day, 2023 on the theme “Beat Plastic Pollution”. This prompted IFGTB to take up the mass cleaning drive on 05th June 2023 in collaboration with Young Indians, Coimbatore Chapter. During the drive the plastic waste which poses threat to the wild animals and also spoil the scenic beauty of the ghat road was mainly targeted. Around 150 volunteers including public, students, scholars and staff of IFGTB participated in the programme and 1250 kg plastic waste were removed from the area.



LIFE – Lifestyle For Environment

ICFRE-IFGTB organized various activities as a part of LiFE style for Environment to preserve and protect environment and uploaded the day-wise details of the events through images/videos in the “Meri LiFE” web portal. Altogether 431 LiFE activities were carried out in IFGTB during the month of May 2023.



EVENTS: APRIL - JUNE 2023

TRAINING

Vegetative propagation techniques of forest tree species (15-19 May); Summer internship training (05-23 Jun); Casuarina windbreak clones for protection of banana crops and popularization of TreeGenie Mobile App (28 Jun).

WEBINAR/ MEETINGS

Application of artificial intelligence and machine learning in forest insect pests management (21 Apr); Casuarina windbreak clones (26 May).

OTHER EVENTS

Earth Day 2023 (22 Apr); International Museum Day (18 May); International Day for Biological Diversity (22 May); LiFE Style for Environment (15 May - 04 June).



PRAKRITI PROGRAMME

Pesticides and its effect on human beings (17 Apr); Environment and its conservation (24 Apr); Recycling (19 Jun); Water conservation (23 Jun); Animals and pollution (26 Jun); Land pollution (28 Jun).

APPOINTMENTS

S. Priyanka, LDC; J. Naveen, LDC; S. Sundarapandian, MTS; Manojkumar Meena, MTS (April), C. Vignesh, Tech. Asst.; K.R. Kousalya, LDC; Ashok Kumar, MTS; S. Sathish Kumar, MTS (May), Surajkumar Chaudhary, MTS (June).



SUPERANNUATION

Mr. N. Muraliedharan, Assistant (May)

About IFGTB

The ICFRE - Institute of Forest Genetics and Tree Breeding (ICFRE - IFGTB), Coimbatore, is a national institution of the Indian Council of Forestry Research and Education (ICFRE), an autonomous body under the Ministry of Environment, Forest and Climate Change, Government of India. ICFRE - IFGTB has a mandate to develop new varieties, management and silvicultural techniques to maximize productivity of natural and planted forests under different ecological considerations and changing environment.

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