IFGTB News ✦ Vol 6 ✦ No. 2 ✦ July 2025

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)

From the Director's Desk

ICFRE–Institute of Forest Genetics and Tree Breeding (IFGTB), Coimbatore, is committed to disseminating the outcomes of its research to a wide range of stakeholders—including State Forest Departments, Forest Development Corporations, wood-based industries, forestry research and academic institutions, nursery growers, and farmers through various extension activities. One such initiative is the publication of our quarterly magazine, IFGTB News.

The current issue features the restoration of salt-affected soils, an emerging concern due to the increasing salinization and degradation of agricultural lands. The results indicate promising opportunities for reclaiming such lands through tree-based agroforestry interventions. This issue also presents the ranking of Casuarina hybrid clones based on their water-use efficiency, a research area of growing relevance in light of the Government of India's vision of "*More crop per drop*". In addition, it covers highlights from "The Inventors' User Meet – 2025" and other key events at the Institute. I trust this issue will be valuable to all our stakeholders.

T. Rabi Kumar, IFS
Director, ICFRE - IFGTB

Tree based restoration of salt-affected farmlands in Tamil Nadu

S. Pragadeesh, A.C. Surya Prabha*, R. Velumani and C. Buvaneswaran

In an era of climate change, land degradation and biodiversity loss, soil has become one of the most vulnerable resources in the world. Nearly 30% of India's land faces degradation, with salt-affected soils particularly widespread in Uttar Pradesh, Rajasthan, Haryana, Punjab, Tamil Nadu, Andhra Pradesh, and Karnataka. These soils suffer from poor structure, high sodicity, and low fertility, severely affecting crop growth and livelihoods. To address this challenge, an All India Coordinated Research Project (AICRP-24 SFRSE) on 'Combating Desertification by Enhancing Vegetation Cover and People's Livelihoods in degraded drylands and deserts of India' was implemented by ICFRE -IFGTB, Coimbatore. The project focused on developing eco-restoration models using indigenous trees with soil amendments and organic manures to reclaim salt-affected farmlands.

Hedgerow planting

Experiments were conducted in the Cauvery Delta, Western, and North Eastern agro-climatic zones of Tamil Nadu, with indigenous green manure tree species. *Pongamia pinnata* (Pungam), *Azadirachta indica* (Neem), *Gliricidia sepium* (Seemai Agathi) and *Thespesia populnea* (Poovarasu) arranged in 2 × 2 m hedge rows with 4 m alleys. Treatments included: Addition of loppings, Gypsum (based on soil testing), Farmyard Manure @ 12.5t/ha, Loppings + Gypsum + FYM and Control.

Measurement of Biomass Components

Among the evaluated species, *Gliricidia sepium* demonstrated superior adaptability and performance in sodic soils. The combined application of *Gliricidia* loppings, farmyard manure (FYM), and gypsum significantly enhanced the plant growth parameters viz., height, DBH, reduced Exchangeable Sodium Percentage (ESP), improved organic carbon, nutrient availability, and increased soil carbon sequestration. The study highlights the importance of *Gliricidia sepium* as a priority species for sodic soil reclamation.

*For more info ✉ acsuryaprabha@icfre.org

Variation in Water Use Efficiency of Casuarina Hybrid clones

C. Buvaneswaran, A. Nicodemus, A. Mayavel and K. Gopinath

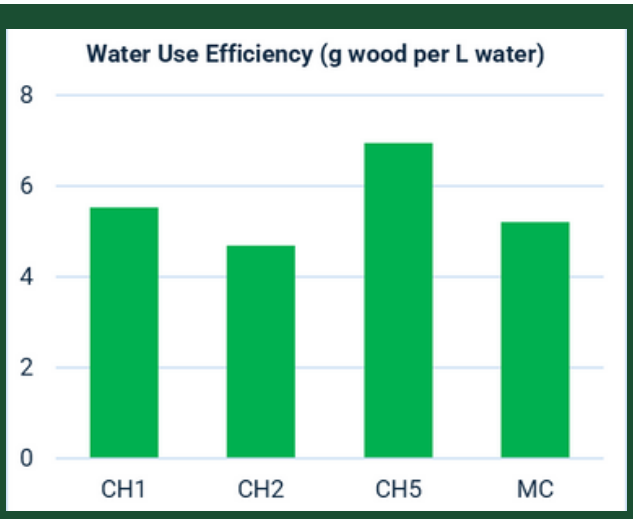
Assessing WUE will be a highly desirable management strategy for deploying high-productivity clones with desirable traits. Optimizing WUE is crucial to achieving maximum productivity while minimizing natural resource utilization. A review of existing literature reveals a paucity of comprehensive studies focusing on the identification of selections that combine high yield potential with improved WUE, particularly in *Casuarina* clonal materials. To address this gap, a study was undertaken in *Casuarina* (AICRP-1 SFRSE) to evaluate the WUE of three selected *Casuarina* hybrid clones released by ICFRE–IFGTB, along with a check clone, commonly known as the Marakkanam clone.

The study was carried out in a clonal trial of *Casuarina* hybrids established in September 2020 at TNPL Unit-I, Karur, Tamil Nadu. Sap Flow Meters were installed in the trial plot to measure water uptake. Four clones IFGTB-CH1, IFGTB-CH2, IFGTB-CH5, and the check clone Marakkanam (MC) were selected for evaluation. Three sample trees per clone were fitted with Sap Flow Meters, and data was recorded from October 2023 to September 2024.

Recording of water uptake through Sap Flow Meter

Clonal variation in Water Use Efficiency (WUE)

The stem weight of each sample tree was estimated using clone-specific regression models developed by IFGTB for predicting stem wood biomass of Casuarina hybrid clones. The Current Annual Increment (CAI) in stem wood production was derived from the difference between the initial and final stem wood measurements. Water uptake for each sample tree was computed monthly from November 2023 to October 2024 and aggregated to obtain annual water uptake. WUE was then determined as the ratio of annual stem wood production to annual water uptake.



Variation in Water Use Efficiency of Casuarina Hybrid clones

Clone CH5 exhibited the highest mean WUE value of 6.94 g of stem wood/liter of water uptake, followed by CH1 (5.52 g/L) and MC (5.20 g/L). Clone CH2 showed the lowest efficiency, with a WUE of 4.69 g/L.

*For more info ✉ buvanesc@icfre.org

The Inventors User Meet - 2025

Dr. N. Senthilkumar

"The Inventors User Meet – 2025" was held on March 19, 2025, at the ICFRE - Institute of Forest Genetics and Tree Breeding (ICFRE - IFGTB) as part of the All India Coordinated Research Project-16 (AICRP-16). The products developed under the project were showcased to user groups. The participants were industry experts, startup companies, investors, commercialization agencies, and innovators. The event provided an excellent platform for networking and partnerships, fostering innovation-driven commercialization in the forestry sector. The event featured addresses by DDG (Extension), DDG (Research), ADG (M&E) of ICFRE, as well as

the Director of ICFRE - IFGTB, Coimbatore. Additionally, the National Project Coordinator (NPC) and all Principal Investigators (PIs) of AICRP-16 presented and introduced their products.

*For more info ✉ senthilnk@icfre.org

EVENTS: APRIL - JUNE 2025

- **TRAINING:** Agroforestry Models - Establishment and Management (3, 8 and 9 April); Summer internship in Biological Sciences and Advanced Instrumentation Techniques for Plant and Soil Analysis (5th - 30th May); Summer internship in Vegetative propagation, hybridization, controlled pollination, and grafting techniques, Advanced Instrumentation Techniques for Plant and Soil Analysis and Genetic resources characterization (2nd - 30th June).

MEETINGS / CONFERENCE / WORKSHOP: Hindi noting-drafting in e-Office (24-25 April 2025).

PRAKRITI PROGRAMME: Tropical deciduous Evergreen Forest (30th April); Evergreen Forest (2nd May); Benefits of Community trees (5th May); Renewable Energy (6th May); Forest Products (22nd May); Natural Calamities (23rd May); Deforestation and its impact (12th June); Environmental Conservation (24th June); Greenhouse gases (27th June).

OTHER EVENTS: Earth Day 2025 (22nd April); Birth Anniversary Celebration of Dr Babasaheb Ambedkar (22nd April); International Museum Day (IMD) (15th May); World Environment Day (5th June); Yoga Day (18th - 21st June).

APPOINTMENTS:

Shri B. Vignesh, MTS (April, 2025)
Smt. R. Poorviga, MTS (April, 2025)
Smt. Ann Maria George, MTS (April, 2025)
Shri B. Bharath, MTS (April, 2025)
Shri Meesala Siva Kishoru, TA (April, 2025)
Shri D. Daniel Davidson, TA (April, 2025)
Shri G. Harish, Technician (April, 2025)
Shri Himanshu Tripathi, Technician (April, 2025)
Shri V.S. Vishnu, Technician (June, 2025)
Shri A. Sunil, MTS (June, 2025)

RETIREMENTS:

Smt. A. Shyamala, MTS (April 2025)

Shri C. Marudachalam, Assistant (May 2025)

About ICFRE - 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 diverse ecological considerations and a changing environment.

Chief Editor:
Director, ICFRE-IFGTB

Executive Editor:
Dr C. Buvaneswaran, Scientist-G

Editorial Committee:
Dr B. Nagarajan, Scientist-G & GCR
Dr A. Nicodemus, Scientist-G
Dr A. Rajasekaran, Scientist-F

Editorial Assistance:
N. Sudha, R.G. Anithaa, S. Pragadeesh

For further information contact

The Director,
ICFRE - Institute of Forest Genetics and Tree Breeding,
(Indian Council of Forestry Research and Education)
P.B. No. 1061, R.S. Puram P.O.,
Coimbatore - 641002, INDIA
Phone: +91 422 2484100
Fax: +91 422 2430549
Email: dir_ifgtb@icfre.org