5th WTC 2025 - ITTO-BMLEH Teak Session

Theme: *"Improving High-value Teak Timber for Sustainable Supply Chains"*

Draft Program Schedule

	ITTO-BMLEH Teak Session
Wednesday, **17 Sept 2025** 14.00-16:00	**Moderators: Dr. Tetra Yanuariadi** (Projects Manager) & **Ms. Paula Sarigumba** (Communications and Outreach Officer), International Tropical Timber Organization (ITTO), Japan

Time	Topic	Speaker
14.00-14.10	Opening Remarks & Group photo	Ms. Sheam SATKURU, ITTO Executive Director
14.10-14.20	ITTO-BMLEH project achievement and way forwards	Prof. Yongyut Trisurat, Kasetsart University, Bangkok, Thailand
14.20-14.30	The Role of Smallholder Teak Plantations in Indonesia's Forestry Sector: Models for Sustainable Development	Prof. Anto RIMBAWANTO, National Research and Innovation Agency (BRIN), Indonesia
14.30-14.40	Teak plantation in Cambodia	Mr. Cheat Vichit, Department of Forest Plantation and Private Forest Development, Cambodia
14.40-14.50	Smallholder Teak Plantations: Bridging the Demand and Supply Gap in India	Dr. R. Yasodha, Institute of Forest Genetics and Tree Breeding (IFGTB), Coimbatore, India
14.50-15.00	Promoting high-value teak timber for sustainable supply chains in Vietnam	Dr. Dang Thinh Trieu, Vietnamese Academy of Forest Sciences, Vietnam
15.00-15.10	Teak Clonal Test Plan for Selecting Superior Mother Trees for Commercial Plantation in Thailand	Ms. Somporn Khumchompoo, Royal Forest Department, Thailand
15.10-15.20	Monitoring adaptation and productivity of teak plantations in Guinean Zone of Togo: A comparative study of historical and newly introduced provenances	Presented by Prof. Adzo Dzifa KOKUTSE, University of Lome, Togo
15.20-15.30	Precision Control and Management of Teak Borer (*Xyleutes ceramica* Walker) in Thailand	Assoc. Prof. Dr. Wattanachai Tasen, Kasetsart University, Bangkok, Thailand
15.30-15.40	Bridging the Financial Gap for Teak Smallholders: A Review of Financing Models in South Asia, Southeast Asia and West Africa.	Dr. Sven Gunter, Thünen Institute of Forestry, Germany
15.40-15.55	Questions & Discussion	All speakers
15.55-16:00	Summary and closing	ITTO

Note: Time allocation for technical presentation is 10 min; Inaugural Session starts at 17:00 hrs. Welcome Reception at 19:00 hrs

List of delegates from the ITTO-BMLEH Teak Project to attend the 5th World Teak Congress

Country	Name	Affiliation
ITTO		
1	Ms. Sheam SATKURU	Executive Director, ITTO, Japan
2	Dr. Tetra Yanuariadi	ITTO Projects Manager
3	Ms. Paula Sarigumba	ITTO Communications and Outreach Officer
Germany		
1	Dr. Sven Günter	Head of Working Group Forestry Worldwide, Thünen Institute of Forestry, Germany
2	Mr. Themesgen Zana Jaffo	Research Scientist, Thünen Institute of Forestry, Germany
Thailand		
1.	Prof. Dr. Yongyut Trisurat	Regional Project Manager, ITTO-BMLEH Teak Project, Faculty of Forestry, Kasetsart University, Bangkok
2.	Assoc. Prof. Dr. Wattanachai Tasen	Head of the Department of Forest Biology, Faculty of Forestry, Kasetsart University, Bangkok
3.	Ms. Somporn Khumchompoo	Scientist, Senior Professional Level, Silvicultural Research Division, Forest Research and Development Office, Royal Forest Department (RFD)
4.	Ms Sangrawee Sukeetham	Forestry Technical Officer, Practitioner Level Forest Utilization Research and Development Division, Forest Research and Development Office, RFD
5.	Mr. Naravich Changtor	Forestry Technical Officer, Practitioner Level Forest Utilization Research and Development Division, Forest Research and Development Office, RFD
6.	Ms. Saichon Mutarapat	Secretary, ITTO-BMLEH Project
7.	Mr. Surasak Choowong	Sri Trang Rubber Plantation C., Ltd.
Cambodia		
1.	Mr. Cheat Vichit	Consultant, Department of Forest Plantation and Private Forest Development (previously Forest Administration), Cambodia
2.	Mr. Phoung Sophea	Scientist, Department of Forest Plantation and Private Forest Development (previously Forest Administration), Cambodia
Vietnam		
1	Dr. Tran Lam Dong	Vice President, Vietnamese Academy of Forest Sciences (VAFS)
2	Dr. Dang Thinh Trieu	National Coordinator, Vietnamese Academy of Forest Sciences (VAFS)
3	Dr. Vu Dinh Huong	Consultant# 1, Vietnamese Academy of Forest

		Sciences (VAFS)
4	Dr. Mai Thi Phuong Thuy	Head of the Department of Plant Cell Technology, Vietnamese Academy of Forest Sciences (VAFS)
India		
1	Dr. R. Yasodha	National Coordinator, Scientist G, Division of Plant Biotechnology ICFRE- Institute of Forest Genetics and Tree Breeding, ICFRE-IFGTB)
2	Dr. Rekha R. Warrier	Deputy National Coordinator, Scientist, ICFRE-Institute of Forest Genetics and Tree Breeding
3	Dr. C. Nalin Kumar,	ITTO Consultant
4	Dr. Mohammad Ghouse	ITTO Consultant
5	Dr. T. Vamadevan	Information Officer, EIACP
6	Ms. P. Maheswari	Senior Project Associate
India		
1	Dr. S. Sandeep	TEAKNET Coordinator, TEAKNET, Kerala, India
2	Dr. P.K. Thulasidas	ITTO Consultant# 5- Information Management, TEAKNET, Kerala, India
Indonesia		
1.	Prof. Dr. Anto RIMBAWANTO	ITTO Consultant – Teak and other valuable species strategy development, Research Centre for Applied Botany, National Research and Innovation Agency (BRIN), YOGYAKARTA
Togo		
1	Prof. Adzo Dzifa KOKUTSE	National Coordinator, University of Lomé, Togo, West Africa
Korea		
1	Dr. Hwan-ok MA	Consultant, ITTO-BMLEH Project Research Professor (Tropical Forest) OJEong Resilience Institute, Korea University

Notes: At least 29 delegates from the participating countries, TEAKNET, Thunen and ITTO confirmed to attend the side event.

ABSTRACTS

(as of 29 May 2025)

ITTO-BMLEH project achievement and way forwards

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The ITTO–BMLEH Teak Project Phase II, entitled "*Promoting Quality Timber Production in Smallholder and Community-based Teak and Other Valuable Species Plantations in the Tropics*" (PP-A/54-331A), started of its operations from November 2023 to December 2026. It builds upon the solid foundation established during Phase I, which was implemented from September 2019 to October 2022.

Phase II aims to significantly enhance the production of high-quality timber from teak and other valuable species grown by smallholders and communities in five countries across the Asia-Pacific region (Cambodia, India, Indonesia, Thailand, and Vietnam), as well as Togo in West Africa. Key strategies include: 1) promoting policies to secure high-quality planting stock; 2) adopting best silvicultural practices; 3) facilitating access to financing to support longer rotations; and 4) enhancing value addition and improving timber legality.

Over the past one and half years, several activities have been implemented. Teak genetic resources from natural teak forests have been conserved, improved, and propagated through better management of seed production areas, seed orchards, and provenance/progeny trials/clonal plantations. This ensures the availability of high-quality materials for smallholders and community-based plantations, including commercial plantations. Additionally, demonstration plots for silvicultural practices and seed production have been established in all participating countries.

The project also has focused on enhancing the capacity of smallholders, local communities, and relevant agencies through various training sessions. Furthermore, micro-financing and credit-lending mechanisms to encourage smallholder and community-based teak plantations to extend rotation periods for the production of high-quality teak timber are currently being explored. Ongoing achievements have been shared at the 24th IUFRO World Congress 2024, through regional workshop, bi-monthly newsletters, and webinars. In addition to presenting overall project achievements, specific outputs will be showcased in the teak side event presentations at the 5th WTC.

The Role of Smallholder Teak Plantations in Indonesia's Forestry Sector: Models for Sustainable Development

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Smallholder teak plantations play a significant role in Indonesia's forestry sector, contributing to the local economies and livelihoods of the rural people. In Java, Indonesia, approximately 1.5 million small-scale farmers cultivate nearly 500,000 hectares of tree-based agroforestry systems, with teak serving as the predominant tree species. Up to 80% of small-diameter logs (under 30 cm dbh) supplied to small- and medium-sized industries in Java originate from smallholder plantations. These plantations have the potential to yield as much as 8.2 million m^3 of teak per annum.

While teak dominance underscores its economic value, it simultaneously faces challenges related to productivity and sustainability, owing to suboptimal silvicultural practices, limited access to markets, and inadequate policy support. This paper examines the status of smallholder teak plantations in Indonesia, identifies key constraints, and explores opportunities for improvement. Through a review of best management practices and case studies of successful interventions, this study provides recommendations for enhancing smallholder productivity and economic returns. Government policies and support mechanisms are crucial for the promotion of sustainable teak production. A combination of improved silvicultural techniques, enhanced market access, and enabling policy frameworks is essential to unlocking the full potential of smallholder teak plantations in Indonesia, contributing to both economic development and environmental conservation.

Keywords: smallholder plantations, sustainability, silviculture practices, teak

Teak Plantations in Cambodia

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Teak was introduced to Cambodia in 1936 to carry out agroforestry system trials for the enrichment of natural forests by intercropping method. Many decades later, the expansion of teak has been made to other provinces such as Pursat and Ratanakiri Province. In Cambodia, teak currently exist between 6,200 and 7,000 ha cultivated as monoculture teak plantations in more than six provinces. The number of major teak plantations reported is 6,100 ha recorded in 6 provinces including Tbong Khmum, Kampong Cham, Kratie, Ratanakiri, Kampong Spure, and Kampot. The various conditions that may affect the growth of teak include climate that differs between the regions, cultivation techniques (space and cropping systems), silvicultural management including pruning and thinning, and fertilizer application to teak stands. The MAI seemed to be similar to the teak growth in other countries. However, the Teak Farm company that applied fertigation and intensive silvicultural practices techniques favoured harvest of teak at 8-10 years.

Challenges for Teak Plantation Development in Cambodia includes: 1) long-term business (at least 20-25 years rotation); 2) lack of financing mechanism with low interest rates in the long run; 3) poor knowledge on techniques for improving and conserving genetic resources through silvicultural practices to foster the growth and quality of teak, and to improve the teak market supply chain; and 4) there is sufficient technology development and innovations in the production and wood processing industry (especially made-of-teak wood products) to add value to wood products (post-harvest) for export and to compete in international markets (value chain). Despite the shortcomings, there are opportunities for promoting teaks in Cambodia: 1)50% export tariff reduction on wood products sourced from domestically-planted trees or local tree plantations; 2) The imposed export tax of all furniture and other finished wood products made of locally grown wood is state-in-charge; 3) The expertise authority shall certify the export license with the scientific and local names of the timber species, and shall certify it as "locally grown timber" or "a wood product made of domestically-gown-tree"; 4)Export tax for timber and non-timber forest products is fixed at 1% of the total cost in the permit (FoB reference price). Since log exports are currently banned, these taxes apply only to timber and non-timber forest products and 5)Declaration on the Establishment of Private Forests to promote and incentivize individuals or juridical persons to plant trees on their own legally acquired land as a means of increasing timber production and fuelwood supplies for domestic consumption and export.

The ITTO -BMEL Teak Project Phase 1 (2019-2022) and the currently running Phase 2- "*Promoting Quality Timber Production in Smallholders and Community-based Teak and Other Valuable Species Plantations in the Tropics* have made significant contributions to teak development in Cambodia.

Smallholder Teak Plantations: Bridging the Demand and Supply Gap in India

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India, though, possesses the highest levels of genetic diversity in teak, remains the world's second-largest importer of tropical logs. One of the major challenges in teak cultivation is its long rotation period, which discourages smallholder participation. Short-rotation plantations, popular in Thailand, Brazil, and Indonesia, offer a viable alternative. Tissue culture technology effectively addresses the challenges of mass propagation of genetically superior teak clones. Its commercial adoption is limited due to high costs, lack of demonstration trials, and awareness among farmers. The ICFRE-Institute of Forest Genetics and Tree Breeding (ICFRE-IFGTB) has been working to bridge this gap by developing protocols and supplying quality planting material to small holders. ICFRE-IFGTB has partnered with commercial tissue culture labs and trained stakeholders to enhance production. Since 2016, over 10 lakh tissue culture teak plants have been distributed, showing promising early growth and increasing interest in clonal teak plantations.

Field trials indicate that clonal teak plants exhibit superior performance compared to seedlings. The tissue culture-derived clones have faster growth, better bole formation, and higher survival rates in well-maintained settings. Under proper irrigation and management practices, harvest cycle can be reduced to 15–20 years, significantly shorter than traditional rotations. The initiative has gained strong support from forest departments and private sector investors. With growing farmer interest and government support, tissue culture teak plantations can boost productivity, sustain livelihoods, and strengthen India's forestry economy. With proper management and silvicultural practices, smallholder teak plantations can significantly contribute to closing the demand-supply gap, offering economic benefits to farmers. The success of clonal teak plantations highlights their potential for a thriving, sustainable teak industry with significant economic benefits for farmers.

Promoting high-value teak timber for sustainable supply chains in Vietnam

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Vietnam is promoting the development of saw-log plantations. In the saw-log production plan for the period 2024-2030, the goal by 2030 is to develop approximately one million hectares of saw-log plantations, including maintaining the existing 500,000 hectares and establishing an additional 500,000 hectares. The income from production plantations is expected to increase by 1.5 to 2 times per unit area compared to 2020. This is an important part of the sustainable forestry development strategy of the country. It aims to enhance the economic value of planted forests, increase carbon absorption capacity, protect the environment, and provide high-quality wood materials for processing and export industries.

As Teak can be planted as a monoculture or in mixed stands across various ecological zones, it is one of the species that meets the criteria for large timber plantations in Vietnam. The Vietnamese Academy of Forest Science is implementing several projects to promote high-value teak timber for sustainable supply chains in Vietnam. This presentation introduces some achievements, including teak propagation using tissue culture, importing high-quality teak genetic materials and demonstration plots of teak planting on the land areas of smallholders.

Keywords: Teak value chains, demonstration plots, seedling production, VAFS, Vietnam

Teak Clonal Test Plan for Selecting Superior Plus Trees for Commercial Planting: Case Study in Kanchanaburi Province

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Teak Clonal Test (CN) is a crucial component of Thailand's teak breeding program. Its primary objective is to evaluate and select superior plus trees or mother trees from the database of 511 candidate teak plus trees. These selected trees are then propagated and promoted for commercial teak plantation by farmers, government agencies, and the private sector. Teak has five series of clonal test plots (CN1 - CN5), each comprising 100 plus trees; CN1: planted in 2000, CN2: 2003, CN3: 2003, CN4: 2005 and CN5: 2021 (supported by the ITTO Project). Before planting, soil samples were collected for chemical analysis to compare environmental factors influencing growth. Years 1to4: Data collection focuses on evaluating growth. The Mean Annual Increment (MAI) is calculated to select the top 20 plus trees (0.12-1.75 cm/year). This data allows for the calculation of carbon sequestration for each clone (0.042-7.532 $kgCO_2eq$/tree), along with survival rates **in a** case study in Kanchanaburi Province. After 5 year onwards, evaluated stem quality and wood quality to select plus trees showing high growth performance. Furthermore, Genotype x Environment Interaction was assessed to understand how the same clones perform differently under varying environmental conditions. A successful example of the teak clonal test efforts to disseminate high-quality planting material to the public is the study by Porntep *et al.* (2017) and Suwan *et al*. (2018) was by analyzing bark thickness, and heartwood proportion. For this study, the suitability of CN1 series teak clone was used to select the top 25 clones for planting clonal test in 2025, supported by the ITTO-BMLEH Project. These selected clones was asexually propagated and established as demonstration plots in agricultural areas of Kanchanaburi and Chiang Mai provinces to further select clones best suited for establishing plantation in each specific region.

Keywords : clonal test, Mean Annual Increment (MAI), Genotype x Environment interaction, demonstration plots, plus trees

Monitoring adaptation and productivity of teak plantations in Guinean Zone of Togo: A comparative study of historical and newly introduced provenances

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Abstract

This study evaluates the growth performance of seven teak provenances planted at the Zogbepim forest station in Togo's Guinean zone. The goal is to optimize silvicultural practices, particularly thinning, to enhance plantation productivity and support the local timber industry. The studied provenances include Tonou (local), Indian, Tanzanian, Ivorian, and three Malaysian (Luasong, Perlis, and Taliwas). Planted with a 3m x 3m spacing, they were monitored in 2022 before thinning and in 2024 after thinning. Dendrometric parameters such as total height (Hm), dominant height (H0), diameter at breast height (Dm), basal area (G), and spacing factor (S%) were measured. Statistical analysis (ANOVA) compared growth performance, and diameter structures were modeled using the Weibull distribution. Productivity was assessed using a site Index (Ip) based on dominant height and stand age. Results show significant variability among teak provenances before thinning (2022) and after thinning (2024). The Indian provenance had the highest diameter growth (12.87 ± 3.85 cm in 2022 and 17.91 ± 2.51 cm in 2024), while Luasong had the tallest trees (16.85 ± 2.88 m) and the highest basal area (18.94 ± 0.13 m^2/ha) in 2024. The Tanzanian provenance also adapted well, with an average height of 15.70 ± 2.28 m and a basal area of 22.27 ± 0.14 m^2/ha. Although Tonou showed slower height growth, it maintained a large diameter (17.22 ± 2.92 cm in 2024). The Ivorian, Perlis, and Taliwas provenances exhibited moderate growth. Thinning played a key role in reducing competition and improving growth, particularly for the Tanzanian and Luasong provenances. This study highlights the importance of selecting the right provenances and applying appropriate silvicultural practices to maximize teak plantation productivity in Togo. Further research is needed to explore wood quality and the influence of site conditions on growth.

Keywords: Teak provenances, silvicultural practices, thinning effects, growth performance, plantation productivity, Togo.

Precision Control and Management of Teak Borer (*Xyleutes ceramica* Walker) in Thailand

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Teak (*Tectona grandis*) is a valuable native timber species found in India, Myanmar, Thailand, and Laos. In addition, the recent global assessment revealed that teak plantations have been widely established across 80 tropical countries, with nearly 80% located in Asia. Smallholder systems account for approximately one-fifth of the global teak estate and serve as an important source of raw material for national and international teak industries. Despite the widespread establishment of teak plantations, productivity remains low, especialy in smallholder plantations due to various factors such as poor quality of planting stock, inadequate silvicultural practices, and insect pest problems. The beehole borer (*Xyleutes ceramica* Walker) is the most significant forest insect pest affecting teak plantations in Thailand. The pest is widely distributed throughout the natural teak forests of Southeast Asia. Teak trees in plantations are more susceptible to this pest than those in natural forests or mixed plantations. Precision management based on monitoring the life cycle of the teak borer and evidence of damage, the prevention and mitigation measures should focus on teak trees less than 10 years old. Field investigations should be conducted all year round. In addition, teak plantation owners must carefully consider these conditions, as it may be too late to mitigate or prevent damage once the caterpillars have already burrowed into the wood.

Keywords: Precision control, teak beehole borer, insect pest, *Xyleutes ceramica*

Bridging the Financial Gap for Teak Smallholders: A Review of Financing Models in South Asia, Southeast Asia and West Africa

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Abstract

Teak (*Tectona grandis*) is a high value and strategic commodity for major teak producing countries in the tropics. Smallholders are a significant player in the sector - by managing approximately one quarter of the world's planted teak forests, which is about 1.2 million ha. However, they face significant barriers including limited access to finance which is a real problem on its own, and also is often a symptom of other difficulties such as insecure tenure, inadequate technical capacity, lack of business and market know-how and limited cost efficiencies and bargaining power. Teak plantations particularly, often require longer maturity period, creating tough cash flow constraints for smallholders who mostly depend on immediate financial returns. Different financial mechanisms have been introduced at various scales and regions that not only address the cash flow problems but also enhance the economic and ecological benefits through long-rotation practices and high-quality timber production for smallholder and community-based teak plantation owners. This review synthesizes the existing literature and ongoing initiatives related to such financial mechanisms, to describe their implementation practices looking into respective key success factors and constraints to their sustainability and replicability across the selected six major teak producing countries in the tropics - Thailand, India, Indonesia, Cambodia, Vietnam and Togo. The review will also highlight selected case studies to draw good practices that support successful smallholder teak systems, emphasizing the importance of integrating policy instruments with appropriate/tailored financial support and value chain coordination mechanisms. Comparative review of regional differences in legal and institutional policy frameworks, land use, market access, and financial infrastructure, remark how tailored finance innovations can bridge the smallholders limitations and help successfully integrate into the high value timber market.

Keywords: Teak, Smallholders, finance, tropics