Teaknet Bulletin

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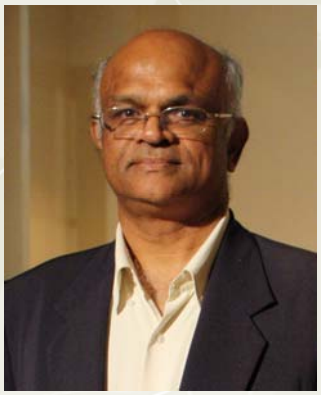
Editorial

The headquarters of TEAKNET which was operating from Myanmar since 1995 was transferred to India in 2008. Dr. K. M. Bhat, Programme Coordinator of the Forest Utilisation Division, Kerala Forest Research Institute, was the Coordinator of TEAKNET during 2008. After the untimely demise of Dr. Bhat, there was a short gap in the functioning of TEAKNET. In June 2009, Dr. K. Jayaraman, Programme Coordinator of the Division of Forest Management Information System, KFRI was appointed as TEAKNET Coordinator. Since then, concerted efforts are being made to revitalize the network. The major change in the perspective that has come forth is in the scope of activities. TEAKNET hitherto confined to Asia-Pacific now extends its wings to the global teak sector. TEAKNET is governed by a Steering Committee constituted by representatives from FAO, JICA and other organizations. Kerala Forest Research Institute presently acts as host for TEAKNET providing the infrastructure and logistic support.



Dr. S. Appanah

One of the premier activities planned by TEAKNET for the year is an International Workshop on Teak. The workshop will be held during 23-25 November 2009 at Peechi in India. More information about the workshop is available in this website www.teaknet.org.

It is requested that all the members of TEAKNET renew their membership by filling in the required form which can be obtained by placing a request to coordinator@ teaknet.org. Prospective members may also use the same application form for enrolling themselves. A note on the services that are offered by this network is also available in this website. TEAKNET invites suggestions to improve its functioning, from all the members. During the international workshop, there will be a separate session to discuss the future activities of TEAKNET.

KFRI

TEAKNET

Message from FAO

Dr. S. Appanah
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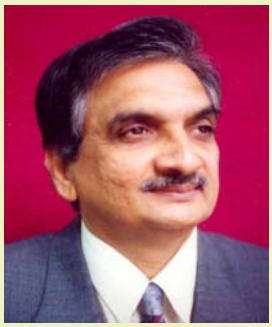
(TEAKNET Steering Committee Member)

In these days of websites and web blogs, to not own one site in the global wired up world would be like living as a hermit. I was beginning to feel teak may be condemned to such an existence. With the launching of this *Teaknet Bulletin*, those lonely days are over. Let me therefore, first of all congratulate KFRI for agreeing to host the Teaknet. KFRI is of course a natural fit for the Network, considering the region that saw some of the earliest teak plantations, starting as far back as the 17th Century. The Institute, without a doubt, is one of the leaders in the field of teak research. The Teaknet is obviously resting on a huge wealth of knowledge on teak. For finding a new house for Teaknet, we are indebted to Dr. K.V. Sankaran, the Director of KFRI. Not only has he provided Teaknet a new roof, but also dedicated both staff time and resources to make the Network come to life. Last but not the least, we also have to give recognition to Dr. K. Jayaraman, the Programme Coordinator, for his singular focus and dedication to make this Network an exemplary one. Lest we forget, we should also express our gratitude to late Dr. K.M. Bhat who was instrumental in seeing the relocation of Teaknet to KFRI.

Over the last few years, I received numerous messages from concerned individuals about the need to strengthen Teaknet. So, now with the launching of Teaknet in KFRI, there is palpable excitement among the Teaknet community. Of course, there will be considerable demand on the Network and its services, but I am confident that this can be met with the leadership and energy that is at the disposal of Teaknet. Already, several activities are being planned, starting with the international workshop on "Production and Marketing of Teakwood" this November. The Network is also beginning to develop many more facilities for the teak community globally. While all these exciting developments are in store, I am often reminded of a Chinese proverb, "A courtyard common to all will be swept by none". We should therefore not rely entirely on a few hands in KFRI to do the task. All of us are jointly responsible for putting life into this valuable Network. Let us give our best in every manner possible. Thank you.

Obituary



Dr. Kanthila Mahabala Bhat (58), the renowned Indian researcher in the area of Wood Science and Technology, died on 2 January 2009 after a brief illness. He was born in Karnataka, India, on 19 June 1950. He holds an L.Sc. (Licentiate of Science in Wood Technology) and D.Sc (Doctor of Science in Forestry -Wood Technology), awarded by the University of Helsinki, Finland.

In 1979 he joined as Scientist in the Division of Wood Science, Kerala Forest Research Institute (KFRI), Peechi, India. He was serving as Programme Coordinator (Scientist F) of Forest Utilisation Division at the time of his death. Besides, he was the Network Coordinator of the Asia Pacific Teak Information Network (TEAKNET) now based in KFRI with the support of FAO- RAP, Bangkok.

Dr. Bhat had a distinguished carreer as a wood scientist and has made important contributions to Indian as well as global forestry. His expertise lies in both tropical and temperate hardwoods and non-wood forest products, their management and utilisation with emphasis on European birch, teak, eucalypts, *Dalbergias, Albizias*, rattan (climbing palms) and reed bamboos. He has made scientific contributions in the areas of logging, wood anatomy/timber identification, properties/ wood quality, industrial processing, grading, among others.

He served as a consultant to Forest Industries Travancore Ltd. for the establishment of a modern rattan furniture manufacturing industry, the International Network for Bamboo and Rattan (INBAR) for standardisation of rattan grading rules, the Amazon Teak Foundation, to the British Overseas Development Administration (ODA), Indufor Oy, Helsinki and to International Cooperation Centre for Agriculture Education (ICCAE), Nagoya University, Japan. In 1996 he was appointed as Regional Coordinator for IAWS in the Indian sub-continent. He has acted as IUFRO Convenor of the Teak Wood Working Party, as a member of the Teak 2000 Technical Foundation Committee and has been a member of IUFRO Enlarged Executive Board and Deputy Coordinator of IUFRO Division 5 (2000-2010). He received the Rising Personalities of India Award as well as a Medal instituted by the Bamboo Society of India, Institute of Wood Science & Technology and Karnataka Forest Department, for outstanding contributions to rattan development in India and Asia Pacific Region (1999).

He was the founder Coordinator of IUFRO 5.06.02 (Teak Wood) Working Party while being a Deputy Coordinator of IUFRO Division 5: Forest Products (2000-2010). In 2000, he was awarded the lifetime IUFRO Scientific Achievement Award with Gold Medal in Forest Products.

He has carried out cooperative research in Finland, France, Germany and Japan. He is a renowned Wood Anatomist by profession. His contribution to the understanding of the rattan structure and anatomical characterisation of Indian species is widely acclaimed. As a member of the Timber Sectional Committee of the Bureau of Indian Standards, he was instrumental in formulating the grading rules for rattans in India. The world forestry community is indebted to him, particularly for his key initiatives aimed at understanding and improving the quality of teak wood. He developed and coordinated many research programmes in this area and was responsible for major conferences and workshops such as *International Teak Conference (2003*) and *Regional Teak Wood Workshop 2007* that attracted much international attention and respect. He was a regular visitor to many international events such as IAWA/IUFRO Conferences, World Forestry Conferences etc. and has presented several papers. Dr. Bhat was also an elected Fellow of *International Academy of Wood Science* (1991) and Indian Academy of Wood Science (1999). He was the author of more than 190 publications including books, refereed papers, monographs, articles and reports. The creative genius of Dr. K. M. Bhat was rare and he was greatly admired throughout the forestry scientific community.

He is survived by wife, Kusuma Bhat and two children- daughter Divya and son Shyamal.
May his soul rest in peace.

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Improvement of teak planting stock and stand growth by mycorrhizal application

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Recently, a research project on 'Improvement of stand productivity of teak through mycorrhizal application' was undertaken with the financial aid from the Department of Biotechnology, Government of India. Vesicular arbuscular mycorrhizal (VAM) fungi collected from the teak rhizosphere soils from the major teak growing areas in the states of Andhra Pradesh, Karnataka and Kerala in India were utilized for screening and selection of efficient isolates of VAM fungi through glasshouse and nursery trials. Highly efficient VAM fungi, *Glomus botryoides, G. fasciculatum, G. macrocarpum, G. mosseae, Acaulospora appendicula, A. scorbiculata, Gigaspora gigantea* and *Scutellospora erythropa* were further utilized for mycorrhization of teak planting stock raised in root trainers.

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Field trials conducted at Vembooram, Kodanad Forest Range, during 2005 employing the mycorrhized teak seedlings registered highly significant gain in terms of survival, height growth, collar diameter and drought resistance as compared to control (non-mycorrhized seedlings) Figure 1. Among the 19 VAM fungal treatments (VAM fungi singly or in combination), treatment with inoculum of *G. fasciculatum* mixed with *A. appendicula* or *G. botryoides* registered maximum plant height, collar diameter and plant vigour. Plants in *A. appendicula* + *G. fasciculatum* treatment recorded maximum mean height of 123 cm with collar diameter of 2.89 cm within 9 months of field planting, while in non-mycorrhized plants (control plants), average plant height and collar diameter were only 86 cm and 1.43 cm respectively.

The nursery and field investigations indicate that quality of teak planting stock as well as teak stand growth can be improved by early mycorrhization with efficient VAM fungi. This boost in growth and plant vigour of artificially mycorrhized teak plants in the early establishment phase of the plantation may also contribute to the future stand health and productivity. For further validating the results, large-scale nursery screening and multi-location field trials with long-term monitoring are warranted.

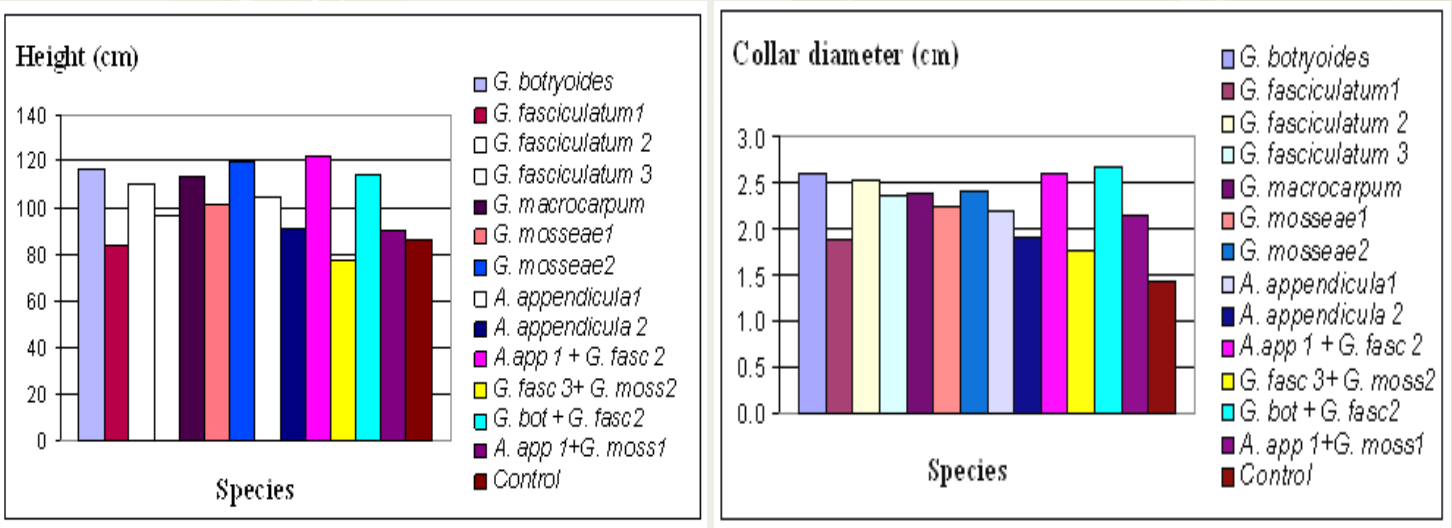

Figure. 1. Field performance of VAM fungi treated and control teak plants

A sector-analytic framework for plantation management

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Teak (*Tectona grandis* L.f) is being grown in plantations in more than 36 tropical countries across the globe. Of the estimated 205.1 million hectares of global productive forest plantations in 2005, about 8.2 million hectares (4%) were teak, representing a major portion of the world's high-quality tropical hardwood plantations. Low productivity has been a major concern in many countries. In a management context, multiple solutions emerge for enhancing the productivity and there arises a decision-making problem. This note aims to bring the attention of the readers to the logical framework offered by Saldanha and Whittle (1998) in seeking a solution.

The method described by Saldanha and Whittle (1998) starts with an assessment of sector performance using corresponding indicators but is followed by identification of a key sector problem or opportunity. Next, a cause and effect analysis is conducted which is later converted into an objective tree indicating the steps to be taken for achieving positive changes. During this process, several alternatives could emerge and there is the task of choosing the appropriate option (s) to address sector problem or opportunity. Setting physical targets and monitoring follow, specifying the assumptions and risks involved. An attempt to illustrate the application of this approach for teak plantation management is made below.

Information on productivity, soil status and product prices will cover most of the issues related to plantations thereby qualifying them to be used as indicators. The universal measure for productivity for tree crops is the mean annual increment per hectare. Soil status however, is a broad term comprising not just fertility but all other edaphic components. Externally, the loss of surface soil qualifies as a single indicator of the soil status and annual loss of top soil in terms of soil depth is relatively easy to measure. Product price is usually expressed in terms of value per unit of finished product.

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The subsequent steps in the process are explained in the Indian context with special reference to Kerala State. Figure 1 shows the cause and effect analysis performed for the key problem of decreasing productivity levels of forest plantations. The problem is identified to be the result of poor genetic stock, low management inputs, soil erosion due to the relatively higher soil exposure in plantations, illicit felling and to some extent, fire. These deficiencies arise from poor technology, inadequate infrastructure and ineffective enforcement of regulations.

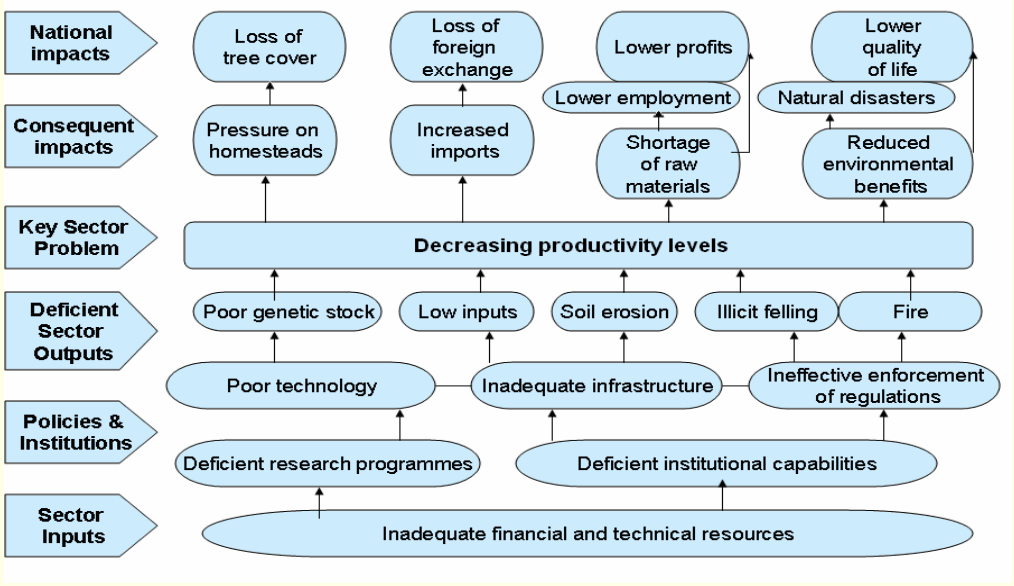

Figure 1. Key sector problem and cause and effect analysis for plantations

Inadequate research programmes and deficient institutional capabilities could be contributing to the above situation in the wake of inadequate financial and technical resources. Low productivity of plantations puts higher pressure on homesteads as a timber source, results in increased imports due to shortage of raw materials. Poor condition of plantations also results in reduced environmental benefits. At the national level, this leads to loss of tree cover, loss of foreign exchange, lower profits and lower quality of life due to lower employment and natural disasters.

In the presence of adequate financial and technical resources, institutional capabilities are strengthened followed by good research programmes resulting in better technology, adequate infrastructure and effective enforcement of regulations. Good plantation technology with high management inputs and effective soil conservation brings in higher productivity. Control on illicit felling and fire help protect the resource. Improved productivity puts less pressure on homesteads for production of wood. Higher domestic production implies fewer imports, more availability of raw materials and enhanced environmental benefits on account of the larger growing stock. These impacts are then carried over to the national level (Figure 2).

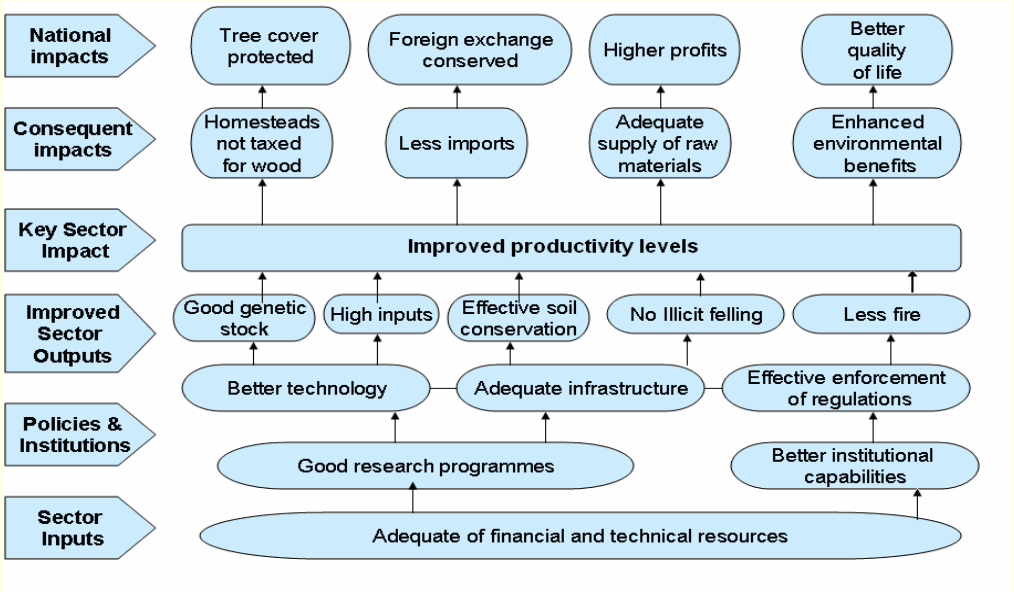

Figure 2. Objective tree for improvement of plantations

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As can be seen from Figure 2, plant improvement programme, provision of higher management inputs, soil conservation, control of illicit felling and fire form the different alternatives for improving productivity. Alternative analysis can be conducted by identifying a set of criteria and scoring the effectiveness of these options with respect to each of these criteria. The scores are out of 10 points. The scores assigned for the different options can then be multiplied by the relative weights assigned for each criterion and added up to get the total score for each option. The option getting the highest score gets considered for implementation. The above process is illustrated in Tables 1 & 2 for plantations. It turns out that several options are desirable. Providing high management inputs and controlling fire are preferable on account of the quickness of results. Plant improvement programme, although effective, has long gestation period.

Table 1. Performing an alternative analysis for plantations

Criteria	Relative weight	Plant improvement programme	Score	High inputs	Score	Effective soil conservation	Score	Controlling illicit felling	Score	Controlling fire	Score
Quickness of results	10	Long- term effect	5	Quick effect	10	Quick	8	Immediate effect	8	Immediate effect	8
Institutional capacity to implement	5	Good genetic stock purchasable	10	Requires additional resources	8	Requires additional resources	8	Requires additional staff	8	Requires employing fire watchers	10
Financial and economic viability	5	Viable	8	Viable	8	Not very good	5	Viable	8	Viable	8
Social and political acceptability	5	Acceptable	10	Not high	7	Difficult to implement	5	Not high	5	Acceptable	5
Most widespread effect	5	Has widespread effect	10	Effective	7	Effective	7	Effective	7	Has widespread effect	10

Table 2. Computations in alternative analysis for plantations

Criteria	Relative weight	Score	Weight * Score (Plant improvement)	Score	Weight * Score (High inputs)	Score	Weight * Score (Soil)	Score	Weight * Score (Illicit felling)	Score	Weight * Score (Fire control)
Quickness of results	10	5	50	10	100	8	80	8	80	8	80
Institutional capacity to implement	5	10	50	8	40	8	40	8	40	10	50
Financial and economic viability	5	8	40	8	40	5	25	8	40	8	40
Social and political acceptability	5	10	50	7	35	5	25	5	25	5	25
Most widespread effect	5	10	50	7	35	7	35	7	35	10	50
Total Index of performance			240		250		205		220		245

In the implementation of the project design process of ADB, there is a final step of setting performance targets and specifying monitoring mechanism with a statement of assumptions and risks. Since these tasks are highly location-specific, no attempt is made to describe them here. It may be noted that the scores used for the alternative analysis were just for the purpose of illustration. In actual, several people could be made to provide such scores and the decisions could be based on the average of such scores. It will then be a collective but informed opinion.

The logical framework advanced by the ADB is functional in the sense that key sector problems are identified and their solutions worked out providing guidelines for the management to seek their management objectives in the most effective manner.

Reference

Saldanha C.D. and Whittle J.F. 1998. Using the Logical Framework for Sector Analysis and Project Design: A User's Guide. Asian Development Bank. 57 p.

From Norway, an eco-alternative to teak

Story Highlights

- Norwegian company, Kebony, has developed an eco-friendly way to simulate hardwood
- Kebony uses sustainable wood including maple, pine and beech
- Wood is treated to give it the same look, performance as tropical hardwood
- Product widely used in Norway, now the company is expanding internationally

Hilary Whiteman of LONDON, England (CNN) reports about a form of processed wood manufactured in Norway, in a five-day process that instills all the qualities of rare, tropical hardwood into sustainable softwood.

Source:
http://edition.cnn.com/2009/BUSINESS/07/05/kebony.wood.deforestation/

Hectic planting of teak in Kerala, India

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The recent declaration of THE KERALA PROMOTION OF TREE GROWTH IN NON-FOREST AREAS ACT, 2005 : *An Act to promote cultivation of trees in non-forest areas of the State, in order to increase green cover, preserve bio-diversity and arrest soil erosion and to increase availability of timber and bamboo for industry,* and its further amendment viz., THE KERALA PROMOTION OF TREE GROWTH IN NON-FOREST AREAS (AMENDMENT) ACT, 2007 have helped regain the tree planting initiative by the private sector in Kerala. For a long time, planting of 'specified trees', viz., sandal (*Santalum album*), teak (*Tectona grandis*), rosewood (*Dalbergia latifolia*), irul (*Xylia xylocarpa*), thempavu (*Terminalia tomentosa*), kampakam (*Hopea parviflora*), chadachi (*Grewia tiliaefolia*), chandana vempu (*Cedrela toona*) , vellakil (*Dysoxylum malabaricum*) and ebony (*Diospyrus* sp.) in the homesteads was under a low profile due to the cumbersome formalities involved in getting permission for cutting and transporting of such trees. In spite of the restrictions, depletion of growing stock of trees in non-forest areas has been happening without much effort towards tree planting. Even with increased import volume, the prices have been hiking up in the wake of increasing demand for teak wood. With the realization of the economic value of teak crop, there is now renewed interest in its planting, well-judged by increasing demands for planting material. In turn, this has opened up new avenues for research as regards the performance of teak in a mixed cropping environment.

Teaknet Bulletin is a biannual electronic newsletter of TEAKNET brought out in March and September of every year through its website. It is intended for circulation among the members of TEAKNET and other stakeholders of global teak sector. The views expressed in the newsletter are those of the authors and do not necessarily reflect the views of the organization. The readers are welcome to express their opinions or pass on information of value to teak growers, traders, researchers or others concerned with teak. However, TEAKNET reserves the right to choose the contributions for publishing and also to make necessary editorial modifications in the articles.

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