

## GLOBAL JOURNAL OF ENGINEERING SCIENCE AND RESEARCHES MALADY AND REMEDY OF SANDAL CULTIVATION IN FARMLANDS AND PRIVATE LANDS

Amit Mishra <sup>\*1</sup> & Vijeta Yadav<sup>2</sup>

<sup>\*1&2</sup>Assistant Professor, Department of Management, Ambalika Institute of Management & Technology,  
Lucknow

### ABSTRACT

Sandal is one of five scheduled trees in Tamil Nadu. 'The tree is called the 'Royal Tree' because its distribution is restricted, its oil is unique and of high value, and the santalol in the heartwood makes the wood impenetrable by termites. So far there are no private plantations of sandal in India; but, of late, due to rapidly increasing market demand and price for sandalwood oil, and possible relaxation of the rules by the State Government, farmers are beginning to show willingness to cultivate sandal. This paper highlights the difficulties faced by planters in protecting the trees, disposing of the wood, and conforming to the legislation. Suggestions are also made on how to motivate farmers to grow sandal on a large scale.

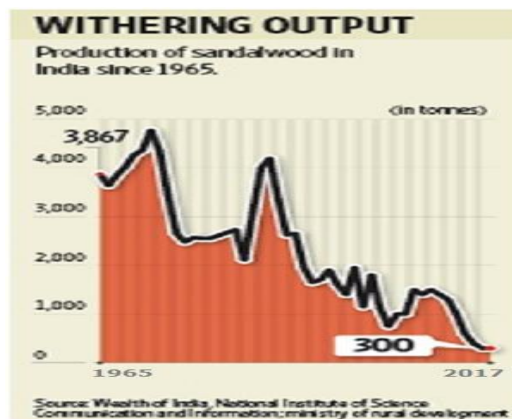
**Keywords:** Sandalwood, Santalol, Replenish, Private Lands, Edaphic, Exploitation

### I. INTRODUCTION

Sandalwood trees are popular for its beautiful fragrance and its wood materials are used from centuries. In **India**, **sandalwood tree** also popular as a Chandan or Srigandha and it is the most expensive tree plant. It is an evergreen tree and it is mostly used in cosmetic, therapeutic, commercial and medicinal. The maximum height of sandalwood tree is 13 to 16 meter and 100 cm to 200 cm girth. Sandalwood tree found in India, Nepal, Bangladesh, Pakistan, Sri Lanka, Australia, Indonesia, Hawaii, and Pacific Islands.

While there are several indigenous varieties, Indian sandalwood is prized for being the most potent, with 90% content of the active ingredient santalol. In contrast, Australian sandalwood oil has only 38-39% santalol content. Not surprisingly, India dominates production worldwide. Nearly 85% of the supply of Indian sandalwood comes from the southern states of Karnataka, Tamil Nadu and Kerala.

But this statistic masks a crisis that the Indian sandalwood industry has been in the grip of for the past decades. Annual production has fallen from a high of 4,000 tonnes in the early 1970s to less than 300 tonnes today.



Indian sandalwood is a highly adaptable species that grows in varying soil conditions and weather, amid temperatures ranging from 5 degrees Celsius to 50 degrees Celsius.

Indian sandalwood's dire situation in its country of origin can be attributed largely to government policy.

The decline in domestic production is primarily due to overexploitation and stringent regulations, said H.S. Anantha Padmanabha, a retired official of the Institute of Wood Science and Technology, Bangalore.

There was no move to replenish the tree stock, which tied in with the other reason for the shortage, the complex set of regulations that govern sandalwood in India.

India has 9/10 th of the worlds supply sandalwood. Upto the year 1958-59 India was meeting the worlds sandal wood oil requirement to the extent of 90% and U.S.A was the main buyer of Indian Sandal Wood.

SANDAL IS ONE of five scheduled trees in Tamil Nadu. *Santalum album* L is called the 'Royal Tree' because:

- The oil extracted from sandal is of high value in perfumery and medicine;
- The sandal heartwood is extensively used in carving works;
- The heartwood contains 'santalol', which makes the heartwood impenetrable to termites;
- The sandal plantation is nearing extinction due to over-exploitation and failure of artificial regeneration methods;
- There is no known artificial substitute for sandal oil;
- The distribution of sandal is limited.

For these reasons, sandal is considered precious and is accorded 'scheduled tree' status. Sandal is found all over India. The area covered in Kamataka is 5254 km<sup>2</sup>; Tamil Nadu. 3045 km<sup>2</sup>; Andra Pradesh, 175 km<sup>2</sup>; Maharastra, 84 km<sup>2</sup>; Madhya Pradesh, 33 km<sup>2</sup>; and Kerala, 15 km<sup>2</sup>. Extensive studies have indicated that *S. album* is the only species yielding high quality sandalwood and oil. A few other species of *Santalum* and four other genera also yield fairly scented wood oil, but the quality of *S. album* oil and wood is superior (Kaikini 1969; Srinivasan et al 1992). The sandal area and the actual plantation area is declining drastically due to overexploitation, poor germination, poor regeneration, and failure of artificial regeneration.

## II. PROBLEMS OF SANDAL CULTIVATION ON PRIVATE LANDS

The difficulty in protecting sandal trees from smugglers is the main reason for not growing sandal on private farmlands. The assurance of the state governments paying 70-75 per cent of net sale proceeds to private sandal growers is affected by red tape and procedural delays in state extraction and disposal of sandal. Marketing is done only by government. Pricing is done by the government at its discretion, and only a minimum percentage of the value is given to the farmer. Hence, there is no financial assurance for him. The farmer has very little control over sandal cultivation and marketing.

**Smuggling:** This is a major problem in all districts and states wherever sandal grows. Even the Government finds it difficult to protect its forest wealth from smuggling. In this context, it would be difficult for farmers to protect even stray sandal trees. A sandal plantation is bound to attract even armed smugglers. The general decline in the incidence of sandal in Government forests has boosted the high market price which makes the business of smuggling much more lucrative. Latest model lorries, cars and vans are used by the armed smugglers aided by cellular telephones.

**Rotation:** All the forestry species have a specific rotation age. In the case of sandal, a physical rotation is followed, where the extraction is done after the death of the tree. This long rotation period is another major problem for farmers' economic return.

Edaphic and related factors: Three particular concerns discourage sandal cultivation on private lands:

- sandal requires a host plant for nutrient uptake during the seedling stage, but the period for which a host is required is not known;
- the absence of control measures against 'sandal spike disease' (from which protection is essential)
- discourages sandal cultivation; and
- sandal plantations regenerate naturally, but there are very few artificially regenerated plantations in existence due to difficulty of artificial regeneration.

Effects of the various States' Forest Acts

Due to the high value of the wood and oil both in India and abroad, sandal had been declared a reserved tree in all states of South India during the times of British Raj and the Feudal States. The existence of sandal trees even on private lands had been recorded in the revenue records during the survey settlements.

The Forest Act provided for:

- special rules for extraction and disposal of sandal trees in all states;
- monopoly extraction of sandal trees on both Government and private lands by the state forest department agencies
- special protection for sandal on private lands;
- information on sandal thefts; and
- payment of fees to owners of private lands for sandal trees growing therein, after extraction and disposal.

The rules paved the way for control on smuggling; but they could not provide complete protection. Thefts were widespread due to weaknesses in the Act, and inadequate forest officials. The very high remuneration for sandalwood billets paid by the distillation units motivate the common people towards theft. These people manipulate through providing wrong information; and mix good quality sandalwood billets from the natural forest with poor quality sandalwood from private growers. The Forest Acts provide for total control of sandal. Governments handle felling, extraction and marketing themselves, and thereby control the smuggling to a major extent. They also regulate the trade effectively, thereby keeping sandal prices stable. The Acts provide for rigid rules regarding sandal. For example, the Madras Forest Act of 1882 provides for the maintenance of accounts in respect of all classes of sandalwood stored on private lands, markets or factories, for industrial or commercial purposes. The differences between the states in legislation controlling sandal is the main problem in controlling smugglers. For example, there are 19 distillation units in Kerala. of which 15 are located in the border region with Tarnil Nadu; they use sandalwood which is mainly smuggled from Tarnil Nadu. This is only possible because of differences in the Forest

Act between the two states.

The procedure for extraction and disposal

The procedure for extraction, transport and conversion is long, rigid and time-consuming. Trees destined for extraction have to be marked. measured and uprooted by digging the nearby soil. Every piece below two cm in diameter must be numbered before

transport. At the depot, cut sandal trees are transported, and the billets are restacked to form the tree. Sapwood removal is called 'dressing to heart wood'. The dressed wood is classified into 24 different classes for use and disposal.

Disposal from the depot is by periodical open auction. From there it goes to state-owned factories, state-owned corporations, and (under concessional quota) to artisans and religious institutions, and small-scale retail outlets for religious purposes. Payment to the owner of the trees is 75 per cent of net sale value, after deducting costs of extraction and dressing and 10 per cent supervision charges. The payment of a bonus to farmers is based on past average sale prices revised by the government sales outlets. These prices are fixed and revised at 1-2-year intervals by the forest department. Market prices for illicit trade in sandal are controlled by the distilleries.

### III. PROS AND CONS OF THE EXISTING RULE

The existing rule is that the landholder is responsible for the preservation of the trees which are the exclusive property of the state government. Any injury or theft must be reported to the forest officers or police. No person shall possess sandal in the form of wood or oil in any form without a valid license except for bona-fide domestic use. Permission must be obtained for felling or exploitation, and stock must be declared. These rules help tree growers and farmers prevent theft or injury to trees. The sandal is being smuggled for its high price. Even with the existing stringent rules, the smuggling rate is very high. Many vehicles are seized from smugglers by the forest department officers. Evidently, smuggling is rife; but if the rules were removed, it would become even more so.

### IV. CONCLUSION

There has been increased interest among farmers in growing sandal in farmlands and private lands. Although there are some bottlenecks and administrative delays, the existing rules should be continued to protect the sandal trees in the farmers' fields as well. Before any action is taken to renew or remove the rule, the pros and cons should be carefully considered. Farmers and private people are affected on one side by the lack of adequate knowledge on sandal cultivation, and on the other side by the rigid rules of the present forest legislation. We suggest that if the rules are better publicized by the Department and the share paid to farmers increased, many farmers would go into sandal cultivation and buying agencies could be arranged by the farmers themselves. Differences in the Forest Acts between the three states considered could be amicably settled to overcome the problems of smuggling and over-exploitation.

### REFERENCES

1. Jain, S.H., Rangaswamy, C.R. and Sharma, C.R. 1988. *Soil properties and their relationship to the growth of sandal (Santalum album L.) in three study areas in Karnataka.*
2. *Myforest* 24: 141-146.
3. Kaikini, N.S. 1969. *The Indian Sandalwood.* *Myforest* 5:27-39.
4. Srinivasan, V.V., Sivaramakrishnan, V.R., Rangaswamy, c.R., Aananthapadmanabha, H.S. and Shankaranarayana, K.H. 1992. *Sandal.* *IWST, ICFRE, Dehra Dun:* 7-11.
5. Thirawat, S. 1955. *Spike disease of sandal.* *Indian Forester* 81: 804.
6. Upadhyay, C.B. 1990. *Madras Forest Act of 1882-Forest Law.* *Hindu Publishing, Allahabad:* 246-247.