

**A SURVEY NOTE ON THE REGENERATION OF ROSEWOOD
(DALBERGIA LATIFOLIA ROXB.) IN GUDALURE WYNAAD
FOREST TRACT (NILGIRIS)**

By

A. BALASUNDARAM, M. GEORGE AND K. G. PRASAD

Forest Soil-cum Vegetation Survey, Southern Region, Coimbatore

Introduction

Dalbergia latifolia Roxb. (rosewood) occurs more or less scattered in the tropical mixed deciduous forests and found in abundance under moist conditions. Better growth has been observed on well drained, deep, and moist soil, particularly near perennial streams (14). In our country appreciable quantity of rosewood is being exploited annually, in view of its high decorative utility and foreign demands.

It has been observed that natural regeneration of rosewood is poor and the only way it can be successfully spread over large areas is by artificial means (4). Artificial regeneration of rosewood from direct seed (1) and by transplanting the seedlings (1,4,5) and stumps (1,3,4,5,2) have been tried. Use of branch cuttings and root suckers have also been reported (8,13). However, none of the artificial method of regeneration of rosewood have come to practice.

Keeping this in view, an attempt is made to assess the existence of rosewood seedlings/ root suckers in the Gudalure Forest Division of Coimbatore Circle. Suggestions have also been made to preserve, protect, and propagate rosewood which will improve the potentiality of rosewood in the tract.

Study site

The study was carried out in the *Janmam* forest (forest lands belonging to private individuals taken over by the Government) of Gudalure Forest Division, which lies between 76°20' to 76°30' north latitude and 10°25' to 10°35' east longitude. This is a mountainous forest tract (between 1,000 m to 1,900 m altitude) and the forests are distributed in scattered patches. These forests have been classified by Champion & Seth (7) as South Indian sub-tropical hill savannah (woodland) (S A DS₁), a degradation stage derived from the sub-tropical evergreen forests. Once, these areas carried a luxuriant growth of valuable timber species. In the past, these trees were ruthlessly and unscientifically exploited. Besides, these forests were subjected to frequent fires which eventually resulted into the present degradation type, comprising of grass-phoenix admixed with *Careya arborea*, *Emblica officinalis*, *Wendlandia thyrsoides*, *Zizyphus glabrata*, etc. The following forest types are also present in this tract :

Deputy Conservator of Forests, Research Officer, and Senior Research Officer, respectively.

Moist deciduous type:—This type consists of species like *Dalbergia latifolia*, *Grewia tilifolia*, *Pterocarpus marsupium*, *Careya arborea*, *Embllica officinalis*, *Olea dioica*, *Litsea coriacea*, *Wendlandia thyrsoides*, etc.

Semi-evergreen type:—This type consists of species like *Artocarpus hirsutus*, *Elaeocarpus serratus*, *Alstonia scholaris*, *Lagerstroemia microcarpa*, *Macaranga pelata*, *Evodia lunuakenda*, *Persea macrantha*, *Schleichera oleosa*, *Cinnamomum zylanicum*, *Mallotus philippensis*, *Callicarpa tomentosa*, etc.

Survey observation

Vegetation survey was carried out using nested quadrat as suggested by Waheed Khan (15) by laying out quadrats of size 20 m × 20 m for tree, 10 m × 10 m for shrub, and 3 m × 3 m for ground flora. The ground flora quadrats were also used as regeneration quadrats and the seedlings/root suckers of tree species were counted and recorded. Using tabular comparison as outlined by Muller-Dombois & Ellenberg (11), three vegetative associations were identified in the Gudalure-Wynaad tract namely (a) *Olea-Mallotus-Lantena* (b) *Phoenix-Careya-Dalbergia*, and (c) *Cinnamomum-Zizyphus-Dalbergia* association. A total of 22 quadrats were laid out in this tract; 5 in *Phoenix-Careya-Dalbergia* association, 5 in *Cinnamomum-Zizyphus-Dalbergia* association, and 11 in *Olea-Mallotus-Lantena* association.

Frequency and abundance of rosewood seedlings/root suckers in different vegetative associations in Gudalure-Wynaad tract are presented in Table 1.

Table 1

Frequency and abundance of *Dalbergia latifolia* root suckers Wynaad forest tract

Vegetative association	Frequency	Abundance	Abundance Frequency
<i>Olea-Mallotus-Lantena</i> association	0.36	3.00	8.33
<i>Phoenix-Careya-Dalbergia</i> association	0.67	8.75	13.06
<i>Cinnamomum-Zizyphus-Dalbergia</i> association	0.47	2.00	5.00

Frequency and abundance of occurrence of rosewood seedlings/root suckers in *Phoenix-Careya-Dalbergia* association was more than other two associations. Using Whitford's criteria as described by Mishra (10) of the ratio of abundance/frequency for determining the nature of distribution of rosewood seedlings/root suckers, the value ranges between 5.00 in *Cinnamomum-Zizyphus-Dalbergia* association to 13.06 in *Phoenix-Careya-Dalbergia* association. This ratio indicates regular distribution of rosewood seedlings/root suckers in the tract. On closer examination it was observed that present day rosewood seedlings are arising from the roots of those rosewood trees which once existed in these areas. Referring back into the history and past management of this forest tract and also from the local enquiries, it was revealed that these areas once carried a luxuriant growth of monsoon forests comprising of timber species like *Dalbergia latifolia*, *Pterocarpus marsupium*, *Lagerstroemia lanceolata*, etc.

Although, density of seedlings of all species were maximum in *Cinnamomum-Zizyphus-Dalbergia* association (Table 2), the relative and absolute density of rosewood root suckers were maximum in *Phoenix-Careya-Dalbergia* association followed by *Olea-Mallotus-Lantena* association and *Cinnamomum-Zizyphus-Dalbergia* association (Table 2).

Table 2

Total density of all species and relative and absolute density of *Dalbergia latifolia* root suckers in Gudalure—Wynud forest tract

Vegetative Association	All spp. Total	<i>Dalbergia latifolia</i>	
		Relative	Absolute
<i>Olea-Mallotus-Lantena</i> association	18.45	5.91	1.09
<i>Phoenix-Careya-Dalbergia</i> association	11.00	53.03	5.83
<i>Cinnamomum-Zizyphus-Dalbergia</i> association	23.40	3.42	0.80

Discussion

It has been reported elsewhere that rosewood is characteristic of the tropical moist deciduous forests but its habitat also extends sometimes into the tropical semi-evergreen forest on the one side and tropical dry deciduous on the other side (9). Further, most favourable conditions necessary for better growth of rosewood root suckers at the initial stages are moderate shade and fairly moist soil. For subsequent development, plentiful overhead light is required (1, 2, 9). These observations are also true for *Phoenix-Careya-Dalbergia* association which provides an ideal condition for the successful regeneration where the frequency abundance, and density values of rosewood root suckers are highest. The reason that these rosewood root suckers which have come up naturally, fail to establish themselves is because of frequent fire and browsing by cattle.

In *Cinnamomum-Zizyphus-Dalbergia* association the density, frequency, and abundance of rosewood root suckers are comparatively less. This is understandable because of the canopy nature of the forest; exposing the forest floor to sun to a minimum, which is an important factor at the initial stages of natural regeneration of this species. It is significant to mention here that most of the rosewood root suckers in this association were found to be towards the external periphery of the forest, the region where the conditions are favourable for the regrowth of rosewood root suckers.

Champion & Seth (6) have observed that reproduction of root suckers in *Dalbergia latifolia* are usually induced by felling the parent tree or by injury to the roots. They further observed that the shoots of *Dalbergia latifolia* are developed mostly at or near the cut ends. It has also been reported that regeneration of rosewood by root suckers is generally good in situations exposed to light such as edges and surface of earthen roads in forest tracts, along fire line, etc. (9). The present data also confirms such observation.

Proposal for future improvement

Recently, Tamil Nadu Forest Department have taken over a portion of these forest from its private ownership and a part has been leased out to the Tamil Nadu Tea Development Corporation (TANTEA). The remaining area is being used by the State Forest Department for raising of plantation, mainly with *Eucalyptus grandis*.

In order to improve and protect the rosewood population in this area, it is suggested that rosewood root suckers that have come up naturally may be left undisturbed and due protection and cultural treatments given along with the proposed plantation of *E. grandis*. The rate of growth of rosewood and that of *E. grandis* are quite different and therefore, in no way either of the species will suppress the growth of other.

Since, rosewood reproduces freely from root suckers, it is suggested that wherever rosewood fellings are resorted to, a trench around the green stump may be opened and left undisturbed. Running trenches may also be opened through those areas where scattered trees of rosewood occur as suggested by Champion & Seth (1968 a). This will stimulate the sprouting of root suckers from the cut end of the roots, which will not only maintain but also increase the potentiality of rosewood in the tract.

Although attempts have been made for the artificial planting of rosewood trees (1, 3, 4, 5, 8, 9, 12), none of the methods are very successful and being practised on large scale. A package practice for raising successful rosewood nursery and rosewood plantation from both sexual (seed) and asexual (vegetative propagation including root suckers) methods should be worked out to supplement the normal regeneration and thereby maintain the level of rosewood population to the requirement.

Acknowledgement

Authors sincerely records the guidance and leadership provided to them by Shri R. C. Ghosh, I. F. S., Director of Forestry Research Forest Research Institute and Colleges, Dehra Dun and Shri K. Shanmughanathan, I. F. S., Principal and Head of Biological Research, Southern Forest Rangers College and Forest Research Centre, Coimbatore. Thanks are also to Shri C.J. Raju Singh, I.F.S. Conservator of Forests, Coimbatore Forest Circle and Shri K. Marimuthu, District Forest Officer, Gudalure Forest Division, for their co-operation and help.

SUMMARY

Quadrat study was carried out on regeneration of rosewood (*Dalbergia latifolia* Roxb.), in the Janmam Forests of Gudalure Forest Division of Coimbatore Circle, Tamil Nadu. This is a mountainous forest tract consisting of moist deciduous, grass-phoenix, and semi-evergreen types of vegetation. More frequency, abundance and density of rosewood root suckers were observed in Phoenix-Careya-Dalbergia association (0.67, 8.75, and 5.83 respectively) followed by Olea-Mallotus-Lantana association (0.36, 3.00 and 1.09, respectively, and Cinnamomum-Zizyphus-Dalbergia association (0.40, 2.00 and 0.80, respectively). Suggestions have been made to preserve and protect these young plants of rosewood which

have come up naturally and to propagate root suckers artificially which will improve the rosewood population in the tract.

गुडालूर वाइनाड वन क्षेत्र (नीलगिरी) में कालाशीशम (*डलबर्जिया लॅटिफोलिया*) के पुनर्जनन सर्वेक्षण संबंधी टिप्पणी

लेखक ए० बालसुन्दरम्, एम० जार्ज व क०जी० प्रसाद

सारांश

गुडालूर वन मण्डल, कोयम्बटूर वन, तमिलनाडु के जंगम वनों में काले शीशम (*डलबर्जिया लॅटिफोलिया* राक्स०) के पुनर्जनन का चतुष्कोणक अध्ययन किया गया। यह पर्वतीय वन क्षेत्र है जिसमें आर्द्र पर्णपाती, घास-फोनिक्स और अर्द्ध सदाहरित प्रकार की वनस्पति पाई जाती है। काले शीशम के जड़ों की अधिक बारम्बारता, प्रचुरता और सघनता फोनिक्स-कैरेया-डलबर्जिया साहचर्य (0.67, 8.75 व 5.83 क्रम से) पाई गई जिसके बाद ओलिया-मैलोटस-लैण्टेना साहचर्य (0.36, 3.00 व 1.09 क्रम से) और सिनामोमम-जिजीफस-डलबर्जिया साहचर्य (0.40 2.00 व 0.80 क्रम से) रहे। काले शीशम के इन सब पादपों को जो स्वतः निकल आए हैं सभालने और सुरक्षित रखने तथा जड़ों का कृत्रिम प्रवर्धन करने का सुझाव दिया गया है जिससे इस क्षेत्र में काले शीशम के वृक्षों की संख्या में वृद्धि हो जाएगी।

Eine übersichtliche Bemerkung auf die Verjüngung der Rosewood (*Dalbergia latifolia* Roxb.) im Gudalure Wynad Forstlandstrich (Nilgiris)

A. BALASUNDARAM, M. GEORGE UND K.G. PRASAD

ZUSAMMENFASSUNG

Eine quadratische Studie war auf Verjüngung der Rosewood (*Dalbergia latifolia* Roxb.) in Janmamforstern des Gudalure Forstdistrikts, Coimbatore Kreis, Tamilnadu geleitet. Das ist ein gebirgige Landstrich und hat feuchten hinfalligen, gras-phoenixen, und halbimmergrüner Typen des Pflanzenwuchs. Mehre Häufigkeit, der Überfluß und die Dichtigkeit der Rosewood Wurzel-ausschlagen waren in Phoenix-Careya-Dalbergia Verbindung (0,67 und 8,75 und 5,83 bzw.) beobachtet, das bei Olea-Mallotus-Lantana Verbindung (0,36 und 3,00 und 1,09 bzw.) und Cinnamomum-Zyzyphus-Dalbergia Verbindung (0,40 und 2,00 und 0,80 bzw.) gefolgt war. Vorschlagen dieser jungen Pflanzen der Rosewood, die natürlich wachsen, zu bewahren und zu schützen und die Wurzel-ausschlagen künstlich zu fortpflanzen werden gegeben, sodaß die Zahl der *Dalbergia* in diesem Landstriche verbessern kann.

Description parcellaire de la régénération de "Rosewood" (*Dalbergia latifolia* Roxb.) à Gudalure dans la région forestière de Wynad (Nilgiris)

par A. BALASUNDARAM M. GEORGE ET K.G. PRASAD

Résumé

On a fait une étude "Quadrat" sur la régénération de "rosewood" (*Dalbergia latifolia* Roxb.) en forêts de Janam, de la section forestière de Gudalure, à Coimbatore, au Tamil Nadu. C'est une région forestière montagneuse, où se trouve une végétation très variée :— humide feuillue, herbe-phoenix et toujours verte (à demi). La fréquence, abondance et densité les plus élevées des dragons de "rosewood" furent observés dans l'association de Phoenix-Careya-Dalbergia (0,67, 8,75 et 5,83 respectivement) suivie de l'association d'Olea-Mallotus-lantana (0,36, 3,00 et 1,09 respectivement) et celle de Cinnamomum-Zyzyphus-Dalbergia (0,40, 2,00 et 0,80 respectivement). On a fait des suggestions relatives à la conservation et protection de ces plants naturels de "rosewood" sortis de terre. On a également proposé que, pour la l'accroissement de la population de "rosewood" dans la région, des dragons soient propagés artificiellement.

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