

## The Germination of Teak.

This large, deciduous, well-known tree is of the first importance in India, affording one of the best and most durable timbers known. It is light, easily worked and strong, and by being durable either in or out of water it has proved superior to every other timber for ship-building and countless other purposes. Much has been written on its habits and economic uses which might well, therefore, not find a place here; but there is one characteristic about its leaves which I may mention before proceeding to our legitimate subject—GERMINATION—for on it the structure and quality of the wood are said to depend.

My observations are limited, but I noticed that there are two distinct varieties of leaf. The upper side of the one is scabrous and the under side clothed with grey or tawny tomentum; but of the other, the upper side is glabrous and shining and the under

side covered with silvery scales. The former has not only a distinct rough feel, but is somewhat narrower, less ovate or obovate and gives off with greater ease a red dye when bruised between the fingers, than the latter.

From the structure of the leaf, as above described, the natives of Tinnevely and parts of the Coimbatore District, distinguish two varieties of Teak, and they prefer the one to the other for particular purposes. I have, however, found both varieties of leaf on the same tree: but the conditions or causes which produce these morphological differences in the structure of the leaves and, doubtless, through them in the physical property of the wood, must be worth studying.

**GERMINATION.**—The greatest obstacle to the spread of Teak is its slow and uncertain germination, added to the fact, that as the seed ripens and falls at the commencement of the hot season, a large proportion is destroyed by the annual fires; or is washed away into the ravines and streams by the monsoon torrents; or either rots, or is destroyed by vermin during the long interval that elapses between the fall of the seed and the rains which favour its germination.

Various attempts have been made to encourage and foster natural regeneration by self sown seed by the exclusion of cattle and fires; but such attempts, as the Annual Administration Reports show, have proved futile. We are, however, indebted to the late Dr. Roxburgh, at the instance of the much lamented Mr. Conolly, Collector of Malabar, to whom the splendid plantations at Nilambur owe their existence, for its artificial regeneration in nursery beds.

*Artificial germination in nursery beds*:—With some slight modifications Dr. Roxburgh's suggestions are still adhered to and they are, as carried out at Nilambur, as follows:—

The soil is dug to 12", reduced to a fine mould, levelled and partitioned into beds 32" wide within raised edgings 4" x 3" to retain the water. About the middle of April the seeds, after being immersed in water 48 hours or more, are spread over the beds and covered an inch thick with fine mould. Across the beds are placed branches on twigs of the wild gooseberry (*Phyllanthus Emblica*) which support a layer of straw, and the beds are daily profusely watered. The seeds germinate within eight or fifteen days when the twigs and straw are removed, the water gradually reduced until the monsoon has well set in and the plants, being then from 4" to 6" high, are put out into the area set apart for planting. A seed bed 32 inches by 50 yards will require 120 seers of seed and some 7,000 plants might be expected.

Notwithstanding all the care bestowed upon the seed in the nursery, a large quantity does not germinate. But the chief points learnt are:—

(i). That the seed must be ensured continuous moisture for its germination, which is best done by covering or burying it in the mineral soil.

(ii). Insurance of the seedling against drought.

*Natural germination of self-sown seed* :—The seed by being exposed on the surface does not receive that amount of continuous moisture essential for its germination. Then again when the seed is placed even in favourable circumstances its protracted germination causes the seedling to start life so late in the season that it is much too weak and insufficiently established to meet the increased transpiration and drought which immediately follows the monsoon. A great number of seedlings are also destroyed by insects which also make their appearance after the monsoon.

Natural germination may therefore be artificially assisted by breaking up and preparing the ground in parallel contour ridges round seedling Teak trees to a radius equal to the distance the top-most seeds are likely to fall. The surface is thereby kept wholesome and porous and the seeds which fall into the trenches are covered by the ridges being washed over them during the monsoon, and the porous prepared soil allows the taproot of the seedling to penetrate deep enough into it to insure the plant against drought and increased transpiration. In the majority of cases seedlings are found in places where the seeds are covered by a layer of sand or earth, or the ground broken up and worked into nodules by earthworms or similar agency.

*The advantages that the method affords are* :—

(i). The localization of Teak within its own habitat and associates, which must therefore tend to raise it to its maximum usefulness.

(ii). The removal of obnoxious weeds, grasses, and undergrowth which are fast supplanting the Teak and other useful trees, and which, notably the Lantana, are over-running the forests.

(iii). It costs very much less than a regular exposed plantation, and the seedlings are less subject to drought and increased transpiration during the hot season from shade afforded by the parent trees.

The financial difficulty, which this method involves, may be overcome by sowing in the area some of the better species of cotton or cereal grains, the crops of which might go to pay in part at least, the expenditure incurred. Or the ground may be prepared free of cost by allowing the jungle tribes to raise their crops on it. Then again, it is not unreasonable to suggest that a part of the forest revenue might well be spent in improving our forests and increasing their value and utility, for nothing can be got without labour and expense.

An experiment much on the lines advocated above was made by me last year on the Anamallais. The seeds on the trees around which the ground was prepared as previously suggested, were

unfortunately picked off for sowing in the nursery beds, other seed, were therefore sown broadcast over the area with, I am told splendid results.

In tracts, therefore, where the Teak has been over-cut, seed may be sown in parallel contour furrows and thus save the enormous expenditure incurred in clearing, felling and planting the area.

In the light of the foregoing, it seems to me that in Teak tracts cattle grazing, were it not for the fires that follow in its train by the carelessness of herdmen, must tend to help the germination of the seed, in that it crops the grass and treads the seed into the mineral soil, facts eloquently borne out in Tinnevelly and other districts.

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