

Growing Teak in the Top End of the NT

(*Tectona grandis*)

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INTRODUCTION

It should be noted that true teak is obtained only from the species *Tectona grandis*. However, many timbers have been wrongly given the name of "teak" based on a superficial resemblance to true teak either in appearance or properties.

Teak is one of the most valuable timbers in the world on account of its outstanding properties. The sapwood is white to pale yellow-brown, narrow to moderately wide. The heartwood is a dark golden-yellow when fresh, turning to a dark golden-brown, sometimes with darker markings. On prolonged exposure to the weather, the colour becomes lighter. The grain is generally straight, but may occasionally be figured. Texture is moderately coarse to coarse and uneven, due to the presence of growth rings. It is moderately hard and moderately heavy, weighing approximately a tonne per 1.5 cubic metres of seasoned sawn timber.

Density is 670 kilograms per cubic metre at 12% moisture content. Plantation material may be lower in density. The timber has a distinct oily feel and this, with other properties, make the wood highly resistant to acids and fire (Hart 1973).

It is showing promising growth in the recently established NHT funded trials in the Top End of the NT.

GERMINATION

Seed from dry and moist climates varies greatly in the ease with which it can germinate. Nearly all teak seed however, shows some degree of dormancy, making it difficult to germinate evenly and adequately. The main cause of delay in the germination of teak seed is the thick pericarp, which does not soften sufficiently for the embryo cells to open (Kadambi 1972).

Pretreatment of the seed is needed to break this dormancy. One method of achieving this is by alternate wetting and drying of the seed before sowing. Place the seed in a hessian bag and soak the bag in water, preferably in a running stream, for 12 hours. Then spread the seed out in

the sun to dry for 12 hours. Repeated this for 10–14 days before sowing the seed into raised germination beds.

Raise the beds about 50 cm above ground level by filling with a layer of 5 cm of gravel on the bottom, 35 cm of clean coarse sand in the centre and 10 cm of a 50/50 mixture of peat and coarse sand on the top. Push seeds into this top layer of sand and peat to cover them and water twice a day. It is important not to sow the seeds too deep, as this will hinder germination.

Germination starts in 10–15 days after sowing, reaches its peak in 35–45 days and then decreases steadily to 80–90 days. In general, the proportion of the seed that germinates in the first year is about 35%. The ungerminated (but still viable) seeds will still maintain viability and germinate in the following year(s) when conditions are favourable. Such germination behaviour is due to dormancy. The real cause of teak seed dormancy is still unknown; however, three main factors are believed to influence seed dormancy: (1) seed structure, (2) seed maturity and (3) seed biochemistry (Kaosa-ard 1986).

PLANTING MATERIAL

Planting material can consist of seedlings, stumps or tissue culture. Seedlings can be pricked out into containers after germination and grown until they reach 30–40 cm in height. These seedlings should be planted into the field after the first rains (Figure 1). Another method is to plant prepared stumps. The seedlings are left to grow in the germination beds until they reach about 15–20 mm in diameter, then they are prepared for planting by pruning off both the shoot and root. Generally 25–50 mm of shoot is retained and about 150–200 mm of the root is left intact. This remaining material is known as a stump and is the most common planting method, because it can be stored for a period of time before planting, and gives more even height when planted in the field. Tissue culture plantlets, although rather costly, have the benefit of superior genetic quality. The initial outlay may be high, but the final crop will be far superior to seedling or stumped stock.

SOIL REQUIREMENTS

In its natural state teak grows on a variety of geological formations but the quality of growth depends on the depth, structure, porosity, drainage and moisture holding capacity of the soil. Teak thrives best on soils that are neutral, or slightly alkaline, so the most favourable soils for growth and development usually have a pH of between 6.5–7.5. Waterlogged, shallow and compacted soils should be avoided. On laterite soils, even if partly disintegrated, teak will always be stunted. Teak is a ‘calcicolous’ species and requires a relatively large amount of calcium in the soil for growth and development (White 1991).

Abundant fine absorbent roots form on young teak plants in the uppermost soil



Figure 1. Teak seedling three months after planting.

layer during the wet season, but largely die off in the dry season and are replaced by new roots that develop in the deeper layers, provided soil aeration is adequate (White 1991).

In deep loam soils a taproot develops early and becomes the main water supplier. In older trees, the taproot though long, is not very thick. The water supply in the soil has an intimate effect on the area of fine water absorbing rootlets and their distribution throughout the soil.

In waterlogged alluvial soils and in clay, roots are stunted and the taproot is very poorly developed (Kadambi 1972).

SITE PREPARATION AND PLANTING

The planting lines should be deep-ripped to a depth of at least 50 cm and if needed, agricultural lime should be incorporated into them so as to raise the pH of the soil to a suitable level. The area should be sprayed with herbicide prior to planting and kept weed-free for at least the first three years of growth. Teak seedlings are very sensitive to competition by weeds. In the Top End of the NT, planting should occur as soon as the soil is moist enough to allow survival until the regular annual rains commence.

Tree spacing depends on a number of factors. Genetically superior quality seed planted on a good site, can be spaced wider for efficient use of the seed. If the site is poor and the seed is not of a superior quality, the spacing can be closer. Spacing also depends on markets for small size logs (thinnings), but a general spacing would be 4 metres between rows and 2 metres along the row (1,250 stems/ha).

A complete fertiliser with trace elements should be applied at the time of planting at the rate of 200 g/tree. This can be applied in two split applications, one at the time of planting and the other before the end of the wet.

THINNING

Teak requires a lot of light and suffers when suppressed. The crown of the tree requires freedom on all sides for proper development. It grows best when plants are of a similar size and are regularly and heavily thinned, particularly in the first half of the rotation. The growth should be monitored regularly and thinning should start before the stand is suppressed. In a thinned plantation, the crop should look distinctly open, and individual crowns should have clear space all round. Normally, trees with the best crown development and stem-form should be retained and they should be evenly spaced, even if this means the sacrifice of some other trees with good crowns and straight trunks. All trees with poorly developed crowns and stems should be removed provided this will not result in permanent canopy gaps (Kadambi 1972).

USES

Teak possesses excellent properties and as such it has a very wide range of uses, including flooring, decking, framing, cladding, fascias and barge boards. In the decorative line it can be used for lining, panelling, turnery, carving, furniture (both indoor and outdoor) and parquetry.

Teak is perhaps best known for its long established use in the boat building industry. It has been extensively used for decking, deck houses, rails, bulwarks, hatches, weather doors and planking. It is also used for cooperage, pipes, and chemical vats (Hart 1973).

SEASONING

Teak air-seasons very well with little tendency to split or warp; however, this process is rather slow. Once seasoned the timber is exceptionally stable, and also has a low co-efficient of expansion and contraction under changes of atmospheric temperature and humidity. It can be kiln-dried easily and degradation is slight, but it requires more than the usual care in determining both the initial and final moisture contents as variations in drying occur. Some collapse may occur if high temperatures are used (Hart 1973).

DURABILITY

Teak is an extremely durable wood (Class 2), which is reported to be highly resistant to, but not immune from, termites and marine borers. It is highly resistant to decay when fully exposed to the weather, clear off the ground and well drained with free air circulation. It is moderately decay-resistant in the ground.

WORKING QUALITIES

The timber works fairly well both with hand and machine tools, provided cutting edges are maintained in good order. It is recommended that planing angle be reduced to 20 degrees and that tungsten carbide-tipped saws be used. An excellent finish can be obtained. It takes nails and screws fairly well, although the oily nature of the wood makes it rather difficult to glue. As with most timbers with an oily nature, machining and surface preparations should be done immediately prior to gluing. It is suggested the timber be filled with wood filler before polishing (Hart 1973).

PESTS AND DISEASES

Teak is susceptible to various kinds of pests and diseases. Generally, defoliators and skeletonisers cause the greatest problem; however, chemical control, except in nurseries or young plantations is not practical. The life cycles of these pests are so short and follow each other so rapidly that it is not considered cost-effective to organise such remedial measures as aerial dusting or spraying. Control efforts may benefit from favourable climatic events, but the main strategy must be on limiting food supply and fostering parasites and predators. Unless alternative plants are available, larvae of both the important defoliators starve during the period when teak is leafless. One approach to control this is to eliminate understory plants, which serve as hosts to the insects (Kadambi 1972).

Termites are another occasional problem in young trees and a baiting program should be commenced at the first signs of damage.



Figure 2. Teak tree near Fog dam S E of Darwin – 25 years old

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