

# DownToEarth

## Why pruning of timber tree species is a strict no-no

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The southern states of the country are major producers of valuable, wood-yielding trees such as sandalwood and teak. Production of sandalwood, in particular, saw a rise in the early 2000s after states like Karnataka and Tamil Nadu allowed its cultivation on private agricultural land.

Such species are highly profitable for growers — on average, a sandalwood farmer can earn up to Rs 1 lakh from a tree just in 15 years, if kept in good health. However, in several cases it has been observed that the growers fail to get the desired profit as the trees grow weak and die prematurely. Over the past decade, the Institute of Wood Science and Technology (IWST) in Bengaluru, under the Indian Council of Forestry Research and Education, has conducted an analysis of plantations in five states — Tamil Nadu, Karnataka, Kerala, Andhra Pradesh and Telangana. It has found that the loss is because of the unnecessary pruning of the timber trees.

Pruning is the practice of removing a specific part of a tree or shrub drying or dying due to pests, diseases and lack of sunlight. Several tree species self-prune; it is a part of their biological process.

Fruit farmers also prune trees, such as mango, pomegranate, moringa and mulberry after every harvest, based on recommendation from horticultural scientists. But here, apart from maximising yield, the practice is also for convenience.

Pruning limits the height of the branches and ensures easy access to leaves, flowers and fruits. The removed limbs, if healthy, can then be replanted.

Similarly, trees in public parks and gardens are pruned to control their shape and structural integrity, thereby increasing their aesthetic value. But growers of timber species incorrectly apply the same logic to sandalwood and teak, which does more harm than good to the trees.

The bark is the trees' first line of defence; it protects the inner layers of the stem — sapwood, which forms the peripheral part of the trunk just beneath the bark and heartwood, the central core.

But when branches are pruned, the bark gets wounded and dries and the cut ends expose the inner tissues. Bio-deteriorating organisms such as wood-decaying fungi (namely *Allophoma tropica*, *Ganoderma applanatum* and *Xylaria berteroi*) and insects like wood borers tend to feed on the dried bark and infest the cut ends of the stem.

Soon, they attack the inner layers and cause decay. This makes the tree weak; leaves grow small and fruits drop prematurely.

Pruning-induced wounds also hinder the natural growth of branches, leading them to bunch profusely at certain points. This disrupts the tree's balance and makes it vulnerable to heavy winds.

Pruned trees often need support from wooden planks to stay upright, but these too attract termites when they dry. In many instances, such trees die quickly.

Teak, for example, is extremely durable and its inner layers have metabolites or extractives that help it resist bio-deteriorating organisms. But pruned teak trees have fewer extractives, which reduce their density and durability, notes a 2015 study led by IWSST researchers and published in the journal *International Biodeterioration & Biodegradation*.

In addition, while pruning improves trees' height, it limits the girth of the main stem, as seen in sandalwood. This means the wood loses weight and therefore fetches less profit. It also develops dead knots, erasing its aesthetic value and lowering its price.

### **Cascading impacts**

It is striking how extensive the invisible effects of pruning can be, on not just trees but the entire ecosystem around them.

Scientists recommend that to deter fungi from infesting pruned wood, tree growers can apply copper-based fungicides like Bordeaux paste at the cut ends. But this has not proven to be effective.

The 2014 book *Encyclopedia of Agriculture and Food Systems* notes that the fungi have developed multifold resistance against commonly used fungicides. Hence growers have begun to use pesticides. This is found to have detrimental effects on earthworms in sandalwood plantations across the states. Earthworms are key in improving soil health; they allow air to percolate and convert organic matter to nutrients.

Pruning has also restricted pollinating insects from accessing nutrient and nesting resources, affecting their foraging and nesting behaviour and phenology and reproduction. This will have an adverse effect on cross-pollinating species like sandalwood and teak.

Hence, growers of timber species with long rotation periods must stop this misguided practice and instead adopt natural methods to preserve trees' health and save the plantation

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