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Jøker, Dorthe

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SEED LEAFLET

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Shorea javanica Koord. & Valeton

Taxonomy and nomenclature

Family: Dipterocarpaceae
Synonyms: *Shorea vandenkopelii* Parijs
Vernacular/common names: damar, white meranti (Eng.); manggasinoro (Philippines); damar kaca, damar sibosa, mesegar lanang (Indonesia); lum'-baô (Cambodia); meranti pa'ang, temak (Malaysia); kiam-khanong, phayom, saya-khao (Thailand); s[ees]n, v[ee]n v[ee]n (Vietnam); white meranti (trade name).

Distribution and habitat

Indigenous to Indonesia where it is common in South Sumatra and found scattered in North Sumatra and Central Java. It occurs in primary and secondary lowland rainforests in dry or periodically waterlogged places up to 500 m altitude in areas with more than 1600 mm rain/year and a dry season of less than 6 months. It is more light tolerant than most dipterocarps.

Uses

The timber is highly preferred for plywood production, which is its most important use. It is a lightweight hardwood with a density of 450-840 kg/m^3 at 15% moisture content. The tree is also valued for its high quality, clear resin – known as damar. It is tapped for resin in the natural forest, in preserved trees in shifting cultivation areas and in plantations.

Along the southern coast of Sumatra, agroforests, called kebun damar, or damar forest gardens, are established at the end of the cycle of shifting cultivation, or when there is a sufficiently large opening in the forest canopy. The cycle normally begins with a crop of upland rice followed by coffee or pepper, and in three to seven years damar seedlings are added to the upland field. As the damar grows, it contributes to a microclimate suitable for coffee production; then, fifteen years after planting, damar overtakes coffee, pepper, and other fruiting trees.

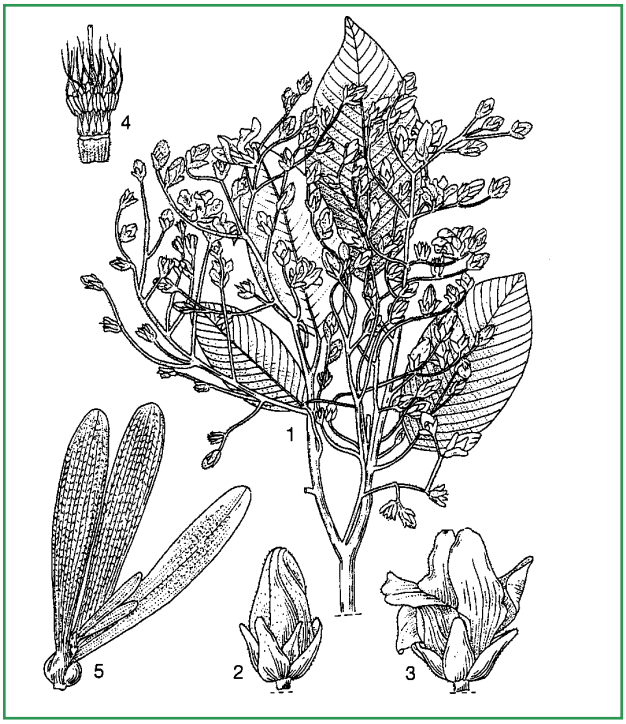
The damar trees begin producing after twenty years, yielding resin for about 30 years before dying sometime between 50 and 60 years of age. A mature damar agroforest generates between 750 and 1625 US $ per hectare per year. Compared to other agroforestry systems, the damar gardens support a high degree of biological diversity.

Botanical description

A medium-sized to fairly large tree up to 40 m tall with diameter up to 150 cm. The bole is branchless for up to 30 m and with buttresses up to 1.5 m high. Leaves are thin and leathery, up to 15 cm long. Flowers bisexual, white or tinged with pink, in terminal or axillary inflorescences.

Fruit and seed description

The fruit is a typical dipterocarp nut. The outer 3 calyx lobes are very long, up to 15 cm. The nut is 1-seeded and sharply pointed. There are about 830 dewinged nuts/kg.



1, flowering branch; 2, flower bud; 3, mature flower; 4, flower with sepals and petals removed; 5, fruit. Copyright: PROSEA Foundation

Flowering and fruiting habit

The trees do not produce seed regularly. The fruiting season is highly unpredictable and seeds are only available every 4 to 6 years. Flowering is correlated with a previous period of drought and all trees in an area will normally flower at the same time. The species is self-incompatible and flowers are pollinated by thrips and fruits are dispersed by wind and water.

Harvest

Seed collection must be well timed. Mature seeds that are sown immediately after collection may germinate close to 100% but deteriorate rapidly in storage. If seeds are collected 2-4 weeks before full maturity, germination is lower (65-80%) but viability is kept longer in storage. Seeds that are collected from the ground must always be sown immediately.

Processing and handling

Mature fruits have a high moisture content and should be transported in open or loosely folded bags, allowing ventilation. The bags should not be stacked and should be protected from direct sunlight. At the processing site the fruits are spread out on a tarpaulin in the shade and dried for a few days. Before sowing or storage the wings must be removed.

Storage and viability

The seeds have intermediate storage behaviour. They tolerate drying but are sensitive to temperatures below 10ºC. Seeds that have been dried to 13-14% moisture content and stored at 15-20ºC can retain about 50% germination for 10 months.

Dormancy and pretreatment

The seeds are not dormant and pretreatment is not necessary.

Sowing and germination

Fresh seeds have high germination percentage and can be sown directly in containers. Germination is epigeal. In Indonesia local farmers have solved the problems of irregular fruiting and short viability by establishing small seedling nurseries where seeds are sown in seedbeds at high density. The seedlings are not thinned and the high density results in seedlings that do not grow more than 20-30 cm high and this way they can survive 4-5 years. Among vegetative techniques available, stem cutting from hedge orchards has been considered promising.

Selected readings

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Tapping of damar, Java, Indonesia. Phot. Mr. Nurhasybi, Seed Technology Institute, Bogor.

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Author: Dorthe Jøker, *Forest & Landscape Denmark*

Forest & Landscape Denmark
Hørsholm Kongevej 11
DK-2970 Hørsholm
Denmark Website:
Phone: +45-35281503
Fax: +45-35281517
Email: SL-International@kvl.dk
www.SL.kvl.dk