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# Dyera costulata (Miq.) Hook. f.

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*Published in:*
Seed Leaflet

*Publication date:*
2004

*Document version*
Publisher's PDF, also known as Version of record

*Citation for published version (APA):*
Arlanda, R., Fazli, L., Yanardie, R., Harum, F. (Ed.), Schmidt, L. H. (Ed.), & Jøker, D. (Ed.) (2004). *Dyera costulata* (Miq.) Hook. f. *Seed Leaflet*, (104).

Download date: 17. Nov. 2026

Forest & Landscape

# SEED LEAFLET

No. 104 December 2004

# *Dyera costulata* (Miq.) Hook. f.

## Taxonomy and nomenclature

**Family**: Apocynaceae

**Synonyms**: *Dyera laxiflora* Hook. f.; *Alstonia costulata* Miq.

**Vernacular/common names**: In Indonesia and Malaysia mostly known by its trade name jelutong, which is also the common trade name. Other local names are melabuai (Sumatra) and pantung gunung (Kalimantan). In English it is often called hill jelutong.

**Related species**: The genus consists of only two species *D. costulata* and *D. polyphylla*. It is closely related to *Alstonia*.

## Distribution and habitat

The area of natural distribution is Peninsular Thailand, Peninsular Malaysia, Singapore, Sumatra, Borneo and intervening islands. It is mainly found in primary lowland rain forest on planes or smaller hills at altitudes up to 300 m altitude, occasionally up to 800 m Typically it grows in heavy rainfall areas on soil with good drainage e.g. on ridges or alluvial soil and lateritic clay soil but not in swamp forest (site of related *D. polyphylla*). Is a very light-demanding species and once a young tree is well established in full light, it tends to spread its crown and develop into a pronounced 'wolf tree'. Distribution of the species has declined as a result of tapping for latex and felling for timber and in some places it is reported to be threatened.

1, tree habit, 2. twig with leaves, 3. fruit, 4. seed. From: Plant resources of South-east Asia 5(2)

## Uses

Wood is a yellow, lightweight hardwood with no distinction between heartwood and sapwood. The texture is fine and straight, and the surface is glossy. It is considered easy to dry and saw even though it contains latex. The wood is easy to work, nail, screw, paint, and varnish. It has a number of speciality uses such as plywood, pulp and paper, pencils, picture frames, wood containers, furniture, blackboard, toys, handles, partitioning, matchboxes and wood carving. The roots are used as a substitute for cork and the latex is used in the manufacture of chewing gum, in paints, as priming for concrete, or for sizing paper.

Forester in Malaysia climbing a *Dyera costulata* tree. Photo: Marzalina Manzor, FRIM

## Botanical description

Large deciduous tree with straight bole, up to 50-60 m, occasionally up to 80 m tall, with diameter up to 3 m and a clear bole up to 15-30 m without buttresses. Bark surface is dark grey, smooth, with small square scales; inner bark thick, with milky latex. The leaves are usually shed once a year. Leaves in whorls, glabrous, 12-25 cm long and 6-11 cm wide. Flowers small and white, glabrous, in 5-18 cm long panicles.

## Fruit and seed description

**Fruit**: the fruits grow in pairs at the end of branches. Each fruit is a pod-like follicle, 30-40 cm long and 2-3 cm wide. It contains about 20 seeds, sometimes up to 40, and opens at maturity to release the seeds. Usually the overlapping seeds are placed in two rows in each pod. Some of the seeds (about 10%) do not develop an embryo.

**Seed**: straw-coloured, oblong, 4-6 cm, flat with a thin, fine encircling wing. There are 7,500-20,000 seeds/kg.

## Flowering and fruiting habit

In Indonesia the trees flower once or twice per year in February and November respectively. In Malaysia most trees flower in August to October. Flowering occurs before the new shoots start growing. The flowering process lasts for 2-3 weeks and young fruits are detected after 2 to three months. The fruits are ripe 8-9 months after fertilisation. The seeds are dispersed by wind.

## Harvest

Ripening of the fruits begin with gradual flattening, reduction of the latex and a change in colour from green to brown. Towards maturity a split is formed in the pods and it gets progressively wider but the seeds are still enclosed within the pod. At full maturity the pod curves backwards and the seeds are released. The fruits must be collected from the trees before they open or the seeds are dispersed widely by wind. They do not all mature at the same time but pods that are light brown, more flat than round and with wrinkles can be collected together with the fully mature fruits. Seed collection is difficult from the tall mother trees. Clusters of mature fruits can be cut using long handled pruners combined with climbing. Shaking does not work as the fruits will remain on the tree until after seed dispersal and shaking will just cause the fruits to open.

## Processing and handling

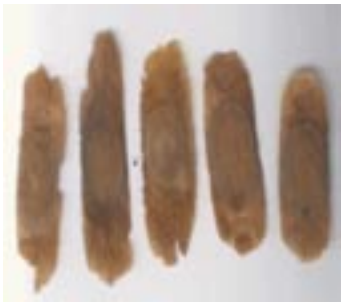
After collection the fruits are dried in the sun for about one week until they open and the seeds are released. Both fruits and seeds are light and can easily be blown away and some sheltering or covering in windy areas is necessary.

## Storage and viability

Storage behaviour of the seed is uncertain but it seems it does not tolerate drying to low moisture content or low temperatures. According to Yap (1980) seed can be stored for 8 months with little loss in viability in a well-ventilated and cool room (20-24°C) with 60% RH. Others, however, find it difficult to store the seed for more than 3 months.

## Dormancy and pretreatment

The seeds are not dormant and pretreatment is not necessary. Germination can be enhanced by imbibition in water before sowing.



Seeds of *Dyera costulata.*
Photo: BPTH Sumatra

## Sowing and germination

Fully mature seeds germinate well, 80-90%. Seeds extracted from immature pods have lower viability and take longer time to germinate. Germination is epigeal, i.e. the cotyledons appear above ground. The seed are sown in a mixture of peat or soil and sand (1:1) in shady conditions. It is recommended to sow them in a seedbed with a light cover of sand. The seedlings can be transplanted after the first pair of leaves has emerged.

## Vegetative propagation

Propagated by rooted cuttings e.g. from wildlings. The cuttings should be 0.5-1.5 cm in diameter and 30-40 cm in length. They should be soaked in rooting hormone such as Rootone-F prior to planting in a mixture of peat and sand (1:1). The cutting bed should be covered with transparent material (e.g. plastic) under shady conditions. By this method, 30% of rooted cuttings are ready for planting after 3 months.

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THIS NOTE WAS PREPARED IN COLLABORATION WITH THE REGIONAL TREE SEED CENTRE OF SUMATERA AND INDONESIA FOREST SEED PROJECT



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