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Diospyros malabarica (Desr.) Kostel.

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Diospyros malabarica (Desr.) Kostel.

Taxonomy and nomenclature

Family: Ebenaceae

Varieties: two varieties are distinguished, var. *malabarica* and var. *siamensis* (Hochr.) Phengklai (= *D. siamensis*).

Synonyms: *Diospyros glutinifera* Roxb., *Diospyros embryopteris* Pers., *Diospyros globularia* (Miq.) Koord & Valetton.

Vernacular/common names: Malabar ebony, mountain ebony, Indian persimmon (Eng.); tako-suan, tako-thai (Thailand), culiket (Sundanese), kledung (Javanese), klicung (Lombok), and kayu arang (Malaysia).



Fruits and seeds of *Diospyros malabarica*.

Distribution and habitat

The species is distributed from India and Sri Lanka in the northwest through SE Asia (Myanmar, Indo-China, Thailand, Peninsular Malaysia) to Sumatra, the Lesser Sunda Islands and Sulawesi. It is a lowland rainforest species occurring scattered in natural forest typically along rivers and streams up to 300 (- 650) m altitude, with rainfall of 1300-2750 mm/year, temperature 18-33°C and with a short and relatively humid dry season. The species can grow on shallow to deep soil with alkaline to neutral pH.

Uses

Primarily used for its highly decorative and valuable hardwood, which is used for furniture and wood carvings. Also used as raw material for boats and constructions (buildings, bridges etc.). Wood density at air-drying is 0.80-1.10 gram/cm³, it is very durable and strong (1. call timber). The ripe fruits are edible. Immature fruits contain tannin that can be used for dyeing. Seeds are used in medicine against diarrhoea and chronic dysentery.

Botanical description

Tall tree, up to 35 m, with clear bole up to 10-20 m, and 30-80 cm in diameter. The stem is cylindrical with black, scaly bark and beefy red inner bark. Leaves are alternate, glabrous, elliptical, 9-30 cm long and 2.5-9 cm wide.

Flowers unisexual and small. Male flowers in 3-7 flowered cymes, 4-5-merous with 24-64 stamens; female flowers solitary or rarely in up to 5-flowered inflorescences, 4-5-merous.

Fruit and seed description

Fruit: round berry with up to 6 seeds, 2-5 cm in diameter, usually slightly longer than wide, yellowish green when mature.

Seed: dark or blackish brown, elliptical or nearly rounded, 1-1.5 cm long and 0.5-0.75 wide. 1 kg contains about 1200 seeds.

Flowering and fruiting habit

The species is monoecious i.e. male and female flowers are on the same tree. Flowering and fruiting start at about 5-7 years of age and is regularly annual. Flowering season varies with site, it usually occurs when the new leaves emerge. In Lombok flowering usually occurs in January-March, in Sumbawa in April-May. Fruits ripen in September-November. Flowers are pollinated by insects. The species is facultative outcrossing, inbreeding results in imperfect fruits and/or high fruit abortion rate.

Harvest

When the fruits are mature they turn yellowish or green with brown stains and the pulp becomes sweet. The mature fruits are often heavily predated by bats, birds and monkeys and must be collected as soon as they mature to avoid them being removed by animals. Fruits are usually collected by climbing the trees and shaking down the fruits or by cutting fruit bearing twigs with long handled tools.

Processing and handling

Fruit pulp must be removed as soon as possible after harvest. Unprocessed fruits are transported in cotton bags, gunny sacks or banana stems. Nearly mature fruits may be after-ripened for 1-2 days during which the pulp will become soft and thus ease extraction. The seeds must be washed to remove the pulp completely. Good seeds have a dark brown colour.

Storage and viability

The seed is recalcitrant. It is to store the fruits in moist gunny sacks or banana stems. By using this method, viability can be kept up to 70% for 2-3 weeks. Fresh seed germinated with 90%.

Sowing and germination

Seeds should be sown in a mixture of sand and soil (1:1) and positioned horizontally or with the radicle pointing downwards. The distance between seeds should be 3-5 cm. Germination begins after about 3 weeks. Another method to germinate the seed is by soaking them in water for 1 hour, and then placing them in moistened gunny sacks. Germination occurs within 4 days and the seedlings are then transplanted into polybags that have been filled with a mixture of soil and compost (4:1). The seedlings will be ready for planting after 10 months.

In addition, bare root seedlings can be grown in the field at the age of 6-7 months when the seedlings have grown 4-5 leaves.

Phytosanitary problems

Fungi may attack the seed after a few days when germinated in moistened gunny sacks as the climate in gunny sacks is conducive to fungal development. Imperfect extraction where some pulp is left on the seed coat appears to be the site of fungal attack. If germinating seeds are attacked by fungi they can be washed with water to remove the fungi and then transferred to planting pots.



Young *D. malabarica* trees. Photo: Bambang Suprianto, BPTH Bali and Nusa Tenggara

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