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Manilkara kauki (L.) Dubard

Taxonomy and nomenclature

Family: Sapotaceae
Synonym: *Mimusops kauki L.*
Local name: sawo kecik (Java, Bali); kayu sawo (Java); sabo (Bali); sner (Queensland, Papua New Guinea); manilkara (trade name).
Related species: the genus *Manilkara* is a pantropical genus consisting of some 65 species. The most widespread and well known is *M. zapota*, which yields sapodilla fruits.

Distribution and habitat

Wide distribution possibly due to cultivation. The area of distribution stretches from Myanmar in the Northeast through Thailand, Indochina, Peninsula Malaysia, and Indonesia (except Kalimantan) to Papua New Guinea and north east of Australia. In Indonesia, the species occurs scattered in the south coast of Banyuwangi, in Karimun Island, Bali, Buton, Sulawesi, Kangena, We Island and Bima. The species grows mostly in coastal low land (including non-inundated land close to mangroves) up to 500 m altitude in relatively dry areas with good drainage, mostly sand or sandy clay regosol.

Uses

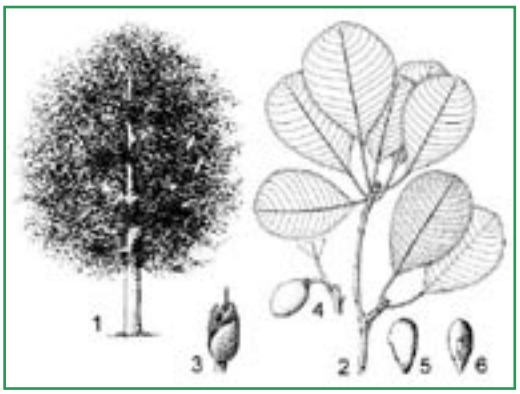
The species is mainly grown and used for wood which is used for heavy construction (house poles, bridge, railway pedestal, telephone poles), charcoal, flooring, furniture and carving. Heartwood is brown, dark brown or reddish brown, sometimes with the reddish lines. Sapwood is light brown. The fruits are edible. Flowers and seeds are used in traditional medicine. The species is used for rootstock for grafting of sapodilla (*M. zapota*).

Botanical description

Up to 25 m high with a diameter of 100 cm. Crown is dense and almost ovoid. Bole is low branched, sometimes columnar. Bark greyish-brown, cracked to deeply fissured with pink to reddish inner bark. Leaves spirally arranged at the end of twigs, simple, entire, leathery and silky white velvety beneath. Flowerbuds solid and ovoid. Flowers single or in small clusters in leaf axils. Calyx white yellowish with light red spots, up to 7 mm long. Flower usually bisexual.

Fruit and seed description

Fruit: 1-6 seeded ovoid berry. The mature fruit is reddish brown, about 3 cm long and 2 cm in diameter.
Seed: shiny brown, elliptic or abovoid, about 2 cm long, 1 cm wide and 0.75 cm thick. The seed coat (testa) is hard and contains saponin. There are 1100 -2200 seeds per kg.



1, tree habit, 2. leaves, 3. flower, 4. fruit, 5. side view of seed, 6. front view of seed. From: Plant Resources of South -East Asia 5:1.

Flowering and fruiting habit

Flowering and fruiting occur almost continuously throughout the year but with a peak season, which varies from place to place. In Bali main flowering is in December-February and main fruiting season in March-June with a peak fruiting season in April. In Cirebon (N. Java) the trees fruit in September-October, in Banten in November and in Banda Aceh in May.

Harvest

When the fruits are mature they are reddish brown and the seed has a moisture content of about 32%. Fruits may be picked manually from the trees after climbing. For tall trees, harvesting is assisted by a long pole stick with small bamboo basket on the end of the stick.

Processing and handling

During transportation the fruits are kept in gunny sacks. Mature fruit is cleaned from impurities (leaves and twigs), then moistened with water and kept for 2-3 days in a plastic container until the fruit flesh is soft. Seeds can then be extracted easily by hand. Seeds with mucus on the surface are rinsed in running water and air dried on wire gauze for 1-2 days.

Storage and viability

The seeds should be stored at a moisture content of 11-13% and kept in airtight containers and at low temperature (5-8ºC) and relative humidity 40-50%. This storage condition can maintain viability of seeds for 6-12 month. Seeds are often infested by insects which may multiply and re-infest sound seed in storage. Seeds that are visibly infested should be removed from the seed lot.

Dormancy and pretreatment

Clean processed seed do not have dormancy and require no pretreatment. However, soaking seeds in the water during 3 x 24 hours prior to sowing may enhance germination rate.

Sowing and Germination

Germination is epigeal i.e. the cotyledons emerge above ground. The seeds are sown horizontally with the hilum downwards and placed under shade during germination. As substrate can be used sand or a mix sand and soil (1:1). Seed may also be sown directly in polybags. Germination starts after 1-2 weeks. The seedling can be transplanted when the cotyledons have developed completely. The seedling is ready to be planted out when they have developed at least four leaves or at the age of one year. The species is sensitive to damping off infections and soil sterilisation is sometimes necessary.

Vegetative Propagation

Vegetative propagation e.g. by nodal cutting (length 20-25 cm, diameter 2-5 mm) dipped with Rootone-F and planted in sand. The cuttings will start rooting after 2-2,5 month with more than 50% rooting success.

Left: seed stand of *Manilkara kauki* in Sumber Kelampok, Bali. Photo: Jajat Hidayat. Right: mature fruits. Photo: www.nativehabitat.com

Selected readings

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