Mangifera caesia

Jack.

Anacardiaceae

machang

LOCAL NAMES
Danish (binjai); Filipino (bayuno); Indonesian (palong,binglu); Javanese (binglu); Malay (sedaman,beluno); Thai (lam-yaa,bin-ya); Trade name (machang)

BOTANIC DESCRIPTION
Mangifera caesia is a large tree, often attaining majestic proportions, 30(-45) m tall, and bole 50-80(-120) cm or more in diameter; bole columnar, without buttresses, crown dome-shaped with massive branches; bark greyish-brown, superficially fissured, containing irritant sap.

Leaves elliptic to lanceolate, more or less obovate, (7-)10-12(-30) cm x (3-)4-5.5(-10) cm, medium green and shiny above, paler below, often crowded at the end of stout branchlets, coriaceous, blunt or bluntly acuminate; midrib thick, flattened, raised above, base gradually decurrent; petiole stout, flattened, 1-1.5(-2.5) cm long.

Panicle terminal, 15-25(-40) cm long, much branched with stout rachis and branches, densely flowered, pale pink; flowers 5-merous, pale lilac, fragrant; petals linear, up to 10 mm long, not strongly reflexed as in most other mango flowers, only slightly reflexed in the upper part; fertile stamen 1, filament 5 mm long, white at base, purple towards the apex, 4 teeth-like staminodes; disc narrow, stipe-like, 1-1.5 mm long, pale green; ovary obliquely globose, reddish brown, style excentric, 8 mm long, white, becoming violet after anthesis.

Fruit an obovate-oblong drupe, necked at base, 12-15(-20) cm x 6-7(-12) cm; skin yellowish or pale brownish, very thin (1 mm); pulp whitish, soft and juicy, fibrous, with a peculiar sourish taste and strong smell at maturity. The 'wani' form: fruit ellipsoid, rounded, 9-11 cm x 6.5-7 cm, glossy pale green at maturity, flesh milky white; the best forms are almost fibreless with a sweet pleasant taste; stone ellipsoid-lanceolate, ca. 7 cm x 3.5-4 cm, not flattened, thin-walled, endocarp not woody, made of matted coarse fibres, monoembryonic.

Wild forms have sour fruits but there is a cultivar in Borneo and Bali with sweet, fibreless and tasty fruits. The smell of the fruit pulp is rather offensive, and the white juice of the immature fruit is very irritating to the skin and when ingested.

M. caesia closely resembles M. kemanga Blume, but differs in the longer petiole and the yellowish or whitish-green and smooth fruit.

BIOLOGY
The trees bloom profusely and old trees can produce thousands of fruits. The fruit ripens 3 months after anthesis. The fruits come to maturity during the rainy season, from November to March in eastern Kalimantan; flowering is between October and December. Trees in Sabah flower between February and April, the fruit ripens from August to October. M. caesia is deciduous, standing bare for some time before shedding the very large bud scales that envelop new twigs and inflorescences.

Mangifera caesia Jack.

machang Anacardiaceae

ECOLOGY
M. caesia are restricted to the wet tropical lowlands, generally below 400 m (rarely up to 800 m). It require a rainfall which is evenly distributed through the year. It also stand inundation well and are commonly cultivated on periodically inundated riverbanks in East Kalimantan. It is rather rare in forests and found more frequently in periodically inundated areas and marshes.

BIOPHYSICAL LIMITS
Altitude: Below 400 m (rarely up to 800 m).

DOCUMENTED SPECIES DISTRIBUTION

Native: Malaysia
Exotic: Indonesia, Papua New Guinea, Philippines, Thailand

The map above shows countries where the species has been planted. It does neither suggest that the species can be planted in every ecological zone within that country, nor that the species can not be planted in other countries than those depicted. Since some tree species are invasive, you need to follow biosafety procedures that apply to your planting site.

Mangifera caesia Jack.

Anacardiaceae

machang

PRODUCTS
Food: The juicy, sweetish-sour binjai fruit can be eaten fresh when ripe. The 'wani' form, which is mainly found in Bali but also in East Kalimantan, is much liked this way and fetches a high price in local markets, as the fruit is palatable, juicy and sweet, almost fibreless, the foetid rank smell being completely absent. It is excellent for making creamy juices. Binjai is often used to prepare a spice based on chillies ('sambal') which is eaten with river fish. In some areas the flesh of ripe fruit is pickled and preserved with salt in jars, to be able to make this sambal when there is no fresh fruit.

About 65% of the binjai fruit is edible. Per 100 g edible portion the constituents are: water 86.5 g, protein 1 g, fat 0.2 g, carbohydrates including fibre 11.9 g, ash 0.4 g, thiamine 0.08 mg, beta-carotene equivalent 0.005 mg and vitamin C 58 mg. The energy value is 200 kJ/100 g.

Timber: The density of the wood is 410-570 kg/m cubic at 15% moisture content. The wood is used for light construction.

Poison: The white juice of the immature binjai fruit is extremely irritant, both on the skin and when ingested,

SERVICES

TREE MANAGEMENT
Mature trees require much space, 12-16 m each way. No particulars about husbandry or yield levels have been published.

GERMPLASM MANAGEMENT

PESTS AND DISEASES
No particulars about pests and diseases have been published.

FURTHER READNG

Boer E. et al. 1995. Mangifera L. In Lemmens, R.H.M.J., Soerianegara, I. & Wong, W.C. (Eds.): Plant Resources of South-East Asia. No. 5(2): Timber trees: Minor commercial timber. Prosea Foundation, Bogor, Indonesia. pp. 325-329.

Bompard JM. 1992. Mangifera caesia Jack and Mangifera kemanga Blume. In Coronel, R.E. & Verheij, E.W.M. (Eds.): Plant Resources of South-East Asia. No. 2: Edible fruits and nuts. Prosea Foundation, Bogor, Indonesia. pp. 207-209.

Burkill IH. 1966. A dictionary of the economic products of the Malay Peninsula. Revised reprint. 2 volumes. Ministry of Agriculture and Co-operatives, Kuala Lumpur, Malaysia. Vol. 1 (A-H) pp. 1-1240. Vol. 2 (I-Z) pp. 1241-2444.

Ding Hou. 1978. Anacardiaceae. In: van Steenis, CGGJ. (Editor): Flora Malesiana. Series 1. Vol. 8. pp. 438-439.

Kostermans, AJGH. 1965. New and critical Malaysian plants. VII. Mangifera caesia Jack. Reinwardtia. 7(1): 19-20.

Martin FW, Campbell CW & Ruberte RM. 1987. Perennial edible fruits of tropics: an inventory. US Department of Agriculture, Agriculture Handbook No. 642. 252 pp.

Murkherjee, P.K., et al. 1998. Studies on the anti-diarrhoea profiles of Bauhinia purpurea Linn. Leaves (Fam. Caesalpiniaceae) extract. Natural product sciences 4(4): 234-237.

Wong KC, Wong SW, Siew SS and Tie DY. 1994. Volatile constituents of the fruits of Lansium domesticum Correa (duku and langsat) and Baccaurea motleyana (Muell. Arg.) Muell. Arg. (rambai). Flavour and Fragrance Journal. 9(6): 319-324.

SUGGESTED CITATION

Orwa C, Mutua A , Kindt R , Jamnadass R, Simons A. 2009. Agroforestree Database:a tree reference and selection guide version 4.0 (http://www.worldagroforestry.org/af/treedb/)