

**LOCAL NAMES**

English (saipan mango); Filipino (uani,kuwini); French (manguier,Mangue odorante); Indonesian (kuweni,kaweni,Bembem); Malay (wani,huani); Thai (Ma-mut,mamuang chingreet)

**BOTANIC DESCRIPTION**

*Mangifera odorata* is a medium-sized tree, 10-15 m, rarely exceeding 20 m height; crown globose or broadly ovoid; bole straight, bark grey, containing irritant sap.

Leaves irregularly scattered on rather thick branchlets, oblong-lanceolate, 12-35 cm x 4-10 cm, coriaceous-chartaceous, edge not wavy, shortly acuminate, with prominent reticulated veins especially on the lower surface, not or hardly odorous when bruised, petiole 3-7 cm, swollen at base.

Panicles terminal, pyramidal, 15-50 cm long, rather densely flowered, rachis yellowish-green tinged with reddish-brown; flowers 5(-6)-merous, ca. 6 mm wide, fragrant; sepals ovate, 3-4 mm long, brown-red or partly green; petals lanceolate, ca. 5-6 mm x 1.2-2 mm, yellowish at the base, pale pinkish towards the apex, reflexed, with 3-5 fingers ('ridges') on ca. 2/3 of the length of the petals, confluent at the base, pale yellow becoming dark red; stamens 5(-6), only 1 fertile, filament 5 mm long, staminodes 1.5-2 mm long; ovary subglobose, yellowish, style excentric, 3-5 mm long, dark red.

Fruit an obliquely ellipsoid-oblong, hardly flattened drupe, 10-13 cm x 6-9 cm, green to yellowish-green, sparingly spotted with dark brown lenticels; rind rather thick (3-4 mm); flesh orange-yellow, firm, fibrous, sourish-sweet, juicy, with a pungent smell and taste of turpentine. Stone 8-10 cm x 4.5-5 cm x 2.5-3 cm, covered with rather soft fibres.

Seed frequently polyembryonic.

The species possibly represents hybrid forms between *M. indica* and *M. foetida*.

*M. odorata* is a polymorphic species. In West Java several forms are distinguished: - 'bembem', an inferior form: the fruit has a strong smell and taste of turpentine reminiscent of the fruit of *M. foetida*, the leaves are coriaceous; - 'kaweni', with less fibrous flesh and a mild taste of turpentine; the best forms are very palatable; - 'gandarassa' of the Banten area in West Java, a rare and poorly known form which is said to be superior to 'kaweni', less sweet but more juicy and with a less strong smell. In the Philippines 'sangay', known from Jolo, is distinguished by its yellow colour at maturity from the greenish 'huani' fruit.

**BIOLOGY**

Major fruit season in West Java is from August to November.

**ECOLOGY**

*M. odorata* thrives below 1000 m in tropical areas with a fairly heavy rainfall that is equally distributed throughout the year, although it grows even with a moderate rainfall (1200 mm) provided there are no prolonged dry periods. It is found for instance on the dry islands of the western part of the Sulu Archipelago.

**BIOPHYSICAL LIMITS**

Altitude: Below 1000 m.

**DOCUMENTED SPECIES DISTRIBUTION**

Native: Indonesia, Malaysia, Philippines, Thailand, Vietnam

Exotic:



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.

**PRODUCTS**

Food: The kuwini is a popular fruit, having local economic significance in areas where *Mangifera indica* L. cannot be grown satisfactorily because the climate is very wet. The fruits, especially those that are less fibrous and smell less strongly, are much appreciated as table fruit. They must be peeled thick because of the presence of an acrid juice in the skin, which can also be reduced by steeping in diluted lime-water before eating. They are also used for making chutney and for pickles with salt. In Java a kind of flour is made of the seed kernels and used in the preparation of delicacies such as 'dodol' (based on glutinous rice) and 'jenang pelok' (a thick pappy preparation from *Curcuma* rhizomes).

About 70% of the fruit is edible. Per 100 g edible portion the fruit contains: water 80 g, protein 0.9 g, fat 0.1 g, carbohydrates including fibre 18.5 g, ash 0.6 g, beta-carotene equivalent 0.36 mg, thiamine 0.04 mg, riboflavin 0.06 mg, niacin 0.7 mg and vitamin C 13 mg. The energy value is 290 kJ/100 g.

Medicine: In folk medicine, the bark is recommended for external application in hystero-epilepsy, in the form of a compound like a cosmetic mixture.

Timber: The wood is used locally as machang, but is reportedly of poor quality.

**SERVICES**

**TREE MANAGEMENT**

Plantation: Planting distance is 12-14 m.

It is mainly grown mixed with other tree species in homegardens and village orchards. It is a dominant fruit tree in some villages specialized in kuwini production near Solok, West Sumatra, where vegetables or bananas are grown under the relatively light foliage of old trees.

**GERMPLASM MANAGEMENT**

**PESTS AND DISEASES**

Pests: The fruits are commonly damaged by larvae of the mango weevil (*Cryptorrhynchus gravis*), which feed on the flesh and occasionally on the seed. Caterpillars of *Philotroctis eutrapphera* and *Noorda albizonalis* also bore into the fruit.

**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.
- Bondad, N. 1982. Mango nad its relatives in the Philippines. *Philippine Geographical Journal*. 26.(2): 88-100.
- Ding Hou. 1978. Anacardiaceae. In: van Steenis, CGGJ. (Editor): *Flora Malesiana*. Series 1. Vol. 8. pp. 438-439.
- Eiadthong, W., K. Yonemori, et al. (1999). Analysis of phylogenetic relationships in *Mangifera* by restriction site analysis of an amplified region of cpDNA. *Scientia Horticulturae Amsterdam*. 80(3-4): 145-155.
- Martin FW, Campbell CW & Ruberte RM. 1987. Perennial edible fruits of tropics: an inventory. US Department of Agriculture, Agriculture Handbook No. 642. 252 pp.
- Weyerstahl, P., S. Schneider, et al. (1993). The essential oil of *Artemisia sieberi* Bess. *Flavour and Fragrance Journal*. 8(3): 139-145.
- Wong KC and Ong CH. 1993. Volatile components of the fruits of Bachang (*Mangifera foetida* Lour.) and Kuini (*Mangifera odorata* Griff.). *Flavour and Fragrance Journal*. 8(3): 147-151.

**SUGGESTED CITATION**

Orwa C, A Mutua, Kindt R, Jamnadass R, S Anthony. 2009 *Agroforestry Database: a tree reference and selection guide version 4.0* (<http://www.worldagroforestry.org/sites/treedbs/treedatabases.asp>)