

## **Mangifera foetida**

machang

Lour.

Anacardiaceae

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### LOCAL NAMES

Burmese (la-mot); English (bambangan, horse mango); Filipino (horse mango); French (mangue fetide, bachang); Indonesian (limus, membacang, bacang); Javanese (limus); Malay (bacang, macang); Thai (maa-chang, malamut, mamujt, ma chae); Trade name (machang); Vietnamese (xoai hoi)

### BOTANIC DESCRIPTION

*Mangifera foetida* is a tree up to 30-35 m tall, straight bole without buttresses, bark light brown to dark greyish-brown, shallowly fissured with broad flat ridges, containing irritant whitish sap turning black on exposure; crown dense, foliage dark green, branches massive.

Leaves elliptic-oblong to broadly elliptic, sometimes oblanceolate, 15-40 cm x 9-15 cm, stiffly coriaceous, dark green above, clear green below, apex sub-acute, sometimes rounded or slightly emarginate, base cuneate or attenuate, more or less bullate between the nerves; petiole 1.5-8 cm, stout, very swollen at the base.

Panicles subterminal, upright, pyramidal, 10-40 cm long, sparsely branched, rather densely flowered, deep reddish-pink, inflorescence axes stout, deeply red to copper red; flowers 5-merous, scentless; sepals obovate-lanceolate, 4-5 mm long; petals narrowly lanceolate, 6-9 mm x 1.5-2.5 mm, pale reddish-pink at the base, pale yellow towards the apex, reflexed; stamens 5, 1(-2) fertile, filament ca. 8 mm long, pinkish-purple, anthers dark violet, other ones smaller, filaments connate at the base; ovary subglobose, yellow, style excentric, white, 6-7 mm long.

Fruit variable in size and shape, an obliquely ovoid-oblong or almost globose drupe, 9-14(-16) cm x 7-12 cm, dirty dark olive-green or yellowish-green, smooth, dull, with brown lenticels, nose reduced to a point or slightly prominent, rarely prominent, skin ca. 5 mm thick; flesh pale orange yellow or yellow, fibrous, juicy, with strong smell and taste of turpentine at its full extent. Stone plump, ca. 6 cm x 5 cm x 3 cm, coarsely fibrous; seed monoembryonic.

Different forms are recognized by local people. Small, almost globose fruits (e.g. 'limus piti' in West Java) are consistently distinguished from large and more oblong ones which are commonly sold in Malay markets. There is also another kind, with large, oblong fruits, remarkable for being hardly fibrous, and finer textured. In West Java, it is called 'limus tipung' ('tipung' meaning flour, referring to its fine texture). A similar kind ('asem linggau') was found in East Kalimantan, with, moreover, a large proportion of fruit having abortive seeds. Sizeable variability in fruit characters is recorded in Borneo, particularly in South Kalimantan.

### BIOLOGY

A striking form, commonly seen in markets in Sarawak, has deep yellow unripe fruits. Flowering in Sarawak is in May-August, fruit ripening in August-November. In East Kalimantan flowering is in April-September, ripening in August-January.

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### ECOLOGY

The species occur chiefly in primary lowland forest in the wet tropics. In Peninsular Malaysia, it is the most important representative of the machang trade group found scattered in natural forest. They are adapted to areas with abundant rainfall, evenly distributed over the year.

### BIOPHYSICAL LIMITS

Altitude: Up to 1000(-1500) m.

### DOCUMENTED SPECIES DISTRIBUTION

Native: India, Indonesia, Malaysia, Thailand

Exotic: Cambodia, Myanmar, Philippines, Vietnam



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.

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### **PRODUCTS**

**Food:** Fresh bachang fruit contain an irritant juice which may inflame the lips and mouth. At maturity the irritant juice is restricted to the skin, so that the ripe fruit can be eaten fresh if it is peeled fairly thick. It is a rather savoury fruit, in spite of its turpentine smell and the taste sometimes is likened to durian, but it is not generally valued as a table fruit. Unripe fruit, washed in salted water and sliced is used in vegetable salads ('rujak') and in a sour pickle ('asinan'). In Borneo, especially in East Kalimantan, the fruit commonly replaces tamarind as an acid ingredient in the preparation of sambal. In Malaysia it is used to make chutneys as well as pickles.

The edible portion of *M. foetida* represents 65% of fruit weight. Per 100 g edible portion the flesh contains: water 72.5 g, protein 1.4 g, carbohydrates 25.4 g, calcium 21 mg, phosphorus 15 mg, thiamine 0.03 mg, beta-carotene equivalent 0.218 mg and vitamin C 56 mg.

**Timber:** The density of the wood is 545-785 kg/m cubic at 15% moisture content. The wood is not durable, but is suitable for light indoor constructions, temporary constructions and plywood. Streaked heartwood is suitable for the manufacture of furniture.

**Medicine:** The leaves are said to be antipyretic and the seeds used against trichophytosis, scabies and eczema.

**Other products:** Orang Asli in Peninsular Malaysia reportedly used the sap to deepen tattoo scars.

### **SERVICES**

**Ornamental:** In flower *M. foetida* is a beautiful ornamental with upright inflorescences.

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### **TREE MANAGEMENT**

Spacing for orchard planting should be 14-16 m.

### **GERMPLASM MANAGEMENT**

### **PESTS AND DISEASES**

Pests: Trunk borers (*Rhytidodera simulans*, a longicorn beetle) may damage and kill branches, but the tree retains its viability. The attacks of the bark by *Arbela* are more superficial. The fruit is often damaged by the mango weevil, *Cryptorrhynchus mangiferae*, whose larvae feed in the flesh. The wood is liable to subterranean and drywood termite attack and fungal attack and during seasoning sometimes also to powder-post beetle attack.

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### **FURTHER READING**

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### **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>)