Mallotus philippensis

(Lamk) Muell. Arg.

Euphorbiaceae

monkey face tree

LOCAL NAMES

Burmese (hpawng-awn); Chinese (cukangcai,xiang guishu,feilibingtong,xiangtan,hong guoguo); English (monkey face tree); Filipino (tagusala); French (croton tinctorial,rottlière des teinturiers); Indonesian (galuga furu,kapasan,ki meyong); Lao (Sino-Tibetan) (kh'aay paax,khiiz moon,tangx thôôm); Malay (balik angin,kasirau,rambai kuching); Thai (khee nuea); Trade name (monkey face tree); Vietnamese (ba chia,canh kiên,rùm nao)

BOTANIC DESCRIPTION

A small to medium-sized monoecious tree, up to 25 m tall and with a bole up to 50 cm in diameter, but usually much less. Slash turning deep red. Branchlets reddish-brown glandular.

Leaves alternate and simple, more or less leathery, ovate to lanceolate, 5-16(-23) cm x 2-7(-9.5) cm, cuneate to rounded and with 2 glands at base, acute or acuminate at apex, entire, conspicuously 3-nerved, hairy and reddish glandular beneath; petiole 1-4(-10) cm long, puberulous and reddish-brown.

Male flowers in terminal and axillary, 2-10(-16) cm long, solitary or fascicled paniculates spikes, each flower with numerous stamens, small; female flowers in spikes or slender racemes, each flower with a stellate-hairy, 3-celled ovary with 3 papillose stigmas.

Fruit a depressed-globose, 3-lobed capsule, 5-7 mm x 8-10(-12) mm, stellate-puberulous and with abundant orange or reddish glandular granules, 3-seeded.

Seeds subglobose and black, ca. 4 mm across.

BIOLOGY

In the Philippines M. philippensis flowers from March to April and fruits mature in July-August. M. philippensis has extrafloral nectaries attracting ants.

ECOLOGY
M. philippensis has a widespread natural distribution, from the western Himalayas, through India, Sri Lanka, to southern China, and throughout Malesia to Australia and Melanesia. Sometimes gregarious but more usually mixed with other species, both in forests and in open scrubland. Kamala tree is common in evergreen forest, especially in secondary forest, and sometimes even dominant in the undergrowth. Kamala tree withstands considerable shade, it is frost-hardy and resistant to drought.

BIOPHYSICAL LIMITS
Altitude: 0-1600 m.
Mean annual temperature: 16-28 deg C
Mean annual rainfall: 800-2 000 mm
Soil type: M. philippensis tolerates a wide range of soli types, including infertile soils, limestone. Acid and rocky land.

DOCUMENTED SPECIES DISTRIBUTION

Native: Afghanistan, Australia, Bhutan, Cambodia, China, India, Indonesia, Japan, Laos, Malaysia, Myanmar, Nepal, Papua New Guinea, Philippines, Sri Lanka, Thailand, Yemen, Republic of

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: Kamala also serves as a preservative for vegetable oils and dairy products. Kamala also recorded to be used as a dye for food-stuffs and beverages, which seems unlikely because it is generally known as a purgative.

Fodder: The leaves are used as fodder, and in southern China M. philippensis is a host plant for lac insects.

Fuel: The wood is often used as fuelwood.

Fibre: The wood is suitable for paper pulp. The fibrous bark is used to make rope and artificial fur.

Timber: The wood is whitish to pale reddish-grey, often with darker streaks, and fairly close and straight grained; heartwood not distinct; somewhat lustrous, working to a smooth surface under tools, without characteristic odour or taste; hard and moderately heavy, averaging 770 kg/cubic metre. It shrinks considerably and is susceptible to insect attack. The wood is sometimes used as timber for implements.

Lipids: The seeds yield kamala seed oil which can be used as a substitute for tung oil, obtained from Aleurites spp., in the production of rapid-drying paints and varnishes. The seed oil is also used as a fixative in cosmetic preparations. The oil is also used as a fixative in cosmetic preparations and for colouring foodstuffs and beverages.

Tannin or dyestuff: The granules which cover the ripe fruit are used in India as a dye ('kamala') for dyeing silk and wool bright orange. A red dye has been extracted from the roots.

Medicine: In pharmacy kamala is used as anthelmintic and an extract of kamala in hexachlorethane may be useful in treating liver fluke in cattle. Kamala is also known to affect the fertility of animal and man. All parts of the tree can be applied externally to treat parasitic infections of the skin. The fruits and bark have been reported to be used medicinally to treat stomach ulcers and tapeworm.

SERVICES
Shade or shelter: In India M. philippensis is considered to be a valuable nurse tree for more important forest tree species, e.g. sal (Shorea robusta Gaertn.f.).

Reclamation: It readily colonizes fertile soils.

Intercropping: The tree is usually planted in rows with field crops.

TREE MANAGEMENT
The tree is light-demanding and readily colonizes exposed, fertile soil. It will tolerate light shade when young, but full overhead light is necessary for full vigour. The species coppices well. Loosening of soil and regular weeding are necessary for at least 2 years after sowing.

GERMPLASM MANAGEMENT
M. philippensis seed is collected from branches with mature fruit. Mature seed is classified as orthodox and is robust in its storage requirements. Dried seeds can be stored in gunny bags or in tins in a dry place for up to 6 months without losing viability.

PESTS AND DISEASES
Diseases: Several fungi causing rot have been reported to attack kamala tree.

Pests: The wood is susceptible to attack from insects, especially beetles, such as Monochamus bimaculatus, Xylotrechus smei, Agrilus malloti, Sinoxylon spp., Lyctus africanus, and Stromatium barbatum.

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SUGGESTED CITATION

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