Madhuca latifolia

Roxb.

Sapotaceae

mahua, butter tree

LOCAL NAMES
English (honey tree,butter tree); Hindi (tittinam,nattiluppai,mowa,moha,mahua,madurgam); Trade name (mahua,butter tree)

BOTANIC DESCRIPTION
Madhuca latifolia is a large, much branched deciduous tree up to 18 m high and 80 cm dbh. Bole short, crown rounded, bark grey to black with vertical cracks, exfoliating in thin scales.

Leaves oblong-shaped, rigid, clustered at the end of branches, 6-9 cm x 13-23 cm, thick and firm, exuding a milky sap when broken. Young leaves pinkish and wooly underneath.

Flowers cream, corollas fleshy, juicy, clustered at the end of branches.

Fruit ovoid, fleshy, greenish, 3-5 cm long, 1-4 seeded.

Seed large, 3-4 cm long, elliptical, flattened on one side.

The specific epithet latifolia is derived from the Latin Lati- (broad) and –folius (leaved).

BIOLOGY
Leaf fall occurs from February to April, flowers appear in March-April, fruits ripen from June to August. M. latifolia is long-lived and starts bearing from about the 10th year. A full grown tree can produce up to 90 kg of flowers in a year. It is believed to be pollinated by bats which feed on the corollas.

Madhuca latifolia Roxb.

Sapotaceae

mahua, butter tree

ECOLOGY
Mahua is a frost resisting tree of the dry tropics and sub-tropics, common in deciduous forests and dry sal plain forests. The tree is usually found scattered in pastures and cultivated fields in central India. It is extensively cultivated near villages.

BIOPHYSICAL LIMITS
Altitude: up to 1 200 m
Mean annual temperature: 2-46 deg C
Mean annual rainfall: 550-1 500 mm
Soil type: M. latifolia grows best in deep loamy or sandy-loam soils with good drainage, it also occurs on shallow bouldery, clayey and calcereous soils.

DOCUMENTED SPECIES DISTRIBUTION

Native: India
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 sweet, fleshy corolla is eaten fresh or dried, powdered and cooked with flour. The fruit contains valuable oil that is sometimes used for cooking by the locals. Outer fruit coat is eaten as a vegetable and the fleshy cotyledons are dried and ground into a meal. Ripe fruits are used for fermenting liquor.

Fodder: Leaves, flowers and fruits are lopped for goats and sheep. Seed cake is also fed to cattle.

Timber: The heartwood is reddish brown, strong, hard and durable; very heavy (929 kg/cu. m), takes a fine finish. It is used for house construction, naves and felloes of cartwheels, door and window frames.

Lipids: Oil from the fruit kernels principally consists of palmitic and stearic acids and is mainly used for soap and candle making.

Poison: Mahua oil is used to treat seeds against pest infestation.

Other products: De-fatted seed kernels contain 26-50 % saponin.

SERVICES
Erosion control: Mahua has a large spreading superficial root system that holds soil together.

Shade or shelter: The wide spreading crown provides shade for animals.

Reclamation: Mahua is planted on wasteland with hard lateritic soils in India.

Nitrogen fixing: Vesicular-arbuscular mycorrhizal associations and root colonization have been observed in mahua.

Soil improver: The seed cake has been used as fertilizer

Ornamental: Mahua is occasionally planted as an avenue tree.

Boundary or barrier or support: It is planted along the boundaries of fields.

Intercropping: M. latifolia can be raised with agricultural crops.

TREE MANAGEMENT
Mahua can be planted at a spacing of 3-8 m x 3-8 m and worked on 25-30 year coppice cycle to produce a mean annual increment of 3-5 cu. m/ha. Fire tracing and fencing of plantations are essential in the early stages along with clean weeding and soil working around seedlings. The tree is a light demander, drought resistant and frost hardy. It coppices well if felled in the hot season.

GERMPLASM MANAGEMENT
There are about 450 seeds/kg. Seeds are produced plentifully every second or third year. They lose viability within a short period and the oily fruit should be sown directly in the field as the seeds become available.

PESTS AND DISEASES
Stathmopoda basiplectra is a serious pest of seeds. Among the defoliators of the tree are Achaea janata, Anuga multiplicans, Bombotelia nugatrix, Metanastria hyrtaca and the larvae of Acrocercops euthycolona and A. phaeomorphia mine the leaves. Unaspis acuminata is a sap sucker and Indarbella quadrinotata feeds on the bark. The fungi, Polystictus steinheilianus causes decay in felled timber, Fomes caryophylli causes heartrot; Cercospora haticola causes leaf spot and Scopella echimulata is a leaf rust. Loranthus is a serious pest of trees in some localities. Leaf blight is caused by Pestalotiopsis dichaeta.

FURTHER READNG

Hocking D. 1993. Trees for Drylands. Oxford & IBH Publishing Co. New Delhi.

Ram Prasad and Prasad R. 1991. Mahua: the tree of the poor. Journal of Tropical Forestry. 7(3): 171-179.

Singh RV. 1982. Fodder trees of India. Oxford & IBH Co. New Delhi, India.

Thapar HS, Vijyan AK, Kamla-Uniyal and Uniyal K. 1992. Vesicular-arbuscular mycorrhizal associations and root colonization in some important tree species. Indian Forester. 118(3): 207-212.

SUGGESTED CITATION

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