Maesopsis eminii

Engl.

Rhamnaceae

mutere, musizi

LOCAL NAMES
English (umbrella tree); Indonesian (kayu afrika); Luganda (musizi,musinde,muside); Swahili (ndunga,msizi); Trade name (mutere,musizi)

BOTANIC DESCRIPTION
Maesopsis eminii is a large African forest tree introduced to many parts of the tropics and grown in monoculture plantations as a fast growing timber tree. This leafy, semi-deciduous tree reaches 10-30 m in height with a clear bole up to 10 m. Branches rather horizontal, crown flattened when young, more rounded with age. Bark pale grey-brown, smooth or with deep, vertical, often twisted furrows; slash red outside, yellow near the wood.

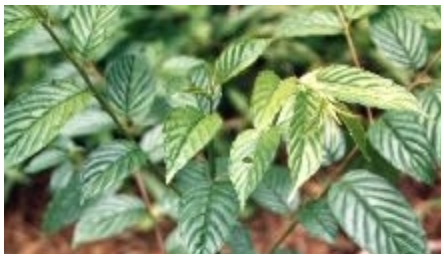
Leaves simple, opposite, subopposite or alternate, dentate. Petiole 1-2 cm long, canaliculate, red and pubescent. Stipules acute, small, 5-8 mm long. Blade elliptic-lanceolate, 6-15 x 2-5 cm, acuminate at the apex, rounded to subcordate and slightly asymmetrical at the base, with dentate margins and having a gland in each tooth, shiny above, glabrous.

M. eminii can be immediately identified by its leaves, with dentate margins bearing very visible glands on the dry leaves. It is characterized by the presence of domatia in the axil of the secondary nerves on the under surfaces.

Inflorescence a many-flowered axillary cyme, 1-5 cm long; peduncle 4-25 mm long; bisexual yellowish-green flowers, each 5-lobed with calyx larger than corolla, each lobe enclosing 1 sessile anther.

Fruit an obovoid drupe, 20-35 x 10-18 mm, turning from green to yellow to purple-black when maturing; mesocarp floury, cream coloured, endocarp creamy-brown. Has a hard stone containing 1-2 black seeds.

BIOLOGY
The sex expression and pollination system is poorly understood but flowers are thought to be hermaphrodite and protogynous and insects are the likely pollinating agent. Flowering and fruiting starts after four to ten years and large seed crops are produced every year often every six months. A number of birds, including hornbills, and monkeys dispersed the large drupe (2-3 cm). Seeds remain dormant for up to at least 200 days. Germination is not triggered by light but appears to be affected by lunar cycles and enhanced soil humidity promotes early germination.



(Manuel Bertomeu)

Mature tree in Kakamega Forest, Kenya (Anthony Simons)

Maesopsis eminii line planting in Kifu (Thomas Raussen)

ECOLOGY
A species of moist forests, widely distributed in forest regrowth and secondary regrowth. In Africa, M. eminii is very common in the ecozone between high forest and savannah. It is an early successional species, adept at colonizing grasslands and disturbed areas in the high forest. In the Budu Forest of Uganda, M. eminii and Piptadenia africana together constitute 80% of the trees. On Sese Island of Lake Victoria, it is found growing in association with Uapaca guineensis, Piptadeniastrum africanum and Canarium schweinfurthii. In the plain high forest or gallery forest of equatorial Sudan, it grows in association with Khaya grandifoliola, Chlorophora excelsa, Funtumia spp., Canarium spp., and Entandophragma spp. It is remarkably long lived for a pioneer species, attaining over 150 years.

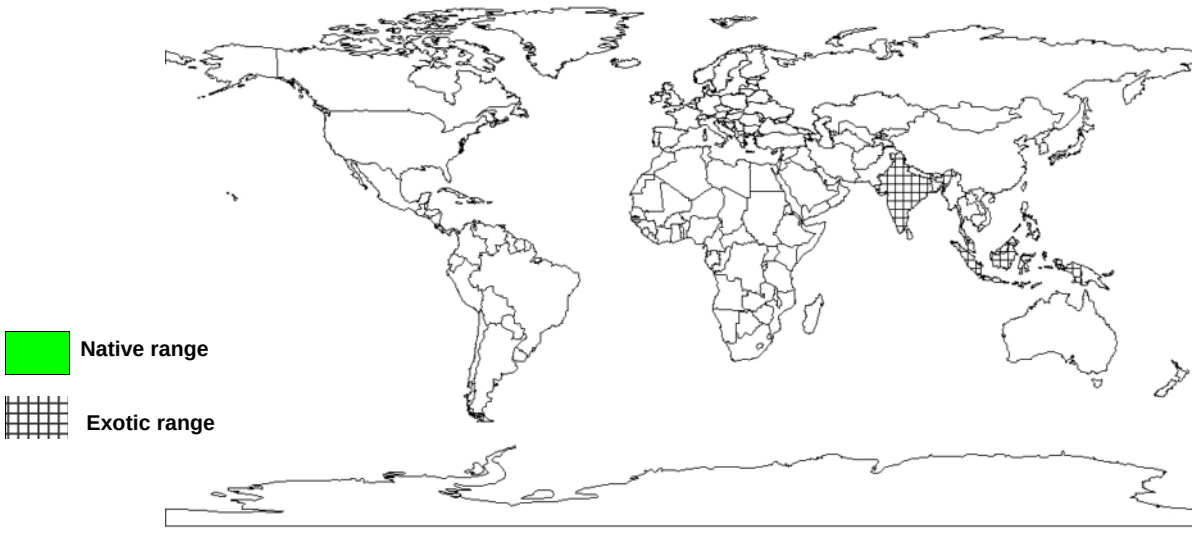
BIOPHYSICAL LIMITS
Altitude: 700-1500 m, Mean annual temperature: 22-27 deg. C, Mean annual rainfall: 1200-3000 mm

Soil type: M. eminii tolerates a wide range of site conditions but grows best on deep, moist and fertile sandy loam soils with a neutral to acid pH.

DOCUMENTED SPECIES DISTRIBUTION

Native: Angola, Benin, Burundi, Cameroon, Central African Republic, Congo, Cote d'Ivoire, Democratic Republic of Congo, Equatorial Guinea, Ethiopia, Gabon, Ghana, Kenya, Liberia, Niger, Rwanda, Sao Tome et Principe, Somalia, Sudan, Tanzania, Togo, Uganda, Zambia

Exotic: Costa Rica, Fiji, India, Indonesia, Malaysia, Puerto Rico



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
Fodder: The leaves are used as fodder. Digestibility of the leaves by livestock is excellent and only slightly reduced by heating. The leaves have a dry-matter content of 35%.

Fuel: Due to its fast growth, M. eminii is widely planted for fuelwood.

Fibre: Sometimes cultivated for fibre.

Timber: The sapwood is light coloured, heartwood brownish-olive to dark red, soft and light with a coarse grain. Wood density varies from 0.38 to 0.48 g/cubic cm. The wood dries rapidly, but logs have a tendency to split during felling and storage. The wood saws and machines easily, and its high absorbency makes it easy to treat with preservatives but difficult to finish. M. eminii wood is used in poles, boxes, crates, millwork, plywood, corestock and lumber construction. Untreated wood is vulnerable to termites and decays in contact with the ground or continual moisture.

Lipids: Analyses of M. eminii seed from Karnataka, India, indicate that they contain 40-50% of an edible oil, the main components of which are stearic acid, oleic acid and linoleic acid.

Medicine: A strong purgative and diuretic can be made by soaking the bark in cold water. The root bark is beaten with clay and used to treat gonorrhoea.

SERVICES
Shade or shelter: M. eminii has been successfully used as a shade tree, for example, for coffee in Uganda, cocoa in the Democratic Republic of Congo, and cardamom plantations in southern India. It is commonly retained in homegardens for shade.

Ornamental: M. eminii is a common ornamental planted along roads.

Reclamation: It is used for reforestation purposes, especially in Zaire.

TREE MANAGEMENT
A range of spacings have been used for planting: for example, for the taungya system in Ghana, a spacing of 1.8 x 2.7 m and 5 x 5 m has been used. In case of attack by Fusarium solani, selective thinning should be carried out to remove the affected stems. Thinning is required after the 5th year to allow a proper crown-to-stem ratio to develop. Established plantations may be coppiced. Rotations in plantations are kept at 30-40 years, as older trees are often wind thrown. Rotations are about 8 years for fuelwood, poles and pulp production.

GERMPLASM MANAGEMENT
Seed storage behaviour is orthodox; viability can be maintained for 1 year at cool temperatures with dry seeds; viability is maintained for several years in hermetic storage at 3 deg. C with 4-9% mc. There are 700-1000 seeds/kg when the pericarp is removed.

PESTS AND DISEASES
Pests include the cerambicid beetle Monohammus scabiosus, which excavates galleries into pole-sized stems, making the stem liable to snap off during high winds. Canker may form when the tree is attacked by a pathogenic complex of Fusarium solani and Volutella spp. Browsing animals can also do considerable damage to seedlings and saplings. In Uganda a canker, caused by Fusarium solani was described in young trees growing in poor soil.

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USDA Wood Technical Fact Sheets (http://www2.fpl.fs.fed.us/TechSheets/Chudnoff/African/htmlDocs%20africa/Maesopsiseminii)

SUGGESTED CITATION

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