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Moringa oleifera Lam.

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TRANSFORMING LIVES AND LANDSCAPES

Moringa oleifera Lam.

Taxonomy and nomenclature

Family: Moringaceae
Synonym: *Moringa pterygosperma* L., *Moringa polygoba* DC, *Guilamdia moringa* L.
Vernacular/common names: Horseradish-tree, Ben-oil tree, Drumstick-tree

Distribution and habitat

The geographical distribution ranges from subtropical dry to tropical most forest areas. Native to India, Arabia, and possibly Africa and the East Indies; widely cultivated and naturalized in tropical Africa, tropical America, Sri Lanka, India, Mexico, Malabar, Malaysia and the Philippine Islands.

Moringa is mostly a dry zone, hot region species, from about 250-1000 mm annual precipitation, but it is occasionally found in areas with less than 50 mm and in the Philippines it occurs also up to 3000 mm annual rainfall. Annual temperature range mostly between 18.7 and 28.5°C, but as the species occurs even above 1000 masl, it is likely to tolerate lower temperatures. It is reported in areas with tolerant to light frost. Grows best on a dry sandy soil and pH of 4.5 to 9. Drought resistant.

Uses

Almost every part of plant is of value for food. Seed is said to be eaten like a peanut in Malaya. Thickened root is used as substitute for horseradish. Foliage eaten as greens, in salads, in vegetable curries, as pickles and for seasoning. Pounded leaves used for scrubbing utensils and for cleaning walls. Seeds yield 38–40% of a non-drying oil, known as Ben Oil, used in paint and for lubricating watches and other delicate machinery. Oil is clear, sweet and odourless, never becoming harsk. It is edible and useful in the manufacture of perfumes and hairdressings. Wood yields blue dye. Leaves and young branches are relished by livestock. Commonly planted in Africa as a living fence (Hausa) tree. Bark can be used for tanning; it also yields a coarse fiber. All parts of the plants have wide applications in traditional medicines.

Botanical description

Short, slender, deciduous, perennial tree, growing to about 10 m tall; rather slender with drooping branches; branches and stems brittle, with corky bark. Leaves feathery, pale green, compound, 3-5-pinnate, 30–60 cm long, with many small leaflets, 1.3–2 cm long, 0.6–0.3 cm wide, lateral ones somewhat elliptic, terminal one obovate and slightly larger than the lateral ones. Main root thick. Inflorescence an erect spreading panicle. Flowers fragrant, white or creamy-white, 2.5 cm in diameter, 2 cm long, 5-merous; stamens yellow.

Moringa oleifera Lam.

Fruit and Seed description

Fruit: pendulous, brown, triangular, semi-dehiscent pods, splitting lengthwise into 3 parts when dry, 30–50 (-120) cm long, 1.5-2.5 cm wide, containing about 20 seeds embedded in the pith. Pod tapering at both ends, cross section triangular, 9-ribbed.

Seed: Seeds light or dark brown, sub-globose, 1-1.4 cm diameter, with 3 papery wings, 0.5-2.5 cm long. There are 3,700-6,000 seeds per kg.

Flowering and fruiting habit

The plant starts bearing pods as early as 6–8 months after planting but regular bearing commences only after the second year. The tree bears for several years. Flowering and fruiting often more or less continuously with some peak seasons. In India and Sri Lanka, fruiting may peak between March and April and again in September and October. In Indochina peak flowering is in January - February. Development from flower to green, vegetable size fruit is about 55-70 days, with additional 30-50 days to reach maturity. Individual, >3 year old, mature trees may produce from 600-1200 fruits per year, occasionally up to more than 2000.

Harvest

Maturity criteria are when pods are light brown and dry and start to split open. The mature pods are mostly harvested from the trees using long handled tools or pulling down fruit bearing branches.

Processing and handling

After drying the pods in the sun, the dried pods are put in a bag and threshed with a stick. The seeds are then separated from the chaff by hand or by winnowing. Seeds are dried in the sun with good aeration (thin layers of seeds) for approximately 3-5 days to reduce moisture content to between 5 and 8%.

Storage and viability

Seeds are orthodox / desiccation tolerant and can be stored dry and cold for several years without loss of viability.

Dormancy and pretreatment

Pre-sowing is not necessary

Sowing and germination

Germination is epigeal. Germination rate typically 50% - 90%. Germination starts in few days and all seeds have completed germination within 2 months. Seeds can be sown either in containers or directly at the planting site.

Vegetative propagation

Stem cuttings are usually preferred because they root easily. In India, the plant is propagated by planting 1–2 m long stake cuttings, from June to August. Shield budding is successful, and budded trees begin to bear fruit in 6 months and continue to give a good crop for more than 13 years.

Selected readings

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Seedleaflets are a series of species wise extension leaflets for tropical forest species with special emphasis on seed technology. Leaflets are compiled from existing literature and research available at the time of writing. In order to currently improve recommendations, FLD encourage feedback from users and researchers who have experience with the species. Comments, corrections, improvements and amendments will be incorporated into future edited leaflets. Please write your comments to: SL-International@life.ku.dk