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Terminalia myriocarpa van Heurck & Müll. Arg.

Taxonomy and nomenclature

Species name: *Terminalia myriocarpa* van Heurck & Müll. Arg.
Family: Combretaceae.
Vernacular/Common name: Hollock, panisaj, jhaluka, jhalna(Indian), East Indian Almond(English).

Distribution and habitat

The tree is distributed in tropical moist deciduous, semi-evergreen and evergreen forests of south-east Asia extending from southern parts of China, Nepal, Bhutan, Bangladesh, eastern India, Laos, Cambodia, Southern Vietnam, Myanmar, Thailand south to Penninsula Malaysia and Western Indonesia. It occurs from sea level up to an altitude of 2100 m. The mean annual maximum temperature of its natural habitat varies from 32-39°C and minimum is 4-7°C; annual rainfall from 1800-5000 mm. The tree grows best on soil with silt but with good drainage. It grows best in moist areas near the river banks with rich soil. In rocky and stony areas, the tree occurs locally in patches.

Use

The wood is hard and strong and has versatile use in construction and carpentry. The timber is extensively used in house-building in the form of scantlings, beams, rafters and planking. It is suitable for the manufacture of furniture and plywood for tea-chests. Formerly used e.g. for making match-boxes, internal fittings of truck bodies, railway sleepers, railway carriages, dugouts, oars, wells and cart shafts. The wood makes good quality charcoal. Bleached pulp is suitable for the production of wrapping, writing and printing papers. The bark is a cardiac stimulant, mild diuretic and used in medicine.

Botanical description

It is a large evergreen tree with buttresses at the base, spreading crown and pendulous branches reaching 30-48 m in height and 4-6 m in girth, with a clear bole of 15-18 m. Bark is grayish brown, peeling off in vertical flakes. Young plant parts and inflorescence are rusty pubescent. Leaves are opposite- sub-opposite, light green; petiole 0.5-1.5 cm, stout, with 2 stalked glands at the apex; leaf blade is oblong-elliptic or oblong-lanceolate, 10-25(-30) × 4-10(-15) cm, thickly papery, sparsely brownish hirsute above and on veins below when young, later becoming sparsely (except on veins) hairy below and subglabrous above; base is obtuse, margin entire or slightly undulate, rarely conspicuously dentate; apex with short, oblique tip; midvein yellow below; lateral veins are in 15-35 pairs. Inflorescences are terminal or axillary, simple or compound, long, slender spikes, many are grouped at branchlet apex and form a large panicle 18-30(-50) cm; axes densely yellow tomentose.

Flowers many, male and bisexual in same cluster, small, 3 mm long, pink with cup-shaped light yellow five-toothed calyx. Male flowers short-stalked, with 10 stamens. Bisexual flowers with short stamens, stalk-like base (hypanthium) finely hairy and containing inferior ovary, style, and dotted stigma.

Left: Flowers of *Terminalia myriocarpa*. Inset: close up of leaf. (Photoes Forest & Kim Starr)

Fruit and seed description

Fruits (drupes)/seeds are many, crowded and stalkless. They are pink - red when immature, becoming shiny yellowish when dry, single-seeded, three angular, developing 2 short membranous wings. Wings are opposite, oblong, equal, 3-6 mm long, 8-12 mm wide, membranous, sparsely pubescent – glabrescent. The de-winged seeds are tiny, with seed weight varying from 420-640 seeds per gram.

Flowering and fruiting habit

Flowers bisexual or male. The panicles appear in October to November and fruits mature in December to February. The tree normally bears a regular heavy seed crop each year, but occasionally a poor seed year may intervene.

Seed collection

Due to minute size of the seeds, care should be taken to collect the ripe fruits. Seeds can be collected after lopping the small branches bearing the fruit or from the felled trees. The best time of collection is when the fruits turn yellow at moisture content of 30-40 %. The seed are then dried under shade for two-to three days.

Branchlet with seed of *Terminalia myriocarpa*

Processing and handling

Fruits are separated from the branches and twigs, and then cleaned. The wings are removed by rubbing between hands or gently beating in a bag, and seeds are separated by winnowing or using a seed blower. Fruits often contain a large number of empty seeds (40-80 %). Winnowing/blowing can remove only 10-20 % of empty seeds; absorption in water is a more effective way to separate the filled seeds from the empty ones; empty seeds tend to float and can be 'skimmed off'.

Dormancy and pretreatment

Germination varies from 20-80 % depending on the percentage of empty seeds. Seeds have no dormancy and do not need any pretreatment.

Storage and viability

The seeds of *T. myriocarpa* are orthodox (desiccation tolerant) and can tolerate 4-5% moisture content and freezing temperature. Seeds maintain viability for more than 2 years if stored at 0°C to -20°C at 4-5 % moisture content. But viability is reduced to 50 % if stored at ambient temperature at the same moisture level. The main cause of death of seeds at any temperature is the increase of moisture content of seed, which occurs at relatively high air humidity and is aggravated by the hygroscopic nature of wing and seed coat. Removal of wings is therefore necessary before storage to prolong seed storability.

Sowing and Germination

The tree has also been successfully raised by direct sowing in the clear felled lines in the burnt strips (1.2 m wide with 2-4 m gap between two strips) that has given good growth and good competition with weed and climbers.

Phytosanitary problem

Some insects and fungus have been isolated that cause damage to the trees. Among the insects, *Lymantria mathura* (pink gypsy moth), *Lymantria bivittata*, *Thamnurgides glandis*, *Acrocercops terminaliae* are the prominent ones. *Fomes pachyphloeus* and *Schizophyllum commune* (wood rot) are the fungus species reported to be associated with *T. myriocarpa*.

Selected readings

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