

LOCAL NAMES

Burmese (kyetyoh); English (hairy-leafed molave); Indonesian (laban, kalapapa, gulimpapa); Malay (tinnok, samo-tinpet, leban tandok, leban buas, kulim papa); Thai (tinnok, samo-tinpet); Vietnamese (b[if]nh linh l[oo]ng)

BOTANIC DESCRIPTION

Vitex pubescens is a small to medium-sized evergreen tree, up to 25(-30) m tall, often with a crooked bole, up to 70 cm in diameter at breast height; bark surface smooth, shallowly fissured or flaky, pale grey to yellowish-brown, inner bark pale yellow to bright orange; branches quadrangular, crown often spreading.

Leaves opposite, compound, (3-)5 foliolate; leaflets and petioles pubescent below; lateral leaflet sessile or nearly so, elliptic, 10-20 cm long.

Inflorescence terminal, paniculate, with prominent bracts; calyx cup-shaped, 5-lobed, lobes subequal, c. 2 mm long, flowers bisexual, zygomorphic, corolla bluish-white to violet, 0.8-1.25 cm long, 2-lipped, upper lip 2-lobed, lower lip much larger and 3-lobed, pubescent outside; stamens 4, inserted on the corolla tube, exerted, didynamous. Ovary superior, 2-4-chambered, with 1 filiform style having a bifid stigma.

Fruit a drupe, subglobose, 7-13 mm in diameter, purplish-black when mature, sessile on the often enlarged calyx, 1-4 seeded.

Seed obovoid or oblong, lacking endosperm.

The specific epithet *pubescens* means hairy.

BIOLOGY

V. pubescens flowers from January-March in the Malay Peninsular, and generally during the rainy season with fruits ripening within a few months. Planted trees start to flower after 11-12 years in Java. *Vitex* species generally exhibit hermaphroditism, where both functional male and female organs are in the same flower (Lars Schmidt, 2000).

ECOLOGY

V. pubescens is common in comparatively dry regions in lowland forest, especially in more open habitats, secondary forests and river banks. It occurs gregariously in secondary forest and is a pioneer species in *Imperata cylindrica* (alang-alang) vegetation and recently burnt grasslands; it is moderately fire resistant.

BIOPHYSICAL LIMITS

Mean annual rainfall: 590-1 500 mm

Mean annual temperature: 20-32 deg.C

Altitude: 400-1 000 m

DOCUMENTED SPECIES DISTRIBUTION

Native: Bangladesh, Cambodia, India, Indonesia, Laos, Malaysia, Myanmar, Philippines, Sri Lanka, Thailand, Vietnam

Exotic: Guatemala



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

Fuel: *V. pubescens* wood produces a high quality charcoal that is compatible and competitive with mangrove charcoal in international markets.

Timber: The wood is brown, very hard and durable, with density of 800-950 kg/m³ at 15% moisture content. The timber though not commercially important due to its small dimensions is favoured locally for construction, boats and implements.

Medicine: In traditional medicine, a decoction of the bark of *V. pubescens* is used to treat stomachache, and a poultice of its leaves is used to treat fevers and wounds.

Other uses: A chemical (ecdysteroid), pinnatasterone (which showed low biological activity against *Musca domestica* larvae), together with 20-hydroxyecdysone and turkesterone, have been isolated from the Ethanol extract of bark.

SERVICES

Shade or shelter: *V. pubescens* is one of the recommended trees in its native range for planting as a shade tree.

Reclamation: The tree has been used in reclaiming imperata grasslands in Asia.

Ornamental: It is one of the recommended species to plant on roadsides.

TREE MANAGEMENT

Planting should be done early in the rainy season. Generally at 1 m x 3 m , occasionally at 1 m x 1-2 m on very fertile soils. Young trees grow moderately slowly, with a mean annual diameter increment of 0.6 cm and slightly over 1 cm in Myanmar and Java respectively. 1-year-old seedlings may reach 2 m in height, mean annual height increment for the first 15 years after planting is about 1 m. Survival of young seedlings is enhanced by removing weeds 3-4 months after planting and thereafter annually up to 10 years. For charcoal production, stands planted at densities of 2 500 trees/ha have yielded 16-18 tons of charcoal in 4 years.

GERMPLASM MANAGEMENT

There are 10 000-12 000 seeds/kg. Seeds start to germinate 10-40 days after sowing with a germination rate of 60-80 %. Soaking seeds in hot water for 15 seconds stimulates and increases germination. Seed can be stored for 1 year after depulping. Under dense forest canopy germination is completely inhibited, but seeds remain dormant and viable for more than 6 months. Seed under light shade differentiates into 2 fractions: one with seeds germinating within 2 months, the other with seeds remaining dormant and only germinating when exposed to full sunlight.

PESTS AND DISEASES

In the Philippines and Java, some insect pests are known to cause serious damage to 9-25 year-old trees, especially the carpenter moth (*Xyleutes ceramicus*), whose larvae may damage the cambium of trunk and branches. The black bug, *Tingide* spp. attacks young trees while larvae of *Chalcolampra pustulata* bore into the shoots. Trees may also be attacked by the teak defoliator, *Hyblaea parea* if planted near teak plantations.

FURTHER READNG

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SUGGESTED CITATION

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