

Durio zibethinus

durian

LOCAL NAMES

Burmese (du-yin); English (civet fruit, thurian, civet-cat tree, durian); Filipino (dulian); German (durianbaum, Zibetbaum); Indonesian (kadu, ambetan, duren); Javanese (duren, ambetan); Khmer (thu-réén); Lao (Sino-Tibetan) (thourièn); Malay (durian kampung, durian puteh); Swahili (mduriani); Thai (rian, thurian); Trade name (durian); Vietnamese (s[aaf]u ri[ee]ng, sâu riêng)

BOTANIC DESCRIPTION

Durio zibethinus is a medium to large buttressed tree, up to 45 m tall in dense lowland forests and 10-15 m in orchards and backyards; bark dark red brown, peeling off irregularly.

Leaves elliptic or lanceolate-elliptic, 10-15 cm long, 3-4 cm wide, papery; base acute; apex acuminate, upper surface glabrous, glossy, lower surface densely covered with silvery or golden scales; secondary veins in about 15 pairs, distinctly looping near the margin; venation indistinct below. Petioles 1-1.5 cm long, angular.

Flowers in fascicles of corymbose inflorescences. Pedicels 5-7 cm long; calyx saccate, flattened at the base, with tube about 2 cm long and 1.5 cm in diameter; petals white or creamy, spatulate, 5 cm long and 2 cm wide at the broadest part. Stamen white, 4 cm long in 5 distinct phalanges, each filament with up to 12 reniform anthers dehiscing by a slit. Ovary ovoid; style slender, 4 cm long, stigma yellow.

Fruit varies greatly in size; 15-25 cm in diameter, green to yellowish brown, with spines that are variable in length and shape. Seeds chestnut-brown, completely enclosed in a thick, white or yellow, soft, sweet, fragrant aril.

The generic epithet is derived from the Malay word 'duri' (thorn), alluding to the spiny fruit.

BIOLOGY

Durio species flower once or twice a year. The bisexual flowers open during the night and are pollinated by moths and other night-flying insects. In Thailand, the honeybee *Apis cerana* collects nectar early in the morning but no evidence has been obtained that it pollinates the flowers. At least one bat species, *Eonycteris spelaea*, pollinates *D. zibethinus* and its near relatives. Production of the durian fruit is seasonal and is prone to alternate bearing. The 2 main ripening seasons in Malaysia are November-February and June-August. Animals involved in the propagation of *D. zibethinus* include civet cat, elephant, tiger, deer, rhinoceros and monkeys. They are attracted by the durian scent and may ingest the seeds while feeding on the arils, thereby dispersing them.

Murray

Bombacaceae



(Manuel bertomeu)



(Manuel Bertomeu)



Durio zibethinus fruits split open. (Chris Gardiner)

Durio zibethinus

Murray

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ECOLOGY

Durian is strictly tropical; it grows successfully near the equator, and up to 18 deg from the equator in Thailand and Australia. At these extreme latitudes, extension growth comes to a halt during coolest months. It needs well-distributed rainfall, but a relatively dry spell stimulates and synchronizes flowering.

BIOPHYSICAL LIMITS

Altitude: 300-800 m, Mean annual temperature: 22 deg. C, Mean annual rainfall: 1500-2000 mm

Soil type: Soils should be deep, well-drained, light sandy or loamy, rather than heavy, to limit losses from root rot.

DOCUMENTED SPECIES DISTRIBUTION

Native: Indonesia, Malaysia

Exotic: Australia, Cambodia, Dominica, India, Myanmar, Papua New Guinea, Philippines, Singapore, Sri Lanka, Thailand, Vietnam, Zanzibar



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: Durian fruit is a good source of carbohydrates and also contains significant amounts of protein and vitamins B and C. Its rich pulp is eaten raw, cooked as a vegetable, frozen or dried for later use. Indonesians ferment the pulp for a side dish or mix the fleshy arils with rice and sugar to produce a local dish, lempung. The seeds can be boiled or roasted and used as confections.

Apiculture: The nectar and pollen that honeybees collect from the tree is an important honey source. The honey characteristics are however not known (Eva, Crane).

Timber: Heartwood is dark red. The relatively durable wood is used in interior construction and for making cheaper types of furniture and packing cases.

TREE MANAGEMENT

Young trees benefit from 30-50% shade until they are 1 m high, at which time they should be gradually introduced to full sun. The trees are mulched lightly on a regular basis with application of animal manure, watered well during the growing season and only sparingly in winter to induce prolific flowering in spring and early summer.

During the 1st years after planting, the trees are shaped by removing orthorpic limbs, including watershoots, and by thinning out plagiotropic laterals. Trees bear fruit best on limbs that are more or less horizontal; upright limbs contribute more to tree size and height. Pruning dominant upright laterals to maintain 1 central leader is essential.

The low productivity of durian orchards is attributed to low planting densities and a long juvenile phase. Intercropping with cocoa could improve productivity through several aspects of the cropping system, such as provision of shade.

GERMPLASM MANAGEMENT

Seeds are recalcitrant; they lose viability within 2 weeks. They tolerate desiccation to 41.5% mc if dried slowly, to 38.5% mc if dried rapidly. Excised embryos tolerated desiccation to 53.9% mc, and none survived further desiccation to 40.1% mc. There are between 60-70 seeds/kg.

PESTS AND DISEASES

Pests include scale insects, leaf-eating caterpillars and beetles, and trunk and branch borers. Two nematode pests, *Helicotylenchus* spp. and *Radopholus* spp., have also been reported.

In poorly drained soils, root rot or patch canker, caused by *Phytophthora palmivora* and *Pythium complectens*, can quickly kill trees shortly after the 1st symptoms appear. Associated with *Pythium* are secondary fungi such as *Diplodia* spp. and *Fusarium* spp. *Corticium salminicolor* causes pink disease; *Phyllosticta durionis*, and *Homostegia durionis* cause black and brown leaf spots. Leaves also suffer severe damage due to *Colletotrichum zibethinus* and *C. durionis*. Die-back of buddings is associated with *Diplodia* spp. and *Phomopsis* spp. Cultural practices, rather than deployment of resistant varieties, have historically tackled these disease problems. The younger trees, which are somewhat resistant, have often been used as rootstock to in-arch older, diseased trees.

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SUGGESTED CITATION

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