Lansium domesticum

Corr.

Meliaceae

LOCAL NAMES
Burmese (duku,langsak); English (Langsat,duku); Filipino (lanzone,lanzon,lansones,lansone,buahan); Indonesian (duku,kokosan,langsat); Malay (langseh,langsep,lansa); Thai (duku,longkong,langsat); Vietnamese (bòn-bon)

BOTANIC DESCRIPTION
Lansium domesticum is an erect, short-trunked, slender or spreading, reaching 10-15 m in height, with red-brown or yellow-brown, furrowed bark.

Leaves pinnate, 22.5-50 cm long, with 5-7 alternate leaflets, obovate or elliptic-oblong, pointed at both ends, 7-20 cm long, slightly leathery, dark-green and glossy on the upper surface, paler and dull beneath, and with prominent midrib.

Flowers small, white or pale-yellow, fleshy, mostly bisexual, borne in simple or branched racemes which may be solitary or in hairy clusters on the trunk and oldest branches, at first standing erect and finally pendant, 10-30 cm long.

Fruits borne 2-30 in a cluster, oval, ovoid-oblong or nearly round, 2.5-5 cm in diameter, and have light greyish-yellow to pale brownish or pink, velvety skin, leathery, thin or thick, and containing milky latex. There are 5 or 6 segments of aromatic, white, translucent, juicy flesh (arils), acid to subacid in flavour.

Seeds, which adhere more or less to the flesh, are usually present in 1 to 3 of the segments. They are green, relatively large, 2-2.5 cm long and 1.25-2 cm wide, very bitter, and sometimes, if the flesh clings tightly to the seed, it may acquire some of its bitterness.

There are two distinct botanical varieties; var. pubescens, the typical wild langsat which is a rather slender, open tree with hairy branchlets and nearly round, thick-skinned fruits having much milky latex and var. domesticum, called the duku, doekoe, or dookoo, which is a more robust tree, broad-topped and densely foliaged with conspicuously-veined leaflets; the fruits, borne few to a cluster, are oblong-ovoid or ellipsoid, with thin, brownish skin, only faintly aromatic and containing little or no milky latex. The former is often referred to as the wild type but both varieties are cultivated and show considerable range of form, size and quality. There are desirable types in both groups. Some small fruits are completely seedless and fairly sweet.

BIOLOGY
Langsats in Malaysia generally bear twice a year, in June-July and again in December-January or even until February. In India, the fruits ripen from April-September but in the Philippines the season is short and most of the fruits are off the market in less than one month.

(Manuel Bertomeu)

(Manuel Bertomeu)

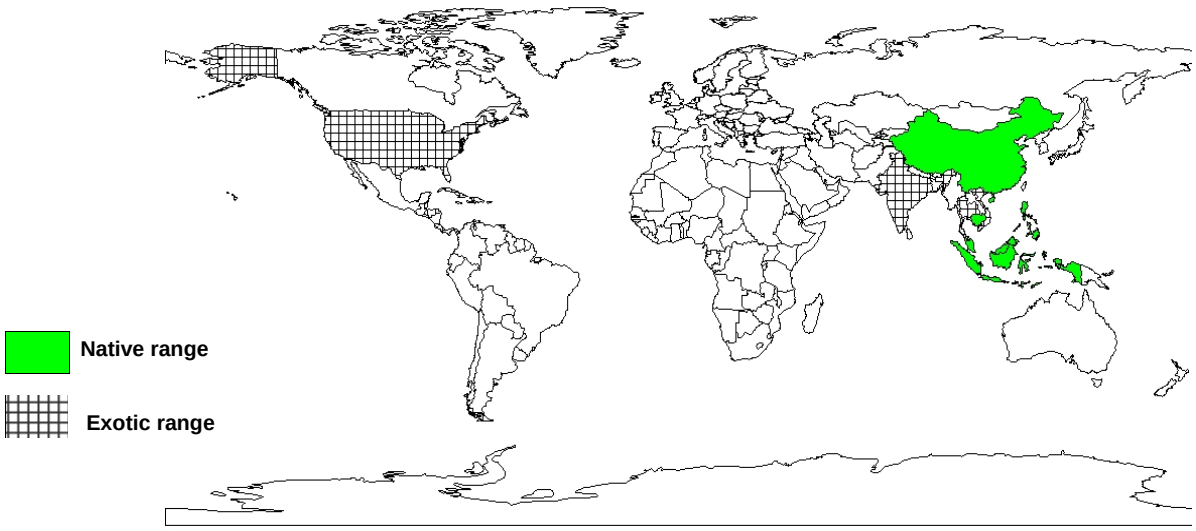
Interplanted commercial crops of langsat, dragon fruit (on concrete pillars), and coconut. (Craig Elevitch)

ECOLOGY
The langsat is ultra-tropical. It is a tree of tropical lowland forest and is damaged by frost. Even in its native territory it cannot be grown at an altitude over 650-750 m. It needs a humid atmosphere, plenty of moisture and will not tolerate long dry seasons. Some shade is beneficial especially during the early years. In Java the tree grows in areas with 6-12 wet months if there is over 100 mm rainfall monthly.

BIOPHYSICAL LIMITS
Altitude: 0-800 m
Mean annual temperature: 27 deg C
Soil type: The tree does best on deep, rich, well-drained, sandy loam or other soils that are slightly acid to neutral and high in organic matter. It is inclined to do poorly on clay that dries and cracks in rainless periods, and is not at all adapted to alkaline soils. It will not endure even a few days of waterlogging.

DOCUMENTED SPECIES DISTRIBUTION

Native: Cambodia, China, Indonesia, Malaysia, Philippines
Exotic: Cuba, Honduras, India, Puerto Rico, Surinam, Thailand, Trinidad and Tobago, US, Vietnam



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: The peel of the langsat is easily removed and the flesh is commonly eaten out-of-hand or served as dessert, and may be cooked in various ways. Varieties with much latex are best dipped into boiling water to eliminate the gumminess before peeling. The peeled, seedless or seeded fruits are canned in syrup or sometimes candied.

Timber: The wood is light-brown, medium-hard, fine-grained, tough, elastic and durable, weighing 840 kg/ cu m. It is utilized in Java for house posts, rafters, tool handles and small utensils. Wood tar, derived by distillation, is employed to blacken the teeth.

Gum or resin: The seed contains a minute amount of an unnamed alkaloid and 1% of an alcohol-soluble resin. The fresh peel contains a brown resin and reducing acids, from the dried peel, a dark, semi-liquid oleoresin composed of 0.17 % volatile oil and 22% resin is obtained.

Tannin or dyestuff: The peel is reportedly high in tannin.

Essential oil: The fresh peel contains 0.2% of a light-yellow volatile oil, from the dried peel, a dark, semi-liquid oleoresin composed of 0.17 % volatile oil and 22% resin is obtained.

Poison: An arrow poison is made from the fruit peel and the bark of the tree. Both possess a toxic property, lansium acid, which, on injection, arrests heartbeat in frogs. The seed contains a minute amount of an unnamed alkaloid and 2 bitter, toxic principles. The dried peel is burned in Java, the aromatic smoke serving as a mosquito repellent and as incense in the rooms of sick people.

Medicine: The resin is non-toxic and administered to halt diarrhoea and intestinal spasms. The pulverized seed is employed as a febrifuge and vermifuge. The bark is poulticed on scorpion stings. An astringent bark decoction is taken as a treatment for dysentery and malaria. Leaves may be combined with the bark in preparing the decoction. The leaf juice is used as eye-drops to dispel inflammation.

SERVICES
Reclamation: The tree is used in reforestation of hilly areas.

Boundary or barrier or support: In the Philippines they are frequently planted around the edges of coconut plantations.

TREE MANAGEMENT
The trees are spaced 8-10 m apart in orchards. Generally, the langsat is casually grown in dooryards and on roadsides and receives no cultural attention. Regular irrigation results in better fruit size and heavier crops. Thrice-yearly applications of a 6-6-6 fertilizer formula with added minor elements result in good growth, productivity and high quality fruits even in an adverse environment. In the Philippines, a productive tree averages 1 000 fruits per year, where it is grown in half shade interplanted with coconut. Seedlings will bear in 12-20 years.

GERMPLASM MANAGEMENT
Seeds are recalcitrant and viability can only be maintained for about 5 weeks if kept moist. Viability is totally lost in 8 days unless fresh seeds are stored in polyethylene bags at 4-6 deg C where they will remain viable for 14 days.

PESTS AND DISEASES
In Puerto Rico, young langsat trees have been defoliated by the sugarcane root borer (Diaprepes abbreviatus). Scale insects, especially Pseudaonidia articulatus and Pseudaulacaspis pentagona, and the red spider mite (Tetranychus bimaculatus), are sometimes found attacking the foliage, and sooty mold is apt to develop on the honey dew deposited by the scales. Rats gnaw on the branchlets, branches and the mature fruits. Anthracnose caused by Colletotrichum gloeosporioides is evidenced by brown spots and other blemishes on the fruit and peduncle and leads to premature shedding of fruits. Canker which makes the bark become rough and corky and flake off has appeared on langsats in Florida, Hawaii and Tahiti. It was believed to be caused by a fungus, Cephalosporium sp., and larvae of a member of the Tineidae have been observed feeding under the loosened bark. However, other fungi, Nectria sp. (perfect stage of Volutella sp.) and Phomopsis sp. are officially recorded as causes of stem gall canker on the langsat in Florida.

FURTHER READNG

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SUGGESTED CITATION

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