

Syzygium malaccense

(L.) Merr. & Perry

Myrtaceae

LOCAL NAMES

Burmese (thabyo-thabyay); English (wax jambu, malay-apple, long fruited rose-apple); Filipino (tersana, pomerac); French (poirier de Malaque); German (Apfel-Jambose); Indonesian (jambu bol); Malay (jambu bol); Spanish (Pomarrosa malay); Thai (chomphu-saraek); Vietnamese (cay roi)

BOTANIC DESCRIPTION

Syzygium malaccense is a tree to 20 m tall, with straight trunk, 20-45 cm diameter, often branched near the base and with broadly ovoid canopy.

Leaves opposite, elliptic-oblong, 15-38 cm x 7-20 cm, thick-coriaceous, petiole 0.5-1.5 cm long, thick, red when young.

Inflorescences exclusively on defoliate twig-parts, short and dense, 1-12-flowered; flowers 5-7 cm in diameter, red; calyx-tube ventricose towards apex, 1.5-2 cm long, with broad lobes 4-8 mm long; petals 4, oblong-ovate or orbicular-ovate, up to 2 cm long, dark red; stamens numerous, up to 3.5 cm long, with red filaments; style 3-4.5 cm long, red.

Fruit a berry, ellipsoid, 5-8 cm in diameter, crowned by the incurved non-fleshy calyx segments, dark red or purplish-yellow or yellow-white; flesh 0.5-2.5 cm thick, juicy, white, fragrant.

Seed 1 per fruit, globose, 2.5-3.5 cm in diameter, brown.

BIOLOGY

There are definite flowering seasons, often two, sometimes three in a year, but the timing varies from year to year. There seems to be no regular growth rhythm for Malay apple. Apparently the trees are triggered into bloom (by wet weather following a dry period) more readily than water apple (*S. aqueum*) and wax jambu (*S. samarangense*) trees; at any rate, Malay apple usually has the most crops per year. Malay apples ripen about 60 days after bloom. Polyembryony occurs in the genus and has been observed in Malay apple seed. Shoot growth proceeds in flushes which are more or less synchronous, depending on the climate. The juvenile period lasts for 3-7 years. Bearing of clonal trees starts after 3-5 years.



Rose apple fruit, about 2-3 inches long, are juicy and sweet, but do not store well. (Lee RF)



Rose apple or jambu tree in Brazil. This tree is about 10 meter high. Note the blossom petal drop beneath the tree. The tree blooms twice a year in most areas of Brazil. (Lee RF)



Laulau flower & leaves (French B.)

ECOLOGY

The trees are at home in fairly moist tropical lowlands up to 1200 m elevation. Malay apple is restricted to the wetter climates. The species require a reliable water supply and are often planted along streams or ponds.

BIOPHYSICAL LIMITS

Altitude: Up to 1200 m.

Soil types: The trees prefer heavy soils and easy access to water instead of having to search for water in light deep soils.

DOCUMENTED SPECIES DISTRIBUTION

Native: Indonesia, Malaysia

Exotic: Fiji, India



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 tree is grown for their fruit, which substitute for one another in the marketplace. Whereas *S. malaccense* can easily be recognized, it is not easy to distinguish between the various *S. aqueum* and *S. samarangense* fruits. The ripe fruit is sweet and is mainly eaten fresh. Malay apples are often stewed with other fruit to tone down the sour taste of the latter. The Malay apple is usually red with pink or white streaks; the flesh is thick, rather dry and scented, but often insipid. Eighty per cent or more of the fruit is edible. The composition of the species per 100 g edible portion is similar with *S. samarangense*: water more than 90%, protein 0.3 g, fat none, carbohydrates 3.9 g, fibre 1 g, vitamin A 253 IU, vitamin B1 and B2 traces, vitamin C 0.1 mg, energy value 80 kJ/100 g (analysis for *S. samarangense* in Thailand).

Timber: The wood is reddish, hard and grows to dimensions large enough for construction purposes.

Medicine: Various parts of the tree are used in traditional medicine, and some have in fact been shown to possess antibiotic activity. In particular the bark, leaves and roots of Malay apple are used against different ailments in a number of countries, also outside Asia (e.g. Hawaii, Brazil).

SERVICES

TREE MANAGEMENT

Tree spacing ranges from 6-8 m. The trees receive little attention after the first year or two when manuring, weeding, mulching and watering ensure rapid increase of tree volume. Trees which bear well benefit from compound fertilizers applied after harvest and supplemented with a top dressing as soon as the inflorescences are being formed. There appears to be no experience with pruning or fruit thinning. Malay apple yields of 20-85 kg/tree are reported.

GERMPLASM MANAGEMENT**PESTS AND DISEASES**

There are no specific recommendations for crop protection, but the incidence of pests and diseases certainly warrants a study of the causal organisms and their control.

FURTHER READING

Dunstan CA, Noreen Y, et al. 1997. Evaluation of some Samoan and Peruvian medicinal plants by prostaglandin biosynthesis and rat ear oedema assays. *Journal of Ethnopharmacology*. 57(1): 35-56.

Jensen M. 1995. *Trees commonly cultivated in Southeast Asia: An illustrated guide*. FAO Regional Office for Asia and the Pacific (RAP). Bangkok, Thailand.

Magness JR, Markle GM & Compton CC. 1971. *Food and feed crops of the United States*. Interregional Research Project IR-4, IR Bul. 1 (Bul. 828 New Jersey Agr. Expt. Sta.).

Martin FW, Campbell CW & Ruberte RM. 1987. *Perennial edible fruits of tropics: an inventory*. US Department of Agriculture, Agriculture Handbook No. 642. 252 pp.

Molesworth AB. 1967. *Malayan fruits*. Donald Moor Press Ltd., Singapore. pp. 115-125.

Morton J. 1987. Malay Apple. In: *Fruits of warm climates*. Creative Resource Systems, Winterville, N.C. pp. 378-383.

Noreen Y, Serrano G, et al. 1998. Flavan-3-ols isolated from some medicinal plants inhibiting COX-1 and COX-2 catalysed prostaglandin biosynthesis. *Planta Medica*. 64(6): 520-524.

Okuda T et al. 1982. Ellagitannins of the Casuarinaceae, Stachyuraceae and Myrtaceae. *Phytochemistry*. 21(12): 2871-2874.

Parnell J. 1999. Numerical analysis of Thai members of the Eugenia-Syzygium group (Myrtaceae). *Blumea*. 44(2): 351-379.

Shah K and Thanki YJ. 1998. Comparative nodal anatomy of some taxa of Myrtaceae. *Journal of Phytological Research*. 11(1): 57-59.

Verheij EWM, Coronel RE (eds.). 1991. *Plant Resources of South East Asia No 2. Edible fruits and nuts*. Backhuys Publishers, Leiden.

Walter A, Sam C. 2002. *Fruits of Oceania*. ACIAR Monograph No. 85. Canberra. 329 pp.

Whistler WA. 1988. A revision of *Syzygium* (Myrtaceae) in Samoa (Pacific Ocean). *Journal Of The Arnold Arboretum Harvard University*. 69(2): 167-192.

Wong KC. and Lai FY. 1996. Volatile constituents from the fruits of four *Syzygium* species grown in Malaysia. *Flavour and Fragrance Journal*. 11(1): 61-66.

SUGGESTED CITATION

Orwa C, Mutua A, Kindt R, Jamnadass R, Simons A. 2009. *Agroforestry Database: a tree reference and selection guide version 4.0* (<http://www.worldagroforestry.org/af/treedb/>)