

Averrhoa bilimbi

L.

Oxalidaceae

LOCAL NAMES

Creole (bimbling plum,blimblin); English (cucumber tree,bilimbi,tree sorrel); Filipino (kamias); French (blimblim,blinblin,cornichon des Indes,zibeline blonde,zibeline,carambolier bilimbi); Indonesian (belimbing asam,belimbing wuluh); Khmer (tralong tong); Malay (belimbing buloh,belimbing asam,b'ling,billing-billing); Spanish (tiriguro,pepino de Indias,mimbros,grosella china,vinagrillo); Thai (kaling pring,taling pling)

BOTANIC DESCRIPTION

Averrhoa bilimbi is an attractive, long-lived tree, reaching 5-10 m in height; has a short trunk soon dividing into a number of upright branches.

Leaves mainly clustered at the branch tips, are alternate, imparipinnate; 30-60 cm long, with 11-37 alternate or subopposite leaflets, ovate or oblong, with rounded base and pointed tip; downy; medium-green on the upper surface, pale on the underside; 2-10 cm long, 1.2-1.25 cm wide.

Flowers small, fragrant, auxiliary or cauliflorous, 5-petalled, yellowish-green or purplish marked with dark-purple, 10-22 mm long, borne in small, hairy panicles emerging directly from the trunk and oldest, thickest branches and some twigs, as do the clusters of curious fruits.

Fruit ellipsoid, obovoid or nearly cylindrical, faintly 5-sided, 4-10 cm long; capped by a thin, star-shaped calyx at the stem-end and tipped with 5 hair-like floral remnants at the apex. Crispy when unripe, the fruit turns from bright green to yellowish-green, ivory or nearly white when ripe and falls to the ground. The outer skin is glossy, very thin, soft and tender, and the flesh green, jelly-like, juicy and extremely acid.

There may be a few (6-7) flattened, disc-like seeds, 6 mm wide, smooth, brown.

The generic name is after Averrhoes (1126-98), the widely known Arab philosopher.

BIOLOGY

In India as in Florida, the tree begins to flower around February and then blooms and fruits more or less continuously until December.



This is a picture taken in the Philippines (Jerry E. Adrados)



Averrhoa bilimbi (Jerry E. Adrados)



Fruits (Trade winds fruit)

ECOLOGY

A. bilimbi is a tropical tree, more sensitive to cold than *A. carambola*, especially when very young. Ideally, it prefers seasonally humid climates, rainfall should be rather evenly distributed throughout most of the year but there should be a 2-3 month dry season. The tree makes slow growth in shady or semi-shady situations. It should be in full sun.

BIOPHYSICAL LIMITS

Altitude: 0-1200 m

Soil type: The tree does best in rich, moist, slightly acidic, well-drained soil, but also grows and fruits quite well on sand or limestone.

DOCUMENTED SPECIES DISTRIBUTION

Native: Indonesia, Malaysia

Exotic: Argentina, Australia, Brazil, Colombia, Cuba, Ecuador, Guyana, India, Jamaica, Myanmar, Philippines, Puerto Rico, Singapore, Sri Lanka, Surinam, Tanzania, Thailand, Trinidad and Tobago, US, Venezuela



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: *A. bilimbi* is generally regarded as too acidic for eating raw, but in Costa Rica, the green, uncooked fruits are prepared as a relish which is served with rice and beans or an accompaniment for fish and meat. Ripe fruits are frequently added to curries in the Far East. They yield 44.2% juice having a pH of 4.47, and the juice is popular for making cooling beverages. Mainly, the bilimbi is used in place of mango to make chutney, and it is much preserved. To reduce acidity, it may be first pricked and soaked in water overnight, or soaked in salted water for a shorter time; then it is boiled with much sugar to make a jam or an acid jelly. The latter, in Malaysia, is added to stewed fruits that are oversweet. Half-ripe fruits are salted, set out in the sun, and pickled in brine and can be thus kept for 3 months. A quicker pickle is made by putting the fruits and salt into boiling water. This product can be kept only 4-5 days. The flowers are sometimes preserved with sugar.

Timber: The wood is white, soft but tough, even-grained, and weighs 35 lbs/cu ft. It is seldom available for carpentry.

Medicine: In the Philippines, the leaves are applied as a paste or poulticed on itches, swellings of mumps and rheumatism, and on skin eruptions. Elsewhere, they are applied on bites of poisonous creatures. Malaysians take the leaves fresh or fermented as a treatment for venereal disease. A leaf infusion is a remedy for coughs and is taken after childbirth as a tonic. A leaf decoction is taken to relieve rectal inflammation. A flower infusion is said to be effective against coughs and thrush. In Java, the fruits combined with pepper are eaten to cause sweating when people are feeling "under the weather". A paste of pickled bilimbis is smeared all over the body to hasten recovery after a fever. The fruit conserve is administered as a treatment for coughs, beri-beri and biliousness. Syrup prepared from the fruit is taken as a cure for fever and inflammation and to stop rectal bleeding and alleviate internal hemorrhoids.

Other products: Very acid fruits are employed to clean the blade of a kris (dagger), and they serve as mordants in the preparation of an orange dye for silk fabrics. Because of its oxalic acid content, fruit juice is useful for bleaching stains from the hands and rust from white cloth, and also tarnish from brass.

SERVICES

Ornamental: Bilimbi is also grown in home gardens due to its attractive small purplish-red flowers borne in clusters along the trunk and branches. Bilimbi is attractive to bees, butterflies and/or birds.

GERMPLASM MANAGEMENT

The storage behaviour is intermediate and seed viability can be maintained for six months with partially dried (about 70% of harvest weight) seeds stored at 5°C. To break dormancy, seeds should be soaked for 24 hours before planting. Seeds should germinate in 14-21 days.

FURTHER READNG

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SUGGESTED CITATION

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