Pouteria campechiana

Baehni

Sapotaceae

LOCAL NAMES
English (yellow sapote,egg-fruit,canistel); Filipino (toesa,boracho); Spanish (zapote mante,zapote amarillo,mammee sapota,mamey de campechi,fruta de huevo,custiczapotl,cucuma); Thai (to maa,lamut khamen,khe maa)

BOTANIC DESCRIPTION
Pouteria campechiana is an erect tree and generally not more than 8 m tall, but it may, in favourable situations, reach height of 27-30 m and the trunk may attain diameter of 1 m. Slender in habit or with a spreading crown, it has brown, furrowed bark and abundant white, gummy latex. Young branches are velvety brown.

The evergreen leaves, alternate but mostly grouped at the branch tips, are relatively thin, glossy, short to long-stemmed, oblanceolate, lanceolate-oblong, or obovate, bluntly pointed at the apex, more sharply tapered at the base; 11.25-28 cm long, 4-7.5 cm wide.
Fragrant, bisexual flowers, solitary or in small clusters, are borne in the leaf axils or at leafless nodes on slender pedicels. They are 5- or 6-lobed, cream-colored, silky-hairy, about 8-11 mm long.

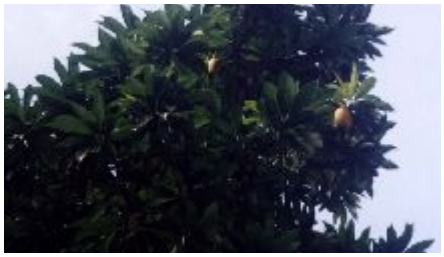
The fruit, extremely variable in form and size, may be nearly round, with or without a pointed apex or curved beak, or may be somewhat oval, ovoid, or spindle-shaped. It is often bulged on one side and there is a 5-pointed calyx at the base, which may be rounded, or with a distinct depression. Length varies from 7.5-12.5 cm and width from 5-7.5 cm, except in the shrubby form, var. palmeri, called huicon -1.5-3 m high–which has nearly round fruits only 2.5 cm long. When unripe the fruit is green-skinned, hard and gummy internally. On ripening, the skin turns lemon yellow, golden-yellow or pale orange-yellow, is very smooth and glossy except where occasionally coated with light-brown or reddish-brown russetting.

There may be 1 to 4 hard, freestone seeds, 2-5.3 cm long and 1.25-3.2 cm wide, near-oval or oblong-oval, glossy and chestnut-brown except for the straight or curved ventral side which is dull light-brown, tan or greyish-white. Both ends are sharp-tipped.

There are apparently no named cultivars but certain types are so distinct as to have been recorded as different species in the past. The spindle-shaped form (called mammee sapota or eggfruit) was the common strain in the Bahamas for many years, at least as far back as the 1920's. The rounded, broader form began to appear in special gardens in the 1940's, and the larger types were introduced from Florida in the 1950's.

BIOLOGY
There is considerable variation as to the time of flowering and fruiting among seedling trees. Blooming extends from January to June in Mexico. In Cuba, the bisexual flowers are borne mostly in April and May though some trees flower all year.

The fruits generally mature from September to January or February in the Bahamas, from November or December to February or March in Florida. In Cuba, the main fruiting season is from October to February but some trees produce more or less continuously throughout the year. The mature but still firm fruits should be clipped to avoid tearing the skin. When left to ripen on the tree, the fruits split at the stem end and fall.



Pouteria campechiana trees in fruit (Manuel Bertomeu)

Fruit and foliage (Trade winds fruit)

Foliage (Trade winds fruit)

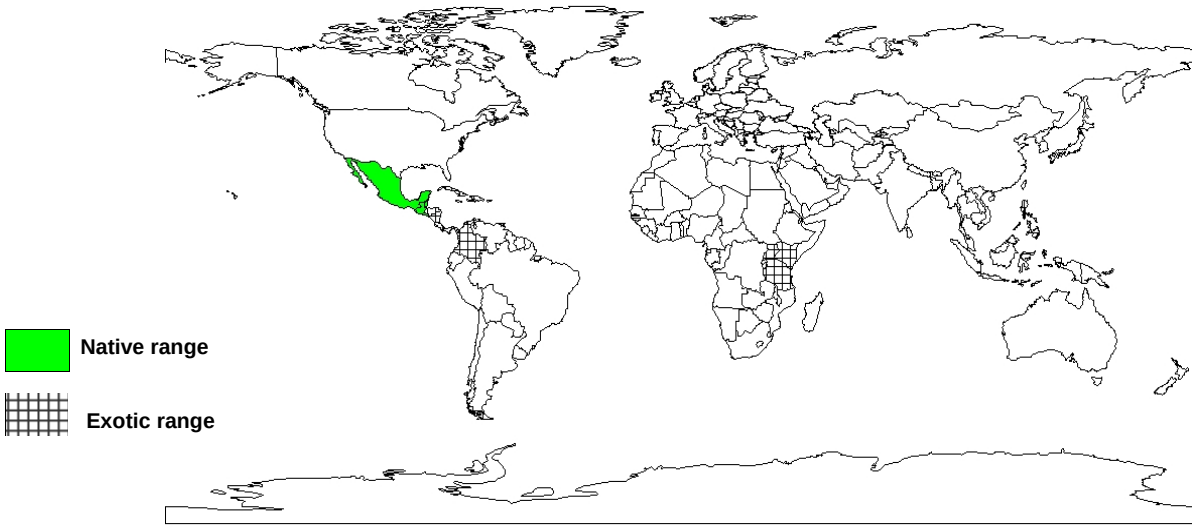
ECOLOGY
The canistel needs a tropical or subtropical climate. In Guatemala, it is found at or below 1 400 m elevation. In Florida, it survives winter cold as far north as Palm Beach and Punta Gorda and in protected areas of St. Petersburg. It has never reached fruiting age in California. It requires no more than moderate precipitation; does well in regions with a long dry season.

BIOPHYSICAL LIMITS
Soil type: The canister is tolerant of a diversity of soils–calcareous, lateritic, acid-sandy and heavy clays. It makes best vegetative growth in deep, fertile, well-drained soils but is said to be more fruitful on shallow soils. It can be cultivated on soil considered too thin and poor for most other fruit trees.

DOCUMENTED SPECIES DISTRIBUTION

Native: Bahamas, Belize, El Salvador, Guatemala, Mexico

Exotic: Colombia, Cuba, Honduras, Jamaica, Kenya, Nicaragua, Panama, Philippines, Puerto Rico, Tanzania, Uganda, US



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 fruit is edible, but not highly regarded; as it is not crispy and juicy like so many other fruits. Eaten with salt, pepper and lime or lemon juice or mayonnaise, either fresh or after light baking. It has been often likened in texture to the yolk of a hard-boiled egg. The pureed flesh may be used in custards or added to ice cream mix just before freezing. A rich milkshake, or "eggfruit nog", is made by combining ripe canistel pulp, milk, sugar, vanilla, nutmeg or other seasoning in an electric blender.
Others prepare canistel pancakes, cupcakes, jam, and marmalade", pie "butter" by beating the ripe pulp in an electric blender, adding sugar, and cooking to a paste, with or without lemon juice. The fruit could also be dehydrated and reduced to a nutritious powder as is being done with the lucmo (q.v.) and this might well have commercial use in pudding mixes. Canistels are rich in niacin and carotene (provitamin A) and have a fair level of ascorbic acid. Chemical analyses show that the canistel excels the glamorized carambola (Averrhoa carambola L.) in every respect except in moisture and fiber content, and riboflavin.

Timber: The fine-grained, compact, strong, moderate to very heavy and hard timber is valued especially for planks and rafters in construction. The heartwood is greyish-brown to reddish-brown and blends into the sapwood, which is somewhat lighter in color. The darker the color, the more resistant to decay.

Latex or rubber: Extracted from the tree in Central America has been used to adulterate chicle.

Medicine: A decoction of the astringent bark is taken as a febrifuge in Mexico and applied on skin eruptions in Cuba. A preparation of the seeds has been employed as a remedy for ulcers.

SERVICES
Shade or shelter: Provides considerable shade when mature.

TREE MANAGEMENT
Mulching is beneficial in the early years. A balanced fertilizer applied at time of planting and during periods of rapid growth is advisable though the tree does not demand special care. Outstanding branches should be pruned back to avoid wind damage and shape the crown.

PESTS AND DISEASES
The tree is nearly always vigorous and healthy. Few pests and diseases attack the canistel. In Florida only scale insects and the fungi, Acrotelium lucumae (rust); Colletotrichum gloeosporioides (fruit spot); Elsinoë lepagei (leaf spot and scab); and Gloeosporium (leaf necrosis) have been recorded for this species.

FURTHER READNG

http://www.hort.purdue.edu/newcrop/morton/canistel.html.

Negreros-Castillo P and Hall RB. 1994. Four methods for partial overstorey removal in tropical forests in Mexico. Journal of Environmental Management. 41(3): 237-243.

Pushpakumara DKNG. 2007. Chapter 16: Lavulu Pouteria campechiana Kunth Baehni.: In: Pushpakumara DKNG, Gunasena HPM, Singh VP. 2007 eds. Underutilized fruit trees in Sri Lanka. World Agroforestry Centre, South Asia Office, New Delhi, India. p. 426-436.

SUGGESTED CITATION

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