

## Genipa americana

L.

Rubiaceae

### LOCAL NAMES

Dutch (arasaloe,tapuripa); English (marmalade box,genipap); French (confiture de singe); Portuguese (guayatil,colorado,carcarutoto,caruto revalsero,guayatil,mandipa,nané); Spanish (jagua azul,genipapo,juito,genipa,maluco,jagua)

### BOTANIC DESCRIPTION

*Genipa americana* is a small to medium-sized deciduous tree, 8-20 m tall, occasionally up to 30 m, and a diameter of 30-80 cm. Trunk is usually tall and straight, crown dense and the lower branches more or less horizontal. The bark is thick and smooth.

Leaves simple, opposite, oblong-obovate, 10-35 cm long by 4-13 cm wide, short-petioled, sometimes faintly toothed, with prominent whitish midrib, clustered at the end of the branches. For each pair of leaves there are two stipules that often leave very distinct scars on falling off.

The Bisexual flowers are small (4cm wide), faintly fragrant, yellow-white, tubular and 5-petalled. They are borne in short, branched, terminal inflorescences.

Fruit a large berry, elliptic or rounded-oval, tapering briefly at the stem end. Measuring 9-15 cm long by 7-9 cm wide, each fruit weighs 200-400 g. Each fruit has a thin leathery skin and a soft yellow-brown mesocarp 1-2 cm thick. There are up to 300 seeds/fruit. Seed hard, flat, dark brown, 10-12 mm long, covered with the fibrous inner mesocarp.

### BIOLOGY

In the Amazon, genipap flowers in May-September and fruits in September-April. In Brazil, the tree flowers in November and the fruits appear in the markets in February and March. It takes up to one year for the fruits to mature. The trees begin to set fruits when they are about 6 years old. Bees mostly pollinate the flowers while fruits are dispersed either by water or by animals that feed on the soft pulp surrounding the seeds



fruit (TopTropicals.com)



bole (TopTropicals.com)



tree (TopTropicals.com)

**ECOLOGY**

The genipap is native to wet or moist areas and is widely distributed throughout the humid tropical and parts of subtropical Americas. It is found especially in the 'várzeas' the part of the Amazon forest, which lies next to rivers and is flooded annually for several months. It also extends into the open forest/savannah transition zone. In most places it is restricted to the lowlands. It is common in secondary forests on sites abandoned by shifting agriculture. Although reasonably represented in these vegetation types, its presence is rather scattered except where planted. It tolerates dry periods of up to 6 months but is sensitive to near zero temperatures

**BIOPHYSICAL LIMITS**

Altitude: 0-1000 m

Mean annual temperature: 18-28°C

Mean annual rainfall: 1200-4000 mm

Soil type: The genipap flourishes best in a deep, rich, loamy and moist soils

**DOCUMENTED SPECIES DISTRIBUTION**

Native: Argentina, Barbados, Belize, Bolivia, Brazil, Colombia, Costa Rica, Cuba, Ecuador, Guadeloupe, Guatemala, Haiti, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Puerto Rico, Trinidad and Tobago, Venezuela, Virgin Islands (US)

Exotic: Malaysia, Philippines



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 species is mainly grown for its fruits, a popular source of beverages. The pulp from mature fruits is cooked with sugar to produce syrup used for various beverages and deserts. It is a common practice in Puerto Rico to cut up the fruits, steep them in water until there is a little fermentation and then add flavoring and drink. As an edible fruit, it is rated low. The values for the edible portion (70%) of the fruit contains about 0.51% proteins, 11.21% carbohydrates, 4.30% sugar and 0.63% malic acid.

**Fodder:** Cattle readily eat the foliage. The fallen, astringent fruits are much eaten by wild and domestic animals

**Apiculture:** The flowers yield nectar for honeybees

**Fuel:** Saplings good for firewood

**Fibre:** It yields a fiber employed in making rough clothing

**Timber:** The wood is yellowish-white or sometimes slightly pinkish or lavender, with light, reddish-brown streaks. It is of good quality with fine grain and easy to work. It is used for cabinets, carvings, light construction and many other minor uses. It is neither durable nor resistant to termites, borers and fungi. Saplings are usually harvested at 5-6 years old for poles or fence posts

**Tannin or dyestuffs:** The bark is rich in tannins, used for treating leather. A dark blue body paint is made from the green fruits, which has been commonly employed by South American Indians to paint their faces and bodies for adornment, to repel insects, to dye clothing, hammocks, utensils and basket materials. The dye is indelible on the skin for 15 to 20 days. This was a very common use and probably the reason for the wide distribution of the species

**Medicine:** In El Salvador, the fruit is eaten as a remedy for jaundice and when eaten in large quantities, acts as a vermifuge. The fruit juice is given as a diuretic while the fruit infusion as a cold remedy. The crushed green fruit and the bark decoction are applied on venereal sores and pharyngitis. The root decoction is a strong purgative. The bark exudes a whitish, sweetish gum when cut. This is diluted and used as an eyewash and is claimed to alleviate corneal opacities. The flower decoction and juice from the leaves is commonly given as a tonic and febrifuge. The pulverized seeds are emetic and caustic. The identification of 2 antibiotic cyclopentoid monoterpenes, primarily genipic acid and secondarily genipinic acid, its carbomethoxyl derivative, has been isolated from all parts of the fruit in Puerto Rico.

**Other products:** In Guyana, the ripe fruit is used mainly as a fish bait.

**SERVICES**

**Shade or shelter:** It is widely planted for its shade.

**Soil improver:** The heavy leaf fall of the genipap is important in improving the soils

**Ornamental:** It is a popular ornamental tree in homegardens

**Boundary or barrier or support:** In Trinidad, the tree is occasionally planted as a live-hedge in grazing areas.

**Intercropping:** It can be interplanted with temporary crops such as cassava or cotton to provide shade for the young trees

**TREE MANAGEMENT**

For fruit production, spacing of 10 x 15 m is normally used and for the purposes of reforestation spacing may be 1.5 m x 3 m or up to 3 m x 3 m especially for timber production. The tree requires little cultural attention. Temporary crops such as cassava or cotton can be inter-planted to provide shade for the young trees

**GERMPLASM MANAGEMENT**

Mature fruits fall to the ground. Collecting fruits directly from the tree is done when the colour changes to greenish grey. A tree of 15-20 years can produce 400-600 fruits

The freshly harvested fruits are packed in bags that allow for ventilation and protection from direct sunlight. At the processing site, the fruits are soaked in water and macerated in order to remove the pulp. The extracted seeds are spread out on mesh wire and left to dry in the shade in a well-ventilated place because of the high moisture content. At the time of harvest, the seeds have moisture content of almost 50% (this value is for seeds extracted without using water), which should be dried to below some 15%. Seed storage behaviour is orthodox. There are 10000 seeds/kg.

**FURTHER READNG**

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**SUGGESTED CITATION**

Orwa C, A Mutua, Kindt R, Jamnadass R, S Anthony. 2009 *Agroforestry Database: a tree reference and selection guide version 4.0* (<http://www.worldagroforestry.org/sites/treedbs/treedatabases.asp>)