Enterolobium cyclocarpum (Jacq.) Griseb.

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FABACEAE (BEAN FAMILY)

No synonyms

Algarrobo de orejas, árbol de las orejas, caro, costa-mahogany, dormilón, earpod tree, flamboyán extranjero, guancaste, guanacastle, jenízaro, juana, nacaste, nacastle, oreja, oreja de mono orejón, parota, pich, picho

Native to the tropical regions of America, *Enterolobium cyclocarpum* is naturally distributed from central Mexico, across Central America, to the northern part of South America. The species has been introduced and naturalized in the Caribbean islands, Cuba, Puerto Rico, and Haiti (Little and others 1988, Standley and Steyermark 1946a).

Enterolobium cyclocarpum is a deciduous and thornless tree that can reach 30 m in height and 3.5 m d.b.h. The trunk is short and straight with small spurs at the base. The bark has numerous lenticels. The thick, rising branches produce an ample, spreading, and hemispherical crown. The leaves are bipinnate and 15 to 40 cm long, with linear-oblong leaflets 8 to 15 mm long. *Enterolobium cyclocarpum* grows in alkaline, calcareous, sandy, and clayey soils. It grows at elevations from sea level to 900 m. The species prospers where average annual temperatures range between 23 and 28 °C, and average annual precipitaiton ranges between 750 and 2000 mm. The tree requires a dry season 1 to 6 months long.

Enterolobium cyclocarpum is a tree with multiple uses. It is planted in pastures as a shade tree and as a source of forage for cattle. In Central America, the tree is used to shade coffee plantations and to enrich the soil. It is also planted as an ornamental and shade tree on the edges of roads and in parks and gardens. The fruits, boiled unripe seeds, and roasted ripe seeds are edible. Ground seeds provide a flour that contains up to 35 percent protein. The ripe fruits and the bark contain tannin and are used to tan hides. Specific gravity of the wood ranges between 0.34 and 0.6. The wood is easy to work using hand tools. Its uses include furniture and cabinets, veneer, construction, panels, canoes, posts, firewood, and charcoal. Because it is resistant to humidity, the wood is used in ship building. An infusion of the bark is used to reduce fevers. The gum that exudes from the trunk has properties similar to those of gum arabic (Francis 1988, National Academy of Sciences 1979, Niembro 1986).

The flowers are white and arranged in capitula. The tree blooms February through April. The fruits take 3 months to ripen. Ripe fruits can be recognized by the color change in the pericarp from green to dark brown and by the noise the seeds make when the fruits are shaken. The legumes are curved or twisted, laterally flattened, dark brown, shiny, indehiscent, ligneous, and sometimes form a circle 7 to 12 cm in diameter. Each fruit contains 8 to 16 seeds (Holdridge and Poveda 1975, Little and others 1988, Pennington and Sarukhan 1968, Standley and Steyermark 1946a). A tree can yield several kilograms of seeds. The seeds are ovate, laterally flattened, 14.5 to 17.5 mm long, 7.8 to 11.2 mm wide, and 6.2 to 7.2 mm thick. The seedcoat is red-brown, smooth, opaque, cartaceous, very hard, and marked on one of its lateral surfaces by a closed pleurogram or fissural line that follows the contour of the seed. Inside the light brown halo of the pleurogram, the color of the seedcoat changes to a dark brown.

The fruits are usually collected from May through July. Fruits may be collected from the ground or from the trees. A pole with metal hooks is used to remove fruits from trees. Because the fruits are indehiscent they must be broken by hand or macerated. The fruits are ground in wood mortars in the first step to extracting the seeds. The seeds are big and they are easily separated by hand. Small impurities are removed with sieves or by using a vertical column blower. Seeds average 1,100 to 1,170 per kg (Francis 1988, Patiño and Villagómez 1976, Vega and others 1981).

Cleaned of impurities, the seeds are stored in plastic containers at ambient temperature, where they can conserve

their viability for a period of 13 months (Vega and others 1981). Stored in hermetically sealed containers in cold chambers at a temperature of 5 °C and a moisture content of 6 to 8 percent, viability is kept for up to 11 years with a germination of 80 percent (Centro Agronómico Tropical de Investigación y Enseñza 1997c).

The seeds have very hard teguments, and they have mechanical latency. The thinning of the teguments can be done mechanically with sandpaper or a knife. However, germination can also be stimulated by submerging the seeds in boiling water for 15 to 30 seconds. Subsequently, they are soaked in water at ambient temperature for 6 to 7 hours. The treated seeds are planted in a seedbed or in polyethylene bags, where they begin to germinate in 4 to 5 days with 80 percent germination. The plantules grow fast and resist desiccation. Francis (1988) notes that the trees are removed from the nursery when they are 6 months old and 50 cm high. However, Centro Agronómico Tropical de Investigación y Enseñza (1997c) recommends outplanting when the plants are 2 to 3 months old and their height ranges from 20 to 25 cm. In general, the plantules do not require special care during cultivation.

ADDITIONAL INFORMATION

Tests done in Costa Rica showed that trees 7.5 to 8 years of age measured 11 to 16 m in height and 8 to 11 cm d.b.h. In southern Mexico, 8-year-old trees had an average height of 8 m and 12 cm d.b.h. In Puerto Rico, 5-year-old trees growing along with other species had a height of 6 m. At 25 years of age, the trees measured 18 m in height and 42 cm d.b.h. (Francis 1988).

The hilum is basal, puntiform, 3 to 5 mm long, and sometimes has a fuliform micropyle. The micropyle is puntiform and set deep. The lens is set deep, on the opposite side of the micropyle and on the path of the vascular bundle. The endosperm is absent. The yellow embryo has a straight axis and is almost bilaterally symmetrical. The cotyledons are shaped like the seed, whole, expanded, plano-convex, and independent of one another, with a fissural base. The plumule is well developed in pinnae. The radicle is conical, slightly prominent, and mostly covered by the cotyledons (Hutchinson 1964; Niembro 1982, 1983).


2cm
2cm
1cm
1cm