Eugenia stipitata

McVaugh

Myrtaceae

LOCAL NAMES
English (eugenia); Portuguese (araçá-boi); Spanish (arazá-buey,arazá)

BOTANIC DESCRIPTION
Eugenia stipitata is an ornamental leafy tree or shrub, 3-15 m tall, of densely branched habit, without apical dominance; stem with brown to reddish-brown; bark flaking; young branches covered with short, velvety, brown hairs that are lost with age.

Leaves opposite, simple, without stipule; petiole short, 3 mm long; blade ovate to somewhat broadly elliptic, 8-19 cm long, 3.5-9.5 wide; apex acuminate; base rounded and often subcordate; margins entire; leaves dull, dark green above, with 6-10 pairs of impressed lateral veins; pale green, shortly pilose, with scattered hairs below.

Inflorescence racemose pedicles long; bracteoles linear, 1-2 mm long; calyx lobes rounded, broader than long, overlapping in bud; petals 5, white, obovate, 7-10 mm long, 4 mm wide, ciliate; stamens about 70, 6 mm long; ovary (3 min.) 4 locular, each locule with 5-8 ovules; style 5-8 mm long.

Fruit an oblate or spherical berry, 2-10 x 2-12 cm, weighing 50-750 g, light green at first, turning pale or orange yellow when ripe, soft, with a thin, velvety skin enclosing a juicy, thick pulp that accounts for as much as 60% of the fresh fruit. There are approximately 12 seeds in each fruit.

The genus was named after Francois Eugene, Prince of Savoy (1663-1736), an Austrian general who, with Marlborough, won the Battle of Blenheim and was a distinguished patron of art, science and literature.

BIOLOGY
The pollen grain dispersal unit is elongated or triangular shaped. There is 1 grain (12-20 µm) per dispersal unit, each with 3 apertures and 2 nuclei. E. stipitata is a hermaphrodite with the characteristics of male sterility, polyembryony and polyploidy. Pollen should be stored in dry conditions for only several days. The reproductive strategy is allogamous, with 2-5 years for each reproductive cycle.
Bats are the pollen vectors and the main dispersal agents of the trees in their natural habitat. Other birds and mammals also disperse the fruit. Plants growing in well-fertilized soils can flower and fruit throughout the year.

Detail of ripe fruit. (Frutales de la Amazonia)

ECOLOGY
E. stipitata is a species of the dense, humid, tropical high forest. It can withstand a drought of up to 2 months.

BIOPHYSICAL LIMITS
Altitude: 0-650 m, Mean annual temperature: 26 deg. C, Mean annual rainfall: 2 000-2 600 mm

Soil type: Well drained rich loamy soils but will tolerate poorer clay oxisols, provided they are well drained. It tolerates acid soil stress.

DOCUMENTED SPECIES DISTRIBUTION

Native: Bolivia, Brazil, Colombia, Peru
Exotic: Costa Rica, Ecuador, United States of America

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 because of its strong acidity it is not eaten directly but is popular as a strong or weak juice. A jelly can be made from the pulp and seed. However, excessive cooking destroys the attractive aroma and flavour. The dry weight of the fruit consists of 8-10.75% protein, 5-6.5% fibre, 69-72% other carbohydrates, 0.16-0.21 calcium, some phosphorus, potassium and magnesium and 10-12 ppm of zinc. In 100 g of fruit there are approximately 7.75 mg of vitamin A, 9.84 mg of vitamin B1 and 7.68 mg of vitamin C. The surprisingly high protein content presumably comes from the inclusion of the seeds. The fruit has some value as a source of vitamins and minerals.

SERVICES
Reclamation: Even though E. stipitata is a relatively slow grower, it is a suitable species for rehabilitating exhausted land.

Ornamental: Arboriculture (cultivation of an ornamental species for recreational purposes) is widely practised for this species in its native range.

Intercropping: A potential tree for fruit-tree-based production systems.

TREE MANAGEMENT
The fruits should be harvested once a week because they mature rapidly. At a spacing of 3 x 3 m and with adequate fertilization and rainfall, the 1st fruiting year can yield between 3 and 5 t/ha. The seedling, when planted in the field with manure, grows rapidly, although more in diameter than in height. Well-fertilized seedlings can start to fruit after 18 months in the field. Potassium seems to be an especially important nutrient for E. stipitata.

GERMPLASM MANAGEMENT
The seeds are recalcitrant and they lose more than 70% of their viability after 40 days in cold storage. There are about 29 seeds/kg.

PESTS AND DISEASES
Susceptibility to anthracnose is a main production drawback.

FURTHER READNG

FAO. 1983. Food and fruit bearing forest species. 3: Examples from Latin America. FAO Forestry Paper. 44/3. Rome.

Sedgley M, Griffin AR. 1989. Sexual reproduction of tree crops. Academic Press. London.

SUGGESTED CITATION

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