

# *Quercus costaricensis* Liebm.

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## FAGACEAE (OAK FAMILY)

*Quercus frazuensis*, *Quercus endres*

No common names

*Quercus costaricensis* grows in Panama and Costa Rica.

*Quercus costaricensis* is a large tree that can reach 44 m in height and 60 to 90 cm d.b.h. The tree has a conical, cylindrical, or straight trunk. It has coriaceous leaves with prints on the adaxial surface. The pubescences in the abaxial surface have abundant alternate stipules (Burger 1977). This species grows in wet, rainy mountainous forests at elevations between 2200 and 3300 m, where temperatures range from 0 to 20 °C and annual precipitation is 1000 to 4000 mm.

*Quercus costaricensis* wood ranges from heavy to very heavy (specific gravity 0.59 to 0.63). The wood dries moderately fast and shows some regular cracks and a strong collapse. It is difficult to work and preserve; however, it has a strong natural resistance, especially to fungus attack (Carpio 1992). It has regular quality for making paper and is used for farm tools, keels, bridges, wharf pilings, mine beams, and underwater posts. It is excellent for charcoal (Carpio 1992, Torres and others 1992, Van der Slooten 1968).

The tree produces green flowers in bunches from August through November. The female inflorescences are located in the branch terminals. The sepals and petals form a resistant perianth with numerous bracts. The male inflorescences average 4 to 9 cm in length and are located at the base of branches where there are stipules. They are amentaceous (Arnáez and Moreira 1992). The brown fruit is 1.5 to 2.3 cm long and 1.3 to 4.4 cm wide. This acorn is oval to globular with a wide and discoidal proximal part showing a rough surface.

The brown pericarp is coriaceous with a large amount of druse (crystal). Mature fruits are green or brown and the cupule separates easily. The fruits contain one to three seeds, but usually only one seed germinates (Arnáez and Moreira 1992). The oval seeds are approximately 2.11 cm long and 2.7 cm wide and are classified as megasperm (more than 10 mm in size). The top is brown. Its embryo is straight and cylindrical. The size of fruit and seeds varies within the same tree.

Fruits, which ripen from November through January, are usually collected from the ground or from the tree by shaking the branches. Fruits are transported in nylon sacks. If fruit must be preserved, it must be wrapped in moss to prevent dehydration (Torres and others 1992). In Costa Rica, seeds average 41 per kg. The seeds cannot be stored because storage damages the embryo and at 15 °C metabolic activity accelerates (Quirós 1990).

Pretreatments are unnecessary. Germination is hipogean and begins 7 days after the fruit is planted (Quirós 1990). The rate of germination is 90 percent. The fruits are planted in a substrate of sandy-frank texture that is high in organic matter. Because seedlings show vigorous radical systems, the bed of substrate soils should be deep. Seedlings should be watered twice daily, and transferred to plastic bags 12 days after sowing. Plagues or diseases have not been detected in the plants; however, continuous weed control is recommended (Torres and others 1992).

