

LOCAL NAMES

English (cutnut); Pidgin English (katanat)

BOTANIC DESCRIPTION

Cutnut is a medium-size fast growing, evergreen tree up to 24 m high but often range between 8-12 m with a crown diameter of 0.8–6 m and mature tree dbh of 2-45 cm.

Cutnut produces a vigorous framework of branches following the formation of the terminal inflorescences.

Leaves large, simple, lanceolate and arranged in a whorl at each node. Leaf size varies, typically measuring 21.5–66 cm long and 5–20 cm wide. The upper surface of the leaf is dark green and glossy; the lower surface is slightly paler. Typically, the leaf has a truncated base and an acuminate apex, with undulated margins.

Inflorescence racemose with a 30–110 cm long pendulous spike containing up to 150 densely packed flower buds, arranged in spirally alternate pattern, and varying in colors, typically from green to white or red. Flowering is terminal on the shoots. Flower buds are semisessile to sessile and are protected by a calyx closed in the bud, which ruptures into two to four pseudolobes.

Fruits multiple, sessile, elongated, oblong to obovoid, tapering toward the apex and base, and borne on a pendulous rachis. At maturity they are indehiscent, but the skin can be easily peeled off when ripe. Length of a mature fruit varies between 25–95 mm.

Seed or kernel is contained in a fibrous, white to purplish, cylindrical, eight-sided endocarp shell (prominent when exocarp and mesocarp are removed).

Bark smooth at early stages of growth but becomes fissured as the trees grow older. Large lenticels up to 5 mm across are present.

The tree has a relatively shallow taproot and a well formed network of lateral roots, concentrated in the topsoil layer.

BIOLOGY

Cutnut flowers are bisexual. Bees forage on the flowers and act as pollinators. In the Solomon Islands and Papua New Guinea, flowering occurs two to three times per year with two peak seasons occurring in May-June and October-November each year, although low off-season fruiting does occur. Trees begin flowering as early as 1.5 years, although the average is 3 years. Fruits take about 3 months to reach full size and a further 3-4 weeks to ripen to maturity. The tree's life span is 80–90 years.

ECOLOGY

Common in old gardens, mature coconut plantations, and coastal villages, and in remnants of secondary lowland humid tropical rainforests. Within its natural range are other species including canarium nut (*Canarium* spp.), breadfruit (*Artocarpus altilis*), coconut (*Cocos nucifera*), Tahitian chestnut (*Inocarpus fagifer*), poumuli (*Flueggea flexuosa*), sago palm (*Metroxylon salomonense*), Malay apple (*Syzygium malaccense*), *Mangifera minor*, *Ficus* spp., *Macaranga* spp., *Terminalia* spp., and tava (*Pometia pinnata*).

BIOPHYSICAL LIMITS

Altitude: 0-600 m

Temperature: 26.4-27.7°C

- Mean maximum temperature of hottest month 29.4-34.5°C

- Mean minimum temperature of coldest month 20-23°C

Rainfall: 1500-4300 mm

Soil type: Cutnut grows in coastal coral soils with light to heavy textures. It occurs in soils with medium to high fertility, and it tolerates rocky soils. It grows well in mildly acid to neutral or mildly alkaline soils (pH 5.1-8.5) but does not tolerate waterlogged soils.

DOCUMENTED SPECIES DISTRIBUTION

Native: Papua New Guinea, Solomon Islands, Vanuatu

Exotic: Australia, Fiji



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 kernel is edible, tasty, and highly nutritious and is eaten as a snack or prepared into dishes for a main meal. It can be roasted and baked into puddings together with edible hibiscus (*Abelmoschus manihot*) and coconut cream. It contains protein and carbohydrate at about 10% and 25%, respectively, in its raw form. The mesocarp of a ripe fruit is aromatic and has potential for flavoring.

Timber: Despite its poor quality, the wood is used for crafts and temporary light construction. The wood is sometimes used for making paddles in the Reef Islands, Temotu Province, Solomon Islands.

Fodder: The kernel and mesocarp are a good feed for free-range chickens. Birds (cockatoos, parrots) and flying foxes feed on the fleshy mesocarp of fruits and on the flower nectar. The fallen kernels and mesocarps are food to some freshwater fish and prawns.

Apiculture: The tree is a good bee forage for nectar.

Essential oils: The kernel oil has potential for cooking and body care products.

Fuel: Fallen branches and felled trees make good firewood.

Medicine: Leaves and bark are largely used medicinally. The leaves have been used to treat inflammation of the ear and headaches. Sap from the bark has been used for treating ciguatera poisoning, coughs, and urinary infections, and the red-leafed form is used as a contraceptive and for abortion.

Other products: The leaves have traditionally been used for wrapping and parceling nuts. The flower buds are potentially attractive for body garlands, but have not been used traditionally.

SERVICES

Intercropping: Its open canopy structure allows sufficient light penetration to the ground level for other crops to be interplanted under it. It is compatible with common field crops such as cabbage, sweet potato, banana, *Xanthosoma* spp., and cassava. Farmers in Temotu province of the Solomon Islands have used cutnut as a companion and interline tree crop in an improved traditional agroforestry system. It is a good trellis tree for betel nut vine (*Piper betle*).

Shade or shelter: In a homegarden situation, cutnut provides good shade and shelter to cereal and other understory crops such as sugarcane (*Saccharum officinarum*) and edible hibiscus (*Abelmoschus manihot*). With appropriate spacing, the tree can provide medium shade suitable for understory crops such as cocoa (*Theobroma cacao*), joint fir (*Gnetum gnemon*), and betel nut (*Areca catechu*). The tree provides a good wildlife habitat for some nesting bird species.

Boundary or barrier or support: Cutnut tree can be used as support for fencing. In its native areas, cutnut indicates human settlements and provides proof of land ownership, and therefore can serve as a good boundary marker. The tree is a good medium-height windbreak because it tolerates strong winds.

Soil improver: Fallen leaves, flowers, and dead branches enrich the surrounding soil.

Erosion control: The tree is rated high (more than 60% of farmers interviewed in Kolombangara, Solomon Islands) for soil stabilization due to a good network of lateral roots.

Ornamental: Cutnut is an attractive evergreen tree with bright flowers that beautifies rural villages. Being a medium-size tree and providing good shade, it would be suitable as a park or street tree. Its pendulous flowers and fruits are attractive in an urban landscape.

TREE MANAGEMENT

Cutnut is naturally self-pruning of lower branches up to about one-fifth of the height of the tree. Trees coppice and pollarded trees re-sprout well.

In a small-scale plantation, seedlings should be planted at 5 x 5 m spacing, or 400 trees/ha. In agroforestry systems mixed with other species, 40 trees/ha are optimal. For silvopasture, a low planting density of 10-15 trees/ha is recommended to avoid shading of the pasture grass. Seedlings may be planted on cleared land or as line-plantings in secondary forests, in which selective thinning of the forest allows more light to reach the seedlings.

Weeding is crucial for the first 2-3 years of growth in the field. As the trees mature, weeding operations should be scaled down to cleaning once a year (largely by removing vines from the trees).

Trees that are too tall should be pollarded to reduce height and ensure safety around villages.

Note: There is no record of cutnut becoming invasive, and in situ observation on the distribution of wildings appears to rule out any potential invasiveness.

GERMPLASM MANAGEMENT

Well formed, ripe fruits should be collected from the ground, fresh fruits collected from the tree result in low germination if immature. Fruit maturity is indicated by a distinctive dieback of the persistent stigma at the base of the fruit.

Seeds are recalcitrant, do not withstand drying, and remain viable only for short period in dry storage. To maximize storage, it is best to retain the mesocarp on the nut and store the seeds in a shady, cool (19-25°C), and low-humidity environment and out of reach of pests such as crabs and rodents.

There is no special pre-planting treatment for cutnut. Viability can be tested by placing them in water. Fruits that float are likely to be non-viable.

PESTS AND DISEASES

Cutnut is generally free of major pests and diseases. Leaf miners can be a problem at the seedling stage in the nursery. Cockatoo and flying foxes feed on the fruits, and parrots feed on the flowers. Potentially, these animal pests could be drawn to cutnut and thereby introduced to other tree and field crops within the same area.

FURTHER READNG

- Bonnie JM. 1993. Improved Temotu Agriculture. Provincial Press Ltd., Honiara, Solomon Islands.
- Bourke M. 1996. Edible indigenous nuts in Papua New Guinea: Their potential for commercial development. WANATCA Yearbook. 20: 37-40.
- Clarke WC, Thaman RR. 1993. Agroforestry in the Pacific Islands: Systems for Sustainability. United Nations University Press.
- Evans B. 1999. Edible Nut Trees in Solomon Islands: A Variety Collection of Canarium, Terminalia and Barringtonia. ACIAR Technical Reports 44. Australian Centre for International Agricultural Research, Canberra, Australia.
- Hallé F, Oldeman RAA & Tomlinson PB. 1978. Tropical Trees and Forests: An Architectural Analysis. Springer-Verlag, New York.
- Hancock IR & Henderson CP. 1988. Flora of the Solomon Islands. Dodo Creek Research Station, Research Department, MAL, Honiara, Solomon Islands.
- Jebb M. 1992. Edible Barringtonias. Kew Magazine 15(2).
- McGregor AM & McGregor IK. 1997. Establishing a Commercial Indigenous Nut Industry in Fiji: Opportunities and Requirements. United Nations ESCAP/POC.
- Payens JPDW. 1967. A monograph of genus Barringtonia (Lecythidaceae). Blumea 15(2).
- Pelomo MP, Barasi RN, Liloqula R & Roposi N. 1996. Canarium nut and oil marketing in Solomon Islands. In: Stevens, Bourke, and Evans, op. cit.
- Raynor B. 1991. Agroforestry systems in Pohnpei. Practices and strategies for development. Forestry Development Programme.
- Stevens ML, Bourke RM and Evans BR. 1996. South Pacific Indigenous Nuts. Canberra, Australian Centre for International Agricultural Research.
- Thaman RR, Whistler WA, 1996. A review of uses and status of trees and forests in land-use systems in Samoa, Tonga, Kiribati and Tuvalu with recommendations for future action. Working paper 5. South Pacific Forestry Development Programme, RAS/92/361.
- Walter A, Sam C. 2002. Fruits of Oceania. ACIAR Monograph No. 85. Canberra.329 pp.
- Whitmore TC. 1969. The vegetation of the Solomon Islands. Philosophical Transactions of The Royal Society 255.

SUGGESTED CITATION

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