

Macadamia tetraphylla

Johnson

Proteaceae

LOCAL NAMES

English (rough-shelled bush nut, Queensland nut, macadamia nut)

BOTANIC DESCRIPTION

Macadamia tetraphylla is a small to medium sized, densely branched tree, up to 18 m with a diameter of 45 cm (dbh). The outer bark greyish-brown, smooth or finely wrinkled, with numerous cream horizontal lenticels. Branchlets brown to greyish-brown, young shoots hairy.

Leaves in whorls of 4, simple, the margins always prickly-toothed with 33-40 teeth on each side, oblong or oblong lanceolate, 7-25 cm long, 2-5 cm wide, abruptly rounded to a short sharp point at the tip, rigid in texture.

Inflorescence axillary or on the branches, 10-25 cm long; flowers creamy pink to mauve, 10 mm long.

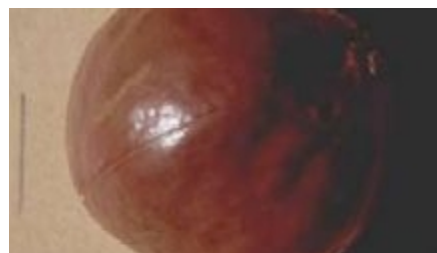
Fruit 20-35 mm in diameter, greyish-green, turning brown.

Seed 15-30 mm long, pointed at the apex and warty.

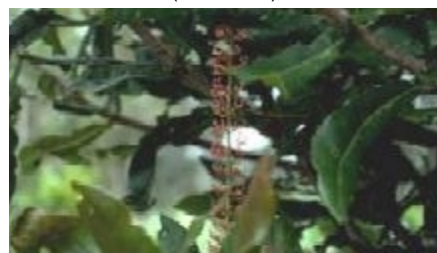
The name *tetraphylla* is derived from tetra-four phylon-leaf, in allusion to the grouping of leaves in whorls of four.

BIOLOGY

Flowers appear August - October and fruits ripen in January.



Macadamia nut. (French B.)



Macadamia flower and foliage. (French B.)



Fruits (French B.)

ECOLOGY

M. tetraphylla is found on sub-coastal low hills and plateau, basaltic shelves, rocky slopes, ravines, rocky off-shore islands and headlands and in warm, protected fertile valleys of coastal river systems. It is restricted to eastern Australia and extends from extreme north eastern New South Wales to overlap with *M. integrifolia* in southern Queensland. It occurs in warm sub-humid and humid zones. The average number of frosts vary from 1-4 annually. It withstands mild frosts but only for a short period. Rainfall is distributed through out the year, with a summer maximum.

Associated vegetation include: *Argyrodendron trifoliatum*, *Dysoxylum muelleri* and *Castanospermum australe*. In the drier notophyll vineforest dominant genera are *Ficus*, *Streblus* and *Casine*.

BIOPHYSICAL LIMITS

Altitude: 0-2 000 m

Mean annual temperature: 15-29 Deg C.

Mean annual rainfall: 700-2600 mm

Soil type: Soils are well-drained, fertile red loams or alluvia derived largely from basic igneous rocks such as basalt.

DOCUMENTED SPECIES DISTRIBUTION

Native: Australia

Exotic: Brazil, China, Colombia, Costa Rica, Ethiopia, Fiji, India, Indonesia, Jamaica, Kenya, Malawi, Samoa, South Africa, Tanzania, United States of America, Venezuela, Zimbabwe



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: Raw kernels (macadamia nuts) are used either alone or in a wide range of confectionery and processed foods. Macadamia oil is also produced. Hawaii dominates the macadamia industry followed by Australia and Costa Rica. The nuts have an excellent flavour, containing up to 76% colorless oil, suitable for human food; the residual cake, after crushing for oil, contains 35-36 % protein. The nut has no starch. Fancy pastries, candies and ice cream, have been made from it. It has the advantage of retaining texture and flavour without becoming stale when used this way.

Fuel: Macadamia shell may be used as fuel, generating sufficient energy to dry wet, in shell nuts.

Timber: The wood is reddish, hard and tough, attractively marked, used in small turnery jobs. The timber is not generally exploited.

Other products: The decomposed husk is used in potting soils and the ground shell supplied to the plastic industry.

SERVICES

Shade or shelter: *M. tetraphylla* is beautifully proportioned with handsome foliage, making it a fine shade tree.

Intercropping: In Kenya, it has been inter-cropped with coffee and food crops without affecting the yield of these crops (ICRAF, 1992).

TREE MANAGEMENT

Pruning is necessary to remove excessive side branching as the trees are prone to breakage and wind-throw on exposed sites. Weed control and fertilizer application may be necessary before the canopy closes. A light crop can be harvested in 4-5 years after planting. Where initial spacing is 14 x 4 m, yields of 6 tons/ha/year can be expected. Macadamia trees are expected to give 40-50 years of productive life.

GERMPLASM MANAGEMENT

Mature seed may be stored at 1-2 deg C. for several months in airtight containers.

PESTS AND DISEASES

There are a number of economically important pests attacking flowers, fruits, foliage and twigs. Fungal diseases include *Phytophthora cinamomi*, husk spot, blossom blight and husk rot.

FURTHER READNG

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SUGGESTED CITATION

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