

LOCAL NAMES

English (gevuina nut, Chilean wildnut, Chilean nut, Chilean hazel); Spanish (gevuín, avellano, avellana)

BOTANIC DESCRIPTION

Gevuina avellana is a medium-sized evergreen tree, 10-12 m, rarely over 15 m high; canopy compact but much more open under shady conditions; branches stout, pubescent; young shoots covered in dense reddish hair.

Leaves large, bipinnate, leaflets glossy, coriaceous dark green with serrated margins.

Inflorescence racemose, flowers snow- to ivory-white, borne on the outside of the canopy in pairs; tepals 4, fused into a single structure with stamens curving back at anthesis to reveal the simple style and ovary.

Fruit a globose, woody drupe derived from an indehiscent follicle; 1.2-2.3 cm diameter, coral-red when mature then brown or black.

Seed 1, globular with smooth, tough shell.

Gevuina is a monospecific genus restricted to the southern Sub Antarctic forests of South America. The specific epithet means hazel or nut-brown.

BIOLOGY

The tree is hermaphrodite but seems to require or benefit from out-crossing. Flowering starts from February-May in the late Chilean summer and early autumn, attracting a variety of insect pollinators including honeybees. Fruits ripen at the following year's flowering time. Trees take up to 7 years before fruiting.



Gevunia avellana fruit (Ian Barclay)

ECOLOGY

G. avellana is an understory tree common in the Valdivian forests of southern Chile. These diverse subantarctic forests show many Gondwana affinities. It grows from the snowline of the Pacific slopes of the Andes to the coast in areas that have Mediterranean (mild moist temperate maritime) climate with occasional radiation freezes in spring and autumn, as well as winter frosts. The habitats are open areas where forest vegetation regenerates spontaneously and Proteaceae are important in the secondary communities.

BIOPHYSICAL LIMITS

Altitude: 0-700 m

Mean annual temperature: 12 deg C

Mean annual rainfall: 900 mm

Soil type: *G. avellana* prefers highly organic and well drained volcanic soils, although it will also grow well on almost swampy and shallow, eroded, acidic soils.

DOCUMENTED SPECIES DISTRIBUTION

Native: Argentina, Chile

Exotic: New Zealand, United Kingdom, US



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 pulp and kernel are edible. The kernel is similar to hazelnut (*Corylus avellana*) in appearance and flavour and is eaten fresh or roasted. The protein concentration after oil extraction has been found to be 16 %. Of the 18 amino acids found in the flour, glutamic acid, followed by aspartic acid and arginine, are present in the greatest concentrations; lysine is the only limiting essential amino acid when compared with the FAO/WHO standards. Coupled with its low fat and high fibre content, gevuina flour has prospects as a health food. The whole nut is processed into a gevuina butter paste of high nutritional value, which can be at par with peanut butter.

Fodder: The high protein content of cracking residue is used as stock feed.

Apiculture: Flowers have abundant nectar and are excellent bee fodder.

Timber: The timber is pale brown with an attractive grain, light, strong, durable and easy to work. It is used in its native range for turnery, musical instruments, picture frames, furniture and shingles.

Tannin or dyestuff: Husks left over after nuts processing are rich in tannin.

Lipids: Lipid content is comparable to rapeseed, sunflower and peanuts. The oil is of high quality as table oil rich in polyunsaturated fatty acids such as linolenic and ecosaenoic. *G. avellana* nuts are rich in oils that have health-cosmetic purposes. The oil is particularly high in palmitoleic acid (up to 27.6 %), which is a good natural UV filter for sun lotions.

Other products: Its fine foliage is in demand in the cut flower market.

SERVICES

Erosion control: The tree is found on badly eroded slopes and has potential for erosion control by binding soil liable to erosion.

Reclamation: It is a pioneer species tolerating situations occasioned by sun, wind and frost; qualities which can be exploited for reclaiming sites where top soil has been destroyed.

Ornamental: *Gevuina* is an attractive garden and park specimen with showy sprays of creamy flowers contrasting vividly with the dark green foliage and bright red nuts.

TREE MANAGEMENT

The tree requires protection from strong winds due to the weight of foliage. *G. avellana* shows a 2-year rhythm in seed production which is concentrated in summer and autumn. Spacing of 2-4 m x 2-4 m has been used in trials in Chile. The tree does better on sunny slopes, it coppices well.

PESTS AND DISEASES

A fungus, *Pestalotia truncata* [*Pestalotiopsis theae*] has been isolated from the leaves of *G. avellana*. One of the main limitations to gevuina propagation is infection with *Phytophthora cinnamomi*. Mature trees have been known to wilt and die abruptly. Broad mites (*Polyphagotarsonemus latus*) pest on seedlings and the leaf roller caterpillars (*Tortricidae*) damage young leaves.

FURTHER READING

Donoso C and Escobar B. 1986. Germination of the tree Proteaceae of Chile. *Bosque*. 7(2): 85-94.

Donoso ZC. 1978. Progress of research: preliminary report on the production of *Gevuina avellana* fruits. *Bosque*. 2(2): 105-108.

Grinbergs J, Valenzuela E and Ramirez C. 1986. In vitro germination of *Gevuina avellana* (Proteaceae). *Bosque*. 7(2): 95-101.

Halloy S, Grau A and Mckenzie B. 1996. *Gevuina* nut (*Gevuina avellana*), Proteaceae, a cool climate alternative to macadamia. *Economic Botany*. 50(2): 224-235.

Peredo H and Aguilar A. 1983. *Pestalotia truncata* on leaves of *Gevuina avellana*. *Agricultura Tecnica*. 43(1): 67-68.

Peredo HL and Valenzuela FE. 1988. New records of pathogenic fungi of forest plants in Chile. *Boletin Micologico*. 3(4): 249-252.

Villarroel M et al. 1987. Amino acid composition of Chilean hazel nuts. *Food Chemistry*. 25(2): 155-158.

Wickens GE (ed.). 1995. Non-wood forest products 5; Edible nuts. FAO, Rome.

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/>)