

Gevuina nut - a cool climate macadamia



Gevuina trees have been growing and fruiting in New Zealand for close to 50 years, which is evidence of its fit to New Zealand conditions. This member of the Macadamieae tribe of the Proteaceae produces top quality, high value nuts. Requirements for optimum fruiting are being defined in order to explore the potential for nuts produced in New Zealand to meet export market requirements

As a concentrated and tasty form of food, nuts have enjoyed a booming world market in recent decades. Tree nut production increased 83% between 1980 and 2000. Traditional nuts include walnuts, almonds, chestnuts and hazelnuts, but there is also a growing trade in lesser known nuts such as pistachio and macadamia. Although marketed in relatively small volumes, macadamia nuts (*Macadamia integrifolia* and *M. tetraphylla*) trade for the highest prices, although those prices are falling due to a preference for smaller nuts and oversupply. Only recently developed from the wild, macadamia is now perceived as the superior luxury nut. Australia produced 29 000 tons of macadamia in 1999 and is the world's largest exporter. Japan imported more than 400 t of shelled nuts in 1986, at about NZ \$13/kg and trade has since grown substantially. Wholesale prices for unshelled macadamia nuts were more than NZ \$4/kg in 1991 and retail prices of shelled nuts in 2001 are NZ \$35-40/kg. As a result of its high value, macadamia is being planted in many areas of the world, including New Zealand. In contrast, the closely related and similar quality genus *Gevuina* is barely known outside its native area of Chile.

Gevuina trees have been growing and fruiting in New Zealand for close to 50 years, which is evidence of its fit to New Zealand conditions. *Gevuina* (*Gevuina avellana*), also inappropriately called Chilean hazelnut, is the southernmost species in the Macadamieae tribe of the Proteaceae. The tree is native to southern Chile and Argentina from around 35 to 44°S. Compared to the subtropical macadamia, it has better growth rates in cool summers and good frost tolerance (at least -12°C for mature plants). Genetic types tolerate from well drained soils to almost swampy waterlogged soils.

Uses

The beautiful, evergreen, glossy-leaved trees with their creamy white flowers and red to black fruit are striking as ornamentals. Their nectar is relished by bees and they produce a prized wood. Nuts are around 1.4-2.5 cm diameter, depending on origin, but are enclosed in a softer, thinner shell than macadamia. This is an advantage for processing and for selling as nuts in their shells. The roasted nut is well accepted by the public in Chile, retailing

for at least NZ \$7/kg. As a health food, gevuina ranks amongst the best. It is high in essential amino acids and quality unsaturated fatty acids while being lower in fats than macadamia. Above all, it has attractive flavour and aroma. Nuts can be used in a variety of confectionery (chocolates, cakes, muesli bars), cereal preparations, roasted nuts or they can be processed into gevuina butter, a high protein flour and a variety of other products. In addition, nuts can be processed for their valuable edible and cosmetic oils, which have good skin penetrating and UV filtering properties.

Agronomy

As a new crop there is a lot to learn about gevuina. Research is progressing concurrently with commercial development. Propagation is by seed, cuttings or tissue culture, and trees coppice well. Gevuina is within the macadamia range in terms of production. Seedlings take some seven years to first production, and an estimated production of 3-9 t/ha nut in shell may be achieved. Cutting-grown trees may set fruit in 3-4 years and reach economic volumes in 6-7. To meet market requirements for a quality standardised product on a commercial scale clonal (vegetatively propagated) material must be planted. Two selections are presently available in New Zealand (acc 63 and acc 557) and should be planted together to allow cross-pollination. For research purposes, seedlings are preferred because they allow the expression of genetic diversity from which future cultivars may be selected.

Gevuina are vigorous trees demonstrating rapid growth in their first years. Young gevuina seedlings are susceptible to fungal diseases; a survival rate of 30% or less is not uncommon at the nursery stage. Careful management is critical and can make the difference between excellent survival rates (>99%) at some sites and poor rates (<50%) at others. Root development is also critical, making selection of appropriate sites and soils an important factor. Healthy nursery stock with vigorous and well formed roots is essential to successful establishment. Common good orchard management practices are appropriate for gevuina: shelter, irrigation, and pest and weed monitoring and control (conventional or as integrated pest management or organic systems for a value added product). Timing of planting with respect to site conditions (frost, drought) and nursery stock vigour are also important.

Pruning, pollination and nutrient requirements are under investigation. Further collections from the wild and from ongoing research are being evaluated. They provide a wider genetic base from which future improvements in productivity and health may be made.

Market potential

There is little doubt that an international market for gevuina exists. Market research shows there is a high and rapidly increasing demand for high quality health food, snack foods and nuts (which combine both of the former). Gevuina can obtain high prices in this market. To do so, however, because it is not yet known, will require a concerted effort in promotion and further research into its production, processing and presentation. The versatility and variety of products offered ensures long-term success for this product.

Future

Gevuina growers co-ordinate through the Gevuina Action Group, an offshoot of the New Zealand Tree Crops Association. In co-operation with Crop & Food Research, experimental sites have been set up throughout the country to trial different climates, soils, management practices and genetic stock. If you are interested in joining triallists to assess gevuina and be part of the commercial development of this new crop, see contacts below.



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