

The Australian Chestnut Industry

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Historical Background

Chestnuts are not native to Australia and were thought to have been introduced with the influx of migrants during the Gold Rush of the 1850's. Between 1851 and 1871 Australia's population grew from 430,000 to 1.7 million. These migrants, who came from all over the world but predominantly England, Ireland and China, brought with them food and plants from their own countries. The location of the oldest chestnut trees in Australia in the gold mining areas of Daylesford, Beechworth and the Buckland Valley in Victoria and the Blue Mountains in New South Wales indicate that the miners were most likely to have brought chestnuts with them possibly for consumption on the long sea voyage to Australia. They then planted any of the remaining nuts.

The development of the chestnut industry in Australia though, did not start until 100 years after the first introduction of chestnuts and again it was driven by a new wave of immigrants. After the Second World War, Australia received many Southern European migrants mainly from Italy and Greece. These migrants did not appreciate the basic 1950's Australian diet of lamb and potatoes and craved the foods of their homelands. From 1947 to 1971 the North East of Victoria became a focal point for Italian immigrants who had arrived at the Bonegilla Migrant reception centre in the area. After settling into their new environment, these "*New Australians*" moved out into the surrounding areas and became farmers mainly growing tobacco and hops. As is customary, each farmer had their own home garden and orchard supplying fruit, vegetables, wine grapes and of course chestnuts.

During the 1970's migrants living in the cities would travel to areas in the country every autumn to get chestnuts. Some would pick their own nuts from chestnut trees planted in public places whilst others would buy them from the few farmers that grew them at very high prices. This encouraged farmers to plant more trees on a commercial basis and so by the 1980's the chestnut industry in Australia had truly begun.

Species

Of the four main chestnut species, *C. sativa*, *C. mollissima*, *C. crenata* and *C. dentata* it is widely thought that the chestnuts in Australia are hybrids of mainly *C. sativa* but with influences of *C. mollissima* and *C. crenata*. Over the past 20 years there has been a move towards certain selections, most based on chance seedlings, with each growing region having its own preferred varieties. Whilst there are many named selections, the three main selections that were widely established are Buffalo Queen, Red Spanish and Purton's Pride. Current industry direction is towards the selection of new varieties on the basis of ease of peeling and flavour, with size and productivity being secondary features. Buffalo Queen as a selection is now not favoured as it does not fit the criteria of being easy to peel and many growers are re-grafting these trees and seedling varieties to easier peeling nuts.

As well as these chance seedlings there are a number of introduced varieties. Colossal from the United States was introduced in 1987 (AQIS) and although it initially looked promising, it is now considered unsuitable to Australian conditions and most plantings have been regrafted. The French hybrid, Bouche de Betizac and Marrone di Chiusa Pesio from the Cuneo region of Northwest Italy were both introduced in 1990 (AQIS). In the 1980's Tony De Coppi, an Italian, is attributed to having facilitated the introduction of a variety from his home village of Tarzo, at the foothills of the Dolomites. De Coppi Marone, named in his honour, is now grown widely and is an industry benchmark nut in terms of ease of peeling and flavour. It is very similar to the Marrone di Chiusa Pesio which is also gaining popularity amongst growers and consumers alike. Bouche de Betizac is rapidly replacing Buffalo Queen as the preferred early variety due to superior size and peeling attributes.

Pests and Disease

Australia is fortunate not to have chestnut blight (*Cryphonectria parasitica*), nor chestnut weevils (several species), oriental chestnut gall wasp (*Dryocosmus kuriphilus*), chestnut codling moth (*Cydia splendana*), cryptodiaporthe canker (*Amphiporthe castaneae*), chestnut mosaic virus or chestnut moths (Berg et al, 2001, p2). Australia is also free of *Phytophthora ramorum* and this is why no imports of propagating material are currently permitted entry into Australia.

The benefit of no pests however cannot be underestimated and Australian growers are very fortunate. So whilst the quarantine procedures currently result in no new varieties being permitted into Australia they are fully supported by industry.

Chestnuts grown in Australia can, however, be affected by ink disease (*Phytophthora cinnamoni*) and an internal nut rot problem (*Phomopsis castanea*). (Ridley et al, 1999, p7.1). In the past twenty years there has been a number of growers periodically affected by a condition known locally as “*Bubbly Bark*”. The early symptoms are a bubbling of the bark in late winter/early spring, often followed by a weak bud burst and poor nut set. The affected branches and the whole tree, if the condition is severe, die and turn black in colour. Younger trees are affected most severely with death rates of up to 50% in two year old orchards, but as trees age the death rates decline and the recovery rate improves. Trees over the age of ten years are rarely affected by the condition. The process causing the bubbly effect is unknown, but it has been observed only in grafted trees above the graft union and often the tree will re-shoot from the base after the top section has died. (Borschmann et al, 2006)

Propagation and Grafting

Because of the lack of disease, propagation and top working of mature chestnut trees to better varieties is relatively easy in Australia. Initial nursery rootstocks were random seedlings. Then, due to concerns of graft incompatibility there was a move towards “half sibling” i.e. the rootstock is grown from seeds of the cultivar that is being propagated.

In the early 1990’s a trial was conducted to identify a rootstock that was resistant to the fungal root rot *Phytophthora*. The cultivar “*Menzies*” thought to be a European/Japanese hybrid, proved to be the least susceptible to *phytophthora* and is now widely as a nursery rootstock. Bark grafting is the most common method for reworking mature trees with “whip and tongue” grafting, and both summer and spring budding are used for nursery propagation.

Economical and Technical Data

The total Australian production is estimated to be around 1200 tonnes in 2009 with an average wholesale price of around A\$4.50 making the value of the industry A\$5,400,000. In 2007 there was an estimated 95,000 trees planted over 1,000 hectares around Australia (Haslett, 2007, p10). There are more than 340 commercial chestnut producers with plantations averaging 200-300 trees. The North East of Victoria is the largest producing region and commercial plantings of over 1,000 trees are common in this area. Trees were initially planted on 10m x 10m spacings, however, in recent years this has been reduced and spaces of between 6m x 6m are more common in the newer orchards. Most orchards are irrigated where water is available and weedicide strips are common along the tree lines. Since 2007 there has been a shift towards biological and organic farming practices.

Other production areas include the Dandenong Ranges near Melbourne, the Adelaide Hills in South Australia, the Central and Southern Tablelands as well as the Blue Mountains in New South Wales, and Manjimup in Western Australia. (Ridley et al, 1999, p1.1)

Australian chestnuts are size graded into seven industry standard sizes depending on the size hole the nuts will fall through. The sizes are:

SIZE	Diameter of hole
Small	< 25 mm
Medium	25 mm – 28 mm
Standard	28 mm – 32 mm
Large 1	32 mm – 35 mm
Large 2	35 mm – 38 mm
Large 3	38 mm – 41 mm
Large 4	> 41 mm

Most fresh chestnuts are sold on the wholesale fruit and vegetable markets in the capital cities. Packaging is usually in 5 kg cardboard cartons or in 10 kg sacks made of hessian (jute) or poly-woven plastic. Growers indicate variety as well as size on each pack. Rarely do growers mix different varieties within the one bag or carton.

There are no co-operatives for the central packing of fresh chestnuts so each individual grower is responsible for harvesting, grading, packing and marketing of their own produce. Most orchards have their own grading and packing facilities and on-farm cool rooms are now widely used. Some growers sell part of their crop direct to consumers from their farm and local farmers markets are becoming more popular in rural towns, as well as in the large cities.

The national growers association, Chestnuts Australia Incorporated (formerly Chestnut Growers of Australia Ltd.) provides services to the chestnut industry. In the 1990's the association worked to establish a statutory levy on all chestnuts sold. This levy of A\$0.10 (10 cents) per kilogram is used for marketing and also research and development programs. Chestnuts Australia Inc determines industry priorities and manages the expenditure of this levy on behalf of industry.

The processing sector in Australia has been developing over the last 10 years and although still only relatively small (approx 30 tonne per annum) it is expanding rapidly and is seen as having a vital role to play in the development of the Australian chestnut industry. There are currently 3 commercial processors of Australian chestnuts. The *Australian Chestnut Processing Cooperative* produces frozen chestnut meal, freeze dried chestnuts and chestnut flour. *Celebrate Health* produces chestnut flour and a range of gluten free cake mixes based on chestnut flour. Australia's largest processor, Australian Gourmet Chestnuts, produces frozen peeled chestnuts, sweetened chestnut puree and chestnut stuffing mix. *Australian Gourmet Chestnuts* also export frozen peeled chestnuts mainly to upmarket restaurants in Japan.

Tradition and Uses

Australia is a multicultural society made up of immigrants from all over the world. The traditional uses of chestnuts by the Italians and Greeks predominated from the 1950's until the 1970's when Australia had an influx of Asian and Middle Eastern immigrants. Now Australia is an eclectic mix of cultures and this creates interesting uses for foods as traditional techniques are combined in the fusion of cultures.

Most chestnuts in Australia are consumed in family gatherings as hot roasted chestnuts especially around the Easter period. The Italians and Greeks may put the nuts over a brassiere in the garden but the Asians will roast their nuts in hot sand in a wok. Either way, chestnuts are a wonderful way to connect with family and friends. Restaurants in Australia have recently started to include chestnuts on their menus and various types of chestnut soup have become quite popular, as well as game meat (e.g. venison) dishes with chestnuts and also brussel-sprouts with chestnuts.

There is no tradition to use chestnut wood as a timber in Australia and the trees are planted exclusively for nut production purposes with little demand as an ornamental tree.

Chilli Chestnuts and Macadamias

- a distinctly Australian twist on a classic

2 tbs light olive oil
500g roasted peeled chestnuts
100g roasted macadamia nuts
finely chopped chilli
garlic salt
fresh thyme

Roast chestnuts in the usual way – either under the grill or in the oven (don't forget to score them before cooking, otherwise they'll explode) and peel (you can then freeze these to use later or use straight away).

Heat the oil in a heavy based frying pan and sauté the chestnuts. Add chilli to taste and cook over a moderate heat until the chestnuts are heated through. I sometimes add a tablespoon of water during cooking and put the lid on the pan. This steams the chestnuts a little and keeps them moist. Just take off the lid of the pan and let the water evaporate before adding the garlic salt.

Add the macadamias and garlic salt and toss for a minute.

Serve sprinkled with a little fresh thyme to garnish

Conclusion

The landscape of the Australian chestnut industry is changing. From an industry that was previously dominated by small hobby farmers growing mainly 'seedling' trees, it has become more professional with larger commercial scale growers now more common. Superior cultivars that are easy to peel and good tasting are becoming more prevalent and this will lead to increased chestnut consumption and the further expansion of the Australian Chestnut industry.

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