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Growing Feijoas

Acca sellowiana. Sometimes referred to as the Pineapple Guava.

The Feijoa is a sub-tropical fruit tree in the myrtle family which is native to Brazil, Argentina, Columbia and Uruguay. The Feijoa was introduced into New Zealand in the 1920’s and since then we have become the centre for research and development relating to Feijoa growing internationally. New Zealand remains the main producer and exporter of Feijoas because of its ideal climate (largely temperate) which produces large fruit with few pests. In recent years Australia has begun to grow and market Feijoas. In some parts of Australia the fruit is a prime host of the fruit fly and regular spraying is necessary.

New Zealanders love-affair with the Feijoa is long-standing and for many it is taken for granted. It is in the back garden of many city properties, especially in northern parts of the country.

Because there are few pests in New Zealand, the Feijoa is a crop which lends itself to organic growing.

With many processors in the market (conventional and organic), there are many possible outlets for growers. Processed products include wines and juices as well as icecreams, chutneys, jams, and nectar. In recent years we have seen the marketing of a Feijoa fruit “beer” and Feijoa cider.

The recently published New Zealand Tree Crops Association (NZTCA) recipe book includes a range of Feijoa recipes, demonstrating the versatility of the fruit. A Feijoa recipe book is also available from the New Zealand Feijoa Growers Association (NZFGA). Interestingly, the petals from well watered trees are quite fleshy and spicy-sweet and can be added to salads or desserts.
Varieties

There are many varieties, and it can be confusing to know which to grow. Weather patterns, soil type, varietal features all play an important part in determining which variety is best suited to a particular region. Early or mid-season varieties should be planted if frosts are prevalent, or in colder climates.

The early season variety "Unique" is grown extensively in New Zealand. It is a prolific fruiter, though it requires some management (e.g. branch thinning and pruning) because of its vigorous, "rank" growth. Other early varieties include Gemini, White Goose and Pounamu. Early season fruit generally ripen in February/March-April, depending on region.

There are some promising new early season varieties bred by Roy Hart (see “Research” on page 8).

Mid-Season Varieties ripen in April–May again depending on the region. They include Kakapo, Mammoth, Dens Choice and Apollo. The latter is often preferred by consumers for its size and delicate sweetness, though it bruises easily and is best harvested by touch picking. The new early season varieties have Apollo as one of their parents.

Late season varieties generally ripen in April-June and they include Triumph, Opal Star and Wiki Tu.

When choosing a variety for planting make sure the label names the variety so that you know whether it suits your conditions. Some garden centres still supply the generic name only (Feijoa sellowiana). Ask them for the variety name. Best to consult with local growers (e.g. via your New Zealand Tree Crops Association branch or the New Zealand Feijoa Growers Association) to determine which varieties are the best choice for your circumstances.
Marketing and Standards

While the price received by many growers for their fresh fruit continues to be good, the same cannot be said of processed fruit, with some of the larger processors offering a return to growers, which is barely economic.

In the industry there has long been a concern for ensuring consistent fruit quality, both at the grower and retailer end. However there are a few Feijoa marketing co-operatives which are helping to ensure high quality standards and that the returns that growers receive are worthwhile (e.g. Feijoa Supreme and Nelson’s Future Fruit).

As well, many growers have signed up to New Zealand Feijoa Growers Association’s recently developed quality standards, which means that they have agreed to quality controlled touch picking, handling and grading standards, and storage and transport standards. While it is the marketer’s and the retailer’s responsibility to store and handle the fruit with utmost care, there is some evidence that this does not always occur and that “retailer education” is also required.

New Zealand Feijoa Growers Association’s commitment to quality standards is also illustrated by its organic sub-group which works to influence the organic Feijoa industry for the benefit of all growers.
Research

Exporting

In recent years the anticipated growth in the Feijoa export industry has not materialised. The United States is the main importer of our fruit. Issues concerning storage life and pest management probably explain why Feijoas are not yet widely exported.

Exporters generally blow every single fruit with compressed air and check the calyces for bugs prior to export. However these processes are not always successful in eliminating the presence of mealy bugs which, if found, can mean rejection of an export shipment. Some growers have found that dipping the fruit in pyrethrum has helped them deal with pest problems.

The large variability of maturity at harvest, cultivar differences, and the sheer number of cultivars contribute to the complexity around storage of Feijoas. A challenge for exporters (and indeed for those supplying the domestic market) is to find a way of extending the post harvest storage life of the fruit and the period of optimum ripeness. Ripe Feijoas are very prone to bruising; while maintaining the fruit in good condition for any length of time is not easy. Currently fruit must be air-freighted to our overseas markets, which is expensive. Feijoas can be cool-stored for approximately a month with only a few days of shelf life after this. The aim in the industry is to sea-freight the fruit and thus reduce costs for exporters and overseas consumers. In recent years, HortResearch has examined a range of possible temperature manipulations to extend storage life, including low temperature conditioning, heat treatments, and “step-down” temperature storage. The latter shows some promise. Future work will examine a wider range of cultivars, particularly for step-down temperature treatments. The industry continues to search for the “ideal”, long storing cultivar.

A wide range of fruit maturities occurs on Feijoa trees during fruit development. Currently, the fruit is “touch picked” and a sample of fruit is cut open during harvest to confirm ripeness. This can mean variability in storage performance. A more reliable and efficient way of determining fruit ripeness may need to be identified.

HortResearch

In 1983 HortResearch released two cultivars, “Gemini” and “Apollo”. Programme leader Kevin Patterson was particularly interested in early maturing, large fruited cultivars with good flavour and storage qualities. Evaluation of several other promising clones continued, and in 1990 the late maturing cultivar “Opal Star” was released.
Health benefits – the Superfruit?

In recent research, extracts from Feijoas have been found to contain comparatively high levels of the compounds that enhance anti-inflammatory and anti-oxidant activity. They also have high levels of Vitamin C, minerals and fibre. In one measure of anti-oxidant activity, Plant & Food Research ranked Feijoas just over mid-way in comparison with other popular fruit, confirming the potential for the fruit as a functional food ingredient.

The Guava Moth (fruit driller caterpillar)

The reputation of the Feijoa as an “easy grow” reasonably pest and disease free plant, is under threat by the emergence of the Guava Moth (fruit driller caterpillar) particularly in northern parts of New Zealand. Because it spends the larval stage inside the fruit, insecticides are not very effective. It is suggested that one way to control the moth is to regularly clean leaf litter and fallen fruit from under the trees. Pheromone technology is showing promise as a control.

Roy Hart

Roy Hart (previous New Zealand Tree Crops Association research co-ordinator and recipient of the Dr Don McKenzie award) has for many years been a leader in research and development relating to the Feijoa, particularly research on new varieties.

In the early 1980’s Roy started a breeding programme to develop fruit which was more robust for handling, with early and late maturity seasons, and a longer storage life. Two cultivars, “Kakapo” and “Pounamu” were released from this breeding programme.

More recently, Roy has bred and trialled some promising new early season varieties (Anatoki, Kaiteri and Kakariki) all partly self-fertile, with a smooth skin, good fruit size, and sweetness. Trials indicate that they ripen before Unique, and in the Nelson district around two weeks before.

Roy is also doing some work with rootstocks to identify a dwarfing Feijoa, and currently he is exploring ways by which the storage life of the fruit can be extended.
Management

Building a framework and pruning

In commercial orchards, most growers will build a framework based on a single stem and an open centre. Opening up the middle fosters good air and light penetration to help with pollination by birds and to assist with disease prevention. Keeping the height of trees to around 2.5 metres helps with harvesting by avoiding the need for ladders. Pruning is normally undertaken after harvest in late autumn or winter, with the aim of thinning out branches. Some growers undertake a light trim in summer if there is too much vegetative growth. Low and weak hanging branches should be pruned off. About a third of the tree is normally pruned each year.

Some growers are experimenting with using the espalier system to simplify harvesting. This may become standard.

Soil

Feijoas will grow on most soils providing good drainage is present. A slightly acidic soil is best (within the range 6-6.5). Heavier soils appear to produce better quality fruit. Feijoas grown in sandy soils will need to be well mulched and watered.

Temperature

The Feijoa grows well in temperate to sub-tropical climates. There are established orchards in most North Island regions, as well as in many locations in the South Island, particularly in the top of the island. However, hot dry summers can affect fruit set and yield and Feijoas will be damaged under -5°C. An early autumn frost can damage late fruiting varieties.

Spacing

In my experience, planting trees 3.5m apart and 5-6m between the rows allows for plenty of light and air to circulate in the orchard, helps with pruning (particularly between trees) and allows adequate room for machinery to operate along the rows.

Wind and shelter

The Feijoa is relatively brittle so it is important to provide shelter, which will also protect fruit from "scarring" and limb rub on the fruit.
Pollination
Flowers have fleshy petals that attract birds for pollination – starlings, mynahs, blackbirds and thrush. At least two different varieties are necessary for good pollination, including those varieties that are advertised as “self-fertile”. Cropping of Apollos is often relatively light, though this is compensated by the large fruit size. Some growers hand pollinate this variety using a paint brush.

Feeding
The Feijoa is a heavy feeder. An annual application of compost and/or an all-purpose fertiliser will help replenish the nutrients.

Water
Plants have drought tolerance characteristics but require moisture during the fruiting season. Mulching the trees is helpful.

Weed control
This is important, especially during the first few years. Many conventional growers use weed sprays to minimise completion for moisture and nutrients and to allow a clear area for fruit collection. Other approaches include mulching, such as weed mats or grass. As the Feijoa ages, the need for/frequency of spraying lessens.

Harvesting
Harvesting is labour-intensive and time-consuming – you can be picking fruit for 4-5 weeks because the fruit on any one tree does not ripen at the same time. The industry standard is to “touch pick”, particularly for the fresh fruit market. A few growers harvest from fruit which has fallen into nets strung underneath the trees. Ground gathered fruit may be bruised, especially thin skinned varieties such as the Apollo. However, such fruit is normally suitable for the processed fruit market. Ground-gathered fruit is generally riper than touch-picked fruit, and will have a limited shelf life.

The author Ray Hollis, and his wife Jean have been certified organic Feijoa growers and active members of both the New Zealand Tree Crops Association and New Zealand Feijoa Growers Association for many years. Jean was on the national executive of New Zealand Feijoa Growers Association until last year, and represented that committee on the organic sub-group.
Acknowledgements

Tararua District Council would like to acknowledge the contributions made to this information sheet by Ray Hollis, Levin.