

The Australian Avocado Industry

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HISTORY

Avocados are recorded growing in Australia as early as the mid-eighteenth century. However, the modern-day industry dates from 1928 with the first importation of named varieties from California. Small quantities of fruit were first offered for sale on major metropolitan markets during the mid-1930s where they were accepted for their novelty value.

The industry initially developed on the subtropical eastern coast of Australia, in southern Queensland and northern New South Wales (latitude 26°S to 30°S). Production has since spread to all other mainland states.

During the early years of development the avocado industry could only be considered as a 'back-yard' enterprise. Individual growers had small tree numbers and were inevitably engaged in some other form of horticultural pursuit for their major income source.

During the late 1960s and early 1970s fruit became 'in-vogue' in up-market restaurants and hotels where it was seen as a luxury item. In 1974 the 'big wet' swept the major production areas of Queensland and New South Wales decimating the industry. It was estimated that 50 per cent of all bearing trees in these two states died by drowning or Phytophthora root rot while most of the survivors went into severe root rot decline. Subsequently high market prices resulted in large tree numbers being planted during the midlate 1970s. These continued until 1983 when prices fell in response to a fully supplied market and the previous optimism was replaced by a concern of over-production.

PRODUCTION

During the 1980s, the Australian avocado industry has come of age. Queensland and New South Wales are the largest producing states with an estimated 55 per cent and 40 per cent respectively. In Victoria, South Australia and West Australia where plantings are more recent, tree numbers are still small but some areas show promise of future increase and the ability to fill market shortages at various times of the year.

The total Australian avocado production 1986 was estimated at 20 700 t with the majority being sold on domestic markets. There is no developed export of avocados from Australia. Farm size is variable and ranges up to 50 ha with most growers

controlling between 5 to 15 ha of trees. The better growers in the none favourable environments average 20 t/ha while the highest recorded commercial yield for one season is 31 t/ha. An industry average for bearing trees is thought to be around 12 t/ha.

CULTIVARS

Avocado production in Australia enjoys a wide geographic distribution growing between latitudes 17°S to 32°S. This environmental diversity combined with selected varieties gives fruit supply to markets on a year-round basis. Production peaks from June to December with lighter supplies during the summer months. A maturity standard of 21 per cent dry matter has been set as the market criteria.

The industry is based on Mexican/ Guatemalan cultivars with Fuerte, Sharwil and Hass the most popular. Fuerte is the earliest maturing of the three, followed by Sharwil (mid-season) then Hass (late season). There has been a strong market bias for green pear-shaped fruit (Fuerte and Sharwil). The quality of Hass, however, is now recognised with some markets paying a premium price for this cultivar.

Fuerte and Hass are well documented cultivars but some explanation is required for Sharwil. This cultivar was bred at Redland Bay, southern Queensland, and is thought to be predominantly Guatemalan with a dash of Mexican genes. The tree is vigorous with the potential to set heavy crops of smooth, green, pear-shaped fruit. Flesh quality is excellent and seed size typically 13 to 15 per cent of the fruit. The cultivar has a 'B'-type flower pattern with a sensitive reaction to environment (temperature x flowering). It is more disease and pest resistant than Fuerte. Other promising cultivars include Shepard, Pinkerton and Reed.

Shepard, a lesser known Californian cultivar, is a precocious, heavy cropping, semi-dwarf tree with green pearshaped fruit. It has a 'B'-type flower pattern and like Sharwil is very sensitive to the environment during blossoming. The fruit is more disease and pest resistant than Fuerte and it matures 3 to 4 weeks earlier. Its major disadvantage is the large seed size.

Pinkerton, has been an excellent producer in every area where it has been grown in Australia. However, fruit has received a mixed reception on our markets. The two basic faults are:

- * Susceptibility to ripe fruit rots.
- * Ripening problems, *viz* areas of hard pulp in the neck, streaking and discolouration of the flesh and slow-natural ripening.

Preliminary investigations have shown that these problems can be substantially alleviated by storage above 10° and ethylene ripening above 20°C.

Reed, a very late maturing variety with precocity and high productivity. However, the round, green-skinned fruit is poorly accepted on the market. Persistence and promotion may eventually give this variety the place it deserves in production.

ROOTSTOCKS

The Australian avocado industry grew up on seedling Guatemalan rootstocks. This was by way of convenience rather than choice, as a significant population of seedling trees exists as a hand-over from the days of unregulated importation. Nevertheless, for the most part they have served the industry well. However, with the increased sophistication in orchard management, it is now opportune to narrow the genetic diversity to a few elite lines.

Mexican race rootstocks were introduced into the industry approximately ten years ago and these are serving as a comparative basis for evaluation and selection. More recently the 'resistant' rootstocks from the Californian programme have been introduced for testing under Australian conditions.

CULTURAL DETAILS

Avocados are grown on a wide range of soil types from free-draining, red basaltic foams, previously supporting rainforest, to eroded coastal sand dunes. Where soil depth is marginal, mounding along the row is employed to increase the effective root zone and improve drainage. The most common mineral deficiencies are zinc and boron which are the most difficult to correct.

Tree spacing is variable, ranging from 6m x 6m to 12m x 15m. However, there is a drift towards high density plantings with the 'commitment' to tree removal before crowding begins.

The 'Pegg philosophy' of covercropping and mulching as an integral part of root rot control is practised by a significant proportion of growers in subtropical areas during the establishment phases of the orchard. Invariably these properties have higher productivity.

Most orchards have irrigation to supplement rainfall though many are growing in areas receiving in excess of 1 800 mm pa, which is usually summer dominant. In the southern-most production areas, which are drier with a winter rainfall pattern, chloride content of irrigation water can be marginal and requires careful management.

MAJOR DISEASES AND PESTS

Phytophthora root rot has dominated Australian avocado production, casting a shadow over all production areas. Despite the spectacular success of recently developed chemical treatments, an integrated approach of biological and chemical control is still recommended in the high-risk subtropical areas of northern New South Wales and Queensland. The industry has been slow to move into cloned resistant rootstocks but will have to take this step for additional protection in the future.

Anthracnose is a serious fruit problem in most environments where it is controlled by regular spraying with copper-oxychloride and post-harvest treatment prochloraz (Sportac®).

Fruit-spotting bug causes fruit blemishes and is active in subtropical areas. Queensland fruit fly in eastern Australia and Mediterranean fruit fly in West Australia can damage fruit and control measures are required. Integrated Pest Management systems developed for citrus orchards are gradually being introduced into avocados.

GROWER ORGANISATION

The Australian avocado growers are served by a national body, the Australian Avocado Growers' Federation (AAGF). This organisation has delegate representatives from each state producing avocados. Representation is weighted in favour of Queensland and New South Wales, the two states which dominate production.

Within its limitations the AAGF coordinates promotional effort for avocados in the major Australian markets and acts as a national voice on factors important to the industry. It also assumes the responsibility to hold the biennial seminar and field days where the latest production trends, technology and marketing prospects are discussed.

The Federation liaises closely with the State Department of Agriculture in sponsoring two schemes to enable nurseries to supply disease-free planting material. The Avocado Nursery Voluntary Accreditation Scheme (ANVAS) encourages nurseries to supply Phytophthora root rot-free stock. The Virus Tested Tree Registration Programme maintains a register of true to type and sunblotch-free scion and rootstock selections. These two nursery schemes have developed independently of one another and have been very successful in upgrading nursery stock offered to growers. To reduce the administrative load these two schemes will shortly be amalgamated. The Federation has recently acquired an additional role in sponsoring the importation of new cultivars, covered by Plant Variety Rights, for evaluation under Australian conditions.

Organisation structures differ between states but in areas of significant grower numbers, district associations are formed which serve to keep their members informed on new technology and marketing developments.

CHALLENGES OF THE FUTURE

The Australian industry shares with most primary producing countries of the western world the problem of costs escalating faster than gross returns. To survive, growers have the need to increase efficiency and this means increasing the output of premium fruit per unit of cost. The search must continue into new technology, particularly plant breeding, rootstock selection, orchard management, disease control, IPM, post-harvest handling and marketing.

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