

UPDATE ON NEW ZEALAND WITH A FOCUS ON FRUIT QUALITY

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INTRODUCTION

The New Zealand avocado industry is only about 40 years old but is well established and is the third largest fresh fruit horticultural product group in the country. The industry has a strong focus on fresh fruit exports and has historically exported 60-65% of the national crop. The balance of the crop is sold on the New Zealand domestic market or is processed for cold pressed oil. There are more than 1,100 growers registered with the NZ Avocado Growers Association (AGA).



HORTICULTURAL PRODUCTION.

The only commercial cultivar is Hass (97%) with very small numbers of Zutano, Bacon and Reed planted mainly as pollinizers. The industry is based on seedling root stocks with Zutano being the most popular. There are some Hass plantings on seedling Reed and seedling Bacon. Clonal rootstocks are slowly becoming more popular as nurseries produce increasing numbers of Hass on Duke 7.

New Zealand is blessed with deep volcanic ash soil (Andosols) with low bulk densities. Most of the production in the Bay of Plenty and Northland is on volcanic soils. Avocados are

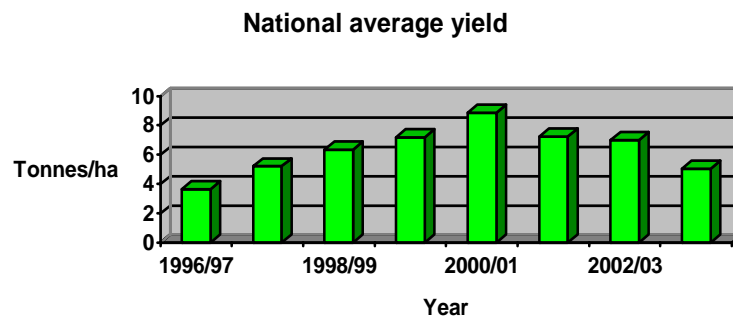
grown on consolidated wind blown dune sands in the Far North region of New Zealand. The Andosols have a deep unrestricted rooting zone with a thick organic horizon on top. Phosphate and potassium are limiting elements in the soil. Typically there are deficiencies in the trace elements magnesium, zinc, sulphur, boron, cobalt and manganese.

Rainfall is between 1600mm and 2300 mm per annum depending on microclimate. The high retention of plant available water of the Andosol soils combined with a well distributed rainfall means that many trees are not irrigated. Irrigation is essential on the sandy Far North soils. *Phytophthora cinnamomi* root rot is widespread in New Zealand but the severity is generally quite low. Root rot is managed by the natural soil advantages and by using phosphonate fungicides and surface water drainage.

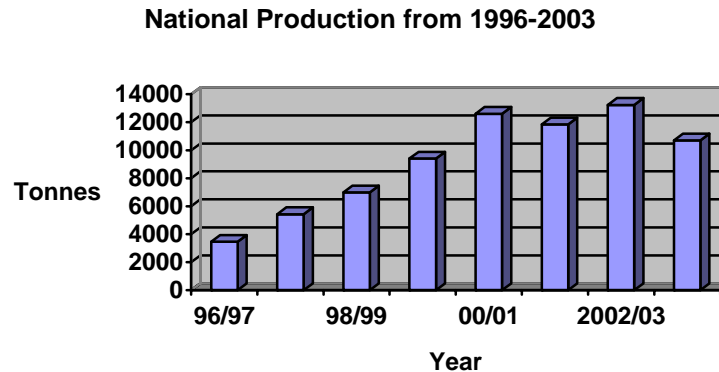
The major constraints on production are low temperatures and late frosts during spring flowering, high winds and insect pests such as six-spotted mite, various leaf rollers, Greenhouse Thrips and armoured scales. New Zealand orchards are typically surrounded by high evergreen windbreaks. Tree size control and canopy management strategies are not widely practiced in New Zealand.

PRODUCTION STATISTICS

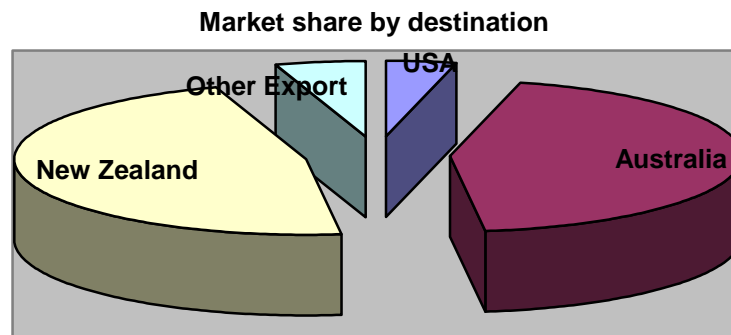
There are approximately 4,000 hectares planted. Less than 1,600 ha are more than 6 years old. The average avocado farm is 3.6 ha, but individual orchard size ranges from less than 0.5 ha to more than 50 ha. Production is limited to the North Island with almost 70% of plantings in the Bay of Plenty region centred around Tauranga. The other regions of commercial importance are Northland around Whangarei and Kaitaia and south of Auckland. National yields have been increasing slowly from a very low base in the mid 1990's. National average yield data may be distorted by the inclusion of young orchards which constitute a disproportionate amount of the total acreage and have not yet reached full production.



The New Zealand crop has increased from less than 4,400 tonnes in 1993/4 to more than 13,500 tonnes in 2002/3. The crop is expected to increase to over 40,000 tonnes by 2012 based on the large acreage planted in the past 6 years.



The major exports markets are Australia and the United States of America (USA). Australia has been the most important export market and continues to be the largest export market consuming almost 70% of New Zealand exports in the 2002/3 season. The USA has increased in importance over the past 6 years.



Smaller quantities of fruit are exported to Japan, Korea, Singapore and Taiwan. Boutique quantities of fruit are exported to the South Pacific Islands. The main harvest season is from mid-September to early March. The vast majority of the national crop is packed in 26 packing houses with the 7 largest packing houses packing half the national crop. Approximately 2% of the national crop is processed into cold pressed extra virgin avocado oil.

QUALITY

The NZ Avocado Growers Association (AGA) and the NZ Avocado Industry Council Limited (AIC) are committed to building demand and value for avocados using fruit quality as a key

strategy. In the late spring 1999 New Zealand avocado fruit was reported as having significant quality problems in the USA. Most of the complaints appeared to be unusual and concerned soft rotting spots on otherwise firm green fruit. The spotting varied in severity from very little (10-20 spots 2-5 mm across) to more than 50% of the fruit surface being affected. Of interest was that all exporters and growers appeared to be affected.

The AGA and the AIC developed and implemented a strategy to address the problem. There were several key elements to the strategy including:

- Industry ownership of the fruit quality problem
- Working closely with USA partners, particularly the USA handlers
- Securing good information about the problem
- Adopting a total communication plan
- Resourcing the AIC to deal effectively with the issues
- Ensuring that the industry implemented both best practise and compliance systems

Communication was identified as a key strategy to ensure that growers “owned” the problem and its solution. This included regular regional grower updates and industry involvement through a series of workshops. An off-shore in-market fruit quality outturn monitoring service was established in the USA using New Zealand personnel and working closely with key USA handlers. The key issues were quality and timeliness of data, flexibility and absolute confidentiality. To improve the breadth of data and information an on-shore (New Zealand) fruit library trays programme was developed where every export grower contributes fruit to be tested for inherent fruit quality. This system has grown and is today viewed by the vast majority of growers and packers as an industry strength. The outturn monitoring and library tray programme activities are centrally located and database driven. All this combines to ensure a powerful feedback mechanism providing input into the postharvest research programme.

A key factor in relation to addressing a major issue such as the quality problems in the USA was to provide the human capability to address the issues. To achieve its goals the avocado industry took the decision to employ skilled people and offer them real career opportunities within the avocado industry. Today the Avocado Industry Council employs 11 staff, of which more than half are involved with the technical development of the industry in areas such as research and development, quality assurance, market access, food safety, crop estimation and grower development.

The New Zealand avocado industry has access to legislation which allows the industry an element of legislated “self management”. This allows industry to set standards including

maturity and cosmetic quality, enforce systems to guarantee fruit age at arrival in export markets, force compliance with food safety requirements and regulate weekly reporting to the industry body. In return the industry provides an environment with significantly reduced “rogue” activity, provides all industry participants with quality information such as crop estimation, crop flow and weekly packing reports and a range of assistance in the form of Best Practise Manuals. The legislation requires a high level of consultation and input from industry and this contributes to a dynamic and innovative environment. A recent innovation introduced to industry is the web based spray diary system. The vast majority of communication with industry is electronic, both email and increasingly now, web based reporting and notification.

New Zealand avocado growers, in partnership with exporters, are financially involved in the development of the Australian market through a range of commercial initiatives with leading Australian supermarket groups and commit approximately 2-3% of the sale value to promotional activities. Growers will contribute to the development of the USA avocado market through promotional levies paid to the Hass Avocado Board to be used to fund generic market development. New Zealand avocado growers are enthusiastic and support this programme.

Fruit quality and meeting consumer expectations to underpin and build long-term demand remains a key market development strategy for New Zealand avocado growers. Growers have invested in an integrated approach to quality which is science based and built upon grower and supply chain education, quality standards, quality compliance, quality assurance, information and intelligence systems.

RESEARCH AND DEVELOPMENT

The AGA makes significant investments in research and development. A key outcome is the sharing and wide distribution of the research results. The AGA publishes all research funded in an annual Research Report made which is available to all growers in New Zealand and can be purchased by researchers anywhere in the world. The research results are also made available to Avocadosource.com and AvolInfo.

The key areas of research are:

- Fruit quality with high relative fruit maturity
- Pollination, fruit set and fruit retention
- Fruit size
- Water deficit and nutrition

- Foliar nutrition
- Root function
- *Phytophthora* root rot
- Carbohydrate cycling, accumulation and utilisation
- Leaf quality and photosynthesis
- AvoGreen, IPM and chemical spray technologies
- Germplasm evaluation

The AGA makes use of a combination of contracted out and internal resourcing to advance the research. At present the AGA leases two gene blocks, cooperates with over 40 growers undertaking field based research, maintains a small laboratory and employs or contracts a range of scientists and technical support.

INTERNATIONAL COOPERATION

The New Zealand avocado industry fully understands the global nature of the international fruit trade. There is a strong partnership between the grower body, exporters and the supply chain under the umbrella of a peak organisation, the Avocado Industry Council Limited. As a result of this partnership there is a shared view of goals and the strategic direction the industry needs to take, and a will to make it happen. Importantly the industry can speak as one and there is a vehicle for deliberate and outcome focussed international cooperation.

On a commercial level exporters and grower groups are active in developing commercial relationships with partners in all markets. The AGA has developed good international relationships with grower and industry organisations in Australia, United States and South Africa. New Zealand is slowly starting to build relationships with Chilean avocado growers. The relationship with Australian growers is particularly close with mutual exchanges and cooperation in the fields of information and technical development. There is regular programmed high-level political and executive contact. Where appropriate there is joint funding of research. The Australian and New Zealand avocado growers share a joint conference every four years.

CONCLUSIONS

The New Zealand avocado industry is very small by international standards and produces less than 1% of world supply. The avocado sector is poised for dramatic growth in the next 10-5 years as new plantings come on stream and the benefits of growing Hass in cool climates are

realised. Growers are confident in the future prospects of avocado. New Zealand is committed to being a responsible participant in the global avocado business and has developed systems and institutions to ensure that this happens in a deliberate and robust way. New Zealand avocado growers have a strong commitment to fruit quality as a key strategy to building long-term demand. New Zealand avocado growers actively support international market development and are financially involved in programmes in New Zealand, Australia and the USA.

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