

# **Australian Onion Industry New Zealand Study Tour**

Joanne Thomas-Ward  
Onions Australia

Project Number: VN08001

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This report is published by Horticulture Australia Ltd to pass on information concerning horticultural research and development undertaken for the onion industry.

The research contained in this report was funded by Horticulture Australia Ltd with the financial support of Onions Australia.

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ISBN 0 7341 2089 3

Published and distributed by:  
Horticulture Australia Ltd  
Level 7  
179 Elizabeth Street  
Sydney NSW 2000  
Telephone: (02) 8295 2300  
Fax: (02) 8295 2399

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# Milestone Report

**VN08001**

## **Australian Onion Industry New Zealand Study Tour**

**April 30<sup>th</sup> – May 8<sup>th</sup> 2009.**

**Project Leader:** Ms Joanne Thomas-Ward  
Executive Officer  
Onions Australia

**MOUNT GAMBIER EAST**

**SA 5291**

**08 87258862**

## Summary

The Australian Onion Industry New Zealand Study tour departed Melbourne with 9 delegates on April 30<sup>th</sup>, 2009. Arrival was into Auckland.

The tour covered the major onion producing areas within New Zealand. It also included visits to research areas, universities and research laboratories. The major onion growing areas of New Zealand are Pukekohe, Napier, Hastings, Christchurch and Ashburton. The Universities and research facilities were in Palmerston North & Lincoln.

The study tour provided delegates an opportunity to develop extensive networks within all sectors of the New Zealand onion industry. This included growers, researchers, seed representatives & engineers.

This tour was a relaxed informative way for the onion industry representatives from both sides of the Tasman to compare notes and competently network. It covered parts of the Strategic Imperatives in the Australian Onion Industry Strategic Plan as will be reported on throughout this document.

- **1.** Grow the market for Australian onion products
  - 1.2 Develop onion products aligned with priority market segments
  - 1.3 Explore export opportunities for onion products
- **2.** Improve Industry Competitiveness
  - 2.4 Improve our ability to respond to disease and pest threats
- **3.** Strengthen industry information and communication networks
  - 3.1 Generate and communicate reliable and targeted information for “industry members”
  - 3.2 Encourage through chain collaboration and communication
- **4.** Identify and build industry leadership and capacity
  - 4.1 Encourage industry participation and leadership
  - 4.2 Enhance industry business and leadership skills

## Outcome & Achievements

May 1<sup>st</sup> 2009

**Compac Machinery** – Pukekohe - Compac sorting equipment are world leaders in fruit and vegetable sorting technology. Compac machinery is highly regarded in Australia and used for most types of produce in over 20 countries worldwide.

The equipment was made on site and delegates were shown all parts of the assembly line. The equipment is then packed in shipping containers and shipped all over the world with technicians sent to set up on sight.

Some delegates had used this sorting equipment; some had seen it in use in Australia, whilst others had never seen it. This equipment uses technology that can check for “sweetness” of produce and sort during the packing process. This technology is being developed for use in onions and potatoes. This may be of use in the future for developing onion products such as mild onions in the future. (Strat Plan 1.2).

Some delegates commented that they could see many possibilities for this technology in Australia, although a very expensive product. It was also noted that delegates saw opportunity for research and development possibilities regarding a technological system for future development of quality control. (Strat Plan 2.4)

The delegates were taken to an operating plant – to see how all the equipment and technology came together. (Punchbowl Cool stores). Delegates were able to see kiwi fruit being sorted and packed using this specialised equipment.

**Seminis Vegetable Seeds** – Onion breeding overview – Pukekohe research station – PLK May & Ryan history overview – New Zealand market overview – Research.

- 1923: Saw Turbot select Straw Spanish in Pukekohe
- 1929: First commercial sale of Turbot Selection
- Turbot After several more selections renamed cultivar Pukekohe Longkeeper.
- 1935: Turbot Selection was then handed onto Morgan and Adamson family to continue selection.

- 1952: Morgan and Adamson on their retirement offered the germplasm to another Harrisville family J.E May & Son.
- 1967: May Ryan established from J.E May and Son (Noel May and Peter Ryan). Agreement signed with Coopers-Yates to Market and Breed
- 1972: May and Ryan introduced to the Onion Industry the first early maturing inbred, taken from the Longkeeper. Known as Early Pukekohe Longkeeper.
- 1987: Agreement with Yates terminated due to receivership
- 1989: Grant Ryan joined the business
- 1989: Joint Breeding Program signed between Asgrow-May and Ryan, Marketing arrangement with New World Seeds.
- 1998: First Sale of commercial hybrids. (Franklin, Canterbury, Waikato).
- 2000: Saw the introduction of Advance (Extra Early Export) Redkeep (Red Export Storage) and Brownkeep (Australian Brown) to the cultivar list.
- Dec 2004: Grant Ryan joined Seminis.

#### *New Zealand Market overview*

- There are various harvest methods used: Double row harvester based around a JD combine: 12t bulk half height containers:
- Total Tonnes Exported 2008 157183.258
- Total FOB Value NZ\$ 2008 \$1046750.
- Area planted 4675ha

#### *Australian Research Trials*

- South Australia has a regional breeding site
- Queensland has a Co-op/linked with US short day breeding program

#### *Research Focus*

- Marker assisted breeding
- Yield
- Disease resistance

- SYI: Sustainable Yield Initiative.
- Disease Res – Downey Mildew, Botrytis (Strat Plan 2.4)
- All Backed with Marker Assisted Breeding Technology.
- Dark Red Colour Selections.
- Improved Storage Life

As most delegates had had historical dealings with Seminis seeds this was an ideal way to network in a relaxed and informative way. There was opportunity to look at the new breeding lines with delegates interacting in an extremely positive way. There were intense discussions on new varieties currently being developed and those “ear-marked” for future development. Later in the evening local New Zealand growers and Australian delegates shared a meal, networked and compared notes. (Strat Plan 3 & 4).

**McKenzie Engineering Ltd** – Neil McKenzie – Pukekohe East. Mr. McKenzie has a family business and has been making and designing machinery since the early 1950’s. Mr. McKenzie was informative – comments from delegates were “what he does not know about onion top and tailors isn’t worth knowing”. McKenzie engineering supplies an onion spiral top and tailor which is used both in New Zealand and in Australia. Some delegates had seen in machinery in use and were impressed at his ingenuity and enthusiasm.

**AS Wilcox & Sons Ltd** – Pukekohe – Wilcox’s main growing regions are Pukekohe and Waikato and are harvested, stored and pre-packed for year round supply. Varieties are continually evaluated to ensure consistent quality standards in taste, texture and keeping properties. Purpose-built onion pack houses are located in Pukekohe in the North Island and Rakaia in the South Island. They have significant exports to the UK through their export company Sofresh. AS Wilcox & Sons Ltd was established in 1954 and is still a family owned and operated business. The business crops about 1200 hectares and produces approximately 50% of what they sell. They grow onions in or around Pukekohe & Mata Mata.

This was a very large operation and many delegates expressed opinion over reliance on export. Disease control of crop is imperative to keep these markets open. Open discussions followed regarding the marketing procedures of their products, bag sizes and export opportunities elsewhere other than the UK. (Strat Plan 1.3).

New Zealand onion varieties were discussed and it was verified that the New Zealand domestic market did not differ much from the Australian domestic market although the New Zealand consumption per capita was lower than in Australia. Australian’s consume

approximately 11.4 kg of onions per person per year, where as New Zealand consumption is approximately 8kg per person per year.

#### *Brown Onions*

these are the most commonly available onions domestically in New Zealand. The most common varieties are Pukekohe Long Keeper and Pukekohe Early Long Keeper.

#### *Red Onions*

recognised by their burgundy red skins and red tinged flesh. Spanish type red onions are large and round, while Californian red onions tend to be flatter and milder. Domestically available in January until August.

#### *Sweet Mild Onions*

these appear similar to main crop of brown onions, with lighter golden skins. Domestically in New Zealand they are generally larger and flatter with a milder flavour. In both countries these onions softer than a main crop of brown onions. Consumers on both sides of Tasman sometimes mistakenly think that this softness indicates inferior quality. The local domestic New Zealand season is December until May.

#### *Pickling Onions*

these are simply small brown onions. These onions are domestically available all year round. Suggested time for pickling around March.

#### *White Onions*

White onions have a papery skin and white flesh, with a sharp medium flavour. They are generally available orange sized. Similarly to Australia these are available in limited quantities. New Zealand also imports this product when availability is limited.

(Strat Plan 3)

### **May 2<sup>nd</sup> 2009**

**Masters** – Onion Exporters – Pukekohe – An informative visit to a 3<sup>rd</sup> generation grower/packer operation. Expressed were opinions of where the onion industry was heading in the future and that it must take a collaborative approach to survive. They expressed that they experience similar difficulties as in Australia with obtaining this collaborative approach. Their onions were predominantly grown about 30kms from Pukekohe with distinct division of onion growers. Their growers were 1/3 Hindu, 1/3 Chinese and 1/3 New Zealand/European. (Strat Plan 1.3, 3.1 & 4.1)

**Terranova Seeds** – a visit to the research station commenced post visit to Masters. Many of their onion varieties were on display for delegates to see and discuss. Terranova Seeds is widely used in Australia

- Terranova is a specialist Vegetable Seed Company with offices in Australia and New Zealand.



- Specialised Technical staff servicing all states of Australia & growing regions of New Zealand
- Terranova Seeds is subsidiary of South Pacific Seeds.
- Terranova market a broad range of varieties having trials in both New Zealand and Australia.

Terranova representatives expressed that they had good control on thrips with the use of mites in the field. This is a problem in Australia and further communication was sought by some delegates. (Strat Plan 2.4)

They expressed that their future may lie in Asia – with exports expected to increase into that area as it is becoming more expensive to export to the EU and UK. (Strat Plan 1.3)

### **May 3<sup>rd</sup> 2009**

**Apatu Farms** – Napier/Hastings region. Apatu Farms is a large grower/pack house producing a range of processed and fresh market crops. Their export market primarily focus' on Brown and Red fresh onions.

Apatu Farms plants 1000ha/year of vegetables, 250ha/year of onions. Their other crops include tomato, sweet corn, beetroot and carrots.

Apatu Farms export 80% of their produce. Their export market is predominantly from January to May. Produce is shipped to Norway, Sweden, Holland and Germany. Some produce is still being exported to the UK, but this market is becoming less economical. Their export market in the past has been dependent upon Japan, but the US is now dominating this market.

The other market that they are developing is value adding and processing. Approximately 20% of their onions go into this market, with very little going into the domestic market. Frozen and sautéed onions are processed in New Zealand with some of these products being exported to Australia. (Strat Plan 1.2)

Irrigation is used in this area of the North Island – all mobile irrigators. They irrigate far less than most Australian onion growers. The annual rain fall is 800mm's per year with irrigation occurring only once in a growing season (300ml's). At the time of our arrival they were in their 3<sup>rd</sup> year of an autumn drought and water restrictions were starting to be applied. The quality of the water was varied from Australia. Quality of water is never a problem as they have direct access to and Artesian Aquifer.

Mark Apatu expressed to the delegates that the market in the UK can be quite volatile and the German market very competitive. The volatility of the currency is becoming an increasing problem. (Strat Plan 1.3)

Delegates from Australia reflected that the industry is very similar to Australia, with less and less growers. With fewer growers yields have not decreased as the growers are becoming larger. Land values are increasing (as is an issue in Australia), therefore cost of production increases. Obtaining good reliable labour is also a problem both sides of the Tasman. (Strat Plan 4.1)

### **May 5<sup>th</sup> 2009**

**Centre for Precision** – Professor Ian Yule and associates – Palmerston North Campus – Professor Ian Yule spoke on the goals of his work which were to reduce the amount of irrigation used without a reduction in Yield and to improve fertiliser efficiency. Some European scientists believe we use approx 50% more fertiliser than actually required.

Professor Ian Yule and Carolyn Hedley presented their work on Variable Rate irrigation. This could be introduced as a possible method of improving irrigation water use efficiency. As in Australia, New Zealand sees the use of pivot irrigators as the most popular system at this time. This use has a low labour demand as it uses a method of high automation. They explained that one of the main problems being overcome is the inflexibility of the systems. The variable rate irrigation systems looks at the inflexibility and also giving the grower a level of assurance regarding the amount of water being used at any point under the irrigator. Their concept gives the grower total control of the irrigator and its application performance inevitably giving the grower the ability to optimise the use of land available. Carolyn Hedley also spoke on the use of Electro Magnetic Mapping.

- Soil mapping can be used to map the soil water capacity under a centre pivot irrigator. This information can then be used to more accurately decide how to program the centre pivot.
- Water savings up to 20-25% may be acquired
- It is possible to control the irrigator to deliver a variable pattern of water use
- Cost effective
- Using variable rate irrigation, it may be possible to have freedom in what is grown under the pivot allowing much more flexibility to the grower. An example was demonstrated later by Stuart from Precision Agriculture – showing delegates a variable rate irrigation system keeping water from wheat whilst watering potatoes.

As most of the delegates used centre pivot irrigation this was a most informative morning. Only two of the delegates used flood irrigation.

Following the above presentation was a presentation from Stuart Bradbury of Precision Irrigation. [www.precisionirrigation.co.nz](http://www.precisionirrigation.co.nz). He covered the following:

- What is variable rate irrigation
  - It is an add-on to a centre pivot that allows different amounts of water to be applied along any part of the length of the irrigator at any one time.
- How variable rate irrigation works
  - Precision Irrigation variable rate irrigation provides precision control of all sprinklers on a centre pivot: achieved by individually pulsing sprinklers on and off to modify the application rate along the length of the irrigator.
  - The farm is mapped and program placed on a PC/Laptop and the grower sets “management zones”. Eg: different crop sites; different soil types; areas that require more/less water
  - These areas can be drawn in from aerial photographs, soil maps or from points recorded by the grower using a hand held GPS
  - Using the company’s software (VRI) on PC/Laptop the grower can define how much water should be applied to each area. Once this has been done and saved to a memory card and inserted into a VRI controller at the centre-point. This can be done wirelessly or through a modem.
  - Each sprinkler on pivot has a lathing solenoid valve which is either pulsed on or off by a controlling node. Each node has four sprinklers with individual control of each valve. It is a simple process to add this to existing centre pivots already in operation.
- Benefits of VRI
  - Water is used more efficiently. Sprinklers can be turned off whilst travelling over track, troughs, drains etc
  - Decreased power consumption
  - Meets needs of high water use type soils.
  - Less Track maintenance
  - Application rate can be changed easily over different soil types or crops

- Reduction in nutrient runoff and leaching
- Fertigate or Chemigate more effectively – fertiliser / chemicals can be applied directly through the irrigator and grower has control of where /when and at what rate they are applied.
- Decrease watering in low and or flooded areas – alleviating pooling in some areas.
- Even out inaccuracies in distribution created where sprinkler nozzles cannot apply the correct amount of water. Eg: often around the centre-point too much water is applied due to sprinkler nozzles not being able to cope with such a slow speed. The VRI compensates and evens out the application.

This company designs the irrigator system for each individual grower. They set up they system, provide software and training. The cost of this system is approximately \$100 NZD per linear metre installed. The mapping of land via GPS and electro-magnetic mapping can take up to 4 days to do 250ha.

Delegates were extremely interested in this morning with many questions being asked. There were comparisons made as to what is already in use in Australia and how this differs. The main area was an improvement in water usage and also an element of disease control. It was also noted that after initial set up costs it may also be cost effective to growers in Australia due to severe water restrictions in some areas. (Strat plan 2.4)

### **May 6<sup>th</sup> 2009**

***Agrimm Technologies*** – A world leader in the development and manufacture of effective, safe and environmentally friendly biological friendly plant protection products. Agrimm was established in 1984 and has its main office in a new purpose built production facility located at Lincoln near Christchurch on the South Island of New Zealand. (Strat Plan 2.4).

Onionmate™ is a product used in New Zealand and has field trials in South Australia. It is marketed in New Zealand as a root zone starter granule, “Vigorous, high yielding plants naturally”, “recommended for spring and bulb onions”. A profile was provided stating onionmate™ bio-inoculant is formulated in a sustained release granule to optimise the colonisation of soil around the emerging onion seed. It contains 2.5 million *Trichoderma atroviride* colony-forming units per gram.

Darren Alexander from EE Muir & Sons, based in Burton in South Australia presented information on a field trial conducted in South Australia. Titled “South Australian Onionmate™ Field Trial”, Plant Yield and Packout Assessment.

The summary of this report was produced and handed to all delegates present. An overview of this report is below:

- A range of onionmate™ treatments were evaluated against standard growing conditions on two separate sites using two different growers.
- Treatments were evaluated per 100 onions per row and their weights and size category measured.
- Yield and size increase were obtained wherever onionmate™ had been applied.
- Observation that treated onions had a greater root system and returned higher levels of nitrogen in the leaves.
- Recommended that growers add onionmate™ at a rate of 25kg/ha to their program at planting to increase their potential \$/ha return.

Delegates commented that they had knowledge of the trials and that they were hopeful for the future of this product.

**Bio Protection Research Centre** – Lincoln University – Lincoln. A brief visit to this facility followed the morning at Agrimm Technologies. (Strat Plan 2.4)

The Bio-protection Research Centre is a collaborative venture focused on finding new, sustainable and non-chemical solutions to protect New Zealand's plant-based, productive eco systems from the threat of diseases, weeds and insect pests. The centre's director is Professor Alison Stewart. Delegates were shown around the facility and provided with an annual report – available on [www.bioprotection.org.nz](http://www.bioprotection.org.nz).

Comments from delegates where varied. A comment was made on the amount of research funding that “does not go into Chemical use” rather that they appeared to be concentrating on sustainable non-chemical research. It was felt that Australia varies slightly in this field. Other comments included that New Zealand are susceptible, as is Australia to imported diseases and bio-security was a major concern for both countries.

**Greg & Joanne Lovett** – Growers – Ashburton – Greg and Joanne Lovett are local small growers with excellent sustainability business practices. (Strat Plan 3.1, 3.2 & 4.1)

Greg Lovett showed delegates his packing facilities whilst explaining how he maintained a smaller farm and packing shed in today's competitive market. He supplied product to the larger packing sheds, but also exported of his own product through his pack house. A larger percentage of his market is domestic which was in direct contrast to the larger grower/packer in New Zealand. Mr & Mrs Lovett's property size and pack house were comparative to what is seen in Australia. The style of irrigation used was of great interest to

delegates, using removable irrigation pipe. Again the amount of irrigation required during the growing season was very much lower than all regions in Australia.

**May 7<sup>th</sup>, 2009**

***Plant & Food Research Centre*** – Dr Nick Ashby, Dr John McCallum & Dr Colin Eady –

Plant & Food Research Centre researchers: sustainable land and water use, high performance plants, personalised foods, high-value marine products & biomolecules & biomaterials.

Presentations on Dr McCallum's work and Dr Eady research were followed by a tour of their facility.

Research completed in 2008:

- germplasm which should put 'tearless' onions within reach of consumers in New Zealand within a decade has been developed. There has been an application to field test these and other genetically modified onions submitted.
- "Round Up Ready" onions were discussed and plot trials were viewed.

Discussion on their work was intense and appeared favourable. (Strat Plan 1.2 & 2.4)

***Wyma Engineering*** – Dr Stephanie Lamotte & Linc Burgess – Developer of innovative pack house equipment.

Delegates were given a tour of the entire operating plant. The tour included the workshop & design area. Wyma products are widely used in Australia with some delegates having imported their washing and polishing equipment.

Wyma's vegetable polisher appeared to be of most interest. This system is designed to remove the surface of the vegetable (an many types of vegetables can be used in this system). The vegetable polisher can completely remove dirt and lighten up skin of some vegetables, remove fungi if necessary, such as Rhizoctonia. Giving the grower/packer a greater percentage of premium products being packed out for consumers.

## Dissemination

The information contained in this report has been discussed with delegates. Each delegate was given a sheet to report on 2 days each of this tour. These sheets were collated and material placed in this report. Since the return of the study tour a presentation has been given at the Regional Levy Payers meeting in Bunbury WA on Monday June 8<sup>th</sup>.

During the Annual Levy Payers meeting being held in Murray Bridge, SA in November 2009 there will be two delegate presentations. In conjunction with these presentations a feature article will appear in the annual Onions Australia magazine, being distributed at that meeting and via Australia post by November 20<sup>th</sup> 2009. This will enable all registered levy payers to view outcomes of the activities and findings from this tour. Onions Australia is also distributed worldwide and this will enable good global coverage as well as promoting the industry to a broad range of interested parties.

## Itinerary

April 30 <sup>th</sup>	Depart Melbourne – overnight in Auckland
May 1 <sup>st</sup>	Compac Engineering, Seminis Seeds, McKenzie Engineering, Punchbowl Coolstores, AS Wilcox & Sons
May 2 <sup>nd</sup>	Terranova Seeds – travel to Rotorua
May 3 <sup>rd</sup>	Travel to Napier
May 4 <sup>th</sup>	Apatu Farms – travel to Palmerston North
May 5 <sup>th</sup>	Professor Ian Yule – Centre for Precision Agriculture – travel to Christchurch
May 6 <sup>th</sup>	Agrimm Technologies, Lincoln University, Greg & Jo Lovett
May 7 <sup>th</sup>	Plant & Food Research Centre, Wyma Engineering
May 8 <sup>th</sup>	Depart Christchurch

## Delegates

Mr Sam Gurciullo	Grower/Packer	New South Wales
Mr Darren Rathjen	Grower/Packer	South Australia
Mr Jason Daniell	Grower/Packer	South Australia
Mr John Dellazoppa	Grower/Packer	South Australia
Mr Vince Gurciullo	Grower/Packer	New South Wales
Mr Andrew Moon	Grower/Packer	Queensland
Mr Aaron Haby	Grower/Packer	South Australia
Mr Peter Dettloff	Grower/Packer	South Australia
Ms Joanne Thomas-Ward	Project Leader – EO – Onions Australia	South Australia

## **Delegate evaluation**

**1=Poor, 2=Needs improvement, 3=Adequate, 4=Good, 5=Excellent**

### **Overall rating of the study tour**

**4.5**

Well organised, informative and enjoyable trip with a good mix of interests. Excellent opportunity to see firsthand issues faced in another country.

### **Value of the study tour to your business**

**4**

Good to learn how another countries industry works. Definitely good value, picked up on ideas which have recently been put in place here in Australia.

### **Value of the tour to you professionally**

**4.5**

Learning about onion industry in general was extremely beneficial, not only the industry in New Zealand but also our own industry in Australia. Spending time talking to people from the Australian industry was a good experience. Through the tour it was a chance to do this and enhanced network capabilities. Helped to make comparison with our own situation. Definitely have more energy now to do a better job in my own business.

### **Participant interactivity**

**5**

The group interacted well together which added to the whole tour experience. The input from most delegates was good.

## **Bibliography**

Compac™	DVD & 2005 brochure
Seminis Seeds	Grant Ryan – PowerPoint presentation
AS Wilcox	<a href="http://www.aswilcox.co.nz/">http://www.aswilcox.co.nz/</a>
Apatu Farms	<a href="http://www.marketnewzealand.co.nz">http://www.marketnewzealand.co.nz</a>
Variable Rate irrigation paper	Dr Ian Yule & Carolyn Hedley
Precision Irrigation Document	Stuart Bradbury
SA Onionmate™ Field Trial	Darren Alexander – EE Muir & Sons
Bio-Protection Research Centre	Annual Report
Plant & Food Research Centre	<a href="http://www.crop.cri.nz">http://www.crop.cri.nz</a>
Wyma Engineering	Produce Handling Equipment brochure 2006