

Study Tour - Lettuce Harvester

Vegetable Growers Association of Victoria

Project Number: VG11702

VG11702

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

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Lettuce Harvester Study Tour

United States (California) and Italy 2011

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Project Number: VG 11702

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Lettuce Harvester Study Tour

VG 11702

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Objective

The objective of the project is to assess existing, new and emerging technologies to improve the efficiency and effectiveness and how they may be integrated to existing systems in Australia.

Government priority

Technology
Promote the development and application of new and existing technologies.

Funding Source

Horticulture Australia Limited

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May 2012

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Media Summary

For the Australian and Victorian Vegetable Industry to improve its competitiveness there needs to be opportunities for growers to implement improvements in their production systems. The recently concluded study tour of California's Salinas Valley and the Italian horticultural region of Veneto provided a platform for participating growers to view new technologies.

The objective of the tour was to assess existing, new and emerging technologies that could improve the efficiency and effectiveness and how they could be integrated into existing systems in Australia. The tour focused on equipment for the lettuce industry (head lettuce iceberg, cos and salad mix) looking at lettuce harvesters, innovation in lettuce production and trends in varieties, packaging and marketing of lettuce.

In order to maximise the learning experience the tour visited several leading manufacturers of lettuce harvesters in both countries as well as lettuce production in those regions.

In California's Salinas Valley we visited Ramsay Highlander in Gonzales and Valley Fabrication in Salinas, both manufacturers of specialized harvesting aids for the vegetable industry.

Ramsay Highlander is internationally known as the world's largest manufacturer of self-propelled Harvesting Aids. On our field visits we observed the launch of Ramsay's newest product, the Mechanical Harvester in action, using a water jet cutting method to harvest cos lettuce. Although labour is used for sorting and packing of the mechanically cut lettuce heads, the process replaces 30 labourers from harvesting.

What is characteristic for both of these manufactures is that they work closely with the growers to design and produce harvesting machines for individual growers. A good example of this harvesting aid in use was at Costa & Sons farm. Valley Fabrication built and designed the equipment, with the grower's input, so that cutting and washing operations were completed on the field by two self-propelled specially designed machines.

In Italy we visited Hortech and Ortomec two manufacturers of self-propelled harvesters for head lettuce and salad mix as well as tractor pulled machinery.

Some of the differences between machines in California and Italy were size and robustness of materials used. Machines in California are larger in size, suitable for a larger scale operation, very often unique for property, area or commodity, and generally cannot be picked 'off the shelf', they must be ordered for a specific property.

Machines in Italy are more suitable for the majority of properties in Australia and in terms of price relative to the farm size. Many salad mix harvesters from Italy have already been used in Australia, our advice would be to get in touch with someone using these in order to make an assessment of suitability before purchase.

As for the harvesting machinery from California, currently that is the best technology available on the market. Individual farms need to make their own assessment if this is going to be suitable for their particular production and how long it will take them to pay off the investment.

California Salinas Valley Introduction

Salinas Valley is the largest vegetable production area in the United States. Vegetable production dominates the economy of the valley, and they call it "The Salad Bowl of the World" for the production of lettuce, broccoli, peppers and other vegetables. The climate is also ideal for the floral industry, strawberries and grape vineyards planted by world-famous vintners. The Salinas Valley runs approximately 145 km south-east from Salinas towards King City. It is located in between two mountain ranges known as the Galiban and Santa Lucia mountain ranges border the Salinas Valley to the east and to the west. This area produces 80 percent of the nation's lettuce with cos and iceberg still being the dominant types. Other crops include broccoli, cauliflower, tomatoes, celery, strawberries, spinach and wine grapes. The climate is excellent for growing leafy crops with good deep alluvial soils and an underground water supply fed, in part, by the large watershed in surrounding mountains supported by two reservoirs for groundwater recharge.

Visit to Enza Zaden US research station San Juan Bautista

Our tour effectively started in San Francisco where we rented a 'big truck' to look like the rest of the farming community in California and drove to San Juan Bautista where we visited the Enza Zaden research station. Enza Zaden is one of the largest developers, growers and marketers of vegetable seeds in the world. Our host there was Jonathan Sinclair, senior iceberg breeder. He showed us some of his latest breeding trials and had a discussion with the growers about current trends in lettuce breeding.



Visit to Enza Zaden lettuce field breeding trial, Left to Right Jonathan Sinclair Enza Zaden, Geoffrey Story Story Fresh, Michael Maguire Rugby Farm, Dino Radin Harsletts farm and Andrew Bulmer Bulmers Farm Fresh Vegetables.

Visit to Ramsay Highlander

The next day we moved to the Salinas Valley, we began the working day with visits to Ramsay Highlander in Gonzales a manufacturer of specialized harvesting aids for the vegetable industry. Located in the heart of the Salinas Valley, Ramsay Highlander is internationally known as the world's largest manufacturer of self-propelled Harvesting Aids. The day started with early morning visits to a cos lettuce field near Gonzales where we observed in action Ramsay's newest product launched, the Mechanical Harvester using a water jet cutting method to harvest cos lettuce. Frank Maconachy CEO of Ramsay Highlander, our host for the day, said that this harvester has been able to eliminate the need for 30 labourers from the harvesting process. He added that this harvesting method increases product shelf life up to 3 days as the water pressure seals the cutting wound. Just one thing worth mentioning, before we were allowed to enter the lettuce field we were handed latex gloves and hair nets to prevent any food/product contamination (very strict on food safety).



Water Jet self-propelled cos lettuce harvester



Water Jet self-propelled cos lettuce harvester with support vehicle for transport

We spent the rest of the day at Ramsay Highlander in the office and workshop talking to engineers and production staff about current projects and their vision for the future.

Ramsay custom design machines to meet the exact requirements of each customer by utilizing the latest computer aided design software in addition to their many years of experience. In their workshop one machine caught our eye with its futuristic look, (like something from a 'Star Wars' set), it was a prototype for a weeding/thinning machine. When the machine is operational it will have a photo/colour sensor with the capability to read 2000 shades of green and then insert (spray) herbicide on unwanted plants.



Water Jet self-propelled cos lettuce harvester with caterpillars instead of wheels



Prototype of weeding/thinning machine (above) tomato harvester (below)





Visiting team in front of spinach harvester (from left to right) Frank Maconachy CEO of Ramsay Highlander, Slobodan Vujovic IDO VGA, Geoffrey Story Story Fresh, Michael Maguire Rugby Farm and Andrew Bulmer Bulmers Farm Fresh Vegetables.

Visit to Valley Fabrication

On day 3 we visited Valley Fabrication in Salinas where our host was Peter de Groot, Engineering Manager. Valley Fabrication is a manufacturer of custom harvesting equipment for the fresh vegetable industry, specialising in salad mix harvesters, self-propelled harvesters for broccoli, cauliflower and cos lettuce, various harvesting aids and transfer systems.

Valley Fabrication's design team work directly with customers to develop a complete new harvester or to modify an existing design according to customer requirements. They use solid modelling software to generate an accurate computer model of a new harvester. This allows the customer to "see" the harvester before it is built. Most changes are made before any drawings go to the shop floor for manufacturing.



From left to right Dino Radin Harsletts farms, Peter de Groot Engineering Manager, Geoffrey Story Story Fresh and Andrew Bulmer Bulmers Farm Fresh Vegetables in the driver seat on spinach harvester from Valley Fabrication

To show us some fine examples of their ingenuity Peter took us to Costa & Sons where we saw first-hand the cutting and washing operation been completed in the field by two self-propelled specially designed machines.



In the afternoon we visited one of the D'Arrigo Bros. Co lettuce (cos) fields to see their harvesting operation in action. D'Arrigo Bros operates under the name Andy Boy and is one of the largest vegetable growing operations in Salinas Valley. They grow broccoli, rabe, cactus pear, cauliflower, fennel, cos (Romaine) lettuce hearts, iceberg lettuce, green & red leaf lettuce.

In the field we observed the process of harvesting, packing into sealed bags and then boxed From there to the transport vehicle to be cooled and then in less than 24 hours on the supermarket shelves across the US. It was of great interest to our growers to see the whole process of the operation, looking at harvesting equipment and how it all works in together.

Observing their internal quality insurance process during which one box per load is field inspected and recorded on a hand held device,. Also every box is bar-coded for traceability recording the block number , harvesting crew, date and time of harvest.



Harvesting crew of around 70 people (images above front and back) harvesting cos lettuce hearts at D'Arrigo Bros farm.



Andrew Bulmer inspecting a bag of cos lettuce hearts, before they were transported from the field to warehouse and then straight to Costco supermarkets.

Visit to Taylor farms

We visited Taylor Farms operation in Salinas where we were shown around by Andrew Fernandez, Vice President of Row Product. Taylor Farms is a processor of salads and fresh cut vegetables with ten processing plants across North America, producing 120 million weekly servings.

We had the opportunity to see their state of the art processing facility and discuss market trends in ready to eat salads and vegetables in US and Australia. Andrew said that the latest market research showed that the Consumer spends 49% of their food budget in restaurants, 71% of adults now say they try to eat healthier when dining out. He added that vegetables have the lowest cost per serve, highest plate coverage and best nutrition to weight ratio of any food.



Visit to Ferry Plaza Farmers Market

The Ferry Plaza Farmers Market is a certified farmers market operated by the non for profit organisation. The market is widely acclaimed for both the quality and diversity of its fresh farm products and prepared foods. It is renowned throughout the country as one of the top farmers markets to visit.

The farmers market is open three days a week Tuesdays, Thursdays and Saturdays. The markets offer fruits, vegetables, herbs, flowers and meats from small regional farmers, many of whom are certified organic. Farmers markets play an important role in US especially for small and organic farms. Farmers selling directly to consumers at farmers' markets have continued to achieve higher returns. In the US the number of farmers' markets more than tripled in last fifteen years.



Organic berries raspberries, strawberries, blackberries and blueberries at Ferry Plaza Farmers Market

Veneto region Italy

The agricultural sector of Veneto is among the most productive in Italy. The area is a well-known horticultural district specialising in market gardening, fruit-growing and vine-growing throughout the plain and the foothills.

The main agricultural products include maize, green peas, vegetables, apples, cherries, sugar beets, forage, tobacco, hemp, Utilising the good soil, good moderate Mediterranean climate and excellent irrigation systems through the region.

Italy Visit to Hortech

This leg of the Italian tour started in Padova, a region of Veneto. We visited Hortech in Agna 20km south from Padova. Hortech is a manufacturer of harvesting machines, transplanting and soil preparation implements. They produce self-propelled harvesters for head lettuce and salad mix as well as tractor pulled machinery.

Our host for the day and translator was Luca Casotto, Hortech Export Manager. After our tour of the Hortech workshop we visited several farms in the local area to see how those implements perform on the field.



Hortech saladmix harvester in action, harvesting rocket in glasshouse near Padova



Luca Casotto Hortech Export Manager with their iceberg lettuce harvester



Field lettuce (butter head) covered with nets for hail protection near Padova

Visit to Ortomec

The next day we visited Ortomec in Cona near Padova. Our host there was Emanuela Gallo one of the co-owners of the company. Ortomec is a manufacturer of harvesting equipment. They produce self-propelled harvesters for head lettuce and salad mix as well as tractor pulled machinery.



Visits to Ortomec from left to right Geoffrey Story, Slobodan Vujovic, Dino Radin, Emanuela Gallo, Andrew Bulmer and Michael Maguire



Ortomec salad mix harvester in action, harvesting spinach in glasshouse near Venice

Visit to Turatti

Our last working stop in Italy was to the head office of Turatti in Cavarzere near Padova. Turatti specialise in the manufacture of processing lines for the vegetable industry (like trimming, cutting, washing, drying, peeling, brushing, and blanching). Turatti has been operating for many generations and our host Alessandro Turatti is a fifth generation owner in the family business. Today Turatti operates from two bases in Europe and US with a worldwide customer base and export rate equal to 80% of the sales volume.

Alessandro showed us around their workshop where we saw a demonstration of the new off the shelf fully enclosed lettuce washing and drying line. He added that their production range is very wide and is the result of an intense research and planning activity that has given birth to a large number of international patents. The needs of the customer are the key to the work of a professional team that operates by applying the strictest international regulations with regards to hygiene, safety and maintenance. From research to after-sales service, each phase of the operating cycle is included, guaranteeing full customer service.





Spinner draying washed lettuce (saladmix)



Proto type of enclosed washing line for process lettuces

Tour Itinerary

DAY ONE: Tuesday 30 August:

Depart Melbourne Australia 10.00am

Arrive in San Francisco, California via LA International

From San Francisco we drove to San Juan Bautista where we visited the Enza Zaden research station. Our host there was Jonathan Sinclair, senior iceberg breeder.

Overnight at: Casa Munras Hotel, Monterey CA

DAY TWO: Wednesday 31 August:

Visited Ramsay Highlander in Gonzales CA and local farms in Salinas Valley, hosted by Frank Maconachy CEO of Ramsay Highlander

Sutton Agricultural Enterprises hosted by Bob Sutton

Overnight at: Casa Munras Hotel, Monterey CA

DAY THREE: Thursday 1 September

Valley Fabrication in Salinas were our host was Peter de Groot Engineering Manager

Visited local farms in Salinas Valley: D'Arrigo Bros. Co operates under the name Andy Boy and Costa & Sons

Overnight at: Casa Munras Hotel, Monterey CA

DAY FOUR: Friday 2 September

Visited Taylor farms operation in Salinas where we were shown around by Andrew Fernandez Vice President of Row Product

Visited Shamrock Seeds vegetable seeds company in Salinas

Overnight at: Nikko Hotel Mason St, San Francisco CA

DAY FIVE: Saturday 3 September

Visited the Ferry Plaza Farmers Market, where local farmers have their stands set up for the 10-15,000 shoppers who attend each Saturday to purchase fresh fruits and vegetables and other goods such as breads, cheeses and jams.

Overnight flight departing from San Francisco to Venice

DAY SIX: Sunday 4 September: on the plane (time difference)

Arriving to Venice

Overnight at: Sheraton Padova

DAY SEVEN: Monday 5 September

We visited Hortech in Agna 20km south from Padova. Our host for the day and translator was Luca Casotto, Hortech Export Manager. Visited several vegetable farms around Padova and Venice region of Veneto

Overnight at: Sheraton Padova

DAY EIGHT: Tuesday 6 September:

Visited Ortomec in Cona near Padova. Our host there was Emanuela Gallo one of the co-owners of the company. Our last working stop in Italy was at head office of Turatti in Cavarzere near Padova. Turatti specialise in manufacturing production of processing lines for the vegetable industry (like trimming, cutting, washing, drying, peeling, brushing, and blanching).

We drove from Cavarzere to Florence for overnight stay

Overnight at: Grand Hotel Mediterraneo, Florence

DAY NINE: Wednesday 7 September: Florence –Rome Italy

We drove from Florence to Rome International airport and flew to Melbourne Australia.

Information Dissemination

Dissemination and transfer of information from this tour has been carried out through various industry presentations and publications.

The following presentations were held:

Presentation to Vegetable Growers Association Executive Committee meeting by IDO and tour leader Slobodan Vujovic on 19 September 2011 Melbourne

Presentation to East Gippsland Growers at the growers meeting on 29 of September 2011 by Slobodan Vujovic & Andrew Bulmer Lindenow

Presentation to Vegetable Growers Association Annual General meeting by IDO and tour leader Slobodan Vujovic on 15 October 2011 Melbourne

Dissemination and transfer of information will also include delivery of a presentation at the 2012 AUSVEG convention (May 10 – 12, 2012 at Wrest Point Hotel Casino in the city of Hobart). The presentation will include a report on market trends/innovations in the visited markets of California and Italy. The presentation will also cover successes and possible difficulties of integration process of new harvesters into our production system and will be delivered by grower tour participant and winner of AUSVEG's Young Grower Award 2011, Andrew Bulmer.

The following articles about the tour were published:

In the field: Lettuce Study Tour VGA Newsletter published 27 September 2011

VGA quarterly magazine: Lettuce Harvester study tour to California and Italy article published December 2011 issue 46

Tour Participants and Contact list

Tour Participants

Five people took part in this tour, two from Victoria and three from Queensland. All tour participants would welcome and are willing to respond to any questions related to the tour.

Slobodan Vujovic, (formerly) Industry Development Officer - VGA Victoria M 0422583784

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E andrewbulmer@bigpond.com

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Dino Radin, Field Operation Manager- Harsletts Amiens, Queensland
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Contact list

Contact details below are of key people and manufactures that we visited. All people listed below indicated to us that they will be happy to answer any questions or host visits from Australia.

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Recommendations

One of the biggest input costs for lettuce production in Australia is the cost of labour and harvesting accounting for more than 50% of all labour input. Majority of head lettuces (iceberg and cos) in Australia are manually harvested. There is an opportunity for our growers to implement improvements in their production systems by introducing lettuce automatic harvesters.

The cost of automatic harvesters that we had the opportunity to see varied from \$150,000 to \$600,000. We strongly urge that anyone thinking of investing in these machines to first investigate if any of these machines are operating in Australia. If the answer is yes, organise to visit the grower and make an assessment if it's going to successfully work on your farm or if it needs extra adjustments to be operational on your farm. If the machine is not yet available in Australia and you are thinking of making an investment, make contact with a manufacturer and take a trip there, the cost of the trip will be 1 to 2% of the cost of a new harvester. Finally, this technology is improving every year therefore it will be wise to investigate and see what is new and adaptable to your farm.

What is characteristic of these manufactures is that they work closely with the growers to design and produce machinery (harvester) suitable for growers needs (bed width and row spacing). In Australia there are no two vegetable farms the same, it is always more cost effective to point out these differences at the beginning of the design and building process in order to avoid disappointments.

We strongly suggest that if you decide to invest in lettuce harvesters do your homework first, talk to the tour participants and manufactures listed here and make a trip yourself or join a similar study tour, it is definitely worth it.

Acknowledgments

In my role as Project Leader, I wish to thank the tour participants for their participation, their enthusiasm and interest in new technologies in lettuce harvesting was second to none. I would like to thank them for their contribution to the information included in this report. Special thanks go to Geoff Story for navigational assistance.

Recognition and appreciation is also given to the following for their welcome contribution to ensuring a successful, informative and interesting tour:

Frank J. Maconachy Ramsay Highlander

Peter de Groot Valley Fabrication Inc.

Andrew Fernandez Taylor Farms

Luca Casotto Hortech

Emanuela Gallo Ortomec

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Slobodan Vujovic