

**Study tour to Florida &
Produce Marketing
Association's Fresh Produce
Summit, Orlando, Florida,
October 2008**

Jonathan Eccles
Quadrant Australia Pty Ltd

Project Number: VG08090

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Florida is home to the Cape Canaveral Rocket Launch Site and NASA's Kennedy Space Center.



Summary

Quadrant Australia offered a professionally led study tour to the United States of America designed to expose vegetable growers and industry representatives to issues associated with global vegetable production, marketing, processing, value adding, supply chain and research activity.

This tour included attending the Produce Marketing Association's (PMA) 59th Fresh Summit International Convention & Exposition which was held in Orlando, Florida 2 – 5 October 2008. Leading the tour was Jonathan Eccles who is well known in the Australian horticultural industries.

A four day tour of Florida preceded the convention, visiting Plant City, Wimauma and Gainesville. The aim of the tour was to give participants the opportunity to observe and discuss issues and the latest industry developments with local farmers and researchers. Visits were made to the University of Florida's Institute of Food & Agricultural Sciences, the Center for Food Distribution & Retailing and the Protected Agriculture Project. The group also met the Florida Strawberry Growers Association and gained an understanding of farming issues in Florida and how the growers work together to market winter strawberries and support research activities.

Visits were also made to various retail produce stores including the Florida based Publix supermarket. There is more value adding of produce in US supermarkets than in Australia and a far greater use of commercially branded products. Also, more use is made of marketing concepts for fresh produce than what is seen in Australia and companies provide greater marketing and promotional support to their products throughout the supply chain.

This year's PMA Fresh Summit was being held under the cloud of the United States' financial turmoil, large increases in cost of inputs, such as fuel and fertiliser, and the lower purchasing power of the American consumer. Added to this was a presidential election taking place. Workshops were held in the mornings and the afternoons were dedicated to one of the world's largest fresh produce exhibitions held. It attracted over 800 exhibitors from 23 countries and nearly 76,000 attendees from more than 58 countries.

Food safety issues continue to dominate this year's Fresh Summit with another food-borne illness attributed to fresh produce over the summer of 2008. Electronic traceability throughout the industry and development of a food safety management plan were being advocated. The United States produce industry still had no emergency management plan to handle a food safety outbreak and there were no clear communication pathways.

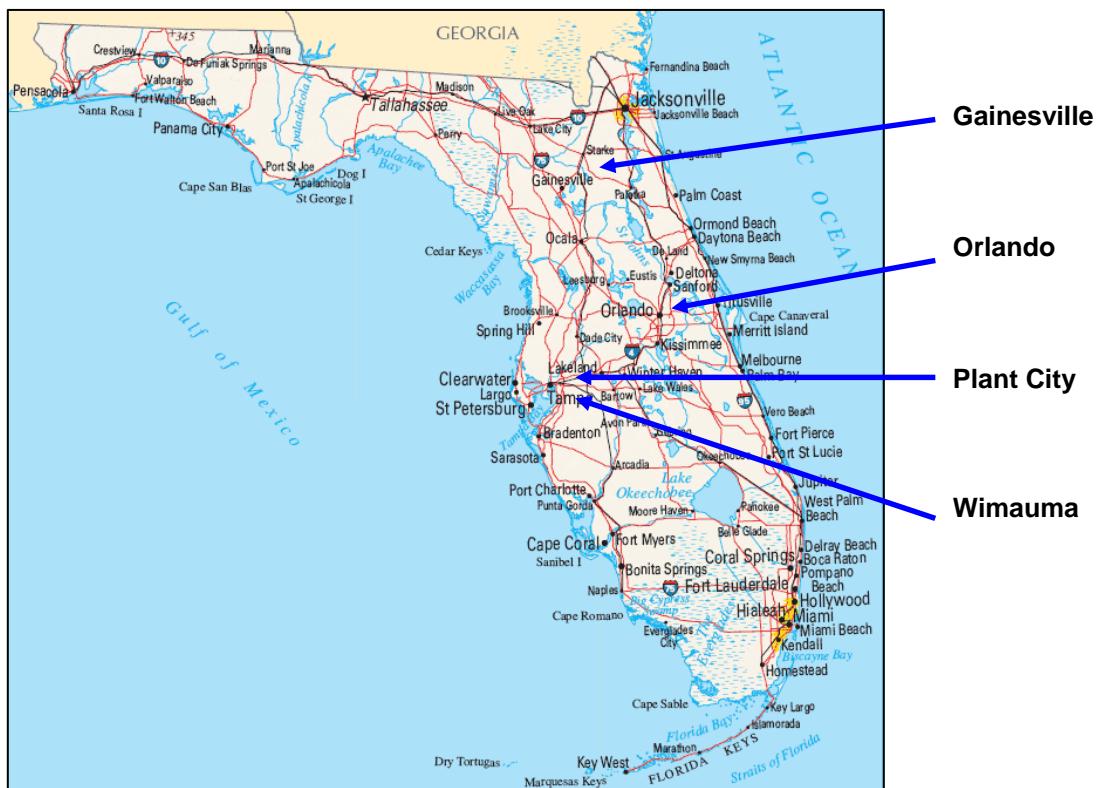
Recommendations from the study tour include the need for the Australian Vegetable Industry to develop an emergency management plan to handle a food safety outbreak with a clear communication strategy.

Florida

'The Sunshine State'



Florida State flag



Most of the state is a large peninsula with the Gulf of Mexico to the west and the Atlantic Ocean to the east.

Introduction

Florida, with an area of 170,304 km² and a population of 18.25 million, is the twenty-second largest state in area and fourth in population in the United States. Compare this with the State of Victoria, which has an area 237,629 km² and a population of 5.2 million. It is located in the south-eastern region of the United States, bordering Alabama to the north-west and Georgia to the north-east.



Florida is located in the south-east of the United States of America.

Florida is situated between 24° and 31° north which is a similar latitude between Bundaberg and Northern New South Wales in the southern hemisphere. While most of the State has a humid subtropical climate, southern Florida has a tropical climate. The climate is tempered as no part of the state is very distant from the sea. High temperatures in summer are commonly in the high 20s to low 30s °C. There are more likely to be only two seasons: hot, wet springs and summers make up the wet season and the mild, relatively dry winters and autumns, making the dry season. Cold fronts can occasionally bring high winds and colder temperatures to the entire state during late autumn and winter.

Florida is the most hurricane-prone US state. The hurricane season lasts from June to November. It is rare for a hurricane season to pass without any impact in the state by at least a tropical storm. August to October is the most likely period for a hurricane in Florida. In 2004, Florida was hit by a record four hurricanes.

The Florida peninsula is a porous plateau of limestone. Extended systems of underwater caves, sinkholes and springs are found throughout the state and supply most of the water used by residents and farmers. The limestone is topped with sandy soils, deposited as ancient beaches over millions of years as global sea levels rose and fell. The Everglades, an enormously wide, very slow-flowing river encompasses the southern tip of the peninsula.

The highest point in Florida is only 105m. Much of the state south of Orlando is low-lying and fairly level. Much of Central and North Florida away from the coast features rolling hills with elevations ranging from 30m to 75m.

The land that is now known as Florida has been inhabited for thousands of years by various Indian tribes. A Spanish conquistador, Juan Ponce de León is credited with the European discovery of the region in 1513. He named it 'Florida' after *Pascua Florida* which is Spanish for Easter as it coincided with the date of his landing.

During the remaining 16th and 17th centuries, both Spanish and French established settlements with varying degrees of success. The Spanish never had a strong hold in Florida and their influence started to wane with the developing French colonies in the west (towards what is now Louisiana) and the British colonies to the north. Tensions were further increased when the Spanish offered refuge and freedom to slaves fleeing the northern British colonies.

Britain gained control of Florida in 1763 after signing a treaty with Spain at the conclusion of the Seven Years War. European immigrants were encouraged to settle in Florida. After the American colonies gained independence from Britain in 1783, Spain once again took control of the region. The Spanish actively encouraged American colonists to settle in Florida by offering land grants which created hostilities with native Indians. These hostilities spread north into neighbouring Georgia, prompting the United States army to invade Florida. In 1818, the Spanish agreed to cede Florida to the United States in exchange for \$5 million and American renunciation of any claims on Texas!

With increasing European settlement, pressure grew to remove the Indians from their lands in Florida. This was exacerbated by the local Indians harbouring runaway slaves from plantations north in Georgia. In 1832, the United States Government signed a treaty with some of the Indian chiefs, promising them lands west of the Mississippi River if they agreed to leave Florida voluntarily. Many left but hostilities continued with those that remained. By 1842, the United States army was forced to respond to Indian guerilla warfare at great cost in both lives and money, after which the Indian population was forced to the west of Florida.

In 1845, Florida became the 27th state of the United States. Settlement continued slowly with Europeans establishing cotton plantations which relied on slave labour. By 1860 Florida had only 140,000 people, of whom 44% were enslaved.

Florida sided with the other Confederate states against the Union in the American Civil War of 1861-65. A new State constitution in the late 1890s effectively disfranchised most African Americans and many poor whites from voting rights. It was not until the 1960s, after Federal legislation was passed, that universal suffrage was realised.

Until the mid 20th century, Florida was the least populous southern state. In 1900, its population was only half a million, of whom nearly 44% were African American. However, cotton crop failures from insect attack, racial upheavals and violence saw huge numbers of African Americans leave the state and head to northern and mid western industrial cities and better work opportunities. The economy improved in the 1920s with land booms and tourism development but the Great Depression brought that to an end.

Florida's economy did not fully recover until the Second World War. With its extensive coastline, Florida was considered a potential target during the War, so the government built airstrips throughout the state many of which are still used.

The climate, tempered by the growing availability of air conditioning and low cost of living made the state an attractive destination. Migration from the temperate north-east states sharply increased the population after the War. In recent decades, more migrants have come for the jobs in a developing economy and for the relaxed lifestyle. Florida is the United State's third fastest growing state and tourism is now the State's biggest industry. Warm weather and hundreds of miles of beaches attract about 60 million visitors to the State every year.

The second largest industry is agriculture. Citrus fruit, especially oranges, are a major part of the economy. Florida produces the majority of citrus fruit grown in the United States with 67% of all citrus, 74% of oranges, 58% of mandarins and 54% of grapefruit. About 95% of commercial orange production in the state is destined for processing (mostly as orange juice, the official state beverage). Citrus canker continues to be an issue of concern. Other products include sugarcane, strawberries, tomatoes and celery.

Phosphate mining is Florida's state's third largest industry. The state produces about 75% of the phosphate used by farmers in the United States and 25% of the world supply. Florida is also famous for NASA's rocket launch sites established in 1962 at Cape Canaveral. There is a sizeable aerospace industry based at the Kennedy Space Center.

Itinerary

Quadrant Australia organised a tour to Florida and the Produce Marketing Association's Fresh Summit International Convention & Exposition, Orlando. The 10 day tour started on 20 October 2008 and was led by Jonathan Eccles. It was designed to expose vegetable growers and industry representatives to issues associated with global vegetable production, marketing, processing, value adding, supply chain and research activity. After each day, tour participants met to discuss their observations and identify key messages from their visits and discussions.

The tour participants were:

Mark Kable, Harvest Moon, Forth, Tasmania
 Lukas Velisha, Sam Velisha & Son, Werribee, Victoria
 Dick Kroupa was the Tour Group's driver.

Date	Visits	Contact Person
Mon 20 October	Arrive Orlando	
Tue 21 October	Strawberry Station Plant City Florida Strawberry Growers Association Gulf Coast Research & Education Center Institute of Food & Agricultural Sciences University of Florida, Wimauma	Mark & Sue Harrell <i>Owner/manager</i> Ted Campbell <i>Executive Director</i> Sue Harrell <i>Director of Marketing</i> Dr Jack Rechcigl <i>Center Director</i>
Wed 22 October	Center for Food Distribution & Retailing Institute of Food & Agricultural Sciences University of Florida, Gainesville Center for Organic Agriculture Institute of Food & Agricultural Sciences University of Florida, Gainesville Albertsons & Publix Supermarkets, Gainesville	Dr Jeffery Brecht <i>Director</i> Dr Rosalie Koenig
Thu 23 October	Sam's Club & Walmart supermarkets, Gainesville Florida Protected Agriculture Project Horticultural Science Department University of Florida, Citra	Produce Manager Nicole Shaw <i>Senior Biological Scientist</i>
Fri 24 October	Produce Marketing Association Fresh Produce Summit, Orlando	
Sat 25 October	Produce Marketing Association Fresh Produce Summit, Orlando	
Sun 26 October	Produce Marketing Association Fresh Produce Summit, Orlando	
Mon 27 October	Produce Marketing Association Fresh Produce Summit, Orlando	
Tues 28 October	Return to Australia	

Note: The exchange rate during the time of the tour and used in this report is Australian \$1 = United States \$0.68.

Results of discussions

Florida Strawberry Growers' Association, Plant City

Ted Campbell, *Executive Director* &
Sue Harrell, *Director of Marketing*



- The Association was formed in 1982. Its mission was to become 'partners in research, promotion and member/community service'. It has four employees. Its main activities are funding promotion and research, such as contributing to the University of Florida's strawberry breeding program and student scholarships. It also represents growers on a wide variety of issues and policies working to keep strawberry production profitable in Florida.
- It has a Board of 15 directors and four employees.
- The Association has over 100 grower members representing over 90% of the growers. It is funded by a voluntary levy of US\$50 per acre (AUS\$180/ha) of strawberries planted each year. In return, the grower members receive a rebate at the end of the season for Florida patented plants that they purchased at the rate of US\$0.50 to \$2.00 per thousand (AUS\$0.75 – 3.00) depending on the variety. Also the handlers/brokers (wholesalers) contribute US\$0.02 per 'flat' (tray) of 12 punnets.
- Most of the strawberries are grown in a 50 mile (80km) radius of Central Florida in over 8,000 acres (3,240ha)
- The Association also offers associate and corporate memberships which provide various benefits throughout the year based on the level of membership (bronze up to platinum).
- Florida is the second biggest producer of fresh strawberries in the United States, after California (15% national production) and is the major supplier of winter strawberries to the eastern and mid-western USA and Canada. Strawberries are Florida's second most important fruit crop, after citrus, and have been a commercial crop for over 100 years.
- Christmas, New Year and Valentine's Day are the main promotional periods using the line, 'A taste of summer all year long'.

Strawberry Station Inc, Dover

Mark & Sue Harrell

- A medium size farm of 90 acres (36 ha). Bed preparation starts in August. Cover crops grown over summer are ploughed and the land is often laser levelled to ensure good drainage.
- Beds are fumigated at the same time as the plastic mulch is laid. Soils are now fumigated prior to each crop with chloropicrin and metham sodium (Vapam®) or Telone®/chloropicrin where once methyl bromide was being used. Mark Harrell believes pressure from the Environmental Protection Agency will see the phasing out of all soil fumigation. Buffer zones of 250 yards (230m) are required even though the fumigants are applied through drip irrigation. An alternative fumigant, methyl iodide, is too expensive.
- Runners are planted throughout October and are established using overhead irrigation then trickle is used. Beds are 48 inch (1.2 m) wide with two rows per bed. Plant spacing varies with variety with 14.5 inch (37cm) for cv. *Strawberry Festival* to 16 inch (41cm) for cv. *Treasure*. Plastic mulch is used for one crop after which it is lifted and burned.



Planting cv. *Strawberry Festival* strawberry runners at Strawberry Station, grown in Nova Scotia, Canada.

Runners are planted through plastic mulch which has been hole cut, two rows per bed. Overhead sprinkler irrigation is used until runners are established, then trickle irrigation takes over.



Mark (left) & Sue Harrell with Mark Kable, Lukas Velisha and Jonathan Eccles.

- Irrigation water is sourced from underground wells which are metered. Retention ponds capture tail water which is recycled.
- Strawberry runners are sourced from Canada (Quebec, Nova Scotia, Ontario) with a few from North Carolina. Local runners are not used due to high incidence of Anthracnose disease experienced. Canadian winters ensure little disease carry over. Mark Harrell is trialling runners from new areas like Colorado which also has cold winters. “Frozen” runners are not used in Florida but are in California.
- The most popular strawberry varieties are *Strawberry Festival*, *Treasure*, *Camino Real*, *Camarosa*, *Carmine* and *Winter Dawn*.
- Crops are only grown for one year similar to what happens in most parts of Australia. Mild (sweet) onions are used as a rotational crop.
- Scanners are used to monitor labour when planting runners and picking fruit and used to assess wage bonuses. Picker numbers vary from three to five per hectare. Crops are picked every three days with a total of 50 harvests. Picking, grading and packing are all done in the field with pickers paid on a piece rate basis
- Strawberry farm employs 125 to 150 pickers. The Government is enforcing more paper work to ensure no illegal workers are employed. Accessing labour has not been an issue for them in last few years. They do not use labour contractors due to dubious behavior from them in the past and are still seen as a liability. Florida's minimum wage is US\$6.72/hour (AUS\$10/hour). Australia's is \$13/hour plus on costs.
- Plants usually start fruiting 35 days after planting. Harvest begins in last week of November and continues through to April. The tail end of the season begins to compete with the Californian harvest starting. Florida growers have the winter months to themselves. Average winter temperatures are around 75°F (24°C).
- Seasonality will depend on the variety. Cultivars such as Early Bright ad Winter Dawn are early fruiting but are disliked by the shippers for their relative inability to withstand interstate transport and distribution. Cvs. *Treasure* and *Strawberry Festival* have good disease tolerance. There is no variety that can withstand the heat after April.
- Insect pest pressure is variable and depends on the weather. The Harrells use a professional scouting service to monitor pests and diseases and predatory mites (*Phyoseiulus persimilis*) are used to control spider mites. Migratory birds can also damage fruit and the odd raccoon or alligator has been known to invade the farm.

Gulf Coast Research and Education Center, Wimauma

Dr Jack Rechcigl, *Center Director & Professor*



- The Center is one of 10 research centres throughout Florida and is part of the Institute of Food & Agricultural Sciences (IFAS), University of Florida. Built only three years ago, this campus houses 16 laboratories including tissue culture and plant diagnostics and staffs 25 PhD faculty members and their support personnel, totalling 120. The 475 acres (192ha) of land was donated by Hillsborough County and contains research trials for vegetables, small fruit and ornamental plants.
- There is a smaller campus in Plant City College used for the teaching program. The Plant City Campus offers a Bachelor of Science degree in Environmental Horticulture, Natural Resource Conservation, Geomatics (modern surveying) and Agricultural Education and a Master of Science degree in Environmental Horticulture and Soils and Water Science.
- The Institute purchased all new equipment. Nothing was brought over from the old facility! Polycom video conferencing is used to connect all University campuses. There are 24 growth rooms used for various research studies.

- Breeding programs are carried out for tomato, capsicum (pepper), rockmelon (cantaloupe), watermelon, cucumbers, squash, pumpkins, strawberries and ornamental crops such as lisianthus and caladiums. The world famous strawberry breeder, Greg Chandler is retiring soon and a new breeder is being sought before he goes.
- Funding for R&D comes from Florida grower funds, such as for strawberry and tomato breeding programs, and from competitive grants of State and Federal funds, often US Department of Agriculture. There is also support from chemical companies. Royalties from varieties sold go back to the breeding programs.
- The Institute takes an interdisciplinary team approach to the breeding programs for strawberries, tomatoes and other vegetables. The breeder works with entomologists, pathologists, etc. and not in isolation.
- The Institute is also looking at building a new strawberry tissue culture facility to produce runners as the Florida Strawberry Growers Association is dissatisfied with how 'clean' the runners are from Canada.
- A free diagnostic service is provided to growers. This is seen as a reciprocal gesture for the support given by the growers to the University.
- Casual labour is sourced from a local low security women's penitentiary. The inmates are paid US\$2/hour (AUS\$2.94) as well as the penitentiary receiving produce from the Institute.

Center for Food Distribution & Retailing, Gainesville

Dr Jeffrey Brech, *Director*



- The Center is part of the IFAS of the University of Florida. Its objective is to apply a multi disciplinary approach to the study of the whole distribution chain and the effects of new practices and technologies on the final quality on the food products on the shelves of a retail store.
- It was set up four years ago, helped along by negative publicity from the food safety outbreaks.
- Participating University of Florida departments include agricultural and biological engineering, food and resource economics, food science and human nutrition, horticultural sciences and plant pathology. There is collaboration with the University of California.
- Florida is the United States second biggest horticultural producing state. Not a lot of produce is exported, unlike California, but 85% is transported out of Florida.
- Florida is traditionally an off season winter producing state and is reliant on good postharvest management to ensure quality produce reaches consumers throughout the United States so the University has had an emphasis on postharvest.
- The Center has an advisory board of retailers (Wal-mart, Publix, Albertsons, Kroger, Stop & Shop, Royal Ahold), food service (Burger King, Outback Steakhouse, US military catering supplier) and plastic manufacturers for returnable plastic crates.
- Industry provides the funding. For example, the Center has received US\$4 million (AUS\$5.9 million) from the US military to develop RFID (Radio Frequency Identification) to improve traceability.
- Another project is investigating shrinkage with strawberries shipped from California to Florida. Temperatures can vary 10°C within loads.
- Research for commercial companies is managed by non disclosure agreements.
- Graduate students are commonly used to undertake the research.

Organic farming and community supported agriculture

Dr Rosalie Koenig, Institute of Food & Agricultural Sciences (IFAS), University of Florida.

- Dr Koenig is the IFAS organic farming contact. She has been involved in developing the United States Department of Agriculture's Organic Standards. She has Doctor of Philosophy in Plant Pathology, University of Florida, Master of Science in International Agricultural Development, University of California Davis and Bachelor of Agricultural Science, Cook College of Rutgers University.
- There has been 20% growth per year in organic retail sales over the last 10-15 years. Supply continues to be the challenge in meeting the demand. Organic production still only represents 1% of total USA farm production.
- Consumers think organic produce is pesticide free. Recent food safety scares are moving more consumers towards purchasing organic.
- Genetically modified plants, irradiation and sewer sludge are not permitted under the organic standard.
- The debate now is with the mix of organics and buying 'local'. The 'locavore' movement is growing but there is no definition for what is 'local'.
- The Organic Materials Review Institute, a non profit organisation, reviews materials such as fertilisers and pesticides for compatibility with organic standards. For example, some formulations of B.T. (*Bacillus thuringiensis*) are not compliant.
- California was the first US state to legislate an organic label. The US Congress took 12 years from drafting to legislating national standards! Then the Standards were reviewed from 1997 to 2002. Dr Koenig was on the National Organic Standards Board during that time. The Standards now require third party certification.
- Community Supported Agriculture (CSA) is an agricultural production/marketing system that sees the sharing of the production risks spread equally between the farmer and the consumer. Members pay for their food up front, before the season commences, and are then kept involved in the farm's activities with field days, newsletters and open invitations to visit the farm. A CSA enterprise usually has one producer. However it is possible to have several farmers involved. There are over 1000 CSA enterprises in the USA and numbers of customers vary between 10 and 700. In Australia the concept is not well known and only a few CSAs exist.
- Dr Koenig operates a 9 ha organic farm outside Gainesville. Her family grows vegetables, cutflowers and herbs which are sold through a 75 member CSA program, three local farmers' markets and to wholesale accounts. Her farm was one of the first CSAs in Florida established in 1996. She developed two farmers' markets in the Gainesville area with three other growers. She currently assists in managing one of the markets.
- The advantage for Dr Koenig is that she knows what she will be paid for the final product when the seed is planted. The cutflowers are used as refuges for beneficial insects.

Protected Agriculture Project, Institute of Food & Agricultural Sciences , University of Florida, Citra

Nicole Shaw, Senior Biological Scientist, Horticultural Sciences Department

- There were 115,000 ha of vegetables produced in Florida valued at 1.6 billion for the season of 2002-03. The major crops of tomato, watermelon, pepper, cucumber, and strawberry accounted for 61% of the total state vegetable crop value. Almost one-third of Florida vegetables including all tomatoes,



strawberries, peppers, eggplants, and most melons are produced on polyethylene-mulch. Nearly 50% of the polyethylene-mulched crops are grown with drip irrigation.

- Although Florida vegetable growing involves intensive production practices, there are major challenges in front of the vegetable industry. These challenges are
 - Increased regulation of water, fertiliser and pesticide inputs;
 - Loss of a major soil fumigant, methyl bromide;
 - Increased urbanisation and loss of some of the more desirable (warmer) production land in southern Florida; and
 - Continued challenges from weather, including freezes, winds and rain.
- Added to these challenges are the increasing problems associated with regional and global market competition.
- Florida is always seen as an outdoor production state particularly for the off season winter market. There is interest in greenhouse production which could lead to production of higher quality crops that will make Florida growers more competitive against imports from other vegetable production areas in the world. With the substantial capital needed to invest in 'high tech' greenhouses for heating and cooling, an alternative could be greenhouses designed with passive venting and heating.
- With the loss of methyl bromide soil fumigant, greenhouse systems invariably now use soilless culture for crop production. Soilless culture has been used successfully for vegetable production in Florida using bag or containers with inert media such as perlite, vermiculite, peat, or coconut fibre. Soilless culture is seen as addressing the current challenges of urbanisation because with soilless culture in greenhouses, winter vegetable production would not depend on warm, sandy soils of southern coastal Florida. It could provide all year round production as well as not needing to use soil fumigants.
- The Protected Agriculture Project is investigating suitable greenhouse technologies for Florida and collating information for hands-on training and demonstrations for Florida growers.
- The Plant Science Research & Education Unit was opened in 2000. It was previously solely used for pastoral research. There is 400ha of which 200ha is in production. Prison (low security, male) inmates are used as cheap casual labour like at Gulf Coast Research and Education Center.
- Vegetable growing in Florida was located in coastal areas but increasing urbanisation has forced farming into inland 'hill' country. Southern Florida with its tropical climate was the main production area in the winter off season.
- There used to be 40ha of greenhouse production in Florida but this has fallen to 16ha. Six Category 3 hurricanes in 2005 destroyed most of the structures with 140 miles per hour (225km/h) winds. Farmers are unable to get storm insurance for either the structures or crops. There are only 10 greenhouse operations most of whom sell at farmers markets or direct to restaurants, etc. Some growers work closely with restaurants so they produce for chefs' specific requirements.
- Ms Shaw is investigating suitable beneficial insects for use in integrated pest management (IPM) in Florida greenhouses. The structures are Top Greenhouses from Israel designed for tropical climates. Water is recycled using Netafim sand filters which uses chlorine and sodium ions to kill bacteria, etc. Most growers use ultraviolet light and ozone to disinfect recycled water.
- The water table is 26m. There is, as yet, no State regulation on 'dumping' waste water.



Galia melons hydroponically growing in pine bark medium in black plastic pots.

Sensory research is being carried out on flavour and aroma of these melons.



Pots sit above the drainage trough. The drainage water is recirculated. →



← **Bumblebees are used to pollinate chillis. Note the queen excluder hole on side of the yellow lid which stops the queen bee from escaping.**

- Tomato, capsicum and Galia melons are being trialled as part of the Protected Agriculture Project. Bumble bees (*Bombus impatiens*) are used for pollinating crops of tomatoes and capsicums. *Encarsia sophia* is used as predator for whitefly, raised on papaya banker plants (*E. formosa* is used in Australia). *Aphidius colemani* is used as predator for aphids (as in Australia) and is raised on sorghum banker plants.
- Temperatures in summer in the greenhouses can reach 55°C but when full of plants, the inside temperatures are much cooler.
- The crops are grown hydroponically using pine park medium. It costs US\$900 (AUS\$1,320) for a semi-truck load of pine bark. It is ground to 12mm or less and is six months old.
- The capsicum plants are not pruned to a single stem but are allowed to branch as there is ample light in Florida.
- The University of Florida is one of the few universities in the United States that separate vegetable and ornamental research.



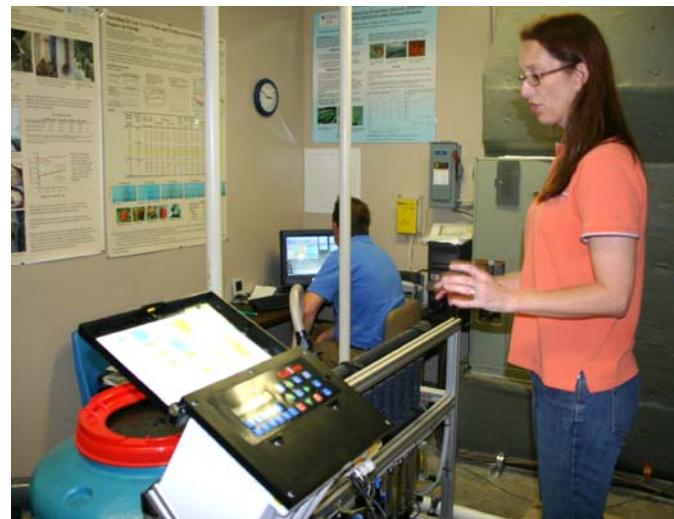
Top Greenhouse with ridge ventilation and double entry door.

Tanks for holding the nutrient solutions. Some have small electric stirrers.



Nutrient management and irrigation of the greenhouses is all controlled by a 'turn key' computer controlled system.

Nicole Shaw explaining how the computer system operates. →



Publix Supermarket, Gainesville



- Founded in 1930 in Florida, Publix is the largest employee-owned supermarket chain in the United States. It is one of the 10 largest supermarket chains in the United States with retail sales of \$23 billion (2007). It employs over 143,000 people.
- Publix has 997 supermarkets which are located in Florida (714), Georgia (177), South Carolina (42), Alabama (38) and Tennessee (26). There are seven distribution centres in Florida and one in Georgia as well as four facilities in Florida and one in Georgia for manufacturing fresh food like bagged salads and bakery products.
- Presentation of fruit and vegetables was good. There was a dedicated organic produce section.
- There was a mixture of commercial and private (Publix) labelling. Private labelled bagged spinach and fresh cut carrots carried a United States Department of Agriculture QTV logo. *Quality Through Verification* (QTV) is a voluntary quality assurance program that facilitates the manufacturing and distributing of wholesome and safe fresh-cut fruit, vegetables and related products. While private companies have been using this government service for some time, it was interesting to see recognition of its use on the product. This was probably a reaction to food safety scares with spinach in 2007 to instil consumer confidence.



Some members of the tour with the store's manager.

Black returnable plastic crates are used. Displays were well stocked.

Organic produce had dedicated space in the chilled section.





5 ounce (140g) bagged organic baby spinach salad blend retailed for US\$3.29 (AUS\$4.84). All certified organic produce carries the United States Department of Agriculture Organic Standard's logo.



Broccoli florets retailed at US\$2.69/lb (AUS\$8.72/kg)

All Publix packed fruit and vegetables had this label:



Fruits & Veggies - More Matters is a health initiative from the Center for Disease Control and Prevention and the Produce for Better Health Foundation to increase the consumption of fruits and vegetables. This new campaign takes the place of the **5 A Day program** to reflect new dietary guidelines, which recommends more than 5 servings of fruits and vegetables for some Americans.



Sugar snap peas from Peru retailing at US\$5.99/lb (AUS\$19.40/kg).

Country of origin labelling is now compulsory in the United States, although there was some shelf ticketing confusion here with Guatemala and Peru!

15 ounce (425g) private labelled bagged spinach on special, US\$3.69 (AUS\$5.42) for two.

Quality Through Verification (QTV) is a voluntary quality assurance program of the United States Department of Agriculture.



Albertsons Supermarket, Gainesville



- In June 2008, the 49 Albertson stores in Florida were sold to Publix.
- The distribution centre for all of Florida is in Plant City, south of Gainesville. Vegetable growers are contracted in advance although no further information was provided regarding other contractual arrangements such as penalties and get out clauses which often happens in Australia.
- There is no dedicated organic produce section but organics were placed along side the same conventionally grown vegetables.
- The produce manager had been a fruit and vegetable retailer and had worked with Albertsons for many years. It was evident he was proud of what he was doing. The attention to display stacking and maintaining stock was excellent.
- There was more choice of fresh cut fruit, particularly melons.



Albertsons store, Gainesville.
The whole fresh produce section had ample aisle space which encouraged customer browsing.

Organic celery at US\$2.49 (AUS\$3.66), reduced from US\$2.99 (AUS\$4.40).

Compare this with similar size conventional celery at US\$1.69 (AUS\$2.49).



Broccoli crowns retailed at US\$2.49 per pound (AUS\$8.00/kg) while broccoli bunches were US\$1.99 (AUS\$2.93) for a bunch of three small heads.

Asian vegetables: Chinese long cabbage, bok choy (buk choy) and nappa cabbage (wongbok) were good quality and presented well. They are sold by weight.



Wal-Mart Supercentre, Gainesville

WAL★MART

- Wal-Mart is a public corporation that runs a chain of large, discount department stores. It is the world's largest public corporation by revenue. It was founded by Sam Walton in 1962, incorporated in 1969 and listed on the New York Stock Exchange in 1972. It is the largest private employer in the world.
- Wal-Mart is the largest grocery retailer in the United States with an estimated 20% of the retail grocery and consumables business.
- No private-labelling of fresh produce or value added products were seen in the store.
- This is the only Wal-Mart supercentre in Gainesville.
- Organic produce was well labelled and stood along side conventionally grown produce.
- Standard of the fresh produce was good.



Wal-Mart's customer commitment:

Our produce is inspected throughout the day. Every day.



The United States Department of Agriculture Organic standard label is promoted as the sole American standard for organic production:



Look for the USDA Organic label on packaging



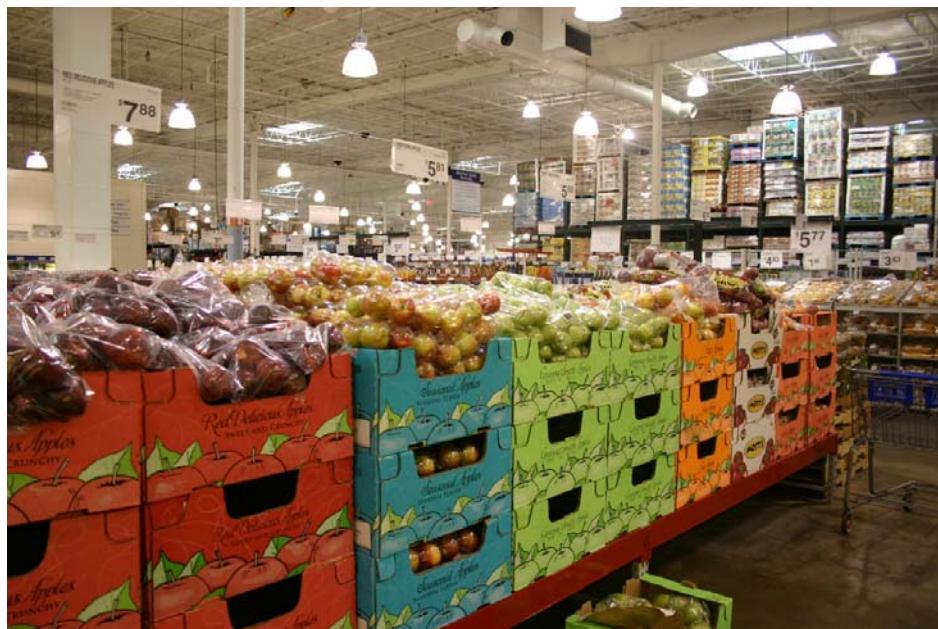
Organic onions were sold as US\$2.88 for a 3lb bag equivalent to 96cent/lb (AUS\$3.11/kg) with conventional onions from Georgia State at 94cents/lb (AUS\$3.04/kg). Not much of a price difference.

Sam's Club, Gainesville

- Sam's Club is a chain of membership-only retail warehouse clubs. Founded in 1983, it is owned and operated by Wal-Mart. It is named after for Wal-Mart's founder, Sam Walton. Sam's Club operated 713 membership warehouse clubs in 48 US states and serves more than 47 million members.
- The store was arranged much like a warehouse, with merchandise stocked in warehouse-style steel bins. A 10% surcharge is added to the prices for non-members. Annual membership ranges from US\$40 to \$100 (AUS\$59 - \$147).



Mark Kable, Dick Krupa & Lukas Velisha discussing the bulk quantities of vegetables on offer at Sam's Club.



Like other warehouse clubs, most merchandise sold at Sam's Club is sold in bulk and directly off pallets.

Produce Marketing Association Fresh Summit International Convention & Exposition, Orange County Convention Center, Orlando



- Founded in 1949, the Produce Marketing Association (PMA) is the leading trade association representing nearly 3,000 companies from every segment of the global produce and floral supply chain. Members rely on PMA year round for the business solutions they need to increase sales and consumption, build strong professional relationships, and expand their business opportunities.
- This was the 59th Fresh Summit. There were 17,000 delegates from around the world and 800 exhibitors participating in three general sessions and 17 workshops.
- This year's Fresh Summit was being held under the cloud of the United States' financial turmoil, large increases in cost of inputs, such as fuel and fertiliser, and lower purchasing power of the American consumer. Added to this was a presidential election taking place.

State of the industry

Brian Silbermann, *Chief Executive and President of PMA*, outlined trends and developments in the fresh produce industry over the last year.



- While the industry has come along way in traceability there is still a need for rapid identification of the product throughout the supply chain. Information systems are not 'speaking' to one another. He believes closing the communication gaps in the supply chain is a priority. PMA has joined with the Canadian PMA and (United States) United Fresh to develop the *Produce Traceability Initiative Action Plan*. This plan aims to drive the adoption of consistent and effective practices across the supply chain using the GS1 Global Traceability Standard. It involves building on current internal traceability systems and includes, in a readable and bar code form, a global trade identification number and a lot number on every case to identify the brand owner, the product inside and its origin. This code is the common language which leads to electronic traceability across the supply chain. The outcomes will be improved product flow and inventory control, faster traceability and greater confidence from consumers and government in the fresh produce supply chain.
- Food safety issues continue to be of concern to the fresh produce industry in the United States and would seem to be the driving force behind the recent focus on traceability. Since the spinach outbreak with *E. coli* 157 in 2007, there have been several others, most notably being *Salmonella* St Paul in the past summer which implicated first tomatoes then capsicums. This caused over a thousand illnesses. This cost the industry over US\$150 million and hit the tomato industry in Florida. There was confusion with unclear communication between public health officials at the State and Federal level which only compounded the issue. Still months later there has been no official statement to the cause of the outbreak or clearing earlier suspicions. What is surprising is there is no clear industry management plan for handling such outbreaks. It forced government intervention, recall of product and enormous damage to consumer confidence.
- The fresh produce industry is facing issues that are unprecedented. While some have been felt before, the industry has not seen them happening all at once. The rising cost of inputs, labour and talent shortage, the financial markets, the slowing economy, food safety demands, sustainability and the demand for 'locally grown' food all are disruptive to traditional markets.
- The supply chain model being used today is the same that was used over 50 years ago. The model is based on assumptions of plentiful and affordable inputs: cheap

water to grow, cheap labour to harvest, pack and deliver, cheap packaging to protect, cheap fuel to transport and cheap prices for consumers. The industry continues to act as if we have the same advantages. Some growers plant without a buyer in mind, over produce and plough under or compete on price instead of value. Lettuce was 'decommoditised' in the 1990s with innovations in packaged salads only to see some of those innovations back in the commodity bracket.

- Americans spend some of the lowest percentage of disposable income in the world on food. Is this sustainable for the farmers, the environment and consumers? Cheap and plentiful eventually has a price. Just like excessive credit has impacted on the financial markets, so too it will on our natural resources, land, water, fuel and people. Our supply chain has developed believing those cheap inputs will always be there.
- In the 1950s, an American farmer received on average 41 cents in every dollar spent on food - today it is 17 cents. 12% of the US workforce worked on the land. One farmer fed 15 people. By the 1990s, farmers comprised less than 3% of the workforce and one farmer was feeding 128 people, one third of whom were outside the United States. Despite the great improvements in efficiency and production capacity, farmers are drowning in the escalating costs.
- While cost is one element, expect to see more attention being paid to the carbon footprint comparisons of one mode of transport over another. Even major shippers and processors are re-evaluating their business models, drawing smaller circles around their plants and sourcing product closer.
- 'Locovore' is Mr Silbermann's term for consumers who prefer to buy 'local' produce and produce in season although there does not appear to be any definition of 'local'. Food service companies are also responding to consumer demands for locally grown. The drive to regional production will continue to increase in response to consumer demand. What is driving this consumer motivation for wanting 'local' is based on the desire for freshness and taste, keeping farmland and open space, a desire to be close to the food source, knowing where it comes from, support of local farmers, keeping money in the community and concerns about food safety. Areas of the United States and Canada that went out of production are now redeveloping. Greenhouse production is exploding all across North America, in part due to a response to the locovore trend.
- The locovore trend is just one component at work in developing consumer trends. Issues such as global terrorism, global warming and declining trust in financial markets, government institutions and public health institutions is causing consumers to turn inwards, seeking closer connections with their lives and their food. This desire for consumers to reconnect is seeing the move to 'small' becoming a very big force. Has the industry passed the consumer going in the other direction, on their way 'back home to basics'? Look at the trend for large food retailers to open small neighbourhood stores, such as UK's Tesco's entry into California with Tesco Fresh. These retailers recognise consumers are turning inwards and are looking for meal solutions that offer value, convenience and flavour. What we are witnessing is the change in consumer thinking where food was once seen as necessary fuel which needed to be eaten without much difficulty or cost. It is a social movement which is pushing back against industrial agriculture and the heavy reliance on excessively processed food.
- The short term nature of the produce often gives rise to short term thinking in business. We need to look at the long term financial sustainability of growers. There is no long term future for growers in continually driving down costs in the supply chain to growers unless they are rewarded for that investment.
- Recent PMA market research showed that many consumers were concerned about the increasing price of fresh produce and said they would purchase frozen produce instead. The frozen category has been steadily innovating from steamable packaging to complete meals in a bag.

- The challenge is for the produce industry to own the space in the consumers' minds. "Intellectual eaters" and "food with integrity" relate to the consumers' demanding food with a conscience.
- The demand for organic produce would seem to have peaked. Shoppers will opt for locally grown over organics when costs are similar. It satisfies the need for wanting 'freshness'. Of those shoppers who no longer purchase organics, 70% say it is too expensive, 39% say there is a lack of perceivable difference and 33% say they are concerned about the food safety. It does not mean that the consumer's love affair with organics is changing but the desire for locally grown is taking precedence.
- The National Restaurant Association reported that the business is the worst in 17 years. Customers are eating out less and purchasing less when they do. While menu developers focus on costs, the high priced protein ingredients are being targeted. How do we capture this opportunity with innovative ideas with fresh produce so we get a bigger share of the plate? Breakfast sales have increased over the last two years which again is an opportunity for fresh produce.
- Mr Silbermann recognises that the United States has been slower than other countries to embrace the concept of sustainability, although it is catching up. He suspects the downturn in the economy will slow things down but does not expect any reversal. PMA is spending US\$100,000 (AUS\$147,000) to research and better understand what sustainability means to its members. There needs to be a financial return to businesses which is one of the legs of the "People, Planet, Prosperity" focus PMA is using to define sustainability. Many businesses have had sustainability programs for many years. After all it is good business.
- The fresh produce and floral industry in the United States is valued at US\$275 billion (AUS\$404 billion) in direct economic output and 1.9% of total US employment with 2.7 million people directly and indirectly involved.
- There will be tens of millions of ageing 'baby boomers' retiring within the next decade. The challenge will be how to replace the intellectual capital in order to manage the increasing complex supply chain. Mr Silbermann sees the search for the next generation of leaders is not only a critical imperative but a potential market disruption. The next generation is much smaller than that of the baby boomers. In the US alone there will be 30 million fewer. It is not only finding the right people with the right skills but connecting to a new generation who have cut their teeth on the internet, ipods and mobile phones. Recruiting younger staff now should be on top of the list of all companies.
- PMA encourages young people into the industry. PMA Education Foundation was set up in 2006 and is dedicated to ensuring the prosperity of the produce industry by partnering with companies to attract and retain a talented workforce while building strong leadership teams. The Foundation aims to strengthen all segments of the supply chain by providing a 'produce ready' employee base and continually providing them with structured and personalised training and professional development programs.
- PMA's Careers Pathway fund enables 50 university students from the United States and three other countries, including Australia to attend this year's Fresh Summit. It was a great opportunity for these students to learn and meet people in the space of a few days and to see the opportunities the fresh produce industry has to offer. In the five years the program has been going, over half the students find employment within the industry.



Exhibitor examples

Royal Rose™ Radicchio is based in Salinas, California. It is the biggest producer of radicchio in the United States. It has capitalised on the developing bagged fresh cut salad market and now promotes the health benefits of the antioxidants that are found in radicchio.

Crops are grown in California, Arizona, Florida and Chile ensuring all year supply of fresh radicchio for both American and export customers.



Sweet Red Corn™ is grown in California, Florida and Georgia for all year round supply.

Promotional material mentions that this sweetcorn variety was bred by 'traditional' means, subtly inferring there is no genetic engineering involved.

Colorful Harvest is a nationally branded grower, shipper, and marketer of colourful fresh fruits and vegetables in the Colorful Harvest and Green Giant Fresh brands.

They have partnerships with seed breeders and strong national brands that create value in the supply chain for retailers, wholesalers and food service procurement organisations.

Their main products are strawberries and other berries, rockmelons, avocados, beans and coloured vegetables such as purple cauliflower and artichokes, rainbow carrots and red sweetcorn. Crops are grown in Canada, United States, Mexico and South America



Exhibitor examples



is the world's largest grower of watercress and one of America's oldest family farmers. Started in 1870, B&W is GlobalGap certified and certified '100% Organic' for both US Department of Agriculture and European Union organic growing standards.

In addition to producing watercress, B&W now also grows arugula, also known as roquette ('rocket' in Australia).

B&W employs a comprehensive HACCP program and on-site microbiology lab to monitor quality and sanitation at every level of the operations. The harvested crop is double washed and air tunnel dried before packing to ensure freshness.

For all year round seasonal growing conditions, crops are grown in Florida from November through May. In the summer, operations shift north to West Virginia, Pennsylvania, Maryland, Alabama and Tennessee.



Some of the company's activities that are promoted are:

- Food safety compliance and GlobalGap certification;
- '100% Organic' certification for both USDA and European Union organic growing standards;
- No preservatives;
- Fair working hours for its employees using the H2A labour program for foreign workers to ensure a stable, legal and year round work force. This guarantees an hourly rate of US\$8.82/hour (AUS\$13.00) plus free housing and transportation;
- Family owned and operated;
- 100% grown in the United States; and
- Product ranges from retail cello wraps and bags, traditional loose bunches for food service and wholesale and special processor packs

Exhibitor examples

Christopher Ranch is America's largest family owned garlic producer and has been involved in growing garlic in Gilroy, California for over 50 years. The farm produces 27,000 tonnes per annum.

As well as marketing fresh whole garlic, Christopher Ranch produces a range of values added products such as chopped garlic in oil to fresh-peeled garlic.



Garlic's health-boosting power comes from a sulphur compound known as allicin. Allicin is released when garlic is chewed or crushed. Christopher Ranch has supported research with the National Food Laboratory that shows their fresh Californian garlic contains 19% more allicin per clove than many imported garlic varieties. Also while a 600mg capsule of garlic extract produces about 3,600 micrograms of allicin, a clove of fresh garlic produces 18,300 mcg of allicin. Christopher Ranch now uses this research to promote their product.



Christopher Ranch has also compared their garlic with Chinese garlic in terms of total soluble solids, taste and pungency. The company continually promotes their product as being superior and advises consumers how to tell the difference between their product and the imported garlic.

This poster is accompanied by the words:

Look for the garlic with plump, firm bulbs. Check to see if the roots are still intact – garlic imported from China typically has the roots shaved off.

A candid discussion of food borne illness investigations

- Fresh Summit had a number of concurrent workshop sessions. This workshop was interesting as it reviewed the process by which food borne illnesses have been dealt with by both government authorities and industry. The forum was moderated by Bryan Silbermann, PMA's Chief Executive & President. The forum guests were
 - Dr Mike Doyle, Director of the Center for Food Safety, Regents Professor of Food Microbiology, University of Georgia
 - Faye Feidstein, Director of the Office of Food Defense, Communications & Emergency Response, Food & Drug Administration (FDA)
 - Dr Ian Williams, Chief of the Outbreak Net Team, Center for Disease Control & Prevention (CDC)
 - Dr Bob Whitaker, Chief Science Officer for PMA.
- The fresh produce industry has had a series of food safety outbreaks with the most notable being the *E coli* 157 outbreak traced back to spinach grown in California.
- The forum outlined the steps that were taken when tomatoes were initially implicated in an outbreak of *Salmonella* St Paul during the past summer.
- The role of FDA is to 'work on the food' while that of CDC is to 'work on the people'. CDC is usually first contact after notification of human illness. Once the cause is identified, the FDA becomes involved. Throw into the mix the State and local county health authorities and it became clear that with so many organisations involved in a suspected food safety outbreak, it was no wonder there were breakdowns in communications and duplication in roles. Industry seemed to be last to be consulted.
- What seemed surprising was that the produce industry still had no emergency management plan to handle a food safety outbreak and there were no clear communication pathways.
- Learning from previous outbreaks, PMA is now pushing for industry involvement right from the start when there is a suspected outbreak. It is also intending to develop crisis management and product recall guides for its members.



Over 800 fresh produce businesses exhibited at this years Fresh Summit Exhibition

Some businesses go to considerable expense in setting up their exhibits, such as Taylor Farms. Taylor Farms is the largest supplier in North America of value-added fresh produce to the food service industry.



Key messages and implications for Australian horticulture

Production

- Seasonal, winter production has always been Florida's strength. It is essentially an exporting state distributing to other parts of the United States. However, competition is increasing from Central and South American countries. Growers are finding it increasingly difficult to find that market niche.
- Access to water is not an issue in Florida. Water is all sourced from underground wells which are metered but there is no restricted allocation. Quality is good. Surprisingly there is little regulation on what happens to waste water. However, growers thought it is only a matter of time before this changed.
- Urbanisation of traditional vegetable growing areas near the coast has forced growers to move inland. Regulation of pesticide application now forces growers to have buffer zones around their properties which takes valuable land out of production. Similar issues have happened in peri-urban areas in Australia.
- While there are no wholesale produce markets, growers do have more opportunity to use the many farmers markets and community supported agriculture as alternative outlets for selling produce.

Food safety

- The outbreak of *Salmonella* Saint Paul in the recent summer highlighted once again that the fresh produce industry in the United States is lacking any form of contingency plan to manage the issue and minimise negative public reaction. The industry was still reeling from the *E.coli* 157 contamination of spinach in 2007. What was reported at the forum was that there is a plethora of Federal, State and County authorities, all having some degree of jurisdiction over food safety and public health. Initially Florida tomatoes were implicated as the source of the contamination. Only later was imported salsa made from Mexican chilis identified as the real cause. In the rush to get media attention, however, having the finger pointed at tomatoes caused enormous damage to the reputation of Florida tomatoes. As yet, authorities have not refuted their initial claims.
- What seemed to be evident was that many companies do not have a proper food safety strategy, or one that involved their suppliers as well. There seemed to be a strong inclination to let the government take the responsibility for food safety. The industry seemed to be the last to be consulted by the authorities.
- While the produce industry in Australia would appear to take more responsibility for food safety than what seems to happen in the United States, it cannot be taken for granted that should a major public health issue involving fresh fruit or vegetables occur in Australia, that the horticultural industries here are prepared. For example, a couple of years ago, an outbreak of a food borne illness was linked with rockmelons. The NSW Food Authority took its time to contact the sister Department of Primary Industries, having already gone public beforehand, and the melon industry was caught off guard too.
- Several years ago, a Horticultural Emergency Management Plan template was developed by Horticulture Australia Ltd which was designed to assist specific industries develop their own customised plan. This also included developing a communication strategy within this plan.

Retail

- There are a greater number of retail chains in Florida than in Australia. The population of Florida is over 18 million. Growers at least have some more choice of supermarket outlets than in Australia.
- There was no private labelling of fresh produce products (and not even dry grocery lines) in Wal-Mart which was surprising. The Florida based Publix supermarkets did

have significant private labelling products, probably because they had several processing facilities in Florida or neighbouring states. Unlike in Australia, where private labelling has been used for many years by supermarkets for low cost, low quality products (although now changing), it would appear in Florida, private labelling is more associated with higher value, good quality products. Commercial brands, however, still dominate in US supermarkets. As a result, marketing concepts for fresh produce are further advance than what is seen in Australia.

Research & development

- We were amazed at the level of financial support and other support horticultural research that was provided especially from the Florida State Government. Having local government ‘bid’ against one another to ensure they had a new research facility in their own county was another example of this support. This was such a contrast to what has been happening in Australia over recent years where governments are scaling back their support.
- Likewise the growers we spoke to also had enthusiastic support for their research facilities and were actively involved with the researchers, advising on the direction of the research. The relationship also spanned a number of years and was not just spasmodic support to handle *ad hoc* issues. Such an approach also helped to attract postgraduate researchers to the University. The breeding program partnership between the Florida Strawberry Industry and the University of Florida is a good example of such a long term arrangement.

Communication and dissemination

Articles have been written about the tour for *Good Fruit & Vegetables* and *Vegetables Australia* magazines. These are to be published in 2009.

Recommendations

- The Australian Vegetable Industry should develop a management plan to handle issues such as food safety outbreaks. This plan should also contain a communication strategy. Such a place will require extensive consultation to ensure industry wide ownership and understanding of roles and responsibilities. The Horticultural Emergency Management Plan would provide template as a starting point.
- The Australian Vegetable Industry should initiate long term partnerships with appropriate research organisations and develop long term research programs that provide benefits to both industry and the research community. Such programs have the ability to improve benefits to industry, attract new researchers and help to ensure the research organisation continues to provide services to that industry. There have been some good examples in other industries where this has worked, such as processing potatoes.
- Australians travelling just to attend the PMA Fresh Summit should be encouraged to visit other horticultural businesses and related facilities. PMA deliberately varies the location of the Summit each year and provides great opportunities to meet and learn from fellow horticultural business people in the USA.

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