Sydney Basin Vegetable grower study tour to California July 09

Darryl Cislowski
Ace Ohlsson

Project Number: VG09105

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

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

ISBN 0 7341 2377 9

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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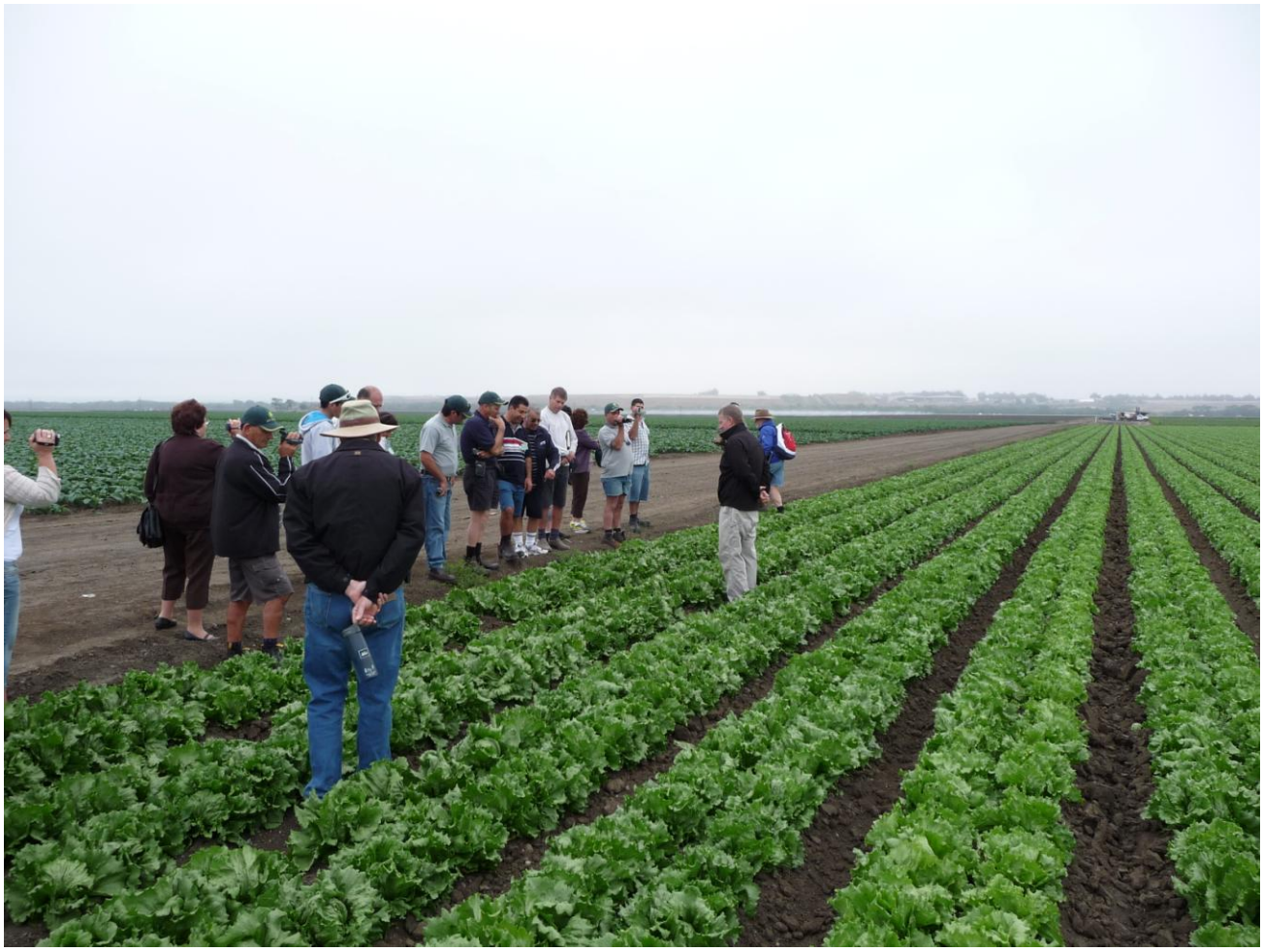

Vegetable Growers Study Tour California July 2009

Project VG09105

Darryl Cislowski
Seed Manager Ace Ohlsson Pty Ltd
Graham Nicol
Bayer Crop Sciences

ACE OHLSSON

Bayer CropScience

Project ***VG09105*** ***Vegetable Growers***

Service Provider
Ace Ohlsson Pty Ltd

Project Leader

Darryl Cislowski
Seed Manager
Ace Ohlsson Pty Ltd
Po Box 90
Sydney Markets NSW 2129
Phone 02 97465641
Fax 02 97467015
darryl@aceohlsson.com.au

Team Leaders
Graham Nicol 0417374863
John Xerri 0411072093

Purpose
To review the large scale vegetable production areas in California, Particular emphasis will be placed on the water and soil usage strategies in areas with low annual rainfall and increasingly limited irrigation water availability.
This will include but not be limited to trickle irrigation of leafy vegetables, minimum tillage, permanent beds and low compaction equipment. Review varietal selection, pest control techniques, irrigation management and harvest technology.
Also to be reviewed are the post harvest management of produce through effective cold chain systems.

Government Priority
Productivity and Value adding

Funding Source
Funds for this project have been received from Horticulture Australia Limited, sponsors including Bayer Crop Sciences, Terranova Seeds and Dow.
The participating growers paid all other costs.

Report Date
6/20/2010

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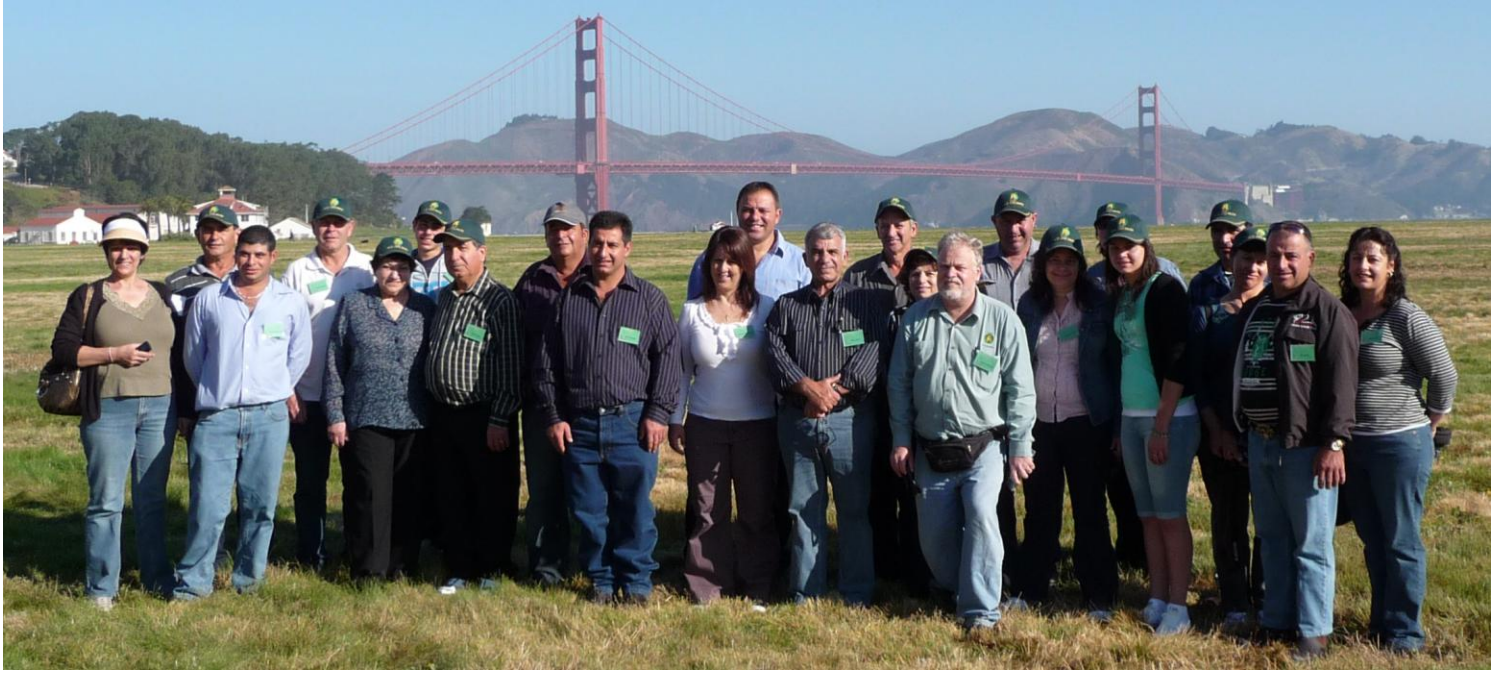


Tour Participants

First Name	Last Name	Type	Company represented	Address	City	State	Post Code
Marianne	Attard	Grower	Attard Brothers and Sons	336 Sackville Rd	Wilberforce	NSW	2756
Savior	Attard	Grower	Attard Brothers and Sons	336 Sackville Rd	Wilberforce	NSW	2756
Joseph	Camilleri	Grower	J. M. Camilleri	70 Drift Rd	Richmond	NSW	2753
Darryl	Cislowski	Tour Leader	Ace Ohlsson Pty Ltd	Po Box 90	Sydney Markets	NSW	2129
Charles	D' Anastasi	Grower		PO Box 163	Round Corner	NSW	5158
Mario	Grech	Grower	M & S Grech Fresh Produce	80 Wattle Creek Drive	Theresa Park	NSW	2570
Sandra	Grech	Grower	M & S Grech Fresh Produce	80 Wattle Creek Drive	Theresa Park	NSW	2570
Matthew	Gretch	Grower	Grech Farms Camden	175 Terry Rd	Theresa Park	NSW	2570
Andrew	Muscat	Grower	J and A Muscat	Lot 3 Boundary Rd	Schofields	NSW	2762
Graham	Nicol	Team Leader	Bayer Crop Science	63 Boulder Bay Rd	Fingal Bay	NSW	2315
Dolores	Refalo	Grower	E & D Refalo	74 Terry Rd	Box Hill	NSW	2765
Emanuel	Refalo	Grower	E & D Refalo	74 Terry Rd	Box Hill	NSW	2765
Emanuel	Sultana	Grower	Manuel & Jane Sultana	210 Kings Rd	Wilberforce	NSW	2756
Jim	Vella	Grower	J & M Vella Farm Fresh	55 Clifton Ave	Kemps Creek	NSW	2171
Joe	Vella	Grower	Vella's Fresh Produce	40 Thurns Rd	Razorback Via Picton	NSW	2571
Josephine	Vella	Grower	Vella's Fresh Produce	40 Thurns Rd	Razorback Via Picton	NSW	2571
Katie	Vella	Grower	Vella's Fresh Produce	40 Thurns Rd	Razorback Via Picton	NSW	2571
Mary	Vella	Grower	J & M Vella Farm Fresh	55 Clifton Ave	Kemps Creek	NSW	2171
John	Xerri	Team Leader	Ace Ohlsson Pty Ltd	C- Ace Ohlsson	Sydney Markets	NSW	2129
Charles	Xiberras	Grower	C & M Xiberras	28 Ulm Rd	Orchard Hills	NSW	2748
Maryanne	Xiberras	Grower	C & M Xiberras	28 Ulm Rd	Orchard Hills	NSW	2748

Tour Itinerary

Monday July 13th

Group Meets at Sydney (International Departures)	11.15 am	Departures
Depart Sydney	1.55 pm	QF 73
Arrive SFO	10.30 am	
Bus transfer to Hotel	11.15 am	Meet up outside arrivals Hall
Book in and rest of day free	12.00 pm	One night only here
Dinner at Fishermans wharf	6.45 pm	Graham Nicol to determine

Tuesday July 14	Leave Hotel 7.30am	Via GGB and H'way #1
Travel Via highway 1 to Davenport approx 2 hrs	9.30 am	**Swanton Berry Farm**
Travel to Gilroy factory outlets for lunch	12.00 noon	Gilroy factory outlets
Gilroy Foods	1.00 pm	**Gilroy Foods**
Goldsmith Seeds and debrief	3.30 pm	**Goldsmith Flower Seeds**
Book into Laurel Inn Salinas	5.30 pm	2 Nights
Dinner at "Hullaballo" Main St Salinas	6.45 pm	

Wednesday July 15th

		David Martella
Farm Visits with Enza Seeds	8.00 am	**Ocean Mist Farms**
Farm Visits with Nunhems Seeds / Bayer	11.00 am	**Tanimura and Antle**
Dinner with Bayer / Nunhems Include debrief	7.00 pm	Gino's Restaurant

Thursday July 16th

Farm Visits Syngenta Seeds	7.30 am	**Broccoli Production**
Sakata Seeds Plant Breeding Station	10.00 -11.30 am	**Sakata Seeds Research Station**
Seed Dynamics	11.45 am	Includes Lunch Stop
Taylor Farms	1.30 pm	**Taylor Farms Packaging**
Gowan / Dune	3-3.30 pm	**Distributor / Contract applicator**
Winery Visit and debrief	4.00 pm	**Scheid Vineyard Greenfield**
Travel via 101 to Pismo Beach approx 2.5 hrs	7.30 pm	One night only
Dinner hosted by Terranova Seeds	8.00 pm	**Cliffside Restaurant**

Friday July 17th

Farm and factory visits with Bejo Seeds	8.00 am	**Babes Veges**
	10.30 am	**Plantel Nursery**
	1.30 pm	**Opio Fresh Cuts**
Travel to Ventura via Lompoc debrief on way	3.00 pm	
Book into Marriot Hotel Ventura	6.00 pm	2 nights
Dinner own choice		Own choice

Saturday July 18th

Breakfast at Hotel	7.30-8.00 am	Depart 8.30am
Seed Factory visit Seminis seeds Warehouse	9.00 am	**Seminus Vegetable Seeds Oxnard**
Farm Visit TBA	11.00 am	visit to local farm with Seminus

Rest of day free Rest and Recovery		
Dinner group	7.00 pm	Aloha restaurant
Sunday July 19th	R & R	
Early Start	6.30 am	Away from Hotel early
Universal Studio	9.00 am to 4 pm	Studio City
Travel to Harris Ranch via 405 / 5	4.00 pm - 7.30 pm	
Book into Harris Ranch Hotel	7.30 pm	2 nights
Monday July 20th		
Farm visits with John Palmer Absorbent Technologies	7.30-9.00 am	**Stone Land Company**
Water conservation, farm tours	10.30 - 12.00 pm	**Buttonwillow Land & Cattle Company**
	12.15 - 1.45 pm	**Bolthouse Farms**
	3.15 - 5.00 pm	**J. G. Boswell Co. Farm and Tomato Factory**
Debrief on return to hotel		
Tuesday July 21st		
Syngenta Seeds	7.30 am	**Pappas Farms**
North Pacific Seeds	10.00 am	**San Joaquin Lettuce Seed Production**
Harris Moran Seeds	2.00 pm	**Tomato Fresh market Production**
Debrief on way to hotel		
Arrive Tuscan Inn Hotel San Francisco	7.00 pm	San Francisco one night
Wednesday July 22nd		
Free day		
Bus will depart for Airport before 4pm	4.00 pm	

Day 1 – Tuesday 14th July. San Francisco to Gilroy (Salinas Valley)

Swanton Organic Strawberries
Large organic producer of Berries and Brassica located close enough to San Francisco to pick up the low food miles and pick your own markets.

- "Pick your own" blocks reduce labour costs and customers accept smaller size berries and some marked fruit.
- Supplies organic wholesale market with best fruit, and jams.
- Old varieties preferred for taste, however lower yield and size.
- Rotation important for disease control, 1 year in, 4 years out using green cover crops.
- Crops grown under plastic mulch, on high beds for picker convenience.
- Limited chemical usage - Sulphur, Entrust (Spinosad), Pyrethrum.

Gilroy Foods – Onion & Garlic Processors
Processor of dried Garlic and Onion products.

- 65 acres, 500 employees, now owned by Conagra Group.
- Agronomists for GF advise contract growers on everything from sowing to harvest.
- Special varieties for processing, loose skins, maintain flavour when dehydrated
- Washing, cutting, drying, dehydration plant inspection.
- Quality control very strict following E Coli contamination in spinach last season.

Goldsmith Seeds – Flower Seed Production – Mike Capp

- Now owned by Syngenta Seeds
- Commercial and Retail flower market, breeding for vibrant colours.

The day was rounded off by a presentation from Evan Oakes of AgVenture tours on the history and current trends in the Salinas Valley **See attached summary** of the most recent district production summary.

Day 2 – Wednesday 15th July. Salinas Valley
– Host David Duke - Enza Coastal Seeds.

Martello Farm – David Martello – Large vegetable producer 1500 acres including 800 of head lettuce contract grower to Tanimura & Antle. 5th generation vegetable grower.

- Broccolli, Lettuce, Cauliflower, Strawberry rotation.
- Direct seeded Lettuce, better plant establishment, stronger tap root.
- No herbicides used in Lettuce. Methyl Bromide used prior to strawberries, hence weeds can be hand weeded. Goal used in Brassica crop.
- Sprinklers used to germinate Lettuce seed, hand thin, and then flood irrigate.
- 15 tractor workings between crops, seen as excessive by Aust. growers.
- Hand harvesting, big crews, mainly Mexican labour, $US10/hr.
- GPS used for bed formation, seeding, cultivation.
- Cauliflower 10 inch spacing, target yield of 1,000 cases (24 pack) per acre.
- Seed price very cheap compared to Aust. < 50c/1,000. $350/ac.

Ocean Mist Farm – Mike Hitchcock
Large diversified grower of lettuce and artichoke we spent time with a lettuce harvesting crew.

- Lettuce harvesting.
- Cut, bag & pack in cartons on the mobile harvester.
- Limited human contact with Lettuce, minimising contamination.

- No Admire (Confidor) used due to short length of control. Lower rates allowed in US compared to Aust.

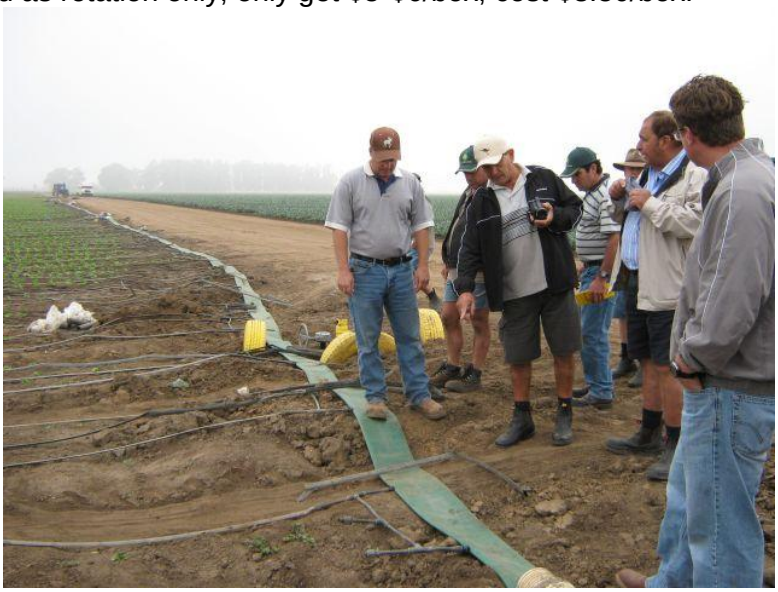
Tanimura & Antle – Very large growers and shippers of vegetables. Largest grower packer in the Salinas Valley packing over 700,000 boxes of product in a 6 day week.

- Jose, Carlos and Zac – Processing Managers.
- Seedling nursery – floor heating in concrete with hot water to achieve even germination, and quick seedling growth. Misting for humidity control.
- Seed germination times – celery 5 days, cauliflower 3 days.
- Cauliflower ready to plant in 4 weeks.
- Celery mowed 2 times a week for 4 weeks to strengthen stem.
- All celery seed hot water treated & pelleted.
- Cooling, Storage and Despatch facility. Record time taken from harvest to cool down. Quick cooling by different methods. Broccoli & Baby Leaf hydro cooled, Lettuce vacuum cooled, Cauliflower & Strawberries forced air.
- Ice flushing of Broccoli in cartons, very quick and effective cooling.
- Traceability very important for QA, from field to final pack.
- Baby leaf plots, different colours in one bed, drip irrigation.

Day 3 – Thursday 16th July – Salinas area – 130,000 acre Lettuce, 45,000 acre Broccoli.

Blanco Farm (Foxy Produce) – Peter Odello (Farm Manager) Medium to large grower by area standards with up to 5000 acres in production over the 2 crops per year

- Broccoli, Lettuce, Strawberries. Peter manages 1,500 acres X 2 crops/ year.
- Soil prep after Strawberries, 12 passes - mow, disc x 2, rip x 2, disc x 2, laser, rip, disc x 2, bed shape.
- Rip to 32" deep.
- Drip tape gaining popularity, 5 lines per bed, tape re-used up to 8 times. Infuric Acid used to clean lines, 100mm between holes.
- Broccoli and lettuce direct seeded with an air seeder, Broccoli 62,000 seeds/acre, thin to 6 inches, 2 rows on 40" bed.
- Low insect pressure, 1 spray for aphid, sometimes Diamond Back Moth spray by air.
- Broccoli harvester – contracted - 28 workers per machine – 2,300 boxes/day for 10 hr. shift. Broccoli used as rotation only, only get $5-$6/box, cost $8.50/box.

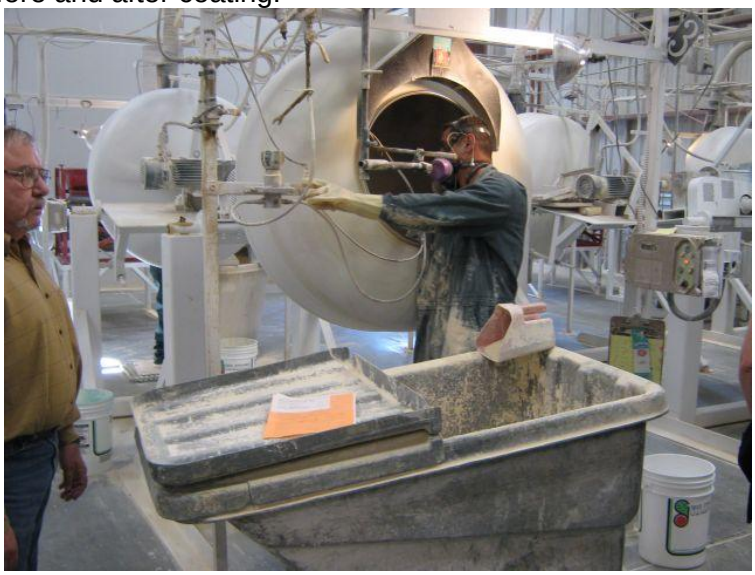


Sakata Seeds – incorporating Alf Christiansen Seed Co. – Mat Linder, Larry

- Major vegetable seed breeder with majority share of the world Broccoli, plus Tomato, Carrot, Radish, Onion, Pepper, Zucchini, Melons, Spinach, Beet, Swiss Chard, Pumpkin.
- Sakata have 80% of world Broccoli business 65-70% in Salinas Valley.
- 8 breeding stations in worldwide for different climates.
- Breeding in Japan for resistance to Pepper Spot and Club Root in brassicas, Virus and Mildew resistance in Zucchinis.
- 7 to 8 years from discovery to commercial release.
- No GMO breeding yet.
- Blindness in plants could be due to heat & light intensity. Too low, or too high.

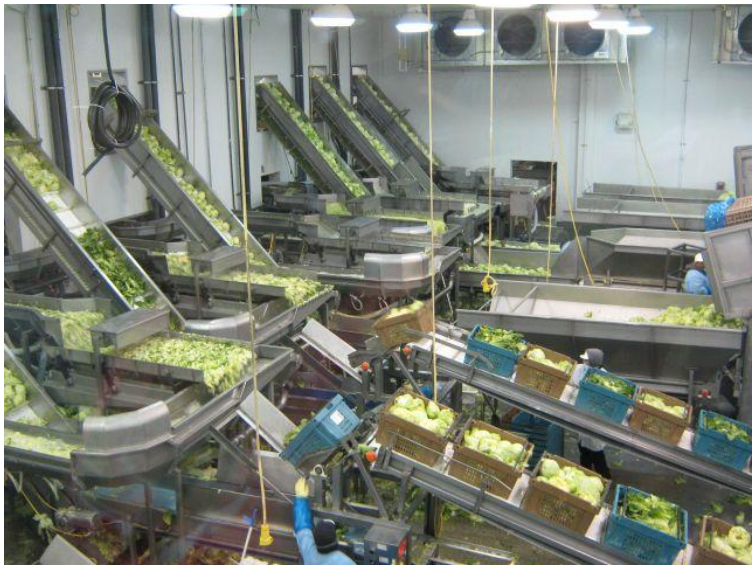
Seed Dynamics Inc. – Dr. Hill
Largest contract seed treatment company in the USA

- Seed coating business. 80% now packed in Seed Dynamics pack due to reputation.
- Specialist seed "priming" technology, prior to seed coating. Top secret.
- QA very tight.
- Organic section accounts for 20% income and growing.
- Takes 3 months to train a seed coater.
- Working with Syngenta to include thiomethoxam (Actara®) in seed coat.
- Germ test before and after coating.



Taylor Farms – Andrew Fernandez – Farm Production Manager
A fresh cut and salad mix supplier to the food industry sector (no retail packs)

- Vegetable and Salad processors for food service market, not retail.
- 5.5 to 6 million kgs processed per week.
- 6 to 8 hours from field to final product in bag. 16 day shelf life.
- Mixed baby leaf, broccoli and cauliflower florets, spring mix (6-7 varieties of salad mix).
- Different packs for Lettuce and Spinach, due to different respiration rate.
- 10-15% weight loss in vacuum cooled produce.
- Cos and Iceberg cored in the field.
- Spin dry Iceberg for 5 min, Baby Leaf only 2 mins.
- Water chlorinated during processing.
- Traceability from field to pack.



The Dune Co. – Mike German – Chemical, Fertilizer distributor & contract applicator.

- Very strict government regulation for farm advisors, re-accreditation every 2 years.
- Downturn in industry due to water shortages, only running 4 spray rigs out of 9.
- Chemicals generally cheaper than in Australia.
- Still using old chemistry, metasystox, but have new products earlier than Australia eg. Movento.
- Synapse WG (flubendiamide) soil treatment.
- Spraying done at night (10pm to 2am), using GPS and computer controlled monitors.
- Drift a major concern, using bigger droplets.

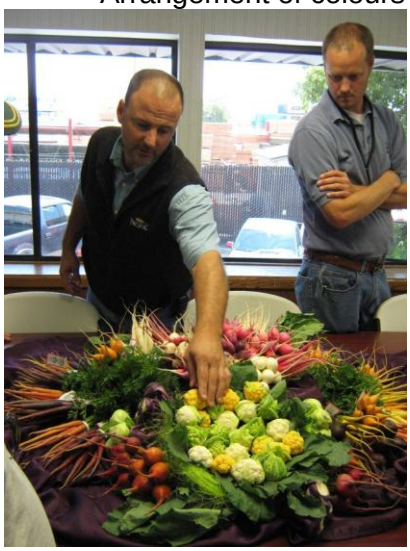
Day 4 – Friday 17th July – Santa Maria region.

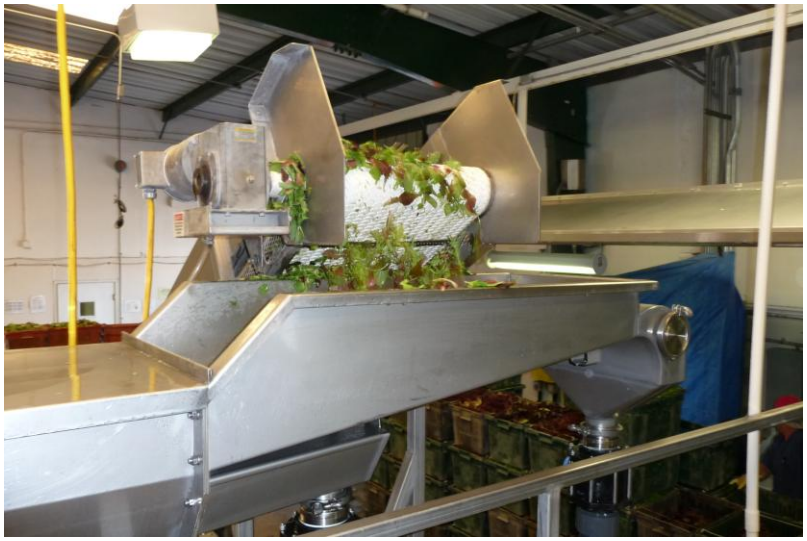
Apio Inc. – Processors of vegetable party packs, trays targeting food service and retail markets.

- 40,000 to 80,000 cartons/week, up to 110,000 in holidays.
- Celery, Snow Peas, Snap Peas, Baby Carrots, Cherry Tomatoes, Coleslaw.
- 2 shifts 4am to 7pm.
- Very innovative packaging with patented “breathway” gas transfer technology to increase shelf life.

Babe Vegetable Processors – Guadaloupe

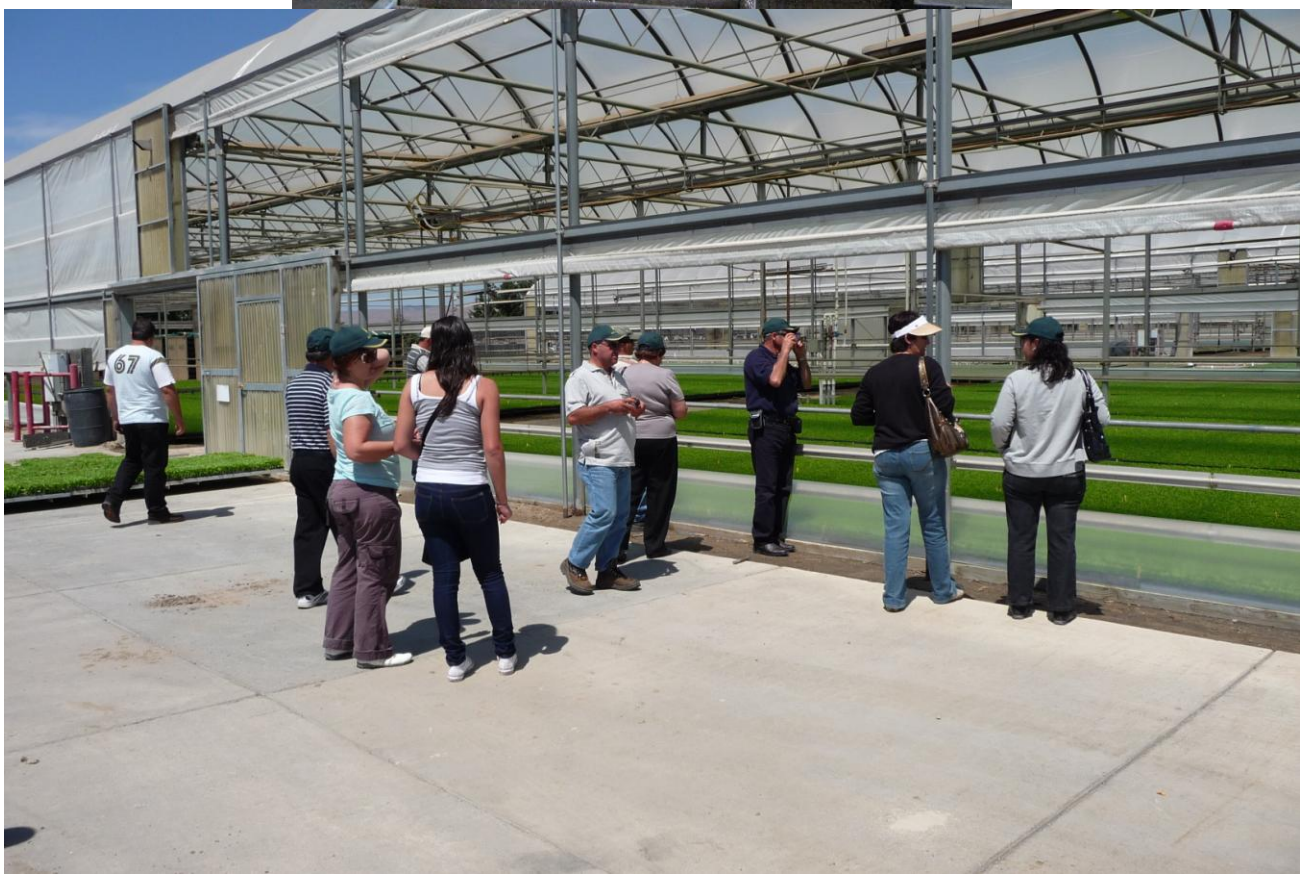
- Smaller operation, more like Aust. scale of production.
- Restaurant market, specialising in mini vegetables, radish, turnips, beetroot, carrots, cauliflower, kohlrabi also coloured lettuce and feature packed lettuce.
- Arrangement of colours in trays for presentation very important and effective.





Plantel Nursery – Vegetable Seedling Nursery - Mike Stevens

- Seedlings cheaper than Aust. $16-$17 per thousand planted. Uses rice hulls v peat moss.
- Santa Maria valley 75% transplant broccoli, 25% Lettuce. Direct seed Lettuce still popular.
- Spraying and mowing gantry.



Day 5 – Saturday 18th July – Oxnard.

Seminis Seeds – Kevin Lane

- 30 acre site, storage for 5 million kg seed at 45ºF, 30% humidity, insects controlled by temperature.
- 40m kg seed/year – 33m large seed (15% revenue), 7m small seed (85% revenue). 85% exported.
- Retention samples kept for 18 months.
- Orders dispatched in 48 hrs.
- Seed harvested from contracted farms, cleaned, treated, graded for size, germ tested, colour coded, counted and packaged for orders only. Others kept in storage.

CalCoast Machinery – John Deere Dealer

- Machinery cheaper than in Australia.
- Offer growers short term lease options 1-5 weeks only allowing large machinery required for initial ground preparation to be used efficiently and cost effectively.

Ed Chell – Contract Capsicum Farmer – Oxnard.

- 110 acre farm, rented for $US1600 per acre per crop. 23 tons per acre in 7 pickings by hand into buckets, packed during transport.
- Red Peppers take extra 3-4 weeks account for 75% of US market.
- 15,500 plants per acre as transplants. Lamuyo main variety used.
- Capsicums trained using stakes and 3 strings.
- Drip tape irrigation, 8 in. spacing.
- Plant April to June, Harvesting August to November.
- Pests – Potato Syllids – secretes honeydew, - Grubs, Leaf Minor, Thrips.
- Diseases – Spotted Wilt, Phytophthera, Rhizoctonia, Bacterial Spot
- Injects Confidor in drip tape for sucking pests.

Day 6 – Sunday 19th July – Rest and Recreation – Los Angeles

Day 7 – Monday 20th July – San Joaquin/ Central Valley

- San Joaquin Valley – 50 to 250 ml annual rainfall, water from King River, Aquaduct & Bores. Aquaduct built in 1950s, collects run-off from snow. Water allocation down to 10% this summer, due to drought and reduced pumping to save endangered crustacean species, and water needed for LA expansion.
- 800,000 acres of Almonds and Pisstachios. Almonds yield after 3 years, Pisstachios after 7 years. Spider mites the biggest problem in tree crops.
- Cotton grown, mainly high quality Pima variety, long staple. Low price for the last few years, due to poor demand and oversupply from Turkey, Middle East.

Stone land Company – Bill Stone.

- 8,000 acres processing Tomatoes, Garlic, Onions, Rockmelons (Cantaloupes) GM Corn Seed for Monsanto and Lettuce Seed production, 2,000 acres Cotton.
- Tomatoes yield 74 tons/acre. Price $US70/ton.
- Tomatoes grown on 80 inch beds, drip irrigation, mechanical harvested into bins and taken directly to factory.
- Rockmelons for fresh market, too much waste due to imperfections on skins.

Button Willow Land Cattle Co. – Wes Seldige

- 1,000acre Processing Potatoes for French fries, Crisps – supply “In & Out” fast food chain with fresh potatoes (not frozen) daily.
- Potato yield 20 ton/acre. Returning $US 4,500/acre.
- Rotate potatoes with cotton, wheat, carrots, lucerne.
- Fumigates with metham before potatoes and carrots.
- Eptam and Prowl herbicides used in potatoes.

Bolthouse Farms – Carrot and Vegetable Juice Processors.

- Grow and process their own mini carrot varieties. Year round carrot harvesting.
- Supply packaged 2.5 kilo cello pack whole carrots and then a large range of items produced from small and broken roots including bulk and packaged mini carrots. Snack packs with dips sold to restaurant chains and supermarkets.
- High tech machines with sensors to detect deformities, only 5% wastage, reject carrots go to juice or cattle feed. Some sliced and dried carrots sold to processors for fillers in hot dogs etc.
- Process 30 tons carrots per hour, 300 staff.
- At the end of each day the entire plant is sanitized and first run next day is organic product.
- Organic carrots cost $US2.00 per 10kg pack more than conventional.

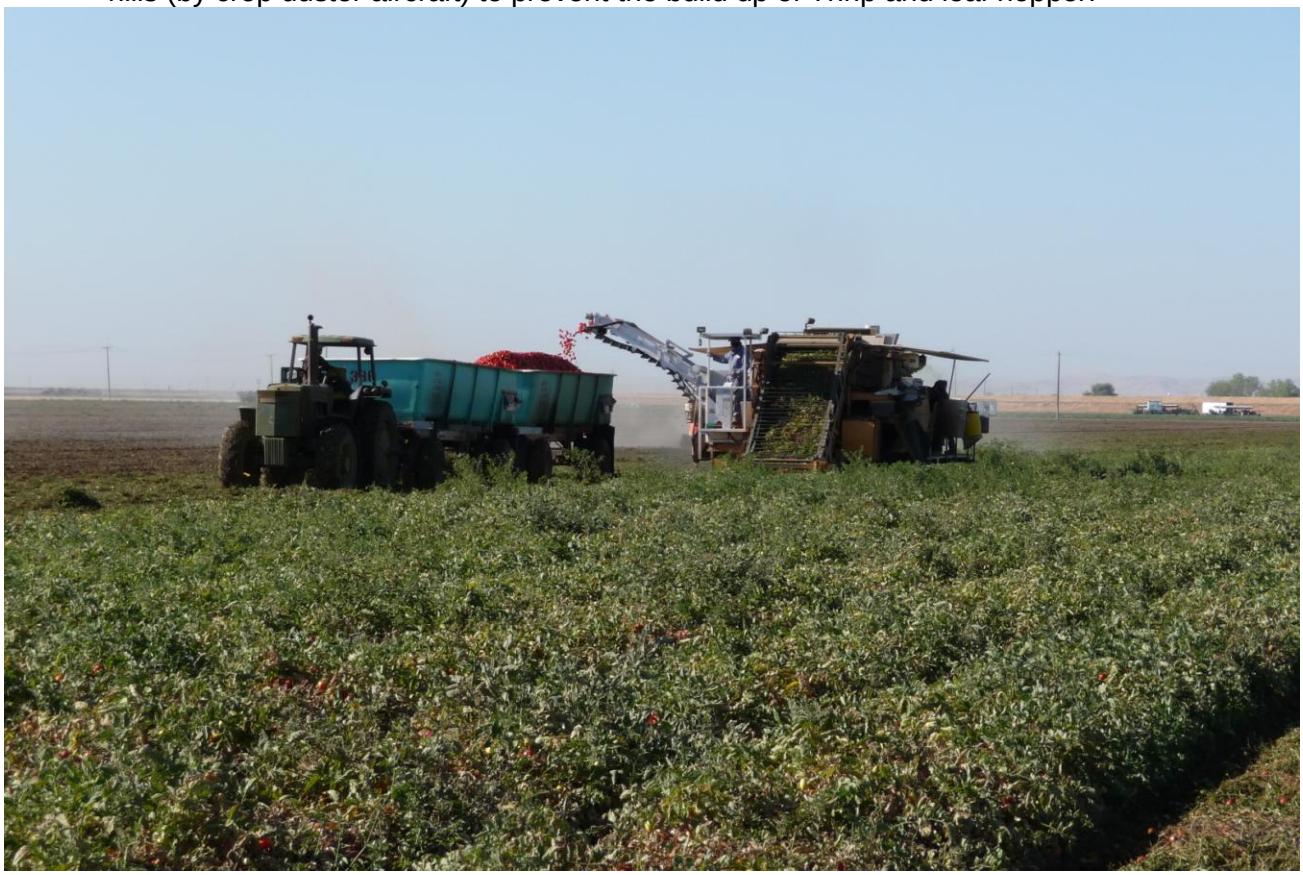
J.G.Boswell Co. – Worlds largest irrigated farm – Manager - Don Johnston. We toured the tomato paste factory and the farm area.

- 40,000 acres of Tomatoes for processing, supply 40% of US tomato paste.
- Cotton, Lucerne, Safflower grown in rotation.
- Processing converts tomatoes with 5% solids to 35% solids as paste.
- Supply Campbell and Kraft with paste.
- 10 hours from field to paste. Heated to 185-200ºF to dehydrate tomatoes, vacuum sealed in foil bags, will store for 12 months with no preservatives.

Day 8 – Tuesday 21st July – Central Valley to San Francisco

TS & L Seed Co. – Processing Tomatoes – Ron Colburn.

- 70% now drip irrigated, 80% transplants up from 15% in 3 years.
- Direct seeded 80,000 seeds per acre, transplants 7,000 plants per acre.
- Transplants cost $US20/1,000 seedlings or $US140 per acre. $US 420 / acre planted cost. Seed cost $US14/1,000.
- Yield 48-50 Ton / acre.
- Harvest 3 -3.5 acres per hour per machine
- Uses Vapam, Trifluralin, Dual, Sencor for weed control.
- Thrips, Leafhoppers (Virus vectors) and grubs are the main insect problems.
- The local Dept of Ag undertake “environmental Spaying” of 60,000 acres of the surrounding hills (by crop duster aircraft) to prevent the build up of Thrip and leaf hopper.



Pappas & Co. – George Pappas – Mendota.

- Growers and packers of Broccoli, Corn, Melons, Onions, Processing Tomatoes, Almonds.
- Fertigation and fumigation through drip irrigation system.
- Sweet corn is grown on trickle but the furrows are still flushed with water to increase humidity approaching harvest.
- 900 acre. Sweet corn, harvested by hand at night, single cob per plant, mainly white kernels, some bi-colour, no yellow.
- Corn is iced and packed in cardboard boxes.
- Pappas have 4 times the cooling capacity (cool rooms, ice machines etc) than would be normally required in case of breakdown, weather interruption or other issue that may require them to take in extra product or hold it longer than would be normally the case. They see it a cheap insurance.
- Hi-tech X-ray scanner used to sort watermelons, 26 photos scans of each melon to colour sort. Scanner cost $US500,000.
- Own label melons – Gold Express Rockmelons, Sweet Treat Seedless Watermelons.
- Direct seed rockmelons, transplants used for seedless watermelons.

North Pacific Seeds – Subsidiary of South Pacific Seeds. – Chad.

- Established in 1995, specialising in Hybrid Onions. Also Radish, Broccoli, Lettuce including organic seed.
- Producing seed under contract to over 100 companies, this year over 400 lettuce varieties.
- Production of baby leaf varieties is trending down.
- 95% sold as raw seed, coated to customer orders by specialist coating companies.

Dimare Tomatoes – Fresh Tomato growers and packers. – Geoff Dimare

- Established 1920s producing round and roma tomatoes.
- Contracts growers to supply land, water, and tractor hours. Dimare supply fertiliser, pesticide and harvest inputs and the knowledge to produce the crop.
- 2.5 million boxes (10kg) produced per year. Average price $US3.50/box, 1100 boxes / acre.
- Tomatoes grown on the ground, too hot for stakes, picked green and gassed.
- Late Blight (Phytophthera), Spotted Wilt Virus, thrips, aphid, whitefly and Heliothus grubs the main problem pests and diseases.
- Quality trace back system to grower with box tags on every container.
- 80% produce for the food service sector rather than home market.

Tour Outcomes

The grower who took part on this tour returned with a better understanding of the Californian growing conditions as well an appreciation of the scale of production undertaken with the use of modern equipment irrigation techniques and farming practices. The participants were very surprised by the high degree of support offered by the Dept of Agriculture. Contracted personnel were heavily utilised for soil preparation, spraying and harvest.

The recent Ecoli outbreaks have forced the growers in California to become "food producers" rather than farmers . Complete traceability from farm to consumer is now mandatory and practiced by all sites the group visited This level of compliance lead to restrictions on access to the field and operational areas. This was a surprise for the participants and an indication of what could be required in Australia in the future. Further visits may be required to research the methodology software used for Californian producers to operate within these new food safety guide lines.

A large number of innovative systems were reviewed during the tour. Many of these could well find a place in the Australian vegetable production systems.

These include

- Regular pruning of celery seedlings to promote growth and extra leaf.
- Use of composted rice husk in seedling production as an alternative to mined peat.
- Aggressive use of tyned implements for soil preparation rather than powered or rotory cultivators...
- Trickle irrigation and fertigation of leaf vegetable crops reducing overall water usage by 30% and increasing crop health by eliminating "wet leaves"
- The use of GPS technology for maximising productivity.
- The use of satellite imagery to establish crop maturity in processing tomato.
- Short term lease options for machinery, particularly for land preparation.
- Reuse of trickle irrigation tape for several crops by use of hydraulically driven rollers to retrieve tape.
- Use of cover cropping and alternative cropping systems (i.e. Strawberries) to reduce weed control issues.
- Use of "Pressurised Ice Slurries" in the cold chain of some crops including Broccoli and Sweetcorn.
- "Breathway" labels to promote advantageous gas transfer on packaged product.

Growers are naturally curious and will absorb a large amount of information from site visits and discussions with the various sponsor and host companies. The full benefit of these tours could take several years to be fully realized.

On their return several of the growers have undertaken new farm practices which have resulted in significant savings or additional yield and some cases both as a direct result of the exposure to the practices on this trip. Attached is a selection of grower responses taken10 months after the tour.

Suggestions for tour leaders on future tours

Planning It cannot be said that these trips just happen. The incredible amounts of hours spent in the planning stage were well rewarded by the smoothness of the tour while on the ground in the U S.

Our driver who had over 40 years experience commented that he had never seen a tour group so organized and single minded in what they wanted to see. He had never seen an international group do a 10 day tour and manage to stay on time for the entire period without a local guide. Future tour guides need to ensure the timing and distances covered are reasonable and the visits are planned to be long enough to see what there is to see but not too short to gain maximum benefit from each site visited.

Accommodation The accommodation selected turned out to be of very high standard and would be well recommended to other groups visiting these regions.

Meals The meals were all of a very high standard and as is the way in California, "way too big" for our appetites. "Bag Lunches" from Harris Ranch and local Deli's were very well received for lunches. All hotels offered full breakfast and by the end of the tour most participants were opting for the continental version.

Money Funds for the incidentals on this trip were held as a group fund with a positive balance on a Visa card this proved to be a very good option. Several participants found difficulty in accessing funds through ATM or EFPOS outlets using Australian debit style cards. Minimal cash was required for incidental tips etc.

Co Operators This form of tour would not be possible without co operative representatives on the ground in each region taking the time and making the effort to open doors for our group they are to be heartily thanked and welcome for reciprocal visits in the future.

Package costs to include insurance In the initial planning stage travel insurance was not included in our costing and proved to be a considerable issue to ensure all parties were sufficiently covered. It would be recommended that this be taken into account and included in the tour cost in future.

More breaks in schedule, down time and R & R The schedule set (and completed) for this trip turned out to be too regimented and in future the schedule should allow more time for "unscheduled interest stops" while still allowing a full itinerary and commitments to be met.

Daily Debrief Our daily debrief sessions turned out to be **essential** to ensure the information collected by the participants was able to be collected and collated. Many times participants picked up on facts during the debrief sessions that otherwise would have been lost to them.

Team Leaders The decision to have 3 team leaders working with smaller groups was positive and I would set a maximum of 8 participants per team leader for future groups.

Video and photography…Photography and particularly video has proved to be a major learning tool on the return to Australia with several participants disseminating information in these forms to interested parties who did not take part in the tour. It is however vital to ensure permission of the site is granted on each location.

Thank you gifts for hosts On this tour we gave each of the co-operator host and the growers visited a certificate of appreciation and also a "genuine" boomerang. These were all well received and similar gifts will be repeated if the opportunity again arises.

Tour Questionnaire

A questionnaire was filled out by each of the participants / family groups, asking each to rate the visit sites on a scale of 1 to 5 depending on their individual interest and if they were worth while visits, also rating the overall trip,

accommodation and meal schedules. The table below shows the results from these questionnaires an average rating of 4.75 out of 5 proves that the itinerary and the information obtained were of interest and pertinent to the growers involved. When asked if they would participate again in further study tours 100% answered yes.
When asked what they would like to see on future trips results were mixed but there is definite interest from within this group for more specific time in field study tours.

Trip Questionnaire results

		1	2	3	4	5
Overall trip						11
Accommodation					2	9
Meal Options					1	10
Visits						
Swanton Berry Farm		1		8	1	5
Gilroy foods				1	5	5
Dave Matella						11
Ocean Mist						11
Tanamira and Antle						11
Broccoli Farm						11
Sakata Seeds					7	5
Taylor Farms					1	10
Seed Dynamics					1	10
Dune Company					1	10
Babes Vegetables					1	10
Opio					2	9
Plantel Nsy					1	10
Seminis Seeds						11
Capsicum Farm					1	10
Stone Land Co				1	1	9
Buttonwillow land and Cattle Company					2	9
Bolthouse Farms					1	10
JG Boswell Farm				1	2	8
JG Boswell Factory				2		9
Pappas Farms						11
North Pacific Seeds				2	1	9
Modesto Tomato Farm				1	2	9
Overall Comments						
What would you like to see more of						
Where else would you like to see						
Would you participate on further tours	**Yes**	11				
Average Assessment	4.75					

Technology Transfer

Published Articles
Good fruit and Vegetable Oct 2009 (attached)

Bayer Sothern Cross internal newsletter communication (attached)

Grower meeting presentations
Windsor growers shed meeting (18 growers Present) 12 Sept 09
Sydney Basin Growers Meeting May 2010

Expenditure Budget Summary

Air Fares	41206
Accommodation	22254
Meals in USA	18728
Travel Insurance	3680
Coach	11519
Thank you's	1216
Sundries tips cabs etc	854
Report preparation	1600
Report production	1200
Report presentation and technology transfer	2250
	103508

Acknowledgements

Study tours such as this California Vegetable Growers Tour would not be possible without the assistance of a huge number of people in Australia and more particularly our Hosts, Co-Operators and Suppliers in California.

Below is a list of those of particular note.

Hosts
Goldsmith Seeds
Syngenta Seeds
Nunhems Seeds
Bayer Crop Sciences Australia and USA
Sakata Seeds R & D Salinas
Gowan Seeds
Bejo Seeds
Seminis Vegetable Seeds
Absorbent Technologies
North Pacific Seeds
Harris Moran Seeds

Suppliers of Goods and Services
Coach America (Excellent service and great driver)
Evan Oakes of AgVenture tours (A very worthwhile contact for future tour groups)
Harris Ranch Fresno
Best Western San Francisco, Salinas and Pismo beach
Marriot Hotels Ventura
Various restaurants and food outlets.

Cooperators and Growers visited
Those listed above and any not specifically mentioned.

Most importantly our sponsoring suppliers
Bayer Crop Sciences
Terranova Seeds
Dow
Horticulture Australia

Without whose assistance this trip would not have taking place.

MAJOR MONTEREY COUNTY AGRICULTURAL COMMODITIES - 2007

	Commodity	Acres	Value ($)	Rank in CA	Comments
1	Leaf lettuce	94,608	613,306,000	1	
	(Romaine, red leaf, green leaf, butter, endive, escarole)				
2	Strawberries	9,630	604,939,000	1	+ 38%
3	Iceberg lettuce	58,887	508,599,000	1	+ 15%
4	Nursery (all)	1,835	342,125,000	2	
	(includes: transplants, potted plants, cut flowers, ornamentals, etc.)				
5	Broccoli	51,126	260,410,000	1	+ 11%
6	Wine grapes	39,636	251,604,000		+ 15%
	(chardonnay, merlot, cabernet sauvignon, pinot noir, syrah, etc.)				
7	Organic crops	17,653	226,843,000	(includes all vegetables, berries, etc.)	
8	Spring mix (baby lettuce)	12,887	175,275,000	1	
9	Spinach	13,339	128,528,000	1	+ 15%
10	Misc. vegetables	24,401	117,734,000		
	(Includes: arugula, Mache, green beans, fresh corn, beets, Brussels sprouts, cactus pears, garlic, etc.)				
11	Celery	10,468	117,276,000	2	
12	Salad products (packaged salads, etc.)		114,070,000	1	
13	Cauliflower	17,261	103,433,000	1	
14	Artichokes	7,194	74,164,000	1	
15	Mushrooms	44,378,000 lbs.	73,224,000	1	
16	Cabbage (green, red)	5,141	34,430,000	1	+ 25%
17	Beef cattle	95,200 head	32,209,000		
18	Peas (all)	1,488	25,547,000	1	
19	Raspberries	521	24,706,000	3	+ 11%
20	Carrots	3,342	23,814,000	2	+ 40%
21	Onions (green)	1,410	21,353,000		+ 18%
22	Asparagus	3,505	18,340,000	2	
23	Rappini (broccoli rabe)	3,707	16,861,000	1	
24	Kale	2,007	16,681,000		
25	Citrus (lemons)	1,248	16,287,000		
26	Radicchio	2,440	13,317,000		
27	Pasture (non irrigated)	1.1 million ac.	10,656,000	3	
28	Onions, dry	1,860	10,225,000		
29	Dairy, Milk	1,400 head	8,445,000		+ 40%
30	Seeds	4,435	7,335,000		– 24%
31	Tomatoes	658	6,357,000		– 22%
32	Peppers (Bell, chili)	870	6,305,000		– 12%
33	Chard	763	5,770,000		+ 13%
34	Cilantro	784	5,630,000		
35	Anise (fennil)	662	5,427,000		
36	Parsley	403	5,039,000		
37	Napa cabbage	514	4,398,000		– 23%
38	Leeks	180	2,324,000	1	
39	Bok Choy	422	2,154,000		
40	Squash	308	1,969,000	3	
41	Misc. fruit (apples, olive, kiwi)	165	1,685,000		
42	Herbs	103	1,240.000		
43	Radish	172	1,205,000	2	
44	Poultry (eggs, misc)		1,005,000		
Total		379,716	3,823,287,300		+ 9%

Source: Monterey County Agriculture Commissioner Compiled by: Ag Venture Tours

M&S GRECH
FRESH PRODUCE

California Farm Study Tour

July 2009

In July 2009, we travelled to California on the Ace Ohlsson farm study tour. We visited many farms, processing facilities, seedling nurseries, seed companies, packing sheds and cooled packing sheds.

We visited many seed companies, both flowers and vegetables. We looked at trial sites for new varieties and breeding. We also saw seed pelleting, film coating, treatment, storage and packaging of seed.

The nurseries we visited grew seedlings for growers and some were on farms for their own use, and some also provided a transplanting service.

We visited many different farms, which produced berries, broccoli, lettuce, cauliflower, tomatoes, capsicum, garlic, onions, watermelon, rockmelon, potatoes, corn and crops for seed production. We saw ground preparation; irrigation; lettuce, broccoli and tomato harvesting.

Some of the packing sheds we visited specialised in only one or just a few different vegetables and mostly were on the farms. The tomato packing shed received hand picked green tomatoes, packed them into boxes, then gassed them to ripen and trucked out to the markets. We also saw potatoes washed and bagged, and watermelon Colour vision, graded and packed.

The processing facilities we visited included Onion and Garlic drying, bagged vegetables, baby vegetables, salad mixes, carrots, tomatoes for sauce and vegetable juices. Many of the processing plants also had very large cooling facilities, which included Hydro cooling, Vacuum cooling, Icing (corn and broccoli) and large cool rooms for storage. Some packaging was done in cooled rooms.

We saw how the shortage of water was becoming a concern and many farms were using drip irrigation to reduce water usage. Labour was also a large part of the production area, with teams of contractors doing specialised jobs like lettuce thinning, weeding, harvesting vegetables, driving and

operating machinery. Each team specialised in a particular job, for example harvesting- each person in the team had a different job such as pickers, packers, box makers, box stackers and supervisors.

The tour was very well planned and all very interesting with informative talks from farmers, nurserymen, processing managers, and seed company representatives. The scale of production and the size of the operations was an eye opening experience.
We were particularly interested in the ways they used their drip irrigation, to irrigate more accurately and to save water. We saw machinery that lays out drip line and rewinds drip line after each crop, which was quick and efficient.

We learned about many different ways of farming in California, and on our own farm. We are currently quoting a filtration system, heavy-duty reusable drip line, and a machine to rewind drip line after a crop has finished.

Mario and Sandra Grech.

J and J Vella
Trading as Razorback Fresh Produce
40 Thurns Rd
Razorback Via Picton NSW

I Joe Vella, my wife Josephine and Daughter Katie were part of the Ace Ohlsson American trip that went to California last July...

We saw that a lot of drip irrigation is used to water crops from Cauliflower and Broccoli to head and romain (cos) Lettuce. They use overhead irrigation to water the crop until it is thinned out, they then use the drip lines to grow the crop to harvest.

On our farm we have gone one step further and we now put the drip tape in the ground before planting and only use the overhead sprays on the newly transplanted crops. We then switch to the drips through to harvest.

Until the trip last year we had not recycled the tape. We have now grown 4 crops on the same tape. The cost in time and money to lift, retrieve and roll is nothing in comparison to the significantly better crops being produced. The water saving alone in our current systems has payed for any extra costs. Before going to the USA I had never seen vegetable and strawberries grown in this way before.

Joe Vella

CMX TRANSPORT PTY. LTD.

ABN: 93 754 702 024

28 Ulm Road
ORCHARD HILLS NSW 2748

18 June 2010

To whom it may concern,

During our trip to the USA of California in July 2009 we were able to take on a number of ideas that could be implemented onto our farm. Some of these ideas we have since changed onto our farm.

We have since transformed all our farm to the lay flat and t-tape type of irrigation as seen over there which has worked very well for us this past summer.

We have trellised all our summer lines in a criss cross system as shown on a peppers farm for our eggplants, bullhorn capsicum, banana chillis and Lebanese eggplant which we have seen a very high yield quantity over previous years.

On the nutrition side, we are feeding through our t-tape and managing the crop more regularly with less quantity of fertilizer. We have learnt that the crops need different fertilizers through its growing and fruiting stage.

We are now growing more varieties that are less tolerant to diseases and produce higher yields and good market appearance as learnt from seed companies which we visited.

In conclusion the trip was very beneficial to different facets we are now using.

Yours sincerely

Charlie Xiberras.

CHARLIE XIBERRAS
CMX TRANSPORT PTY LTD

Horticulture in focus

Graham Nicol Territory Sales Manager, Bayer CropScience and Gary Cislowski from Ace Chisson Sydney Markets recently organised a study tour to California for 20 vegetable growers and their partners from the Sydney Basin region. Hailed as the horticultural capital of the States, California provides the ideal location for the group to gain insights into various aspects of the vegetable industry.

Starting in San Francisco, the group visited Salinas Valley where they studied processing of lettuce, broccoli and cabbage in both fresh household and commercial packs. Local California Bayer CropScience and Nunhems sales representatives hosted the group in the Salinas region, providing presentations on pest and disease control and new lettuce variety selection.

The group also visited the San Joaquin valley to view the processing of tomatoes, cotton, carrots, melons, pistachios and a number of other crops.

As the fourth study tour that Graham Nicol has been involved in, he was pleased with the outcome of the trip.

"It was an extremely successful tour. Not only was it very educational, valuable friendships were also made with key vegetable end users, highlighting the importance of these trips in getting closer to our customers."

grower Emanuel Rafalo, inspects the lettuce variety Seamist Salinas, California.

Sydney growers shocked over US traceback level

SINCE mid-July this year a group of 23 vegetable growers and agronomists left Sydney for a 10 day study tour to California.

The trip was the first overseas study tour undertaken by horticultural supply company Ace Chisson to enable their grower clients to experience first hand the intensive horticultural production in California.

The trip was partially funded with sponsorship in place from Bayer Crop Sciences, Dow, and Terranova Seeds as well as project funding from Horticulture Australia.

The tour provided a strong emphasis on irrigation and farm practices used to reduce total water usage, new and developing "on farm" and remote "fresh" processing. Cool chain management, and control of pests and diseases.

The group visited more than 20 farms ranging from organic strawberry producers with less than 8 ha in production to massive irrigation farms with 15,000 ha of processing tomatoes. Several days were spent in the Salinas and Santa Maria Valleys' on Lettuce Broccoli, Cauliflower and Bunching crop farms.

Food safety was a significant factor encountered on the tour following the E coli outbreak in 2006, with the Sydney group regularly having to don hair nets and smocks to enter fields nearing harvest.

The group was also surprised by the level of traceability that all growers have to comply with to have fresh produce grown, harvested and delivered to retail outlets.

All pallets and many of the individual boxes of produce were bar coded to enable complete audit trails from farm to plate to be completed.

This compliance came at a considerable cost to the growers but without it they cannot sell their produce.