



TOMATO TOPICS



Know-how for Horticulture™

NEWS and INFORMATION
FOR THE PROCESSING TOMATO INDUSTRY

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2005/06 Processing Tomato Season

Another processing tomato season is well underway but not without difficulties. The first crop this season was sown in early September in NSW. Planting of crops continued through until early December, delayed in many cases by the periodic rain experienced throughout September, October and November.

The season so far has seen hail hitting a number of crops, with one crop in particular experiencing three hail storms. Heavy rain and hail has resulted in bacterial speck affecting a large number of crops in Victoria, while the rain in NSW created crusting problems during plant emergence resulting in a number of crops with a patchy stand.

The periodic rain on the other hand has reduced the need for irrigation, with some furrow irrigated crops having only received a couple of irrigations to date.

Heavy wind has also created problems across the industry with some plants experiencing severe damage or crops needing to be re-sown.

Tomato Spotted Wilt Virus has appeared once again this season with some paddocks experiencing a higher than normal level.

If TSWV, Bacterial Speck, wind and hail are not enough to contend with a number of processing tomato growers in Victoria are now having to contend with plague locusts. Recent reports have

stated that plague levels are the worst they have been for 50 years. Plague locusts have already destroyed a tomato crop and have been flying across a number of other crops. Although pesticides (Fenitrothion) are available to control locusts in tomatoes difficulty arises in plague situations which require a regional management plan.

Heliothis levels have been low this season across the processing tomato region in both Victoria and NSW.

At this stage harvest is not likely to commence before Australia Day

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Soluble Solids and Nutrition: 2005/06 Serve– Ag Trials

Doris Blaesing

1. Replicated potassium trial

Similar to the replicated nitrogen trial, we are conducting a fully controlled and replicated potassium trial this season. Greg Barnes is looking after the trial, together with the grower, Felippo Mei. The trial is running well so far in spite of the adverse weather conditions. The K application rates have been based on K uptake figures produced by Matt Stewart for Australian conditions. We are using the following N and K listed below in table 1. The base N program is based on last year’s results that showed the benefits of humic acid and Ca additions.

Table 1: Fertigation products used in replicated trial

Percentages are given in weight per volume (w/v)

Product Name	Nutrient Composition	Nutrient Concentration	Formulation
Application to all plots (the control will not get any additional potassium)			
Easy-N	Nitrogen	42.5% N	Ammonium (10.5%), urea (21.5%) and nitrate (10.5%) mix designed for injection into fertigation equipment, providing three release patterns of nitrogen.
Easy-Cal	Nitrogen Calcium	12.6% 18.1%	Non acidifying nitrogen fertiliser and calcium source for drip irrigation or foliar application
K-humate	Humate Nitrogen Potassium	18% 7% 3% as organic matter	Liquid soil conditioner / fertiliser formulated from plant derived organic matter.
Potassium treatments			
Solu K	Potassium Sulphur	42.3% 18.2%	Solid, soluble fertiliser for fertigation
Potassium Nitrate	Potassium Nitrate	38.5 13.5	Solid, soluble fertiliser for fertigation
Easy-KS	Potassium Sulphur	30% 25%	Potassium thiosulfate solution (KTS) for fertigation or foliar application
Supa K 30	Potassium	30%	Liquid potassium in organic citric form, which is said to be quickly assimilated
MKP (mono-potassium phosphate)	Phosphorus Potassium	22.7% P 28.7% K	Solid, soluble fertiliser for fertigation

The next table lists the base and planting fertilisers used. They were selected based on soil test results for the trial site and are not a ‘one-fits all’ recipe. The soil test showed low trace element levels. Therefore the trial will get two application of a trace element fertiliser as shown in the table 3.

Table 2: Pre-plant and planting fertiliser application based on soil test results

Nutrient	N%	P%	K%	S%	Ca%	Mg	Zn	B	Fe
Pre-plant over entire area: Pivot SuPerfect Potash 4&1 at 500kg/ha									
%	0	7.3	8.3	9.2	15.8	0	0	0	0
Kg/ha	0	35	50	44	79	0	0	0	0
At planting over beds only (reduces fertiliser amount for the trial area by 30%)									
Nitrophoska Blue Special 250kg/ha									
%	12	5.2	14.1	6	4.3	1.2	0.01	0.02	0.05
kg/ha	30	13	35	15	10.75	3	0.025	0.05	0.125
Sulfate of Potash at 200 kg/ha									
%	0	0	41	17	0	0	0	0	0
kg/ha	0	0	82	34	0	0	0	0	0
TOTAL kg/ha	30	48	166	93	90	3	0.025	0.05	0.125

(Continued on page 3)

(Continued from page 2)

Nutrient	N	Fe	Zn	Mn	Co	B	S	Mo
2 applications, at first green fruit (GS 4.1) and at first orange fruit (GS 5.1)								
%	5	3	3	2	1	0.77	4.60	0.05
kg/ha per application	0.25	0.15	0.15	0.1	0.05	0.0385	0.23	0.0025
TOTAL kg/ha	0.5	0.3	0.3	0.2	0.1	0.077	0.46	0.005

Table 3: Application of trace elements

Agrichem SupaTrace at 5 L/ha

Like last year, the trial is closely monitored for nutrient uptake yield and soluble solids and residual fertiliser N. The first Nu-test showed good levels of all nutrients apart from P. P was low in the soil, as shown in the initial soil test. The deficiency has been addressed by an additional application of P and we hope to see better levels in future Nu-tests.

2. Potassium trial at Boort

Michael Hind from NorthWest Ag, Louis Chirnside and Owen McCarran from Agrichem have pulled together to set up a trial testing different K liquid fertilisers in a commercial crop. Last season, it was hard to raise K levels in the Boort area. The K calculations published in the September Tomato Topics suggested that current additional K applications may not be sufficient to raise the levels. This trial, which will be monitored and analysed as part of the Serve-Ag project will prove or disprove this theory.

Treatment N ^o	Treatments
1	Control
2	Muriate of potash
3	Agri K 415
4	High PK ultra

Meeting Your On Farm Occupational Health and Safety Obligations (OHS Act 2004)

A new OHS Act was released in 2004. Most of the OHS obligations under the 1985 Act continue with a few additional obligations being included. The majority of these additions commenced on the 1st July 2005, with consultation taking effect from the 1st January and building design changes from the 1st July 2006.

The obligations as an employer you must so far as is reasonable practicable provide and maintain for employees a working environment that is safe and without risks to health. This includes:

- Systems of work
- Use, handling, storage, transport of plant or substances
- Adequate facilities
- Information, instruction, training, supervision.

These obligations extend to employees, contractors (e.g. labour hire and tradesmen), third parties (e.g. sales representatives, family members) and procurement (plant and equipment).

Reasonably practicable means that as an employer you have identified the hazards, undertaken a risk assessment and implemented procedures to control the risk (i.e. elimination, substitution, engineering controls, administrative, personal protective equipment).

Consultation which comes into effect from the 1st January

2006 requires that Employers have a duty to consult with employees/contractors on:

- Hazard identification
- Risk assessment
- Control Measures
- Adequacy of employee facilities
- Procedures for resolving health and safety issues, consulting with employees, monitoring health, providing information etc, and
- Agreed consultation procedures must be complied with.

To assist with this consultation process each business must have an elected OHS representative who has received appropriate training.

The health and safety of all the people who work and who live on the farm is the most important responsibility. It is important that employers and employees understand their responsibilities in occupational health and safety. As an employer you have the responsibility to ensure the health and safety of employees, and the health and safety of all others who enter this workplace. Safety must also be the responsibility of each individual and can not be left solely to supervisory and management personnel

A CD to assist you in meeting your OSH obligations has recently been compiled by the Industry Development Manager and will be distributed free of charge to all industry members. The CD is intended to be used as a guide only. It should not be viewed as a definitive guide to the law, and should be read in conjunction with the Occupational Health and Safety Act 2004. Neither the IDM nor APTRC Inc. will be responsible for your reliance on the contents of this disk in the absence of advice from an OH&S professional.

2005/2006 Cultivar Trials
Funded by APTRC and HAL through your research levy

These trials are this year managed by Mike Titley from Applied Horticultural Research.

Victorian Trials

	Co-operator		Established
Early Paste Trials			
Machine harvest 1	Louis Chirnside (Kerang)	Six (6) plus grower std. HZ 8704	Direct seeded 20-09-05
Machine harvest 2	Lyndon Wakeman (Boort)	Eight (8), grower std. HZ 9614	Direct seeded 6-10-05
Observation	Louis Chirnside (Kerang)	26 varieties, grower std. HZ 8704	Transplanted 21-09-05 ex. Boeill Creek Nursery
Mid Season Paste Trials			
Machine harvest 1	Dennis Moon (Rochester)	Eight (8) varieties plus grower std. HZ 3402	Transplanted 11-11-05 ex. Boomaroo Nursery
Machine harvest 2	Cedenco	Ten (10) varieties	Transplanted scheduled 11-12-05 ex. Boomaroo Nursery
Observation	Dennis Moon (Rochester)	34 varieties, grower std. HZ 8704	Transplanted 12-11-05 ex. Boomaroo
Mid Season Whole Peel			
Machine harvest 1	Darryl Rathjen (Colbinabbin)	Six (6) varieties plus grower std. HZ 3402	Transplanted 23-11-05 ex. Boeill Creek
Machine harvest 2	Kennedy Agriculture (Corop)	Five (5) varieties plus grower std. HZ 3402	Transplanted 14-11-05 ex. Berwick Seedlings
Observation	Darryl Rathjen (Colbinabbin)	30 varieties plus grower std. HZ 3402	Transplanted 23-11-05 ex. Boeill Creek

NSW Trials (managed by NSW Ag)

	Co-operator		Established (All Direct Seed)
Early Paste Trials			
Observation	Gary Amaro Griffith	21 varieties plus grower std. HZ 9280	8/9/05 Single row, Drip
Machine harvest	Gary Amaro Griffith	Eight (8) plus grower std. HZ 9280	8/9/05 Single row, Drip
Observation	Richard Stott D/Point	28 varieties plus grower std. ENP 113	22/9/05 Double row, Furrow
Machine harvest	Kooba D/Point	Six (6) varieties plus grower std. HZ 9280	24/9/05 Double row, Furrow
Mid Season Paste Trials			
Observation	Lou Rorato Jerilderie	35 varieties plus grower std. HZ 9723	23/10/05 Single row, Furrow
Machine harvest	Lou Rorato Jerilderie	Nine (9) varieties, grower std. HZ 9723	23/10/05 Single row, Furrow
Replicated	Roy Stillard Barooga	Nine (9) varieties, grower std. HZ 9035	16/11/05 Single row, Drip
Machine harvest	Glenn Rorato Jerilderie	Seven (7) varieties, grower std. HZ 8704	18/11/05 Double row, Furrow
Mid Season Whole Peel			
Observation	Roy Stillard Barooga	54 varieties plus grower std. HZ 8704	12/10/05 Single row Drip
Machine harvest	Roy Stillard Barooga	Seven (7) varieties, grower std. HZ 8704	Single row Drip irrigation
Replicated	Lou Rorato Jerilderie	Seven (7) varieties, grower std. HZ 9723	23/10/05 Single row Furrow



UPCOMING EVENTS

Sponsored by Netafim

Processing Tomato Crop Inspection - Rochester

Friday 20th January, 2006

Meet at Dennis Moon's Shed (Rochester-Kyabram Rd) 3:00 pm



Followed by:

Annual Pre Harvest Social Gathering

Friday 20th January, 2006

Moama, on board the Mirage Houseboat
(Moored near Merool Caravan Park, Moama)

RSVP essential: Liz Mann 0427 857 578

ABARE Outlook Conference

Canberra

28th February - 1st March, 2006

Register online or download a registration form at www.abareconomics.com.au/outlook.

Conference registration after 20 January 2006 is \$1180 including dinner.

Enquiries: Kathie Mackay 02 6272 2303 or kmackay@abare.gov.au

National Conference and Exhibition of the Irrigation Association of Australia

Brisbane May 9th, 10th and 11th, 2006.

For more information visit the IAA website; www.irrigation.org.au

Funding from Horticulture Australia has been received to enable growers to attend this at a reduced cost (total cost to growers will be 55% of the full cost)

Please let Liz know if you are interested in attending.

7th World Congress on the Processing Tomato &

10th ISHS Symposium on the Processing Tomato

5th –8th June 2006

Tunisia

www.worldtomatocongress.com

HAL funding for the attendance of industry members at this conference has been obtained through the Technology Transfer Project. Total funding available to the industry is capped and will be evenly distributed to participating industry members.

Total cost to be determined but airfare and conference registration approx \$4000

Tomatoes and Health

(extract from Tomato News)

The Food and Drug Administration (FDA) in the USA, after six delays over almost two years, recently published regulations detailing health allegations related to the processing tomato industry. The petition was submitted by an H.J. Heinz Company-led consortium of the principal processed tomato organizations and a cancer group, Prostate Cancer Foundation. Companies had hoped to be allowed to tout foods containing tomato like pizza as helping to prevent cancer. A favourable ruling would probably have increased profits, since some tomato-based products could be marketed as cancer fighters. When H.J. Heinz Co. briefly trumpeted lycopene in full-page advertisements a few years ago, ketchup sales rose by 4 percent. The FDA ordered the company to halt the ads because such health claims required its approval.

Lycopene is an antioxidant, a naturally occurring substance that protects the body from chemical reactions that damage cells, proteins, and DNA. One application, to the FDA filed by a Heinz-led coalition, says lycopene in tomato-based products reduces the risk of prostate cancer. The other application, filed by American Longevity, a California company that makes dietary supplements, says lycopene helps to inhibit a broad range of cancers.

Following the FDA ruling producers of tomatoes, tomato sauce and dietary supplements containing lycopene will not be allowed to advertise claims that they reduce the risk of many forms of cancer. Companies will be able to suggest a limited link between tomatoes and a lowered risk of prostate cancer, the agency said. In response to proposals from industry and other groups, the FDA said it will allow only a few limited health claims to appear on packages of tomatoes and tomato sauce. It also rejected proposals to advertise lycopene alone - available in supplements - as having cancer-related benefits.

This is a cautious decree, but a logical one, given the scientific results that are currently available: the FDA has acknowledged a degree of credibility to the cause and effect relation between tomatoes and health, and has decided to grant the benefit to tomato processing in general rather than to lycopene in particular.

Dr. F. Kerr Dow, Ph.D., vice president and chief technical officer for Heinz noted: "Based on health claim guidance provided by the FDA, the risk of prostate cancer may be reduced by eating just 1/2 to 1 cup of tomatoes and /or tomato sauce - such as a single serving of Classico® pasta sauce - per week."

This FDA decision will help educate the general public about the potential health benefits of tomatoes," said Leslie D.

Michelson, CEO of the Prostate Cancer Foundation, USA. "Both fresh and processed tomatoes are treasures of nutrients, with processed tomatoes having higher levels of nutrients simply because the vegetable is concentrated," explained Ida Laquatra, Ph.D., R.D., director of nutrition for Heinz. "In the American diet, tomatoes and tomato products are among the top food sources of Vitamins C, A and E; potassium; and fibre. Plus, tomatoes are an excellent source of other phytochemicals, including the powerful antioxidant lycopene. These nutrients work in combination to offer health benefits which we are just now beginning to understand."

Drought Resistant Tomatoes in the Future?

(extract from Texas A&M University System Agricultural Program)

New tomato research has its roots in yielding more food to feed more people, according to Dr. Kendal Hirschi.

The team made tomato plants over-express the gene, AVP1, which resulted in stronger, larger root systems and that resulted in roots making better use of limited water, said Hirschi, a researcher at Texas A&M University's Vegetable and Fruit Improvement Center and Baylor's College of Medicine.

"The gene gave us a better root system, and the root system could then take the adjustment to drought stress better and thus grow better," Hirschi said of the paper which details "a strategy to engineer drought-resistant crop plants."

For example, regular or control tomatoes used in the experiment suffered irreversible damage after five days without water, as opposed to the transgenic tomatoes, which began to show signs of damage after 13 days but rebounded completely as soon as they were watered, according to the study.

"This technology could ultimately be applied to all crops because it involves the over-expression of a gene found in all plants," said Dr. Roberto Gaxiola, a plant biologist at the University of Connecticut and the lead author of the study. "It has the potential to revolutionize agriculture and improve food production worldwide by addressing an increasing global concern: water scarcity."

Gaxiola's findings regarding the use of AVP1 in Arabidopsis to create hardier, more drought resistant plants were published in the journal Science in October, but the study described in the proceedings marks the first time the enhanced gene has been inserted in a commercially viable crop, he said

Additional Trials this Season

Fully replicated trial at Week’s farm to evaluate Acadian Liquid Concentrate on yield and quality of tomatoes. The product is expected to improve the nutritional status of the plant, and result in improved plant health and ultimate productivity. This trial is funded by Acadian Seaplants and conducted by Liz Mann and Murray Lanyon.

Initial studies are currently being undertaken in a small plot trial on SS Farms to evaluate a product commercially available in Australia. This product may act to shorten internode length and promote flower formation. Plant growth, yield and solids and chemical residue will be assessed in this trial. Fruit from this trial will not undergo processing. This trial is conducted by Liz Mann and Murray Lanyon in conjunction with Jason Fritsch.

A small plot trial will be conducted at Boort to evaluate a possible alternative chemical for control of bacterial speck. This trial will be monitored by Michael Hind and established by Liz Mann and Murray Lanyon.

A couple of growers have again this year purchased composted manure from a beef feedlot. Gino Gugliotti has established an on farm trial comparing a number of treatments including no manure, manure, double manure, manure and no metham. Soil samples and plant tissue sap are being collected from the on farm trial. Soil nutrition and biology data will be collected for each of the treatments. A manure and no manure block comparison is also being monitored at Rochester. Doris Blaesing is involved in interpreting data obtained from both on farm trials. Soil and plant samples are collected by Liz Mann and IK Caldwell.

Heinz Adaptor Trials

The Heinz Adaptor trials this season are located on the following farms:

Corop -	Ellis	Colbinabbin -	Rathjen
	Kennedy	Rochester -	Moon
	Hill		Weeks
	Pike		

If you would like to inspect these trials please contact Bryce Merrett on 0428 505 739

University of Melbourne - Dookie College

The University of Melbourne will be involved in a soil health project. This project will be supervised by Ken Young and conducted by final year agricultural science students undertaking honours projects. The focus of this project will be areas of paddocks or blocks that for an unexplainable reason contain plants that are not growing as expected.

If you currently have plants that are not performing as expected; they may be stunted or deformed please contact Liz Mann ASAP so further studies can be conducted to try and determine the cause.

Also in conjunction with the University of Melbourne Davide Cammarano will be undertaking some work to evaluate a tomatoes simulation model included in the DSSAT (Decision Support System for Agrotechnology Transfer), and to use remote sensing through vegetation indices to assess stresses in tomatoes production and for interpreting spatial variability of a tomatoes yield map. Vegetation indices will also be used to find identify spatial patterns across the field to target soil and plant sampling and to provide spatial inputs for the model. This work will primarily be focused on 3 farms, 2 at Rochester and 1 at Ardmona.

Last Season’s Work Conducted by Emily Creese - University of Melbourne

Studies were conducted to investigate the possibility that the plant stunting and root abnormalities observed at Boort at Lyndon Wakeman’s property were caused by fungi, nematodes, phytoplasmas or herbicide soil residues. Experimental work attempted to reproduce the unusual plant growth characteristics. However, the plant stunting and root abnormalities observed in the paddock in processing tomato plants and wheat plants were not reproduced in either the glasshouse or pot trials.

The only fungi isolated from healthy and unhealthy processing tomato plants were Fusarium spp, strongly resembling F. oxysporum. As Fusarium spp. are not known to cause the observed plant stunting and root abnormalities, it has been concluded that a fungal pathogen or pathogens were not the cause of the abnormal plant growth. In addition, no nematode activity was detected in either processing tomato plants, wheat plants or surrounding soil.

Phytoplasma was detected in the leaves of symptomatic processing tomato plants however; there is no documented evidence to suggest that phytoplasma caused the root abnormalities observed in the processing tomato plants. It is therefore concluded that phytoplasma, despite being detected in the leaves of stunted processing tomato plants, was not the cause of the observed plant symptoms.

Commercial soil analyses to detect residues of imazapic, imazapyr, trifluralin and pendimethalin were conducted. The detailed analysis failed to detect the presence of any of the herbicides. Furthermore, the generic soil scan did not provide any evidence of the presence of other herbicides. DDE was detected in soil from the paddock at a low level but is not reported to cause the observed plant symptoms.

Despite a detailed progression of studies having been conducted, the question still remains as to the cause, or causes, of the unusual growth characteristics observed in both processing tomato plants and wheat plants near Boort. A number of potential causes of the abnormal growth characteristics have been investigated however, no causal relationship has been established between plant symptoms and: soilborne pathogens, nematodes, phytoplasma or herbicides. Further research is required to determine the actual cause or causes.

Netafim Drip Tape Recycling

Pickup Form: To be completed by Grower , then Faxed by the Grower,
 Fax to: Netafim PHX Program Pick Up coordinator at 03 9369 3865

Date of Request*	Contact Name and Contact Phone # and Fax #*	Pick Up Location*	Product type*	Quantity Mtr*

* **Mandatory**

Rules and Conditions

General

1. We will only pick up the pre-agreed quantity in acres or meters or kilograms. Any extra will be collected if feasible otherwise rescheduled.
2. A contact # and name is needed at time of pick up
3. The grower must load the reeled Drip-Lines to the truck
4. Lead-time will be typically 2-4 weeks but may be up to 8 weeks depending on workload.
5. Bad weather may force rescheduling
6. Site inspection by Netafim representative recycler or Netafim dealer may be required prior to pick up
7. The stacks of dripper lines must be readily accessible to a b-double truck. There must be enough room to manoeuvre such equipment

HWD tubing

1. The drip hose must be coiled and tied into individual rolls. Use plastic twine but not wire to tie the rolls.
2. The stacks of dripper lines must be readily accessible to a b-double truck. There must be enough room to manoeuvre

- such equipment.
3. Stacked tubing must be free of trash, wood, rocks, tires and other foreign material

TWD Tubing

1. The tubing must be rolled on core-less spools. The ties must be made of TWD or twine or with the loose end of the dripper line. Do not use wire.
2. Do not use metal, cardboard, sticks or other plant material in the centre of the rolls of dripper line. PE or PVC centres are OK as long as they are less than 4” in diameter
3. Loosely stacked piles of dripper line that has not been properly prepared will not be eligible for the recycle program.
4. Dripper line intermingled with plastic mulch will not be accepted.
5. Stacked dripper line must be free of trash, wood, rocks, tires and other foreign material

These rules are non-negotiable and only the Sales Manager or the Pick-Up Coordinator can approve any exceptions. If the rules are not followed, any commitment is null and void.

ACKNOWLEDGMENTS:

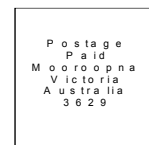
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Opinions expressed in “Tomato Topics” are not necessarily those of the APTRC unless otherwise stated.

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