



# TOMATO TOPICS



Know-how for Horticulture™

NEWS and INFORMATION  
FOR THE PROCESSING TOMATO INDUSTRY

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## 2006/07 Processing Tomato Season

Each season appears to bring with it new challenges. This years challenge is the lack of water. The water allocation for the 2006/07 season opened at 7% for much of the processing tomato region located in Northern Victoria on the 15<sup>th</sup> August, with the irrigation season closing earlier than normal, on the 1<sup>st</sup> April 2007. On the 1<sup>st</sup> September this allocation for the Goulburn system was increased to 17% of Water Right and Licensed Volume. The increase was made possible by including a volume of 86,000 ML of water at Waranga Basin that can be pumped. Goulburn-Murray Water is preparing for emergency drought pumping similar to the 2003 pumping event. The need for pumping will be reassessed over the next two months as water availability changes through the traditionally high inflow months of September and October.

Water on the temporary trade for the Goulburn system began trading on the 24<sup>th</sup> August on Watermove at \$300/ML. On the 7<sup>th</sup> September the price of the temporary water increased to \$353/ML.

|                                     | Megalitres     |
|-------------------------------------|----------------|
| In Store                            | 919,000        |
| Supplementary                       | 0              |
| Inflows                             | 36,000         |
| <b>Total Available at 1st Sep</b>   | <b>955,000</b> |
| Dead Storage                        | 127,000        |
| Headworks Losses                    | 162,000        |
| Distribution System Losses          | 243,000        |
| Urban, Goulburn Flow, Water Quality | 151,000        |
| Cover IVT                           | 30,000         |
| Stock and Domestic                  | 55,000         |
| <b>Irrigation Allocation (17%)</b>  | <b>176,000</b> |
| Carry Over                          | 11,000         |

Table 1 shows details of how much water was available in Goulburn system as of the 1<sup>st</sup> September. This available water is used across the region in perennial horticulture, dairy, fresh and processing tomato production, and grains.

Considering these figures many processing tomato growers have been faced with the possibility of being unable to buy temporary water at an affordable price. It has been indicated that there is a fair chance of the allocation reaching 40% during the season. This has left growers being required to determine what area of crop they are prepared to grow with this level of allocation. Currently growers have chosen to cease seeding transplants in the nursery until the current situation changes.

Another "back trade" from the Murray to Goulburn system will occur on the 15<sup>th</sup> September.

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## 2006/07 Processing Tomato Research

### Cultivar Evaluation

**NSW:** 2 machine row trials early and mid (different planting dates with Glenn Rorato), and an observation

#### Vic:

*Boort: drip, direct seed*

- Lyndon Wakeman, whole row and replicated
- Backup whole row and observation trial

*Rochester: drip, transplant*

- Cedenco, whole row and observation
- Plus and early and midseason trial as backups (providing crops are planted),

*Colbo: drip, transplant*

- 1 or 2 whole row trials depending upon what crops are planted

#### Note

A replicated trial is the mid point, using successful varieties from the observation the year before. If a variety is successful in the observation and replicated trials then the next stage is to be included in the machine harvest trials.

### Solids and Nutrition

Doris is planning to work with a number of individual or groups of growers to fine tune nutrition programs during the coming season. Two approaches can be used, depending on growers preferences:

- Use a 'best bet' treatment in one block and compare with the growers' conventional program (this could be statistically analysed 'paired sites')
- Prepare a nutrient budget, monitor the crop - adjust the conventional program according nutrient budget and monitoring results

*Solids and yield will be recorded in all cases.*

Investigate the effect of crop rotations (e.g. canola, oats etc) and soil improvement treatments (e.g. manure) on soil 'health'/fertility and tomato yield and quality.

A large scale replicated trial is currently being planned to enable up to 5 different fertiliser treatments to be compared in a fully replicated randomised trial. This trial will include the following treatments:

- Grower's conventional program
- Best bet option designed by Michael Hind, Paul Elton and Keith Fallow (Nipro) in conjunction with Doris
- Best bet option designed by Agrobrest
- Other?

### Technology Transfer

A pre season discussion group meeting was held in August in conjunction with Cedenco. This was very well attended by approximately 20 growers, or 14 grower businesses.

Industry statistics have been compiled in a similar format to previous Barry Horn reports. They will be inserted into this years annual processing tomato grower magazine.

The next discussion group meeting is planned for April at the end of the season.

#### On farm trails:

Proposed soil wetting agent to be used on transplants applied through drip and direct seed applied as a foliar prior to seeding (Becker Underwood)

Also test another product which is meant to increase solids (Stubble Aid - Yield Enhancement Services)

Both these companies have been asked to contribute \$1-2,000 to cover Murray Lanyon's time etc

Involvement in both the cultivar and solids nutrition research projects.

Mid season crop inspections planned for January at Boort and Rochester/Corop area.

### Soil Health – University of Melbourne

Utilise grower's fields to apply a range of these commercial inoculants. Also to do field surveys of crops where there is an indication of yield decline. Continue with the glasshouse experiments looking at what rate of inoculants are required to achieve best results -- the inoculants to be used will be based on Madeline's honours work. It is also hoped that a commercial biological producer (i.e. Hybrid Ag - Wangaratta) will assist with the work.



### Corporate Social Responsibility in the Tomato Industry

Sophia Alison, an Honours student at the University of Sydney studying under Bill Pritchard, has completed her research on corporate social responsibility in the tomato industry. Using the Unilever 'Growing for the Future' project as a case study, she documented how its original objectives matched up with its various outcomes. The apparent abandonment of the project following Unilever's decision to exit first-tier tomato processing raises important questions about the capacity of such initiatives to generate lasting changes within grower communities. It highlights the challenges facing companies who may wish to pursue socially responsible practices, but at the same time are also responsible to a shareholder base which demands that investments generate an appropriate rate of return on capital. A copy of Sophia's thesis will shortly be available from the APTRC office.

Sophia's research was made possible by the goodwill and cooperation of many tomato growers and others in the industry. She is also particularly thankful to the efforts of Liz Mann in facilitating contacts through the industry.

# Northern Hemisphere Processing Tomato Production

(from World Processing Tomato Council 6/9/06)

**Italy:** In the South, factories are at full capacity now but there is a lot of irregular ripening in the fields. In the North, quantities are starting to decrease as we reach the end of the crop which is planned for the end of September. Altogether a total crop of around 4 million tonnes is expected, within a range of 3.8 and 4.2 million tonnes, depending on the weather in September.

**Spain:** The forecast is now reduced to under 1.6 million tonnes (range of 1.55 to 1.6 million tonnes).

**Greece:** The crop was generally late and the farm yields are much lower than in the last few years. The size of the crop is now expected in the 710 000 to 720 000 tonnes range. These losses are mainly in the north of the country where crop sizes have been reduced on average by 40% (some areas 80%).

**France:** Harvest is nearing its end, but factories are remaining open to process as much as possible as the total crop is 10 to 15% lower than contracts: A total of 110 000 to 115 000 tonnes expected. All factories should close at the end of next week. Growers and processors are regretting having reduced the volume of the contracts so much and plan to contract more in 2007.

**Portugal:** As farm yields are lower than in 2005 (-5 to -6% on average), the total forecast is down to 900 000 tonnes from 950 000 tonnes, but September will be determining.

## Turkey:

The total processing forecast stands at 1.3 million tonnes. The peak production is about to end but factories should run to the end of September.

**Israel:** On 31.08.2006 the processed quantity of tomatoes was 160,000 tonnes. Processing will still continue a number of days.

**Tunisia:** The harvest is now practically over and the total volume processed should be around 450 000 tonne, or slightly lower.

**Hungary (28 August):** An estimate about only 100.000 tons of tomatoes for processing for this season.

| Country          | Season          | Tonnes *<br>1,000 |                  | %<br>Change               | Ranking   | % of<br>Total |
|------------------|-----------------|-------------------|------------------|---------------------------|-----------|---------------|
|                  |                 | 2005              | forecast<br>2006 | 2005-<br>2006             | 2005      | In 2005       |
| USA              | July-Dec        | 9,256             | 10,290           | 11%                       | 1         | 27.91%        |
| Italy            | July-Dec        | 5,300             | 4,800            | -9%                       | 2         | 15.98%        |
| China            | July-Dec        | 3,200             | 4,000            | 25%                       | 3         | 9.65%         |
| Iran             | July-Dec        | 2124              | 2100             | -1%                       | 5         | 6.40%         |
| Spain            | July-Dec        | 2,850             | 1,750            | -39%                      | 4         | 8.59%         |
| Turkey           | July-Dec        | 1,626             | 1,350            | -17%                      | 6         | 4.90%         |
| Brazil           | July-Dec        | 1,245             | 1,160            | -7%                       | 7         | 3.75%         |
| Portugal         | July-Dec        | 1,000             | 1,000            | 0%                        | 8         | 3.02%         |
| Greece           | July-Dec        | 880               | 850              | -3%                       | 9         | 2.65%         |
| Chile            | Jan-June        | 756               | 630              | -17%                      | 10        | 2.28%         |
| Tunisia          | July-Dec        | 735               | 550              | -25%                      | 11        | 2.22%         |
| Uzbeki-<br>stan  | July-Dec        | 500               | 500              | 0%                        | 12        | 1.51%         |
| Canada           | July-Dec        | 590               | 500              | -15%                      | 13        | 1.78%         |
| Other 9          |                 | 407               | 440              | 9%                        |           | 1.23%         |
| <b>Australia</b> | <b>Jan-June</b> | <b>317</b>        | <b>293</b>       | <b>-8%</b>                | <b>14</b> | <b>0.96%</b>  |
| Argentina        | Jan-June        | 360               | 290              | -19%                      | 15        | 1.09%         |
| Thailand         | Jan-June        | 260               | 260              | 0%                        | 16        | 0.78%         |
| Bulgaria         | July-Dec        | 250               | 250              | 0%                        | 17        | 0.75%         |
| Algeria          | July-Dec        | 150               | 250              | 40%                       | 22        | 0.45%         |
| Poland           | July-Dec        | 205               | 200              | -2%                       | 19        | 0.62%         |
| Israel           | July-Dec        | 229               | 195              | -15%                      | 18        | 0.69%         |
| Ukraine          | July-Dec        | 150               | 150              | 0%                        | 24        | 0.45%         |
| South<br>Africa  | Jan-June        | 160               | 150              | -6%                       | 20        | 0.48%         |
| Morocco          | July-Dec        | 150               | 150              | 0%                        | 23        | 0.45%         |
| Syria            | July-Dec        | 110               | 145              | 32%                       | 26        | 0.33%         |
| India            | Jan-June        | 145               | 145              | 0%                        | 25        | 0.44%         |
| France           | July-Dec        | 157               | 120              | -24%                      | 21        | 0.47%         |
| Mexico           | Jan-June        | 51                | 51               | 0%                        | 27        | 0.15%         |
| <b>TOTAL</b>     |                 | <b>33,163</b>     | <b>32,569</b>    | <b>(From Tomato News)</b> |           |               |

It could be better if the weather in September is good for the ripening and harvesting.

**Algeria:** Less than 200 000 tonnes will be processed in Algeria this year. One company was only able to run one of their two factories because of a lack of available tomatoes.

**Canada (16/08/2006):** Harvest has just begun and the industry continues to forecast contract tonnage or better at 531,670 tonnes. Bacterial disease is beginning to affect some crop.

**California (1/9/2006):** California's contracted processing tomato production is forecast at 9.07 million tonnes, down 12 percent from the May forecast, but 6 percent above the 2005 season. Processors expected this production to come from 279,000 acres producing an average 35.84 tons per acre. As of August 20, the total Statewide inspected tonnage of tomatoes delivered (3,938,841 tons) was 14 % lower compared to the same time one year ago (4,601,457 tons).

## Solids versus Yield

For a number of years the most popular varieties grown in the industry were Heinz 8704, Heinz 9035, Heinz 9280 and Heinz 9614. During the past season approximately 25% of the area was planted to Heinz 3402 and 13% to Heinz 4001. Following last season data on yield, solids and variety were collected from the majority of the Cedenco crops and a large number of SPC Ardmona and Heinz crops. This data was then graphed to demonstrate the maximum yield and solids combinations which were obtained by growers during the season.

In the past it has been assumed that yield and solids were inversely related. This may have been the case for some of the 'older' varieties, but this assumption is not true for the most popular varieties from last season.

Figure 1 demonstrates the various yield and solids combinations that were obtained in commercial Heinz 8704 crops last season. (The R<sup>2</sup> value demonstrates the strength of a relationship between yield and solids. The closer to 1 the stronger the yield and solids relationship.)

From Figure 2 and 3 it is evident that yield and solids are not inversely related. Therefore it can be assumed that high yielding crops with high solids should be achievable by all growers.

Following discussion with some of the individual growers who did achieve high yielding and high solids crops it was found that water and nutrition do appear to influence solids levels. So what are the management practices that may help to increase solids:

- Crop root system was encouraged to grow by with holding irrigation during the early growth stage (pre flowering). The crop did not show any symptoms of stress until the ripening stage.
- Irrigation was carefully monitored throughout the season, taking into consideration how much water was used by the crop (crop evapotranspiration Et).
- Soil moisture levels were measured using G-bugs or capacitance probes.

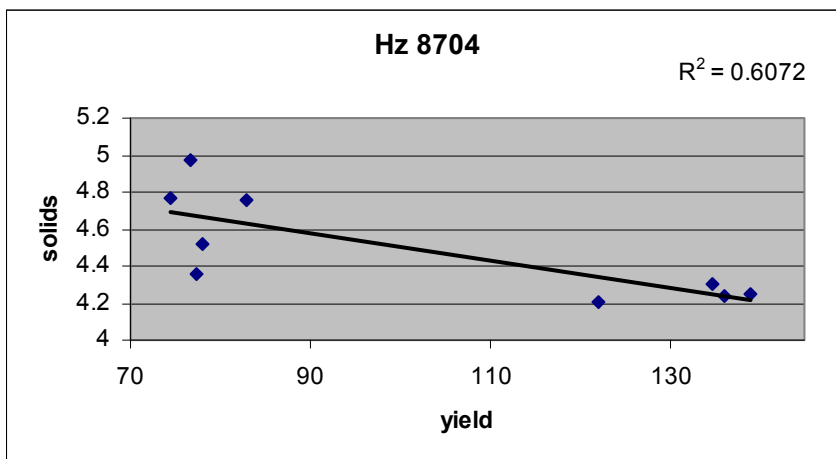


Figure 1: Yield and solids data was only available for 9 Hz 8704 crops

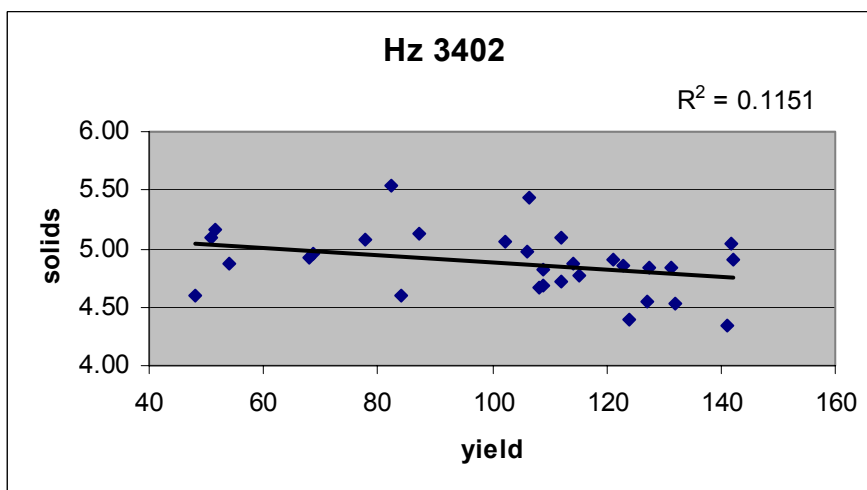


Figure 2: Hz 3402 yeidl and solids from last season

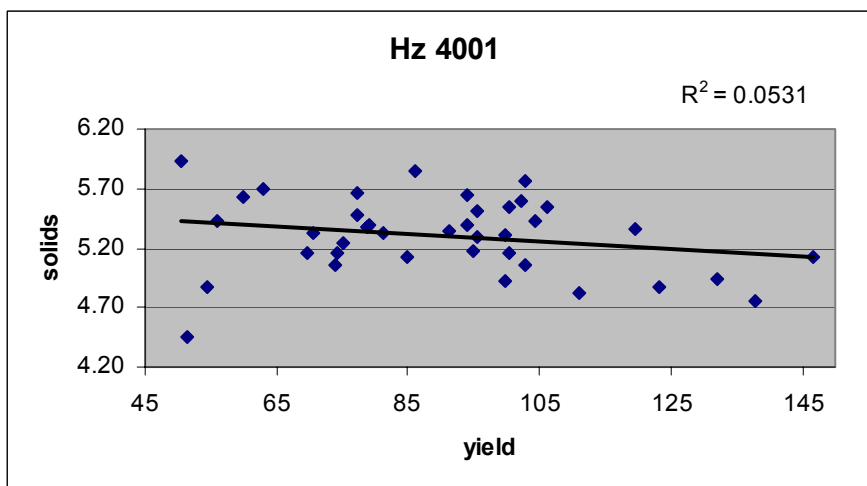


Figure 3: Hz 4001 yield and solids from last season

- Nitrogen was applied depending upon tissue/sap testing using a combination of Calcium Nitrate and Green N. (Many of the processing tomato soils are low in Calcium, the Ca:Mg ratio is important and should be at least 2 in you initial soil test.).



## UPCOMING EVENTS

### Opportunities for Innovative Food Processing - *Bringing new ideas and technologies to market*

Tuesday 19<sup>th</sup> September 2006

4:00-6:00pm

Sundowner Park Lake, Shepparton

### Australian (Nuffield) Innovative Farming Conference

*Globalisation and the Impact on Farming in Australia*

5-6<sup>th</sup> October 2006

<http://www.nuffield.com.au/aifc/index.html>

As Louis Chirnside is speaking at this conference on the 6<sup>th</sup> it has been indicated that some growers may be interested in attending.

If you are interested please contact Liz Mann as we may be able to organise a group to travel down together.

### ANCID 2006: National Conference and Exhibition

**The North - Opportunities for the Future -**

*The Catchment Community Working Together*

15-18<sup>th</sup> October 2006

[www.ancid.org.au](http://www.ancid.org.au)

### Food Innovation: Emerging Science, Technologies and Application

**3<sup>rd</sup> Innovative Foods Centre Conference 2006**

16-17<sup>th</sup> October 2006

[www.innovativefoods2006.com](http://www.innovativefoods2006.com)

### Today Tonight (Seven Network)

A story looking at the importation of cheap Italian processed tomato products into Australia has been prepared by Today Tonight. We do not have a date for when this story will appear on TV, but it could be aired in the near future.

### Keep It Real

*Options for integrating environmental stewardship and quality assurance for  
Australian agriculture*

Incorporating the 5<sup>th</sup> EMS in Agriculture and 5<sup>th</sup> National On Farm Food Safety and Quality Assurance conferences

6 – 10<sup>th</sup> August 2007

Hobart, Tasmania

[www.tqainc.com.au/conference.htm](http://www.tqainc.com.au/conference.htm)

# FOR SALE:

Holden Commodore VX, Equipe, Maroon Colour, Roo Bar  
Approx 230,000 km As is (cracked windscreen)

**Price: \$7,500**

This is the current Industry Development Manager's Car (Liz Mann).

**Please contact Liz if you are interested**

**(lizmann@aptrc.asn.au or 0427 857 578)**

## Understanding Soil Biology

During the past season a number of soil samples from across the industry were analysed using a Soil Microbial Indicator Test (SMI Test). The overall performance of soil is determined by a combination of the soil chemistry, physics and biology. In the past work has primarily been focused on soil chemistry (plant nutrition) and soil structure. Upon receiving a SMI Test result you need to be able to understand what each reading means to determine what particular management practices may be required to change the results to create a more favourable soil for processing tomato production.

The Fungi to Bacteria ratio is important

|              | Fungi | Bacteria |
|--------------|-------|----------|
| Pasture      | 0.75  | 1        |
| Vegetables   | 3     | 1        |
| Vines        | 5     | 1        |
| Citrus/Trees | 10    | 1        |

If the bacteria level is too high then grassy weeds may result. On the other hand if the level of bacteria is too low compared to the fungi level then woody weeds may result.

### Total Microbial Count

Normally the higher the figure the greater capacity for production, although it doesn't always indicate good soil health. It incorporates the total sum of bacteria, fungi and yeasts present in the soil. The ratios of these different microbes are important.

From initial testing it has been found that the Total Microbial Counts obtained from soil used for processing tomato production are lower than desirable. It does appear that the levels can be increased with the addition of composted cow manure as shown in figure 1.

### Bacterial Count

The addition of lime does appear to increase the bacterial count. This was observed in a trial conducted on processing tomato soil last season.

The addition of manure to the soil does not appear to impact greatly upon bacterial levels (Figure 1).

It is difficult to manipulate soil bacterial levels, although products such as organic composts may influence levels.

### Fungal Count

Soil fungi levels can be increased by applying humates to the soil.

From an initial study of processing tomato soils it appears that the fungal counts may increase with the addition of manure or through growing a brassica green manure crop. It is not known if growing a canola crop to harvest would have a similar impact.

Fungal counts can decrease in dry periods.

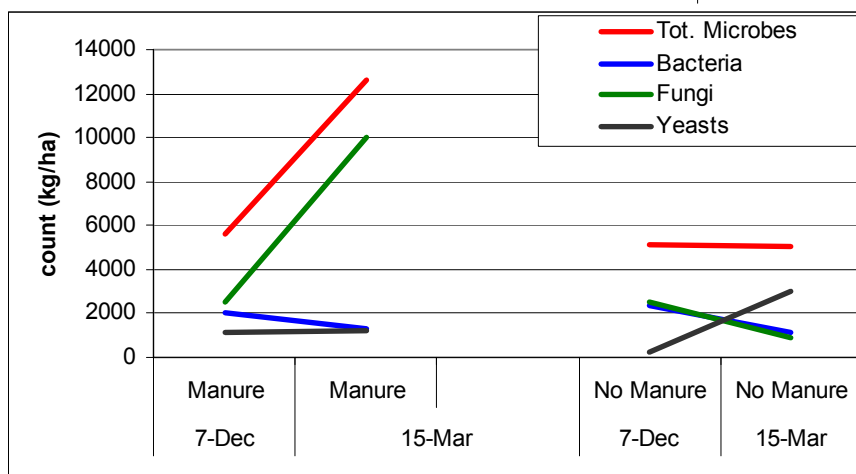
### Yeast Count

Yeasts, although classified as fungi have been separated out in the analysis, as their levels are a good indicator of soil health or plant growth.

It has been shown that there needs to be at least a 1:1 ratio of fungi to yeast for a healthy soil. Too high a level of yeast, especially when accompanied by high anaerobic levels indicates poor soil health.

Yeast levels may increase during the summer period.

Initial studies of processing tomato soils have shown that the yeast count may increase during the processing tomato season. The size of this increase may be reduced if composted manures are applied (Figure 1).



### Anaerobic Count

Anaerobic organisms measured are those bacteria or yeasts which are able to grow without oxygen. Anaerobic counts should be no more than 1:3, or preferably 1:10 of the Bacterial Count level. High Anaerobic Counts are undesirable.

During drought or dry conditions fungi may disappear leaving anaerobic bacteria a chance to dominate. Anaerobic counts will also increase with water logging or poor soil structure.

Figure 1

(Continued on page 7)

(Continued from page 6)

**Azotobacter**

These are the nitrogen – fixing bacteria and have a negative correlation with the presence of nitrogen. The higher the level of Azotobacter the less soil nitrogen is plant available.

From the initial study of the processing tomato soils the Azotobacter levels appear to decrease with the addition of applied fertiliser or manure (Figure 2)

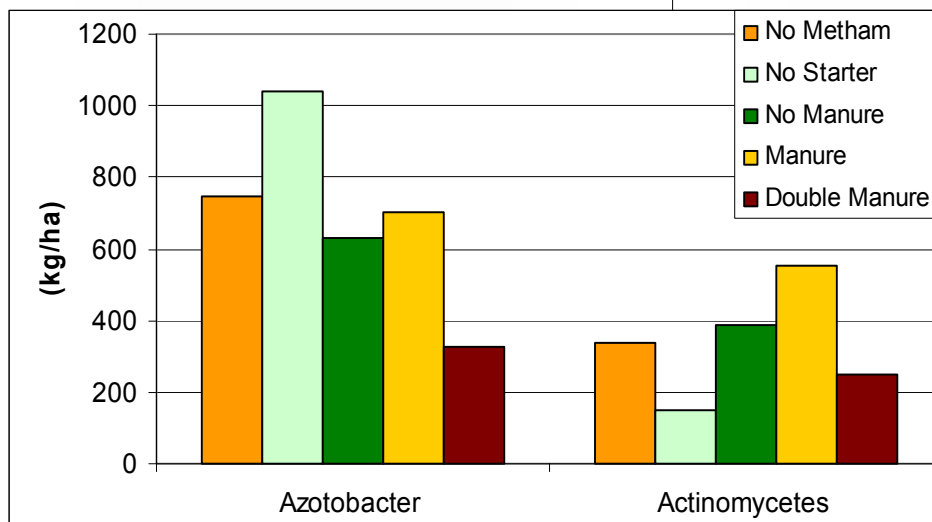


Figure 2

**Actinomycetes**

These bacteria play an important role in the breakdown of complex organic compounds. As a result their level is generally higher in higher organic matter soils.



**Farm Safe Victoria**

It has been some time since the Managing Farm Safety Course was conducted for the Processing Tomato Industry. Although farm safety audits were conducted on a number of individual farms as part of this course, machinery and farming practices may have changed.

Have you recently conducted a farm safety audit on your property? If not you should consider doing this before the start of the season. It is your responsibility as an employer to ensure you are providing a safe and healthy workplace for all employees and contractors.

Workcover has provided funding for **free independent** audits by people who **do not** provide a report to Workcover. This is an opportunity for all growers to obtain some free assistance without Workcover being involved in any way.

If you are interested in this please contact John Curtis, Farm Safe Alliance on 0427 868 852

**Impact of Metham**

From the initial study of the processing tomato soils it appears that metham may decrease the Total Microbial Count, along with the Bacterial and Fungal Counts. Metham does not appear to impact upon the Yeast Count. If composted manure is applied to the soil this helps to once again increase the Total Microbial and Fungal Counts.

**Microbial Activity Levels**

A high Total Microbial Count and low Viable Count indicate that the soil environment is right for the growth of the microbial species present (low number of workers working very hard). The Viable Count could be increased by adding more of the same types of microbes (hard), or by increasing the food source i.e. organic matter (easy).

A low Total Microbial Count and high Viable Count works the opposite way indicating the soil environment is not conducive to microbial growth (high number of workers taking to many tea breaks).

**Nutrient Analysis of Biomass**

The calculated figures indicate how much nutrient is contained within the soil microbes living in the soil at the present time. If the levels are low then additional fertiliser needs to be applied. If the soil test shows high levels of nutrients but the Nutrient Analysis shows low levels then the nutrients may not be available to the plant.



**Dual Gold**

A permit (PER5043) has been available for the use of Dual Gold (S-metolachlor) in processing tomatoes for the control of Blackberry nightshade and other weeds during the past seasons. This permit expired on the 30<sup>th</sup> June 2006.

A condition of the permit was that Syngenta (manufacturers of Dual Gold) would register the use as tomatoes are a major crop.

Syngenta has since decided that due to the variability in soil types and conditions associated with tomato production, that they could not guarantee that crop phytotoxicity would not occur. They believe that this is unacceptable.

Therefore, they no longer support the permit.

# Tomato Pests and Diseases

## Tomato Yellow Leaf Curl Virus

During the early part of this year tomato leaf curl disease was found in cherry tomato crops in the south western periphery of Brisbane and also Bundaberg. The disease has been found in many crops, with infection levels ranging from 5 to 100 per cent of plants. Losses in severely affected crops have been very high and the disease is a major threat to tomato production. Tomato leaf curl disease is caused by viruses in the Geminivirus family of plant viruses, which are spread by whiteflies.

TYLCV, can be confused with several other tomato conditions such as tomato big bud, tomato yellow top, physiological leaf roll and phosphate and magnesium deficiency.



Close-up of TYLCV infection

It is unlikely that this virus will establish in the open as whiteflies are not expected to survive a winter in the open

paddock in Victoria.

If you do observe suspect symptoms please notify Liz Mann ASAP so samples can be collected and properly assessed.



## New Zealand: latest pest a threat to tomato crops

The tomato/potato psyllid (*Bactericera cockerelli*) was found from North Auckland to Taupo in May and is likely to arrive in Gisborne this season.

The distribution, lack of linkages between infested sites and the psyllid's unknown path of entry into New Zealand led Biosecurity New Zealand to conclude that this pest was well established and eradication was not feasible. The psyllid secretes a toxic saliva during feeding that can severely damage potatoes and tomatoes. It can attack species in 20 plant families but prefers to feed on tomato, potato, pepper and eggplant.

The symptoms of the pest on tomato plants are a slight yellow or purpling discolouration along the midribs and edges of the top leaves. As the condition progresses, the entire plant top changes to yellowish-green or purple-red and foliage growth is checked.

## Western Flower Thrips

If you have difficulty controlling thrips this season please contact Liz Mann to obtain a correct Thrip ID to ensure you do not have WFT.

### ACKNOWLEDGMENTS:

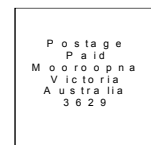
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