



# TOMATO TOPICS



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## Processing Tomato Season 2003/04

Another processing tomato season is well underway. Each season presents a number of different challenges. This season began cooler than last season, and also cooler than the 5 year average. The cumulative heat unit graphs, beginning 1<sup>st</sup> September for Echuca, Kerang and Shepparton are located on the APTRC web site. To date (16<sup>th</sup> December) this year is 156 degree days behind last years total for Echuca, 106 degree days behind last years total for Kerang and 192 degree days behind last years total for Shepparton (visit [www.aptrc.asn.au](http://www.aptrc.asn.au) for graphs).

Along with a cooler than normal start to the season a number of crops have experienced frost or hail damage. Lets hope this season will see a dry harvest.

To date high thrip activity has been observed in some areas. Thrip samples have been collected from a number of paddocks across the processing tomato region, with no Western Flower Thrips being identified to date. Large number of plague thrips have been identified in some areas, along with tomato and onion thrips. If you experience ongoing numbers of thrips at any time during the season please contact me to obtain a sample for identification.

A number of on farm demonstration trials are being conducted this season. These include:

- Surround<sup>TM</sup> Crop Protectant. This product is a fine white kaolin product that is sprayed

onto the tomato crop to reflect the heat of the sun. The product may be applied a number of times during the life of the crop to assist with fruit set, or close to harvest in crops that suffer defoliation to prevent sunburn. Demonstration trials are in the process of being established on 5 farms across the region. It is hoped that during this demonstration each processor will be delivered fruit to ensure Surround<sup>TM</sup> does not effect the processing of the fruit. Along with this yield and solids will be accessed on the treated and untreated fruit. Trials

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## Managing soluble solids and yield in processing tomatoes

Doris Blaesing, Mike Schulz, Ann Murray, Serve-Ag Pty Ltd, December 16, 2003

### Summary of Findings from 2002/03 season:

#### 1. Grower Survey

##### a. Nutrition

Twenty Victorian growers from three growing regions participated in the survey. It included collection of relevant crop management information, nutrient uptake and available soil nitrogen testing (via NU-test<sup>TM</sup> sap analysis and N-check<sup>TM</sup>), yield assessments and soluble solids analyses of first red fruit, and fruit at harvest. NU-test information was collected throughout the season at six crop stages. A statistical analysis was performed to test relationships between nutrient uptake and yield/soluble solids at different growth stages.

**High yield:** Optimum Nitrogen (not too high) and Potassium (high) levels were important during the flowering stage.

**High soluble solids:** Nitrogen during fruit colouring (prior to red fruit stage) should be at the higher end of the desirable level range whereas it has to be at the lower end during the red fruit stage. The higher the Phosphorus, Iron and Manganese levels, the higher were the solids levels.

Relationships between other nutrients and soluble solids or yield were not found in the survey. They were either taken up in sufficient amounts during the season and/or do not play a major role in solids and yield production (e.g. Calcium). The role of Boron needs to be confirmed. It showed a solids/yield relationship during the green fruit stage (still a lot of flowers are produced during this stage), with yields lower and solids higher with higher B levels. Boron is needed for pollination. Molybdenum levels were not tested last season.

##### b. Irrigation

Ten of the twenty survey blocks were equipped with continuous moisture monitoring equipment. In all cases the subsoil (60cm and 80cm depth) was saturated all season. Some crops

accessed this water once irrigation was cut off prior to harvest. The test for available soil nitrogen (N-check), taken after harvest, showed that most surveyed crops had large amounts of residual nitrate to the sampling depth of 60cm. As tomatoes access water from this depth after irrigation shut-off they may take up nitrogen as well when it is not wanted (close to harvest).

c. Early detection of low solids potential  
The analysis of soluble solids in first red and harvest mature fruit showed that low solids in first red fruit indicates a high likelihood that fruit will be low in solids at harvest. This test may offer an opportunity to develop remedial action between first ripe fruit and harvest.

#### 2. P-fertigation

The trial was conducted in a commercial crop. Due to a high P background level in this crop and high N applications, additional application of P through fertigation did not have a significant effect on yields and solids.

#### 3. N-sources

Similar to the P-trial, the nitrogen sources trial was conducted against a high background level of N due to management practice in the commercial crop the trial was part of. Even though interesting trends were observed, there were no significant differences in yield and soluble solids.

#### 4. Crop Improvement Products

None of the crop improvement products (plant resistance boosters, nutrients) had a significant effect on yield or soluble solids in two replicated trials.

### The 2003/04 continuation of the project

#### 1. Grower Survey

##### a. Nutrition

Results from the 2002/03 season had a fit with the physiological function of the nutrients that are important in yield and soluble solids production. Results also reflected soil conditions in the three production areas (e.g. alkaline soils in the Boort

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area lead to higher Ca uptake, often at the expense of P and trace elements).

### Objectives for 2003/04:

Validate previous years data under different climatic conditions

Include Mo in the nutrient uptake analysis

Update/confirm guidelines (desirable levels) for nutrient uptake analysis of processing tomatoes

Develop nutrient budgets, especially for N, P, & K

Evaluate the N-check available soil N test for use during the season

Inform growers of monitoring results ASAP to be able to react to any imbalances

Record actions taken as a result of monitoring and outcomes

#### a. Irrigation

While growers continue to irrigate up using drip, soil moisture monitoring data would be very similar to last season even though growers may need less water to establish crops due to the wetter winter conditions. Growers should endeavor to control irrigation as well as possible, using monitoring equipment of their choice. The project team is available to assist in interpreting soil moisture monitoring results,

#### c. Early detection of low solids potential

##### Objective:

- Investigate options for 'corrective action' if soluble solids in first red fruit are low (= low solids potential).

Confirm that a sap brix test after fruit set (green fruit stage) is a suitable tool for early detection of solids potential alongside the nutrient uptake analysis (i.e. is there a correlation between low sap brix and low P, Fe and /or Mg?).

#### 2. N sources

We will compare survey crops with different use of nitrogen types and amounts to get data on the relationship between nitrogen usage and yield/soluble solids.

#### 3. P-fertigation and Crop Improvement Products

If nutrient uptake analysis or fruit/sap brix levels indicate that P-fertigation or crop improvement products would be beneficial, their use in survey crops will be discussed with the relevant grower.

The Serve-Ag project team wishes everybody in the processing tomato industry a happy Christmas time and a healthy and profitable Year 2004!



### Edible Wraps for Sandwiches

(taken from Good Fruit and Vegetables, October 2003)

The USDA food chemists have developed a new use for off-grade produce: edible wraps for sandwiches. The wraps could keep school lunches fresher and be substituted for some non-biodegradable wraps.

They also add to a healthy diet because each wrap is equal to one serve of fruit or vegetable, reported the <sciencedaily.com> website. A food wrap (an edible film cut into pre-formed sheets or into envelope-like shapes) looks like a piece of paper, except that it is made from highly concentrated puree of a fruit or vegetable.

To make the wraps more water resistant, lipids (vegetable oils) are added. The wraps come in a wide variety of flavours, including broccoli, carrot, tomato, mango, peach, apple, papaya and strawberry.



### Young Irrigation Network

The Young Irrigation Network was established in late 2001 in the Riverina region of NSW. In the last couple of years the network has attracted interest from all over Australia and now has 550 members. The network targets the age group of 18 to 35 and is aimed at young irrigators and people involved in associated industries.

The network is aimed at developing leadership skills and enhancing the understanding of current issues through annual conferences, field tours, various workshops and newsletters. The next event is a three day tour along the Murray River in Jan 2004.

It is proposed that a regional committee be established in the irrigation districts of Northern Victoria. All interested and eligible persons are invited to register with the Young Irrigation Network. This can be done by visiting the network's website at [www.youngirrigation.org](http://www.youngirrigation.org) or by contacting Belinda Wilkes on 02 6964 2420.

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will be conducted with the following growers:

- Stott Family
- Neessen and Kirchhofer
- Rob & Cheryl Hosking
- Darryl Rathjen
- Moon and Hill

Hybrid-Ag are also conducting a couple of on farm demonstration trials at Darryl Rathjen's and Ray Sellwood's properties. Hybrid -Ag are evaluating a number of natural products, including a micro organism seed inoculant and Humate Granules. A yield and solid assessment will also be conducted on this demonstration trial.

Bioflora Ag Pty. Ltd. Are in the processing of establishing a fully replicated trial at Ray Sellwood's property. Bioflora specialise in liquid humic based products that can be applied through the drip irrigation system and as foliar liquids. Once again an assessment of yields and solids will occur on this trial.

A number of growers this season are also trialling a farm management record keeping program from Muddy Boots® Software Limited. Crop Walker is capable of recording all aspects of crop production from seed procurement to harvest. Crop Walker and ProCheck are also being utilised by one of the crop scouts/agronomists. The added benefit of this is that all recommendations made by the agronomist can be simply uploaded into the farmer based Crop Walker program, thus making the record keeping for the grower simpler. The pesticide information from the grower database may then be simply emailed to the processor version of the software to enable them to check for possible spray violations.

The soil moisture monitoring demonstration has been established at Mark Hill's property. This includes equipment from a number of soil moisture monitoring suppliers including:

- Aquaflex
- ECH<sub>2</sub>O
- MEA (Gbugs and GTbugs)
- Sentek (Easy Ag Probes)
- Netafim - Gro Point

Data is currently being collected from this

equipment and a field day is planned for Friday 23rd January where by the pros and cons of each type of equipment will be discussed. A notice will be emailed/faxed to growers and processors in mid January, and also posted on the APTRC web site. If you have any further queries on any of the above projects please contact Liz Mann.



## **6<sup>th</sup> World Congress on the Processing Tomato & 9<sup>th</sup> ISHS Symposium on the Processing Tomato**

Planning is progressing well for the world congress to be held in Melbourne, beginning Monday 15th November, 2004. The event will begin with a welcome cocktail party. A unique Melbourne venue has already been booked to host this cocktail party. The venue for the congress dinner on the night of Wednesday 17th November has also been booked, and plans to be a uniquely Australian event. You will have to attend this event to find out the details.

A number of processing tomato growers have been very active in planning the partner program. The program has been given a test run by a dedicated group and should appeal to all people. It will include a ride on Puffing Billy, lunch at a Yarra Valley Vineyard, visit to Healesville Wildlife Sanctuary, opal shopping, Melbourne highlights and lunch at Emu Bottom Homestead in the old woolshed.

Potential speakers are currently being confirmed for both the Congress and ISHS program. It is hoped that the proposed program will be of interest to people from across the world.

Approximately 10 sponsors have now been confirmed for the event. With their assistance the committee is planning a Congress/ISHS that can not be missed. Although the event will be held during the busy time in Australia it is hoped that many growers, processors and support service personnel may be able to take the time to attend at least a portion of the program.

Visit the Congress website for additional information: [www.worldtomatocongress.com.au](http://www.worldtomatocongress.com.au)



## UPCOMING EVENTS

### **Discussion Group Meetings - Boort, Colbinabbin, Jerilderie**

Will be held the week beginning 19<sup>th</sup> January, and include Doris discussing this seasons nutrition results.

### **Soil Moisture Monitoring Demonstration Field Day**

23<sup>rd</sup> January, 2004 Rochester

### **Annual Industry Pre Harvest Get Together**

7:30 pm Friday 23<sup>rd</sup> January, 2004

La Porcheta, Echuca

Followed by Bowling - **RSVP Essential to Liz by Monday 19<sup>th</sup> Jan, on 0427 857 578**

### **In Depth Drip Irrigation Maintenance Course held by Jos Schuurman**

Sponsored by Netafim, course is 4 hour duration

Boort Tuesday 27<sup>th</sup> January, 2004

Rochester Wednesday 28<sup>th</sup> January, 2004

### **Australia's leading national water forum:**

**Integrating regional and urban water management strategies for efficient and sustainable outcomes**

25<sup>th</sup> - 27<sup>th</sup> February 2004

Carlton Crest Hotel, Melbourne

<http://www.iir.com.au/infrastructure>

### **OUTLOOK 2004 Conference**

2-3 March 2004

National Convention Centre, Canberra

[www.abareconomics.com/outlook](http://www.abareconomics.com/outlook)

### **The International Commission for Irrigation and Drainage**

March 14<sup>th</sup> - 17<sup>th</sup> 2004

2nd Asian Region Conference, Moama NSW

[www.icid2004.com](http://www.icid2004.com)

### **Irrigation Australia 2004 Conference & Exhibition**

May 11<sup>th</sup>-13<sup>th</sup>, 2004

Adelaide Convention Centre

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

## Environmental Management Systems Incentives Program

The Environmental Management Systems (EMS) Incentives Program is an Australian Government funded program delivered by Centrelink on behalf of the Department of Agriculture, Fisheries and Forestry - Australia to encourage the adoption of sustainable management practices by primary producers who implement an Environmental Management System (EMS).

The EMS Incentives Program provides primary producers with a cash reimbursement of up to 50% of the costs associated with developing and implementing an EMS for the primary production enterprise. The maximum amount payable per enterprise is \$3 000, that is, \$6 000 must have been spent in order to reimburse the maximum \$3 000.

The maximum entitlement for each primary production enterprise is dependent on the taxable income of the applicant in either of the two financial years prior to incurring the expense/s being claimed.

The maximum entitlement of \$3 000 will be available to applicants whose taxable income is \$40 000 or less. For those applicants whose taxable income is between \$40 000 and \$45 000, the maximum entitlement of \$3 000 will reduce by \$3 for every \$5 of taxable income over \$40 000. Applicants whose taxable income is \$45 000 or more will not be eligible for a reimbursement through the EMS Incentives Program.

To access the EMS Incentives Program:

- the primary production business must have a taxable income of less than \$45 000; and
- it is not necessary to have a certified EMS in place.

### What expenses will the EMS Incentives Program cover?

The EMS Incentives Program payment is to reimburse up to 50% of the costs associated with developing and implementing an EMS for a primary

production enterprise. The incentive is intended to support primary producers who want to develop an EMS for their operations - the funding will support the identification of priority environmental issues, or the implementation of priority actions already identified.

Examples of what may be covered in developing and implementing an EMS include costs to:

- obtain professional advice required to de-

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## Cultivar Evaluation Trials This Season

Bill Ashcroft and Murat Top Tatura, DPI and Tony Napier, Yanco NSW Ag

Despite an uncertain start, the industry's cultivar screening program continues this season. Many sites have been planted later than expected due to the cool conditions and risks of frost during October. Sites were chosen to represent a range of soil and management conditions, and most trials have now established well. Conditions continue to challenge crops in most areas, so it should be yet another interesting year for evaluations.

To make them more cost efficient and commercially relevant, the back-up trials have been moved from Tatura this year, to the Gugliotti's farm near Undera. Table 1 lists the location of all trials, with details of site management and anticipated harvest dates. Another change this season is that local seed companies have been approached to provide financial support for the work for the first time.

In total, 112 cultivars have been planted, including new material from north America (eg's Heinz, Sun Seeds, Tomato Solutions), Europe (Esasem and Isi Sementi) and Turkey (NDM).

We thank all participating growers, seed companies and processors for their on-going support for the program, and hope to see many of you at field days to inspect the trials later in the season.

*Best wishes for 2004 from the Cultivar Development Team.*

**Table 1: Cultivar Trial Site Summary 03/04**

Site	Trial	Irrigation Type	Planting Method	Sowing Date	Estimated Harvest Time
<b><u>Early</u></b>					
Whitton (Stott)	Replicated & full row	Furrow (Double row)	Direct-sown	13/10 (watered 16/10)	Third week Feb
Boort (Lanyon)	Rep	Furrow	Direct-sown	30/9	First week Feb
Undera (Gugliotti)	Rep	drip	Transplanted	25/11	Third week March
<b><u>Mid Paste</u></b>					
Jerilderie (Rorato)	Rep	Furrow (Double Row)	Direct-sown	28/10	Third week March
<hr/>					
Rochester (Weeks)	Rep	Furrow	Transplanted	27/11	Third week March
Timmering (Moon)	Full Row	Drip	Direct-sown	24/10	Last week March
Undera (Gugliotti)	Rep	Drip	Transplanted	16/12	Mid April
<b><u>Mid Wholepeel</u></b>					
Barooga (Stillard)	Rep	Drip	Direct-sown	23/10	First week March
Rochester (Ryan)	Rep	Furrow	Direct-sown	20/10	Last week Feb
Colbinabbin (Pike)	Full Row	Furrow	Direct-sown	27/10	First week March
Undera (Gugliotti)	Rep	Drip	Transplanted	11/12	Mid April

**Note:** For further details on site locations, block plans etc, contact:

Bill Ashcroft (0358 335 253) or Murat Top (0358 335 311) at Tatura ort Tony Napier at Yanco (0269 512 796)

**Update on Overseas GM Tomato Research**

(from 4<sup>th</sup> ed of Agrifood Awareness Australia Limited's (AFAA) Biotech Bulletin)

Tomatoes were one of the first GM products commercially sold. The Flavr Savr™ tomatoes were field tested in the United States from 1988 to 1992 and were approved for commercial sale in 1994. The tomatoes were modified to delay ripening of the fruit by reversing a gene normally found in a tomato. By delaying the ripening, the tomato ripened on the vine for a longer period, in turn, improving its flavour and maintaining its firmness, which was valuable during transportation. Flavr Savr™ tomatoes were expected to provide an alternate or additional choice to consumers and food manufacturers. While the project was a success, an unsuitable variety of tomato was used and as a result, the fresh tomato did not succeed in the marketplace. The tomatoes are no longer commercially available.

Genetically modified tomatoes in the United Kingdom also with delayed ripening properties, were available as canned tomato puree in 1996 and labelled as genetically modified. Initially the GM tomatoes sold competitively on supermarket shelves however increasing public concern re-

sulted in them being removed from sale.

Field trials are currently underway for a new cancer-fighting tomato variety that has been under development for ten years in the United States. The new variety offers more than three-and-a-half times more of the cancer fighting antioxidant lycopene, which is believed to lower the risk of cancer as well as coronary heart disease. It is expected that commercial varieties of the lycopene increased tomatoes will be available in the United States in the next two to four years.



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- develop an EMS, such as salinity mapping, biodiversity assessments, water quality assessments, etc;
- establish trees and shrubs for biodiversity or erosion control;
- fence to exclude stock or vermin, establish or protect native vegetation and wildlife habitat, protect remnant vegetation, or to separate land classes; and
- eradicate/exterminate weeds or pests that are detrimental to the land.

To have a claim form sent to you or for more information on accessing the EMS Incentives Program, please contact Centrelink on Freecall™ on 1800 050 585.

**ACKNOWLEDGMENTS:**

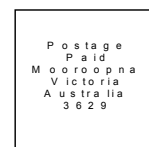
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**Phone: (03) 5825 4633, Fax: (03) 5825 4725, Mobile: (0427) 857-578, E-mail: lizmann@aptrc.asn.au**

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

**Sender:**

**APTRC Inc.  
P.O. Box 2293  
SHEPPARTON, VIC 3632**



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