



TOMATO TOPICS



Know-how for Horticulture™

NEWS and INFORMATION
FOR THE PROCESSING TOMATO INDUSTRY

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Tomato Spotted Wilt Virus/Thrips

Tomato Spotted Wilt Virus (TSWV) is becoming an increasing problem across the processing tomato region. It is difficult to explain why this is occurring, but a number of theories are being discussed across the industry. Currently it appears that the virus is being spread by both tomato and onion thrips which have been observed in high numbers in numerous processing tomato crops. Western Flower Thrips have been identified in one region within the processing tomato industry, but at this stage have not resulted in severe TSWV infection levels.

Tomato and onion thrips must acquire the virus by feeding on TSWV infected plants during the 1st and 2nd instars, which are the larval stages. Hence the adult thrips must lay their eggs on a TSWV infected plant for their young to acquire the virus. The only thrips that are capable of transmitting the virus are those that feed for approximately 15 minutes on a TSWV infected plant during the larval stages. To transmit TSWV to a healthy tomato plant the adults need to feed for a little as 5 minutes.

Having considered how tomato and onion thrips acquire the virus a number of weed species may act as a potential source of the virus. To be a virus source these weed species not only need to be susceptible to TSWV, but must also be able to host onion or tomato thrip reproduction. Some of the plant species that have been identified a "Reservoir" species; being able to host TSWV and provide the site for thrip reproduction include:

- Common sowthistle (*Sonchus asper*)
- Pigweed (*Portulaca oleraceae*)
- Mallow (*Malva parviflora*)
- Capeweed (*Actothea calendula*)

A number of other weed species have been identified as being susceptible to TSWV, but to act as a source of infection to a tomato crop they must also provide a site for thrip reproduction. At this stage some of these other weed spe-

cies may also provide a reproduction site for thrips but have not yet been identified. To fully ensure weeds on your farm are not acting as a breeding ground for TSWV infected thrips it is highly recommended that during the coming months you control all weeds, particularly reservoir species surrounding your tomato blocks. It is important that these are not left growing and sprayed off as you plant your tomato crop as this will result in thrips moving directly from the weeds to your crop.

Thrip populations are also affected by weather such as rainfall, temperature and relative humidity. One suggestion as to why the incidence of TSWV has been increasing within the region is due to the mild winters we have been experiencing. This has allowed thrip numbers to continue build-

(Continued on page 2)

Inside This Issue

	Page
Industry Research and Development	2
Technology Transfer Project	3
Development of a Crop Management Program to Improve the Sugar Content and Quality of Rockmelons	4
Awards to Processing Tomato Growers	4
Upcoming Events	5
Managing soluble solids in processing tomatoes	6
No-Till Vegetable Production	6
Green Manure On Farm Trial	6
New National Guide to Environmental Management Systems in Agriculture	6
6th World Congress & 9th ISHS Symposium	7
Guidelines for Irrigated Vegetable Crops on CD Rom	7
Robotic Weeding Arrives in Australia	7
2004 Nuffield Scholarship	8

Industry Research and Development

Over the last 12 months there has been much discussion within processing tomato industry regarding the future of the processing tomato industry funded research. Due to deadlines placed upon the industry by Horticulture Australia the decision was quickly made by key growers and processors at the end of March 2004 that the industry would aim to support the following project over the coming year:

- ongoing work with Doris Blaesing on Soluble Solids and Nutrition
- ongoing work with Bill Ashcroft on Cultivar evaluation
- continuation of the Technology Transfer project, currently undertaken by Liz Mann

Recently grower and processor representatives met to discuss the future of the processing tomato industry research and development program. It was decided that the APTRC would continue, but consist of 4 processor and 4 grower representatives. Processors also indicated that they will become more actively involved in industry funded research and development, choosing to continue cofunding, with growers some industry based research in the future.

At the recent Processing Tomato Forum in Echuca growers and processors were asked to indicate the areas that they felt required industry funding. These included:

- Cultivar Improvement
- Thrip and TSWV Control
- Soil Health
- Technology Transfer
- Disease Management

To ensure all growers and processors receive the maximum benefit from the investment in the processing tomato industry research and development program it is essential that all individual comments are made available to the APTRC. Without an industry based R & D program the industry is likely to stagnate. The current R & D levy is responsible for many of the advances observed in the industry over the last number of years. Often industry members source their new ideas from other growers within the industry, but these growers are constantly looking at the latest results of industry funded research. If you feel there are additional areas that the industry should be considering investing research funds, or object to industry funds being invested in the areas detailed above please ensure that your comments are passed onto a processor or grower member of the APTRC.

Additional Project Suggestions/Concerns:.....
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Due to the altered structure of the APTRC there are opportunities for growers to self nominate for a position on the research council. A number of grower positions are currently vacant on the research council Taking up a position on the APTRC will allow you to be actively involved in determining future research priorities and projects for the industry. If you are interested please fax or email your name to Liz. These nominations will then be forwarded to the Australian Processing Tomato Growers for final selection.

I would like to nominate myself for a position on the Australian Processing Tomato Research Council

NAME:

Signed:

Please return this page to Liz Mann via email or Fax (03 5825 4725) by the 19th July 2004. Information will then be passed onto the APTRC and APTG. Thanks



(Continued from page 1)

ing up during the winter months. To try and determine other reasons as to why the incidence of TSWV has been increasing Liz Mann will be collecting information from a number growers over the coming months. This information will then be discussed with virus experts and modelers to determine any correlations. Your assistance in the collection of TSWV data over the last couple of years would be greatly appreciated. Hopefully we can begin to understand a little more about this virus and improve control methods within the processing tomato industry.

Development of a Crop Management Program to Improve the Sugar Content and Quality of Rockmelons : Summary of Agronomic Recommendations

Gordon Rogers (AHR Crop Science)

The overall principle for accumulating sugar in the fruit is that the plants must be kept healthy and functioning right up to harvest. It is during the last 10-14 days of fruit development, after the fruit have reached full size that is the most significant for sugar accumulation in the fruit.

Nutrition

- Nitrogen:** Nitrogen is important for photosynthesis which produces the sugar for fruit. It is important there is enough N available for the plants for function well into harvest. Supply most N in the base, but ensure the plants don't run right out by harvest.
- Potassium:** Important for moving sugars into the fruit. Supply in the base, but also supplement right up to mid fruit development.
- Calcium:** Important for good firm fruit and to stop leaking of fluid in to the seed cavity of the fruit. Supply early in plant growth, especially around flowering and early fruit development. Late soil or foliar applications (after mid fruit development) are not taken up by the fruit. Adequate Boron also required for calcium utilisation.

Use dry leaf analysis at flowering to monitor crop nutrition.

Irrigation

- It is crucial to avoid water stressing the plants from fruit set right through to the last pick. This means avoid too little or too much water.
- Maximum sugar accumulation depends on efficient photosynthesis to produce the sugar. This means keeping the plants stress-free while sugars are accumulating.
- The plants should be given a moderate water stress from establishment to the start (or just after) of flowering. This stress is to encourage a strong root system and avoid problems with sudden wilt.
- Over watering is as much a problem as under watering when it comes to post-flowering irrigation scheduling, monitor soil moisture closely.

Plant Density and Crop Load

- The current industry standard plant spacing of 0.5m between plants provides the best balance between yield and fruit Brix.
- Removing fruit not expected to be harvested 7-10 days prior to harvest commencement increases sugars with no yield loss.
- Thinning to 1 fruit per plant 4 weeks before harvest also produces sweeter fruit; however some yield loss occurs.

Awards to Processing Tomato Growers

The Irrigation Research and Extension Committee (IREC) has developed a hall of fame, and the inaugural recipient of the associated lifetime achievement award will be Marvin Amaro. Marvin is credited with introducing and revolutionising the tomato industry in the MIA along with many other instances of crop introduction and technical advancement since the early 1960's when he arrived from the USA.

Ray and Jo Sellwood were recently a winner in the Agricultural Section of the Save Water Awards. This award acknowledged the water savings by an agricultural business in regional Victoria. The award was presented at the awards dinner on Melbourne on the 21st May 2004.



UPCOMING EVENTS

FARMSAFE ALLIANCE FORUM 2004

Benalla Town Hall

24th June 9:30am (No cost)

Includes practical sessions on the use and selection of fall arrest systems

For more information call 03 9207 5509

MAXIMISING YIELDS WITHOUT COMPROMISING QUALITY "NATURALLY"

Presented by: Dr Jeff Norrie

SEMINAR, 29th June, Dookie College Lounge Bar

10: 00am until 12:00, followed by lunch

Dr Norrie is a renowned Plant Scientist having spent most of his working life as a plant researcher in both University and Private Research positions. Presently Dr Norrie is the Agriculture Research Manager at **Acadian Seaplants** based in Nova Scotia, CANADA. Dr Norrie's ongoing research is benefiting both conventional & organic growers worldwide by helping them understand how best to apply seaplant extract products to maximise plant health and harvest quality.

Dr Norrie's presentation will bring together 20 years of his research in the area of plant and soil interactions to help us appreciate as growers and advisors how we can maximise yields without compromising the quality of the crops we grow.

Please RSVP 1800 634 204

DIPLOMA of AGRICULTURE RURAL BUSINESS MANAGEMENT

At this stage 2 more short courses are to be conducted in Echuca, at the DPI to meet the requirements of the Diploma.

Monitor and Evaluate Business Performance **Date: Thursday 12th August 2004**

Monitoring business performance and taking appropriate action are critical to successful business management. This subject promotes greater control of farm finances and the opportunity to evaluate a rural business as a whole entity, identifying strengths and weaknesses, opportunities and threats and recommending change. A non-farm portfolio of investments can reduce the risks inherent in concentrating investments exclusively on the farm.

Manage Human Resources **Date: Thursday 2nd September 2004**

Determine the staffing needs of the business and employ staff to efficiently meet these needs by:

- Preparing job and person specifications and advertising positions
- Distinguishing between successful and unsuccessful applicants and selecting the most suitable for the position
- Understanding the legal requirements associated with employment
- Recognising personal attributes that may affect the operation of a rural business
- Setting work priorities and use of time
- Identifying the role of stress in management effectiveness
- Determining managerial strengths and weaknesses and developing an individual development plan

Developing team members' confidence and capability with emphasis on skills such as active listening, speaking, questioning, assertiveness, verbal and non-verbal communication, perception and stress management.

All people are welcome to attend these courses, a small fee is payable to the University of Melbourne. Please contact Liz on 0427 857 578 for more information, or if you are interested in attending. **RSVP is essential at least 7 days before the course date, or course will not be held in Echuca.**

Managing soluble solids in processing tomatoes

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

During the previous two seasons (2002/03 and 2003/04) basic information has been produced on desirable nutrient uptake levels for processing tomatoes to produce high soluble solids in high yielding crops. Preliminary results from the 2003/04 season have been presented at the Echuca R&D forum in May. The results will be published in the next Australian Processing Tomato Grower magazine.

In discussion with growers and processors, the following issues have been raised for further investigation during the 2004/05 season:

- Crop monitoring and data analysis in relation to yield and soluble solids development needs to be conducted for another season on a large scale to validate data.
- The impact of crop load and fruit size in relation to plant density and its effect on yield and solids production is another relationship that has to be understood better.
- More information on nitrogen management to achieve optimum yield and soluble solids without wasting fertiliser or compromising returns is required.
- Growers and agronomists need to have easy access to all information produced during the entire project.



No-Till Vegetable Production

Applied Horticulture Research (AHR Crop Science, gordon@ahr.com.au) is currently conducting research into no-till vegetable production systems. These systems have included looking at the incorporation of organic mulches. This research has found that soil temperature under organic mulches in Victoria is lower than under bare soil.

AHR are now conducting research into the establishment of vegetable crops by investigating the benefits of "planting strips" within the mulch where the soil surface is left free of mulch residues. Seed or seedlings are then planted into these narrow strips of bare soil.

The technique can use precision planting, spraying or strip tillage to leave a strip of soil clear of cover crop residues where the vegetable crop is to be established. Precision work using GPS-steer tractors would remove the emerging cover crop seedlings in 10-12cm strips per bed. Once the cover crop is grown to maturity, sprayed and rolled, it is hoped that the two planting strips will provide improved root zone temperature and improved vegetable crop establishment.

Green Manure On Farm Trial

Last season a green manure on farm trial was conducted whereby the yields and solids from three plots of processing tomatoes were compared.

The first plot was grown following a brassica crop that had been grown over the winter months. While still in the vegetative stage this crop was incorporated in the soil. The second plot was grown following a mixed grass green manure crop, whilst the third plot of processing tomatoes was grown using the conventional method.

At harvest three one meter plots of the processing tomato crop were harvested. All fruit was weighed and a soluble solids level obtained.

The processing tomato crop grown following the mixed grass green manure crop appeared the result in the highest yield and solids level. This may have been due to the benefits from the fibrous grass roots and leaf matter upon the soil structure. An additional benefit of growing a green manure crop between consecutive processing tomato crops would be the ability to help capture any left over nitrogen in the soil which may otherwise be washed out.

This on farm trial was not replicated, hence the conclusion can not be drawn that a mixed grass green manure crop would always result in higher crop yields and solids levels. If you would be interested in conducting a similar trial on your farm in the future please contact Liz Mann.



New National Guide to Environmental Management Systems in Agriculture

A new, easy to use, multi-media CD-ROM is now available from NSW Agriculture, Tocal. This practical resource provides a step-by-step guide for primary producers wishing to develop an EMS for their farm.

The CD contains text, video, illustrations, examples, an interactive glossary and practical exercises covering four national competency standards that can lead to qualifications in agriculture and conservation and land management.

A sample demonstration of the CD can be viewed at <http://www.tocal.com/ems/index.htm>
Some people may have difficulty viewing the video due to their connection and media player. This will not be the case using the CD.

Developed by NSW Agriculture, Tocal with support from RIRDC, the full CD is available for \$29.95. An order form is available at <http://www.agric.nsw.gov.au/reader/tocal-publications/ems-order-form.pdf>

6th World Congress on the Processing Tomato & 9th ISHS Symposium on the Processing Tomato

The upcoming world congress to be held in Melbourne from the 15th-18th November 2004 is shaping up to be excellent event. Final registration brochures have now been printed and are presently being distributed across the world to all people involved in some aspect of the processing tomato industry. Registrations have now been accepted over the web site for a short period. (www.worldtomatocongress.com.au) To date a small number of registrations have been received, but are now beginning to increase.

The congress organizing committee has been successful in obtaining sponsorship from approximately 23 commercial companies, with the principal sponsor being Visy. Support for this event has also been obtained from Horticulture Australia Ltd. and the Victorian State Government.

Speakers for both the congress and ISHS are being confirmed, but include a number of key industry personnel from across the world. Speakers from Australia will include Louis Chirside, Dennis Moon, Bill Pritchard, Jamie McMaster, Liz Minchinton and Roger Ashburner. Session chairs from Australia include Tim Dyer, Ian Bryce, and Richard Bennett.

Other speakers from across the world that have been confirmed to date include:

- Chris Rufer (The Morning Star Company)
- Duncan Blake (Chairman of WPTC and CEO Merko)
- Juan Jose Amezaga (President of AMITOM)
- Tim Hartz (University of California)
- Jeff Mitchell (University of California)
- Mike Murray (University of California)

Please visit the website for details of the program. Register Now!



Guidelines for Irrigated Vegetable Crops on CD Rom

A CD produced by NSW Agriculture with guidelines for irrigated vegetable crops is now available. This CD contains electronic copies of four irrigation manuals that were previously published for processing tomatoes, melons, carrots and onions. The CD details the full version of the research outcomes and specific information on how to plan, design, manage and maintain different irrigation systems. Also included are case studies and economic analyses of the different systems.

If you would like to obtain a copy please contact Liz Mann (lizmann@aptrc.asn.au) or phone 03 5825 4633

Robotic Weeding Arrives in Australia

A ROBOCROP guided tillage bar has recently arrived in the Riverina for demonstration in a range of row crops. Developed in Britain by a consortium of agricultural and electronics engineers over a decade ROBOCROP systems are now in widespread commercial use in crops as diverse as winter cereals, maize, sugar beet, field peas, onions and carrots.

Malcolm Taylor, a Cobram-based weed researcher recently spent a week with the manufacturer Garford Farm Machinery inspecting ROBOCROP guided hoes in action in Britain. He observed that operators commonly reported a high level of accuracy, high speed of operation and reduced operator fatigue. Malcolm is testing the system in cereals this season on behalf of the Australian grains industry.

ROBOCROP guided hoes use a video camera and image analysis computer to guide the hoe accurately and consistently in between the crop row. They simply observe the crop in front of them, analyse the image, pick the line of best fit between the rows and then position the hoe using a hydraulic side shift. No satellite signals are needed.

A proposal to demonstrate a ROBOCROP tillage hoe in processing tomatoes is currently before Horticulture Australia Ltd.

Further enquiries to Malcolm Taylor : 0358 722 892 email: malcolmc.taylor@bigpond.com



Picture: ROBOCROP performing high speed inter-row cultivation in a sugar beet crop near Peterborough, UK.

2004 Nuffield Scholarship Applications Close on the 25th June 2004

Thirteen outstanding primary producers from across Australia have the opportunity this year to win Australia's most prestigious agricultural award.

The 2004 Nuffield Scholarship winners will join an elite group of over 1000 Scholars from around the world. Each scholarship is valued at \$21,000 and supported by leading Australian commodity and agribusiness organisations. The scholars also received additional support through the pre tour briefings for Scholars where they gain an appreciation of Australia's agri-political global agenda.

The Nuffield Scholars will depart Australia in either February or June 2005 to join other scholars from around the world in a compulsory group study program. This will involve two weeks in Australian and New Zealand, two weeks in North America and two weeks in Europe investigating agricultural marketing and trade issues, environmental issues and experiencing the different social and cultural aspects of each region.

They will meet with scholars from other countries including the UK, Ireland, Canada, Zimbabwe, New Zealand and France to exchange ideas and experiences, and join a network of people who are at the cutting edge of primary industry.

Following the initial six-week program, the scholars will go their individual ways to pursue specific study programs

in the country or countries of their choice.

Applications must be received by Friday June 25, 2004. Application forms are available from the Nuffield office on 02 69646600 or website www.nuffield.com.au

For more information and to arrange interviews contact: Bryan Clark, Australian Nuffield Farming Scholars Association Chief Executive Officer, phone 02 6963 0815 or 0428 645 232



For Sale

Wide range of processing tomato
farming equipment.

Contact: Tait Hamilton 0417 139 505

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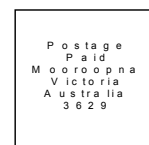
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