TOMATO TOPICS

Hort Innovation
Strategic levy investment

PROCESSING TOMATO FUND

Australian Processing Tomato Research Council Inc.

NEWS and INFORMATION
FOR THE PROCESSING TOMATO INDUSTRY

ISSN 1038-3522 **December 2023** **VOL. 33 NO. 4**

Insights and Advancements Unveiled during Boort Processing Tomato Crop Inspection Day

by Matt Stewart—APTRC

The pivotal annual event unfolded in the Boort processing tomato growing region as 30 industry members convened for the December Crop Inspection Day. The day comprised visits to key farms, where industry leaders shared invaluable insights, showcasing their endeavours and contributing to the collective knowledge base.

Sawers Farm: Precision in Plant Spacing Trials

Our initial stop at Sawers Farm provided opportunity to discuss the issue of plant spacing, with Hamish Lanyon presenting details of their ongoing trials. Ann Morrison of the APTRC actively assists by overseeing the data collection process for end-of-season yield analysis. The emphasis on precision and data-driven decisions at Sawers Farm reflects a commitment to maximising yield and efficiencies.

Graeme & Michelle Lawrence's Farm: Optimizing Irrigation Efficiency

The Lawrence farm was the location for our second stop, as Graeme Lawrence outlined the benefits derived from the implementation of flushing taps and a more rigorous drip tape maintenance routine. Graeme and Michelle's operation always impresses and this conscientious approach to irrigation management is just one in a long line of best

practice adoptions we've seen at Lawrence's farm over recent years.

Graeme Lehmann's Insights: Adapting to Unforeseen Challenges

Graeme Lehmann, our third host, shared a candid overview of the challenges posed by continuous rainfall on his heavier soil types. With an interrupted cultivation program, Graeme emphasised the season's predominant challenge: weed control. His extensive experience (he has been growing now for 42 years) underscores the need for adaptive strategies in mitigating unforeseen challenges within our industry and we're grateful to Graeme for his honest feedback in a difficult season.

Chirnside Farms: Strategic Agronomic Planning

Agronomist Doug Perryman (of Perryman Ag) works directly alongside David and Louis Chirnside and took centre stage at our Chirnside Farms visit, detailing their pest, disease and fertiliser strategies to date. The seasonal strategic planning, assisted by Doug, serves many growers in the Boort region, and helps to maintain the regional standard for optimal crop management.

GoFarm with Tom Farmer: Innovations in Chemistry

The field portion of the day concluded at GoFarm's Mystic Park property, where Tom Farmer presented in front of an impressive crop of early-planted tomatoes. Enhanced soil preparation time and the proactive adoption of newer chemistry options, guided by agronomist Paul Elton (of I.K. Caldwell), showcased an innovative approach to pest and disease control and highlighted a strategy to embrace options for improved crop outcomes.

Mystic Park Hotel: A Gathering of Minds

Our journey concluded at the Mystic Park Hotel, an ideal location for reflection and discussion. The welcoming atmosphere was the perfect space to finish up and enjoy a great meal and some local craft beer (by artisan Hamish Chirnside).

We extend our sincere appreciation to everyone who attended the APTRC crop inspection day and also to SLTec for their support in ensuring the day's success by providing essential hydration for all attendees.

Climate Outlook

Forecasts for January to March predict above median rainfall for south-eastern Australia, but with maximum and minimum temperatures above median values across the country. These high temperatures equate to the warmest 20% of January to March periods from 1981 to 2018.
With an El Niño event and positive Indian Ocean Dipole (IOD), we were expecting and hoping for a warm, dry summer to provide a good cropping season. So what's happened?

The El Niño event continues, with a tongue of warmer water in the eastern tropical Pacific Ocean coupling with atmospheric pressure patterns across the tropical Pacific. The IOD remains positive as well, although it is weakening and likely to return to neutral later in the month.

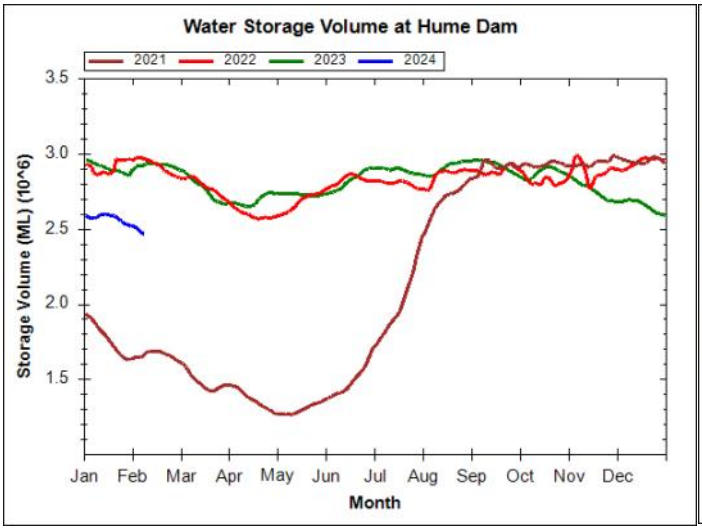
El Niño events are generally associated with drier conditions across inland south-eastern Australia, particularly in winter and spring. That was the case this year, with a dry July–September across the southeast. However, El Niño's typical drying influence on Australia's climate usually reduces during summer, especially in the east. Storm occurrence is also not strongly related to El Niño or La Niña phases. As we have seen this year and historically, high-impact rainfall events can occur during El Niño years, particularly during October to April when severe storm frequency peaks.

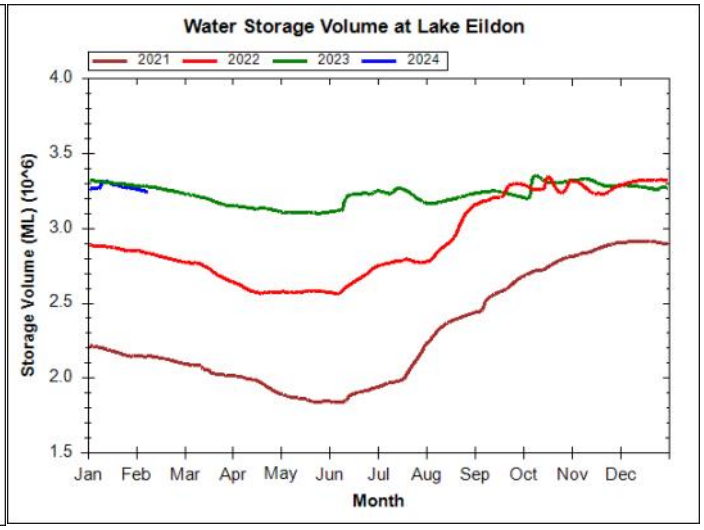
Several factors have been triggering increased rain and thunderstorms along the east coast in recent months, but the main driver is the relatively warm sea surface temperatures (SSTs) near eastern Australia. These warm temperatures in the Tasman Sea provide more energy and moisture for rain-bearing systems. The Southern Annular Mode (SAM) is currently positive, also raising the chances of rainfall by shifting westerly winds further south and increasing onshore flow over south-eastern Australia. The SAM is likely to reduce in strength in the coming weeks.

While model forecasts indicate the oceanic component of this El Niño will persist until early autumn, some atmospheric indicators have weakened over the past three weeks, and the Southern Oscillation Index (SOI) is currently neutral. This disconnect between the atmospheric and oceanic elements of ENSO may also be contributing to our wetter than expected end to the year.

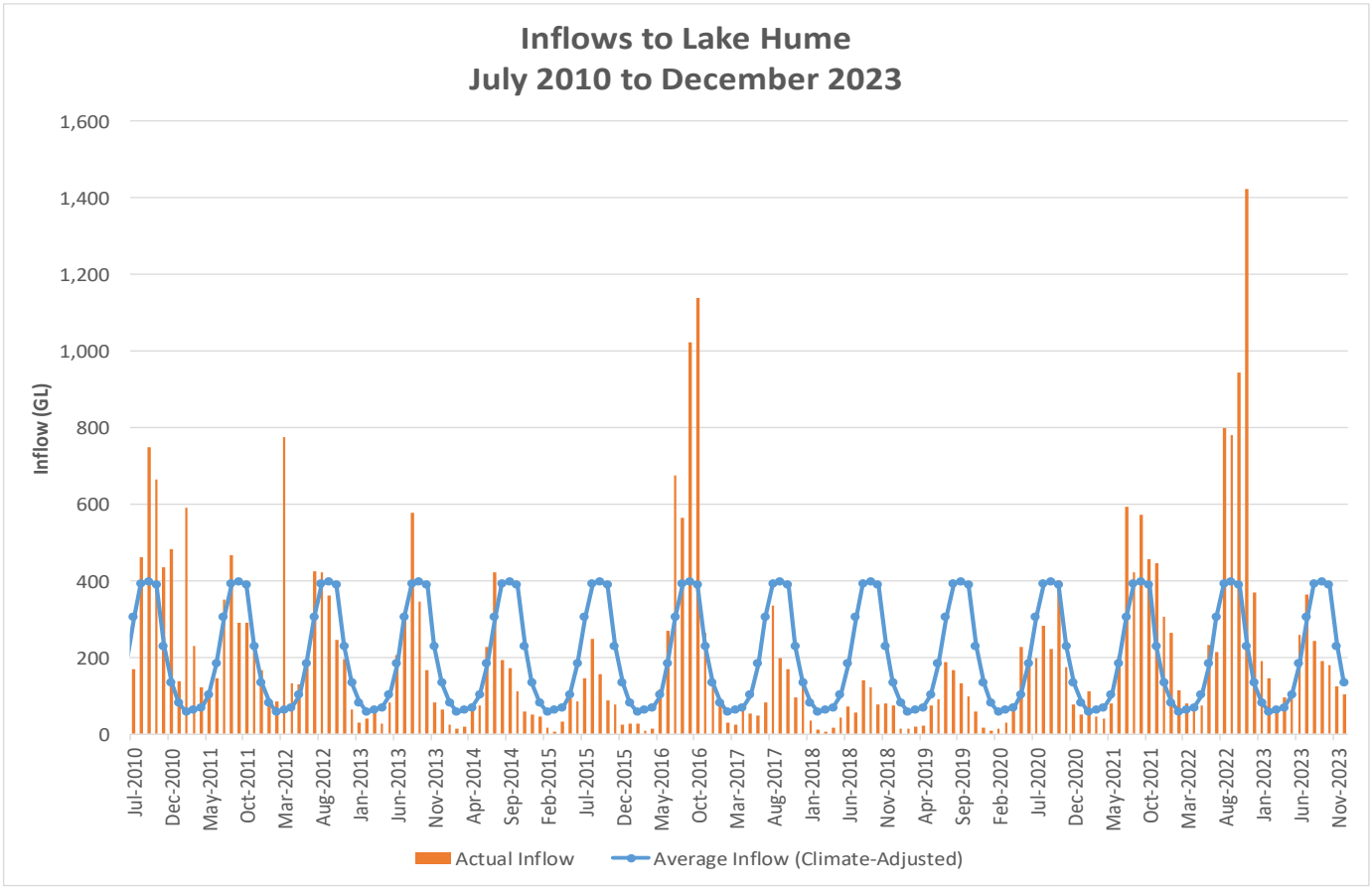
Sources: Bureau of Meteorology and Melbourne University

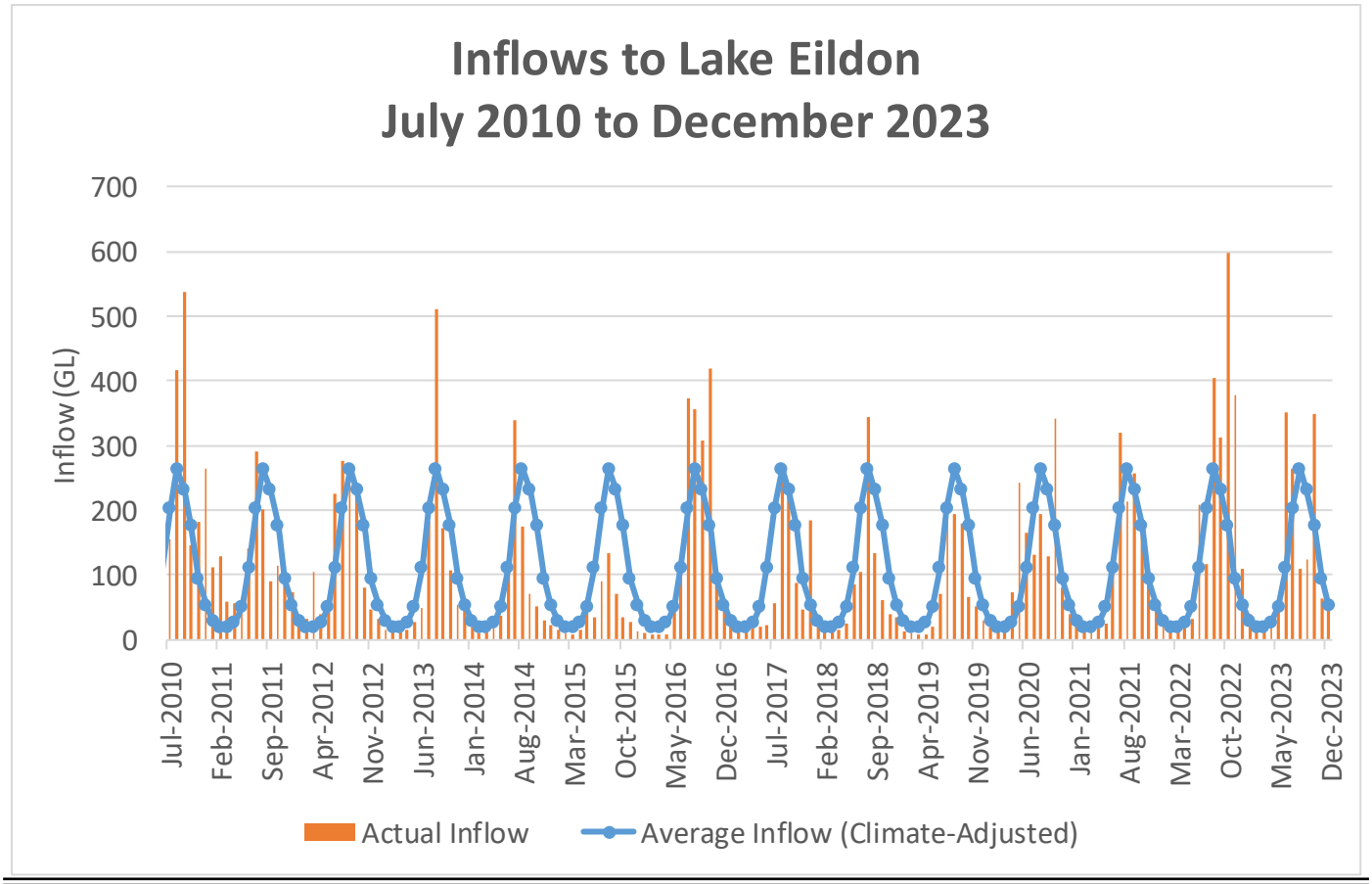
Water Storage Levels to start 2024





Water Inflows (Supplied by Mark Bailey—Goulburn-Murray Water)





Industry Notices

Want to travel overseas and pursue your passion?

The APTRC encourages you to apply for a Churchill Fellowship — a life-changing opportunity to engage with world leaders in your chosen topic and then bring the knowledge home to share. No educational qualifications are necessary. Design your own itinerary and travel for four to eight weeks at a time of your choosing. Applications open 1 March 2024. Find out more about becoming a Churchill Fellow. #learnglobally #inspirelocally #churchillfellow

Hort Connections 2024

Apply for Grower Funding Today! - just click the image

This funding is specifically designed to help cover the costs of accommodation, flights, and attendance for growers to Hort Connections 2024.

Don't miss out on this amazing opportunity to attend the largest horticulture conference and trade show in the Southern Hemisphere and connect with other leading growers and industry suppliers.

OFFICIAL

AGRICULTURE VICTORIA

Biosecurity Update: Import of RIFA host materials

24 January 2024

Following a new detection of Red imported fire ant (RIFA; *Solenopsis invicta*) at Wardell in NSW, this is a reminder of the entry conditions in place to protect Victorian industry and community. This Biosecurity Update restates the entry requirements communicated in the Biosecurity Update on 27 December 2023.

RIFA QUARANTINE ZONES

RIFA interstate plant quarantine zone in QLD

From 1 December 2023, Queensland's fire ant biosecurity zones were adjusted to align with the interstate plant quarantine (IPQ) zone and will be updated as required. The adjusted zone includes some new areas including Scenic Rim, Moreton Bay, Gold Coast, Lockyer Valley and Brisbane local government areas.

An updated map is available at fireants.org.au.

RIFA Restricted Movement Control Area in NSW

There has been another RIFA detection in NSW, at Wardell, south of Ballina, on 19 January 2024, which is in addition to the detection at South Murwillumbah on 24 November 2023. All nests have been treated with liquid insecticide, together with comprehensive broadscale treatment and surveillance regimes being implemented to ensure any residual nests are also destroyed.

NSW has enacted an emergency order and established a restricted movement control area (5 km radius around detections) that requires treatments to be applied to RIFA carriers prior to movement from the zone.

To find out more refer to dpi.nsw.gov.au/biosecurity/insect-pests/fire-ants.

VICTORIAN ENTRY CONDITIONS FOR RIFA

RIFA host material originating from the quarantine zones described above may only enter Victoria if the following conditions are met.

For interstate exporters

RIFA host material from the quarantine zones may enter Victoria if the consignment:

- Is sent from a property that has:
  - been regularly inspected and found to be free of fire ants; or
  - applied approved control methods to prevent the establishment or spread of fire ants.

AND

• Is accompanied by one of the following certificates to certify or declare that the material has been treated in a manner that meets Victoria's importation requirements for RIFA: ○ a Plant Health Certificate (PHC) stating compliance with the relevant treatment requirements under Condition 36 of the Victorian Plant Quarantine Manual; or

- a Plant Health Assurance Certificate (PHAC) stating "meets ICA-39" and including the treatment; or
- a Biosecure *HACCP* Biosecurity Certificate (BHBC) stating compliance with ECCPRIFA28 and including the treatment; or
- a BHBC stating compliance with ECCPRIFA21.

AND

• A copy of the certification is forwarded to market.access@agriculture.vic.gov.au prior to dispatch.

For Victorian importers

All Victorian businesses receiving consignments of RIFA host material from the quarantine zones must:

• Arrange for an Agriculture Victoria Biosecurity Officer to verify the consignment on arrival (fees apply) via 1800 878 962.

OR

- Be accredited under a compliance agreement CA-17 and ensure each consignment is accompanied by a:
  - PHAC stating "meets ICA-39" and including the treatment; or

- PHC stating compliance with the relevant treatment requirements under Condition 36 of the Victorian Plant Quarantine Manual; or
- BHBC stating ECCPRIFA28 and including the treatment; or
- BHBC stating ECCPRIFA21 .

If these requirements have not been met, please contact your local Agriculture Victoria Biosecurity Officer for guidance.

Further information

Please contact Agriculture Victoria on 1800 878 962 or email the Region relevant for service delivery:

- Southeast Region: plant.standards@agriculture.vic.gov.au
- Southwest Region: plant.southwest@agriculture.vic.gov.au
- Northern Region: plant.quarantine@agriculture.vic.gov.au

For further information on this Biosecurity Update please email market.access@agriculture.vic.gov.au.

Photo Credits:

National Fire And Eradication Program (Left)

NSW Department of Primary Industries (Above)

ARTCILE PREPARED FOR AUSTRALIAN PROCESSING TOMATO RESEARCH COUNCIL BY THE APVMA

Proposed regulatory decision for chlorpyrifos

The Australian Pesticides and Veterinary Medicines Authority (APVMA) has published its proposed regulatory decision in relation to the authority's review of chlorpyrifos, an insecticide used for the control of pests in various agricultural, horticultural, commercial and veterinary situations.

Impact on tomato uses

There are several chemical products containing chlorpyrifos currently approved for use on tomatoes for the control of various insect pests. The APVMA's proposed regulatory decision does not support the use of chlorpyrifos on tomatoes, based on worker exposure and environment concerns.

A summary of assessment outcomes is provided in Table 1 below. The APVMA is proposing to remove the use of chlorpyrifos chemical products on tomatoes, through varying or cancelling chlorpyrifos chemical products and associated label approvals.

Further information and a summary of the underlying risk assessments are available in the Review Technical Report and APVMA Gazette, 12 December 2023.

Table 1: Tomatoes – summary of assessment outcomes in the chlorpyrifos proposed regulatory decision

Pest—Tomato	Rate–Tomato	Assessment outcome – Tomato
False wireworm, wireworm	2,500 g ac/ha	Not supported – safety (environment and worker exposure) concerns.
Whitefly *(Trialeurodesvaporariorum)*	1,500 g ac/ha *(60 g ac/100 L water applied using 2,500 L water)*	Not supported – safety (environment and worker exposure) concerns.
African black beetle	1,000 g ac/ha	Not supported* – safety (worker exposure) concerns.
	150 g ac/100 L water *(drench at 100 mL/plant)*	Not supported* – safety (worker exposure) concerns.
Silverleaf whitefly	1,500 g ac/ha	Not supported – safety (environment and worker exposure) concerns.
	750 – 1,000 g ac/ha *(75 – 100 g ac/100 L water, applied using 1,000 L water/ha)*	Not supported – safety (environment and worker exposure) concerns.
Green vegetable bug, *Helicoverpa* spp. (including tomato grub, native budworm)	750 to/or 1,000 g ac/ha	Not supported – safety (environment and worker exposure) concerns.
Green peach aphid	500 g ac/ha	Not supported* – safety (worker exposure) concerns.
Vegetable weevil	400 g ac/ha	Not supported – safety (environment) concerns.
Cutworm, false wireworm	350 g ac/ha *(35 g ac/100 L water applied using 1,000 L water/ha)*	Not supported – safety (environment) concerns.
Wingless grasshopper	250 g ac/ha *(25 g ac/100 L water applied using 1,000 L water/ha)*	Not supported – safety (environment) concerns.
Field cricket, mole cricket	50 g ac/ha *(in 10 kg bran bait)*	Not supported – safety (environment and worker exposure) concerns.

* These use patterns have not been reconsidered in the environment assessment due to the human health, food safety and/or trade concerns identified. Additional environmental concerns not indicated in Table 1 may therefore exist for these use patterns.

What happens next?

The APVMA published the proposed regulatory decision on 12 December 2023 and is now undertaking a 3-month public consultation, which will close on 11 March 2024.

During the consultation period the APVMA invites submissions from stakeholders, including holders and the general public, on the proposed decision.
Once the public consultation period has concluded, the APVMA will consider the submissions received and whether the matters raised would change any aspects of the proposed decision before making its final decision and taking regulatory action.

How do I make a submission?

Information on how to make a submission is available on the APVMA website. When making your submission, please include reasons for your comments, supporting them, if possible, with relevant scientific information and indicating the source of the information you have used.

When will a final decision come into effect?

Publication of the final regulatory decision is expected in July 2024. The APVMA will consider all submissions received during the consultation period before making its final regulatory decision.
The APVMA has proposed that, in the event a decision to vary or cancel chlorpyrifos chemical products is made, a 12-month phase out period could be applied to the affected products.

I have chlorpyrifos product; can I still use it?

Registered chemical products containing chlorpyrifos can continue to be used during the consultation period, in accordance with the approved label instructions. Information about registered products can be found on the APVMA's PubCRIS database.

What about chlorpyrifos permit uses?

The status of permits was not specifically considered in the chlorpyrifos review. The APVMA only considers registrations and approvals under the reconsideration process, not off-label or permitted uses. However, the final outcome of the reconsideration is expected to impact the APVMA's current satisfaction of several existing permits, as the assessments undertaken for permits rely on the APVMA's satisfaction of similar uses on registered products.

The APVMA will be in a position to consider relevant permits that allow the use of chlorpyrifos once it has made a final regulatory decision for the reconsideration of chlorpyrifos.

Are there alternative registered products?

The APVMA maintains a searchable database of registered products (PubCRIS), which allows the public to search for chemicals registered for the control of specific pests on various crops.

Following from Tomato News

2023 Tomato News Conference — The videos and slides of the presentations (***including one from Kagome CEO Jason Fritsch***) made during the 2023 Tomato News Conference are available here.

Also, the **2023 Processed Tomato Yearbook** has been posted, and is available here.

Chinese scientists identify the gene responsible for the blocky shape of tomato fruit

According to a study published in Nature Plants, Chinese scientists have elucidated the mechanism of fruit shape formation in tomatoes and have developed fresh tomatoes for mechanical harvesting.

In the early 1960s, the FS8.1 mutation caused a shape change in tomato fruit from round to blocky, which greatly improved the stress tolerance of tomato fruit and brought about a major change in tomato processing from traditional manual harvesting to mechanized production. Since FS8.1 is located in a heterochromatic region, the underlying gene had not previously been identified.

In a study, led by Prof. LI Chuanyou from the Institute of Genetics and Developmental Biology (IGDB) of the Chinese Academy of Sciences reported the cloning, functional characterization, and breeding application of FS8.1. They demonstrated that the FS8.1 mutation has a stronger promoting effect on cell proliferation in the ovary wall than in the columella, resulting in an elongated fruit shape. Strikingly, FS8.1 was absent in fresh market varieties. Compared to processing tomatoes, the fruit of fresh market tomatoes is of higher quality in terms of nutrition and flavour. However, fresh market tomato fruit may be soft, leading to deterioration during harvest, transport and storage.

Natural ripening-related mutations have been used to improve fruit firmness. However, they often adversely affect colour, flavour and nutritional quality; FS8.1 does not affect fruit ripening. Thus, cloning of FS8.1 offers a potential way to redesign fresh market tomatoes for mechanized production without compromising quality. In addition, simultaneous mutation of FS8.1 and SP, which controls indeterminate growth of tomatoes, converted indeterminate fresh market tomato plants that produce round fruit into determinate plants that produce square fruit suitable for mechanical harvesting.

Some complementary data

More information: Qiang Zhu et al, “Redesigning the tomato fruit shape for mechanized production”, Nature Plants (2023). **DOI: 10.1038/s41477-023-01522-w**

Sources: phys.org, science.org, nature.com, seedworld.com, eurekalert.org

Italy: Kagome, NEC and DXAS: trial their CropScope ICT platform

Lisbon, Portugal, Tokyo and Aichi, Japan – Press Release, November 8, 2023 —

Kagome Co., Ltd., (Kagome) NEC Corporation (NEC) and DXAS Agricultural Technology LDA (DXAS), a joint venture between Kagome and NEC, have introduced an agricultural ICT (Information and Communication Technology) platform, "CropScope," which combines AI farming advice and automatic irrigation control functions compatible with pulse drip irrigation (*1), to tomato fields in northern Italy and Portugal.

In northern Italy, CropScope was introduced for the first time as a field trial conducted from April to August of 2023, resulting in increased yield and requiring less irrigation compared to a field where the platform was not introduced. The platform was also commercially introduced recently to a large-scale tomato field in Portugal, and high yield was achieved. (Note: Kagome Australia is part of this program, testing the platform in their commercial fields – Ed).

The three companies aim to contribute to sustainable agriculture by promoting environmentally friendly and profitable farming by expanding the areas in which CropScope is introduced, while also confirming reproducibility and effectively responding to water shortages at farming sites, which are challenges faced around the world.

Background

Recently, in addition to soaring agricultural materials and energy prices, climate change, including drought, has severely damaged the cultivation of agricultural crops around the world. For sustainable agriculture, measures against water shortages have become an urgent issue. In order to resolve this, small and frequent irrigation is known as a cultivation method that reduces water consumption while maintaining the optimal soil water content. However, this method requires careful management while maintaining the fluctuating soil moisture content at an optimum level and is not widely used because it is complex and requires a large workload for farmers with large or multiple fields.

Outline and Results of the Initiatives

The three companies introduced CropScope services, which consist of AI farming advice and automated irrigation control functions compatible with pulse drip irrigation, to tomato fields in northern Italy and Portugal.

A field trial of CropScope in northern Italy was able to increase yield by about 23% with about 19% less irrigation compared to a field that did not introduce the platform. It was confirmed that this system will produce good results even in new cultivation environments where climates, soil, etc. differ from those in the regions where CropScope was previously introduced. In Portugal, by combining the skills of experienced agronomists, it was able to obtain a high yield of 148t/ha on large commercial fields of about 21ha (total of 2 fields).

Outline and Results of Initiatives in the Test Field in northern Italy

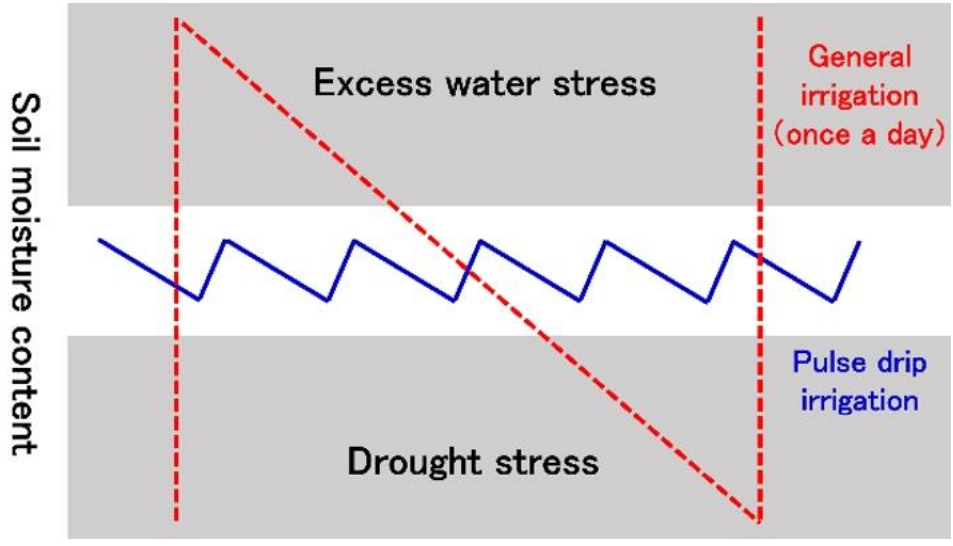
	CropScope introduction field	Comparative control field
Location	Ferrara, Italy	
Tomato variety	UG11227 (*2)	
Area	1.25ha	1.7ha
Yield	148.8t/ha	120.5t/ha

Outline and Results of Initiatives in Commercial Large-Scale DXAS Fields in Portugal

	CropScope introduction field A	CropScope introduction field B
Location	Vila Franca de Xira, Portugal	
Tomato variety	Several varieties including UG16112 (*2)	
Area	13ha	8ha
Yield	144t/ha	161t/ha
Average yield	148t/ha	

Future development

The three companies plan to incorporate the knowledge gained from this initiative into the machine-learning of CropScope, and to improve the accuracy of AI farming advice and strengthen solutions by repeating field trials and increasing reproducibility. In addition, DXAS will reinforce its support for agricultural management by spreading this service to the worldwide processing tomato market.



Conventional irrigation causes plants to be stressed from excess water or drought, while pulse drip irrigation can maintain water conditions that are stress-free.

The automated irrigation system makes it possible to automatically control AI farming advice, such as irrigation frequency, to help eliminate complicated and time-consuming manual work AI makes watering decisions based on the field environment.

Introduction to CropScope

	Farming management recommendation services utilizing AI and automatic irrigation control functions for pulse drip irrigation	**Visualization services (using sensors and satellite images)**
Farmers (Tomato growers)	・With AI that has acquired the know-how of experts, highly profitable farming can be achieved regardless of the proficiency level of the farmers. ・Efficient automatic irrigation allows for environmentally friendly farming. ・Technology will be passed on easily, and an increase in the number of new farmers can be expected.	・By being able to visualize the situation in a vast field, it becomes easier to visually detect abnormalities and reduce cultivation risks.
Farming instructors	・By using explicit farming support know-how, it is possible to reduce the time required to instruct farmers and train farming instructors.	・Since abnormalities can be identified remotely even in vast fields, prompt and accurate guidance can be provided based on data.
Tomato processing companies	・Stable production of processed tomatoes can be expected to reduce procurement risks and minimize input resources.	・Productivity can be improved by making overall optimal harvest adjustments based on objective data.

Some complementary data *Notes:*

*(*1) This is a cultivation method in which the amount of water and fertilizer required by a crop is given in many portions, and the optimum amount of soil moisture for the crop is maintained.*

*(*2) "UG11227" and "UG16112" are varieties of tomatoes from the Kagome Group's United Genetics Seeds Co.*

Sources: Kagome, NEC

The Following from AusVeg

Cover crop tips

A Soil Wealth ICP cover crop trial attracted interest of attendees at a recent vegetable industry field day. The cover crops sown in late February 2023 were:

- Forage barley
- Buckwheat
- Japanese (shirohie) millet
- Mixed legumes – sunn hemp, soybean, cowpea, lablab
- Mixed species – annual ryegrass, oats, benetas vetch and crimson clover

Cover crop expert Dr Kelvin Montagu hosted a field walk through the cover crop trial and discussed the varieties chosen, how they performed, their benefits, termination considerations and helpful tips to keep in mind.

The top five cover crop insights from Kelvin are listed below.

1. **Cover crop benefits**: Cover crops can be used to protect soils, control weeds and soil-borne diseases, build soil health or act as a break crop.
2. **Tailored solution**: The biggest challenge when choosing a cover crop is making sure it works in your farming system and meets your desired goals. It is important to match the cover crop species to your growing conditions, otherwise weeds are likely to out-compete your cover crop.
3. **Plan to terminate**: The termination of your cover crop is one of the most important elements to consider during the planning stage as this will set you up for success. This includes timing of termination; a good indicator for termination of cereal cover crops is to squeeze the seeds and see if they emit a milky substance. You should also consider if you want the cover crop to decompose quickly at termination (i.e. to plant a cash crop) or maintain a higher biomass on the surface to protect your soils.
4. **Nitrogen booster**: Legume cover crops are popular with many growers as they are a valuable source of nitrogen, with potential to add 150-200 units of nitrogen in around three months. It is important to consider your soil condition and soil temperature when choosing this option.
5. **Mix it up carefully**: Mixed cover crops add a level of complexity, particularly if you only want to grow cover crops for a short timeframe (e.g. 4-6 weeks). Make sure you get the balance of the cover crop mix right otherwise some species will dominate others – a good tip is to limit the mix to four species. If you are starting out with cover crops, stick to planting one species and build up your experience and knowledge.

For more information take a look at these cover crop posters:

Cover crops for Australian vegetable growers
Cover crop termination guide
Cover crop herbicide guide

New farm biosecurity guides

A farm biosecurity plan is an essential tool for farmers who want to prevent, eliminate, and minimise biosecurity risks on-farm. It is recommended that anyone who keeps or owns livestock or who operates a cropping or horticulture business, has a biosecurity plan for their property.

Agriculture Victoria has released new farm biosecurity guides to help you through the process.

READ MORE

Above: Storms roll in over Echuca in Late November.

Below: Matt Nihill scouting the Kennedy Crop

UPCOMING EVENTS

Annual APTRC Processing Tomato Forum & Dinner

When: Friday 10th May, 2024

Where: Rich River Golf Club, Tatalia Function Room #1. (24 Lane, Moama NSW)

Hort Connections

When: 3-5 June, 2024

Where: Melbourne Convention Centre

Links: https://hortconnections.com.au/

15th World Processing Tomato Congress & 17th ISHS Symposium on Processing Tomato

When: 9-12 June, 2024

Where: Hilton Budapest (Hungary)

Links: www.worldtomatocongress.com

ACKNOWLEDGMENTS:
This project [Australian Processing Tomato Industry Development and Extension (TM20000)] is funded by Horticulture Innovation Australia Limited with co-investment from Australian Processing Tomato Research Council Inc. and funds from the Australian Government.
"Tomato Topics" is a quarterly newsletter compiled and edited by the Industry Development Manager, APTRC Inc., P.O. Box 547, ECHUCA, VIC 3564. **E-mail: aptrc.idm@outlook.com**