

# TOMATO TOPICS

**Hort  
Innovation**  
Strategic levy investment

**PROCESSING  
TOMATO FUND**



NEWS and INFORMATION  
FOR THE PROCESSING TOMATO INDUSTRY

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## Big Turnout at Annual APTRC Forum shows True colours of the Australian Processing Tomato Industry

*By Matthew Stewart*



The 2022/23 season was difficult in the extreme for many horticultural enterprises throughout Northern Victoria and Southern NSW.

Our processing tomato industry was heavily impacted by extended rainfall periods, flooding, hail and cold weather, all of which amounted to possibly the most challenging season on record.

### Forum attendees taking part in the visual industry survey!

In terms of industry performance it was remarkable, given the conditions, that growers and processors were still able to process 110,340 tonnes of fruit.

It was deeply encouraging, that given the hardships, we still had significant participation in the Annual APTRC forum this year, with 57 members attending the forum at the Moama Bowling Club 'Venue' and 44 staying on for a social dinner at the in-house 'Junction' restaurant.

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The forum was highly rated by participants and more specifically; the authenticity of messages delivered, the transparency of presenters on their chosen topics and the effort put toward presentations was duly noted and much appreciated.

Below is a summary of presenters and my personal key takeaways from the presentations and discussions;

**APTRC Chairman's Report**, Charles Hart — Recognised a very difficult season, but was grateful for a strong attendance at the 2023 forum event and thanked everyone for their ongoing support.

**APTRC IDM Report**, Matt Stewart— I re-visited the [industry strategic plan](#) for APTRC, which focusses on the 4 major strategies of APTRC. At present, the notable activities include up-skilling the emerging generation of growers with a tour to the USA, increasing the capability of irrigators (with assistance of Agriculture Victoria), addressing soil disease and seed issues with the University of Melbourne and increasing domestic market share by using emerging health R&D to further promote processed tomato products and help guide trials with appropriate tomato cultivars.

**APTRC Cultivar Development Program**, Ann Morrison and Bill Ashcroft — Ann and Bill outlined that it was a difficult season for cultivar trials, with several trials being 'knocked out' by unforeseen events and that it was difficult to extract meaningful results with some trial blocks recording very low yields. However, it was a chance to see cultivars under 'high pressure' scenario's.

**GMW Water Update**, Bob Knowles— Bob's presentation highlighted that water storages feeding our industry were all near capacity and allocations were looking at or close to 100% for all regions.

**Kagome Sand Grown Tomatoes**, Stuart McColl— Kagome's presentation on their growing operations this year focussed on how they had innovated by utilising their carrot/garlic growing sand based, pivot irrigated land to grow late season tomatoes.

**Agriculture Victoria Irrigation Surveys & Insights**, Nick O'Halloran and Joe Braden— The presentation by Nick and Joe summarised their surveying of 3 specialist tomato enterprises during the season. The findings highlighted the need to have irrigation systems adequately designed and maintained to achieve maximal efficiencies and uniformity.

**Kagome Update**, Jason Fristch— The Kagome team put together an enlightening presentation that highlighted how the factory and farming operations are building robustness and opportunity into the business. As current president of the WPTC (World Processing Tomato Council), Jason also highlighted where current world prices for processed tomatoes are heading and for our growers, the outlook is for higher and more stable farm gate prices into the near future.

**University of Melbourne**, PhD Update, Niloofar Vaghefi— The investigations into soil disease are getting more in-depth now and Niloofar outlined how Hanyue Feng's (PhD Student) project is creating findings that will help guide our ambition to develop soil disease quantifiers. Interestingly, the *fusarium* (f. sp. *lycopersici* (Fol)) being found is mainly *Fol* race 3, which is important for cultivar selection, as different genes confer resistance to different races of *Fol*. Also, in a sideline study with APTRC, *pythium* has been identified in water supplies and drip lines. However, findings need more investigation before concluding if they're potentially harmful or not.



**ARC Research Hub for Smart Fertilisers**, Hangwei Hu— The research hub at the University of Melbourne are doing work into Protist predators: Natural Weapons for Soil-borne Pathogen Control. The aim currently in tomatoes is to unlock the contribution of soil protists to plant disease management, by developing innovative protists-based microbiological technologies to suppress soil-borne fungal pathogens. For tomatoes the main area of investigation is using friendly *pythium* species to target damaging *pythium* species.

**Agriculture Victoria**, Tanya Dobrijevic— explained Victoria’s flood and storm recovery project and where grants and supports may be available. Contact [recovery@agriculture.vic.gov.au](mailto:recovery@agriculture.vic.gov.au) for more information.

**AgBiz Assist**, Richard Raymond— took the recovery discussion further and outlined how AgBiz Assist can help primary producers to find the appropriate services and walk them through the processes involved. For more information, contact Agbiz Assist on 1300 834 775.

Presentations will be loaded onto the website in the coming weeks under [Information for Industry](#) and the ‘Industry Forums’ tab.

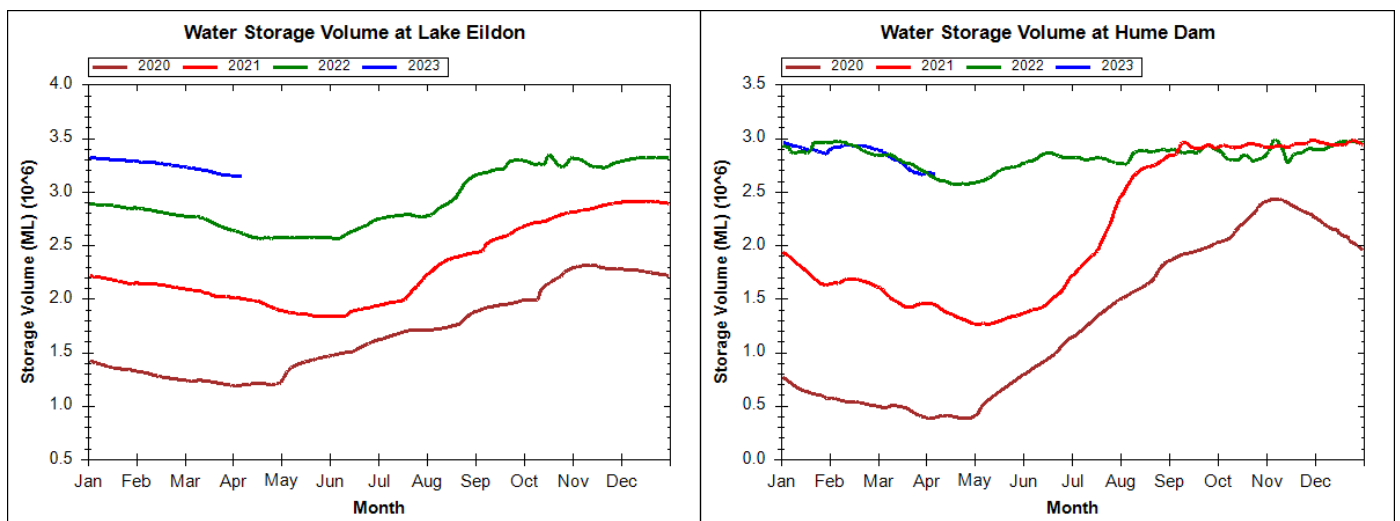
## Climate Outlook

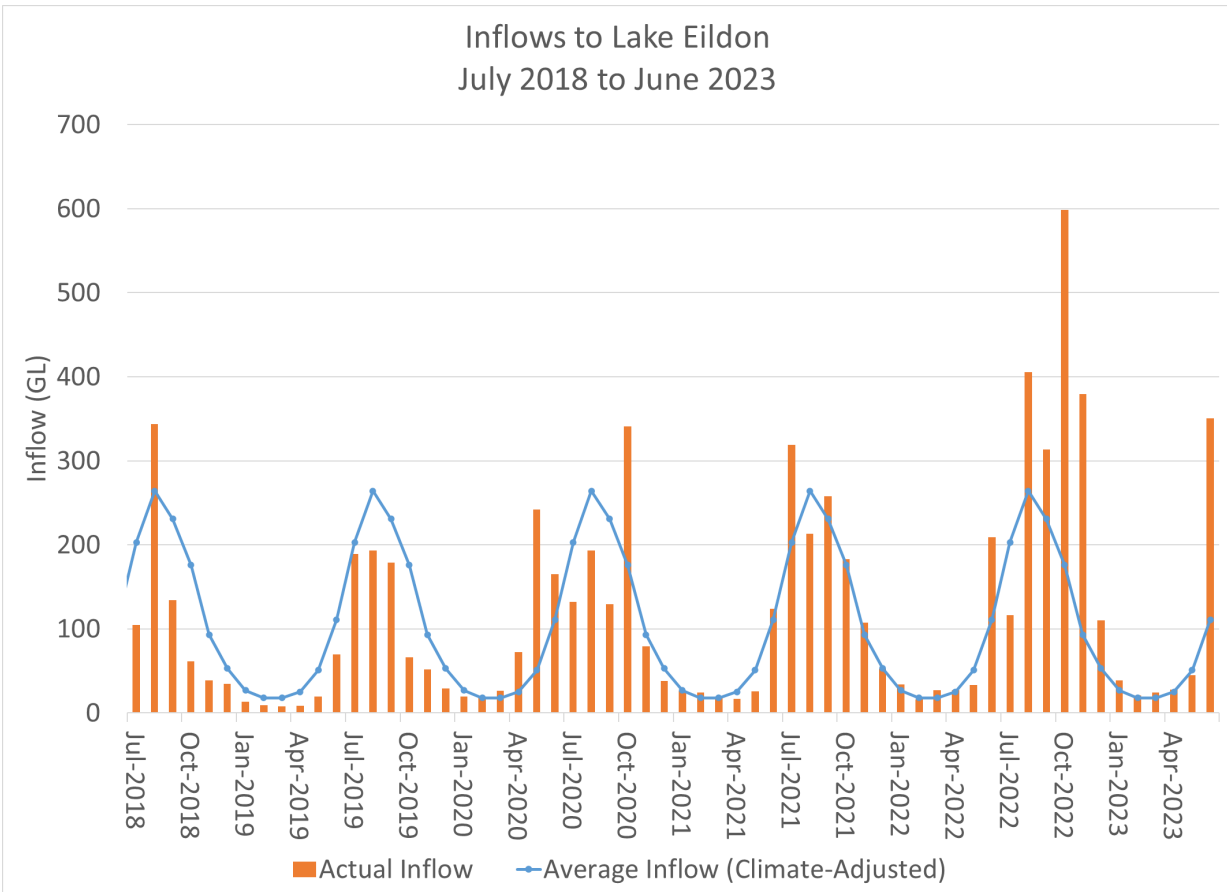
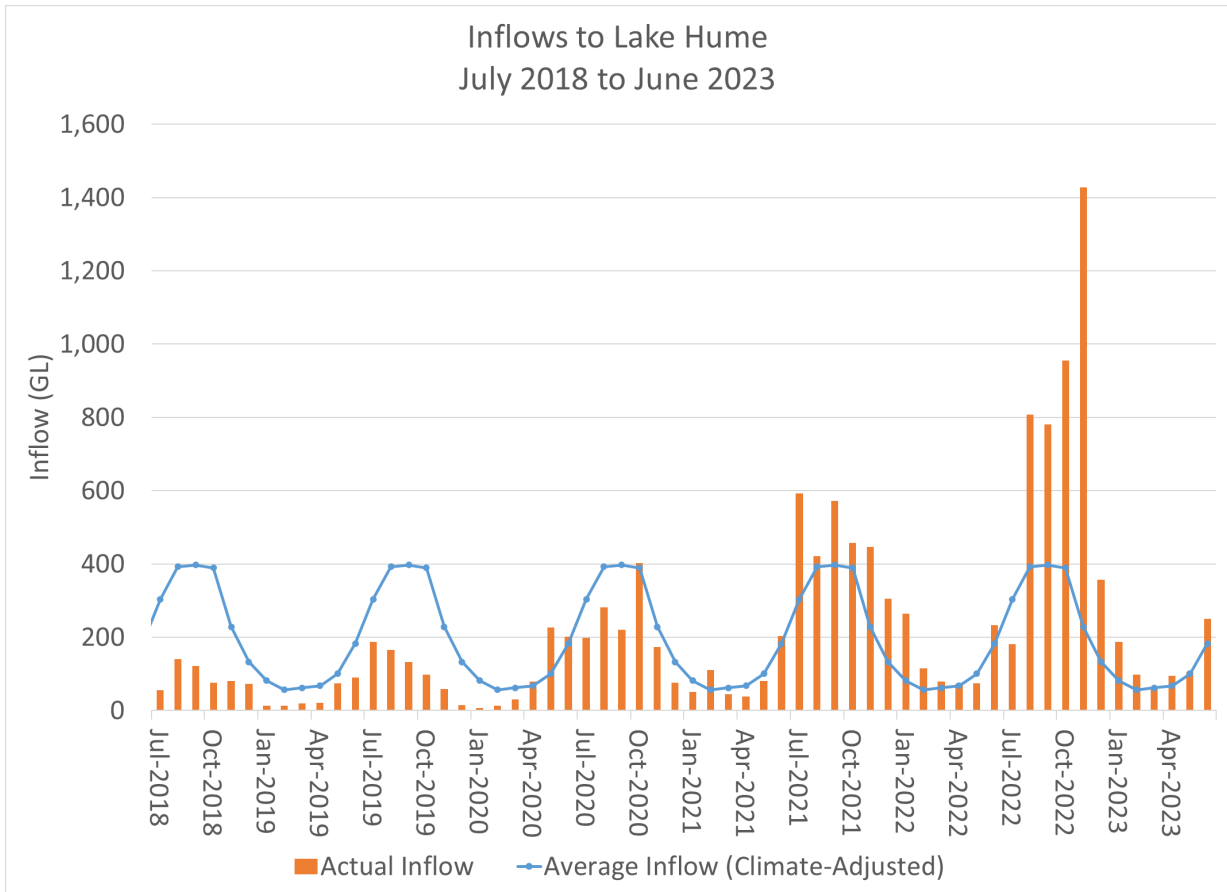
Climate models continue to predict a warm and relatively dry winter, with an El Niño ALERT for the coming season. This means that there is at least a 70% chance of an El Niño weather event forming this year - three times the normal probability.

An El Niño typically produces warmer, drier conditions across much of southern Australia and is often associated with drought. Surface temperatures in the central and eastern Pacific ocean, as well as some atmospheric indicators such as the Southern Oscillation Index, have all moved towards or exceeded El Niño thresholds, although wind, cloud and broad-scale pressure patterns indicate the Pacific Ocean and atmosphere are yet to reinforce each other, as occurs during El Niño events.

Other indicators (such as the Indian Ocean Dipole and the Southern Annular Mode) are expected to move towards values consistent with an El Niño event in coming weeks.

**Source: The Bureau of Meteorology**





## APTRC 2021-2022 Machine Harvest Trials

APTRC’s cultivar program was limited to the establishment of five transplant trials due to the adverse weather conditions in the run up to and during the growing season.

Five screening trials were also planted, the results of which can be found in March 2023 Tomato Topics.

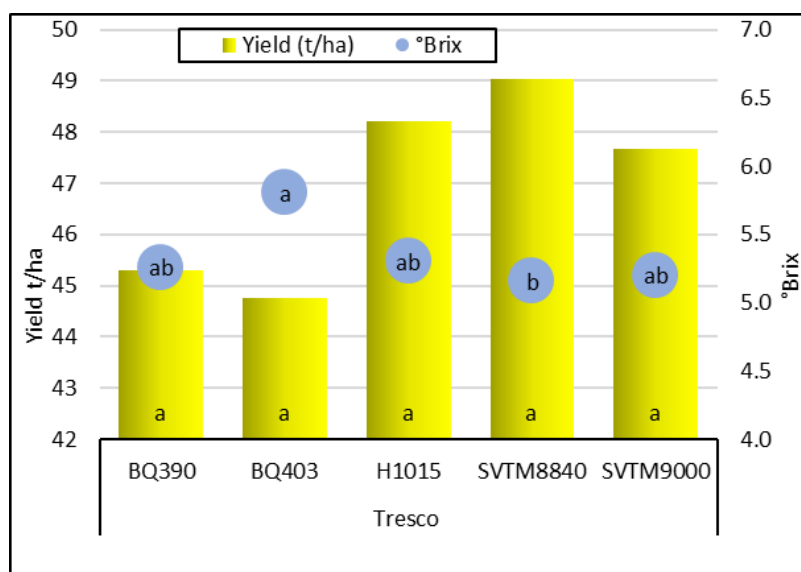
The fact that any trials were established and harvested is a testament to the great support received from both the growers and processors, especially considering the time constraints all were under.



Of the five machine harvested trials, one early season and three mid-season trials were successfully harvested but yields were generally lower than normal.

### Early-Season Machine Harvest Trial

The early season trial was planted at Tresco near Lake Boga in northern Victoria just before the major rain and flood event which stopped all plantings for several weeks. Despite being an early season cultivar trial, this site was harvested at 131 days and yielded an average of 47 t/ha.



#### Comments:

There were no significant differences in yields between any of the cultivars and there was only a difference of 4.3 t/ha between the highest and lowest yielding cultivars.

There were no significant differences in raw fruit brix between H1015 (the commercial standard) and the other cultivars. BQ403 had a significantly higher Brix than SVTM8840 but it also had a lower yield.

Figure 1. Early Season yield and Brix

### Mid-Season Machine Harvest Trial

Of the three mid-season trials that made it to harvest, a one at Tresco was hit by hail and rain resulting in defoliation, flower and fruit loss, and subsequent foliar diseases. Whilst harvest data was collected from this site it was disregarded due to extremely low yields.

**Comments:** The Thyra trial was harvested after 146 days in the field. Unfortunately, we lost replicates of NUN 239 and 507 prior to trial harvest, meaning statistical analysis for these was not possible. The data collected on these two lines is shown for interest’s sake.

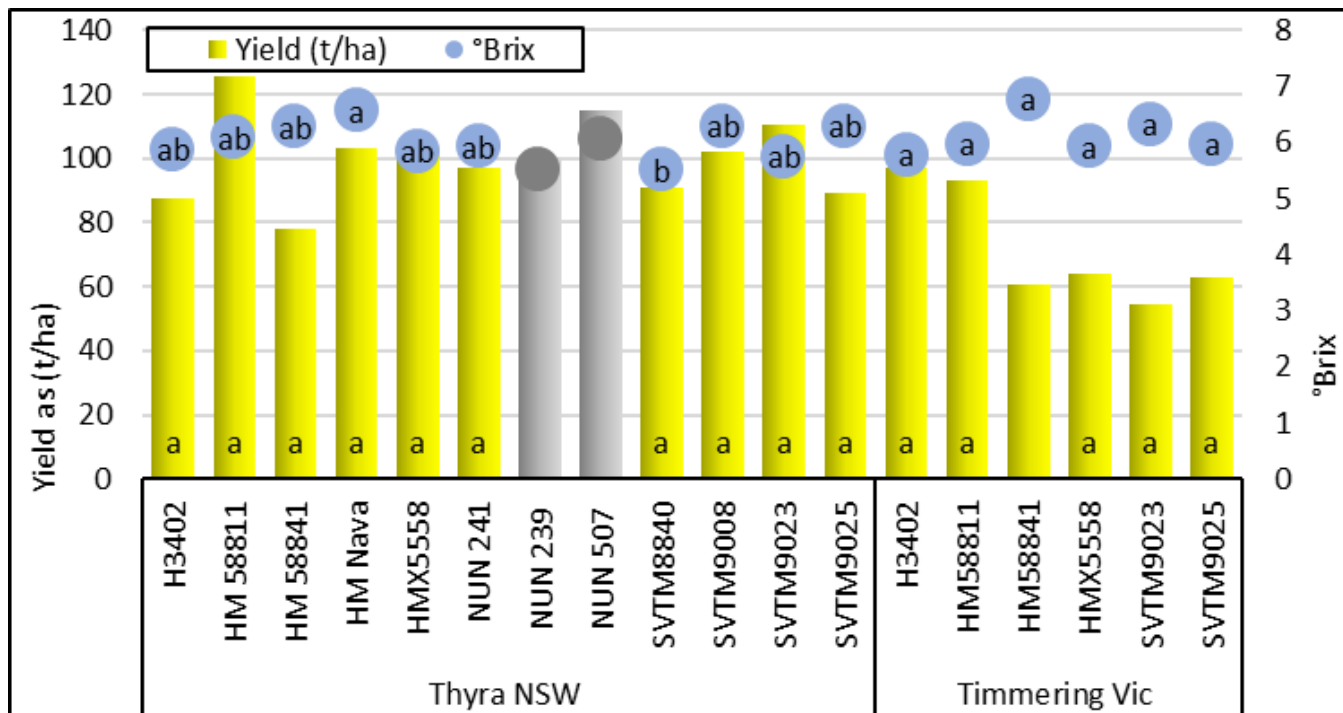


Figure 2. Mid-season yield and Brix

The average yield across the trial was just over 98 t/ha. The commercial standard H3402 yielded 87 t/ha, whilst the highest yielding cultivar HM58811 produced 125 t/ha. Analysis of variance indicated that this difference was not significant.

There was also no significant difference in raw fruit Brix between H3402 and the other cultivars, however HM Nava recorded significantly higher Brix than SVTM 8840.

The Timmering trial was harvested at 160 days and produced an average trial yield of 67 t/ha. Only four out of the five trial replicates were harvested as one replicate was badly impacted by root disease resulting in significant seedling losses. The rest of the trial may have also been affected, but to a lesser extent, which is reflected by lower-than-normal yields across this trial.



Figure 3 (on the following page) shows yields and Brix as a percentage of H3402. There were six cultivars with both higher yields and higher Brix than H3402. In at least one trial, there were five cultivars with lower yields but higher Brix and four cultivars with higher yields and lower Brix.

Whilst these results are not significantly different, it is encouraging there were no cultivars with both lower yields and lower Brix than H3402.

Note: SVTM8840 was included in both early and mid-season trials as it was unclear where the best fit was.

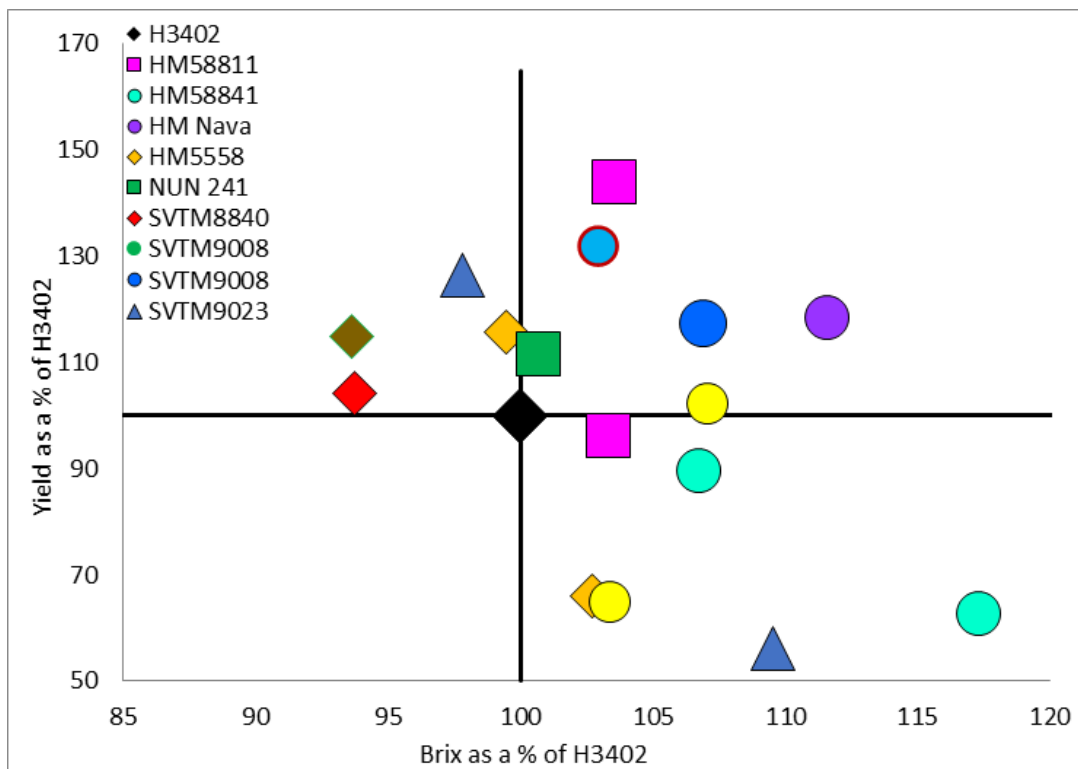


Figure 3. Mid-season yields and Brix as a percentage of H3402.

## Bits and Pieces

Source: Tomato News

### Growers face climate challenges across the globe

In conditions strongly reminiscent of those faced in Australia last season, Californian growers have delayed planting by three weeks due to record rains, and there are concerns that many tomato products may be in short supply as a result. Farmers are making dire predictions about the impact of the rains on the length of the season, with some fearing that they may be forced out of the industry.

At the same time the processing tomato industry in China is currently evaluating the impact of a snowfall over most of Xinjiang province in early May, when about a third of the tomato fields had already been planted. This could mean a significant reduction in the volume of tomatoes processed in China in 2023, previously estimated at 7.2 million tonnes, and on global production.

And in Europe, the extensive flooding across Northern and Central Italy has also affected tomato crops. Impacts are still being assessed, but it appears that tomatoes have fared better than many other agricultural sectors. Local operators have estimated that up to 1500ha have been affected by the harsh weather, including 300-400ha totally destroyed. Decisions are pending about whether these areas can be re-planted, but this weather will no doubt delay crop development and ripening, resulting in problems with harvest scheduling at the end of the season.



## Report predicts impacts of extreme weather events on agricultural production in the EU

On a similar theme, the European Parliament recently received a report titled "*The impact of extreme climate events on agriculture production in the EU*".

The second part of this study focused on the "*Existing scientific evidence on past and upcoming physical and socio-economic impacts through extreme climate events on EU's agricultural sector*" and was summarised in Tomato News with the following points.

- Climate extremes are increasing across Europe with pronounced regional differences, following established trends from the recent past.
- Northern Europe and mountainous regions will likely see more heavy precipitation extremes, while Southern Europe will be faced with severe drought and temperature extremes. Central Europe will endure both heat extremes and an increase in heavy precipitation.

Drought and heat have caused by far the largest share of negative economic impacts on European agriculture and this is expected to continue into the future.

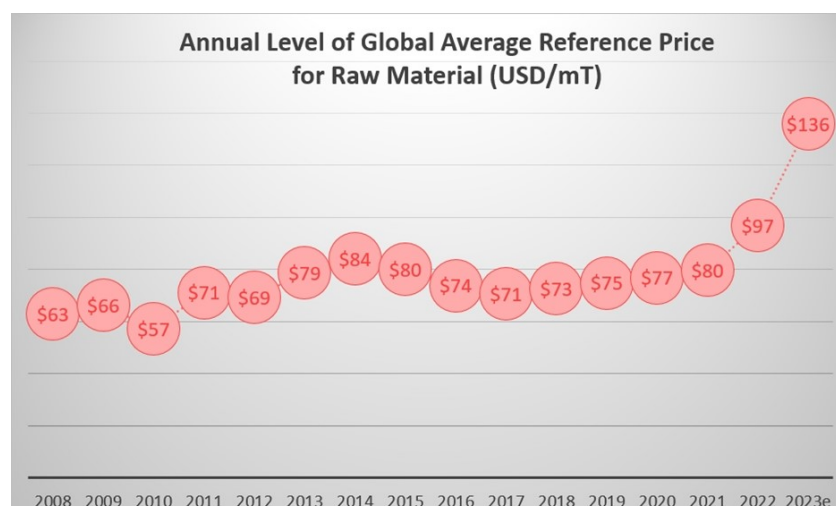
Crops vulnerable to climate extremes include maize (heat), tubers (flooding) and soybean (high yield variability). Most crops will suffer heavy yield damage under drought, so good soil management, crop selection and water management are major factors in future vulnerability. Grassland is also susceptible to drought, causing cascading impacts on the livestock sector.

To access the full report, [click here](#).

## Worldwide Tomato Prices rise by 40%

For the second year running, reference prices negotiated between growers and processors have soared, once again taking the value of processing tomatoes to unprecedented levels.

According to information collected by the WPTC from national operators of the sector for the 2023 season, the worldwide average field-gate value of a metric tonne of tomatoes (estimated as of June 2) is



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around USD 136, up 40% on last year's (already record) level, and 60% higher than the overall average price for the previous three years (2020 to 2022).

This value represents the weighted price (excluding various premiums and incentives) for the quantities scheduled in the main processing basins, in Argentina, California, Chile, China, Egypt, France, Greece, Hungary, northern Italy, Portugal, Spain and Turkey for tomatoes intended for the production of concentrated purées, i.e. around 31 million mT or 73% of the quantities expected for the coming season. As it stands, the total value of the projected harvest worldwide is around USD 5.8 billion (Euro 6.2 billion).

## Israeli research finds that stressed plants emit sounds

*Stressed tomato plants emit airborne sounds that can be detected from over a meter away.* What does a stressed plant sound like? A bit like bubble-wrap being popped. Researchers in Israel report in the journal *Cell* on March 30 that tomato and tobacco plants that are stressed—from dehydration or having their stems severed—emit sounds that are comparable in volume to normal human conversation. The frequency of these noises is too high for our ears to detect, but they can probably be heard by insects, other mammals, and possibly other plants.

*“Even in a quiet field, there are actually sounds that we don't hear, and those sounds carry information,”* says senior author Lilach Hadany, an evolutionary biologist and theoretician at Tel Aviv University. *“There are animals that can hear these sounds, so there is the possibility that a lot of acoustic interaction is occurring.”*

Although ultrasonic vibrations have been recorded from plants before, this is the first evidence that they are airborne, a fact that makes them more relevant for other organisms in the environment. *“Plants interact with insects and other animals all the time, and many of these organisms use sound for communication, so it would be very suboptimal for plants to not use sound at all,”* says Hadany.

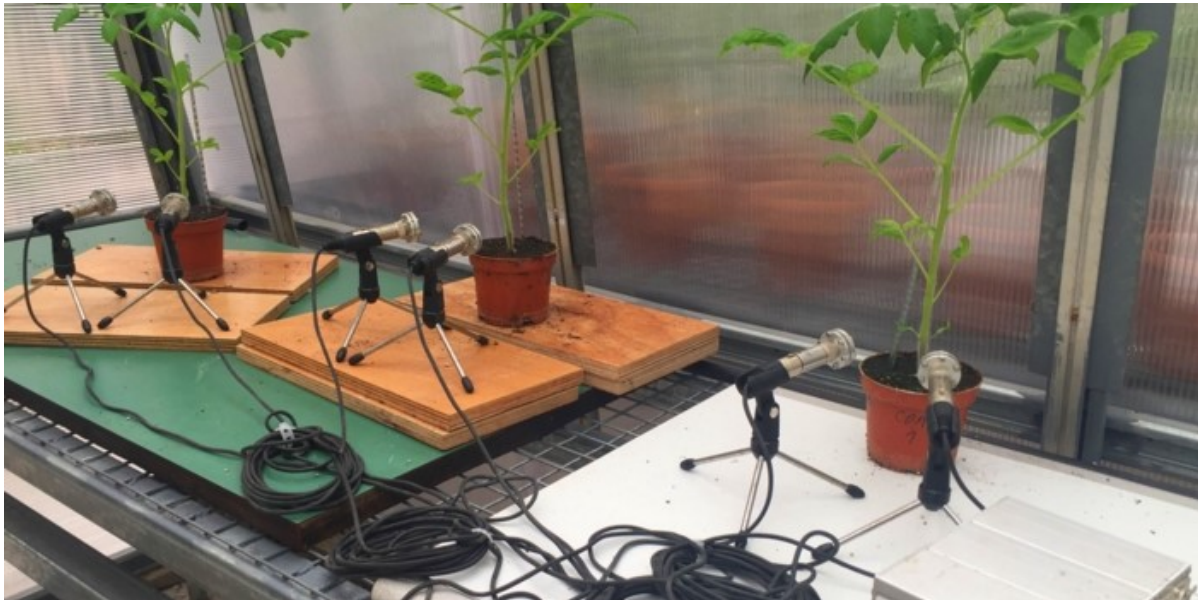
The researchers used microphones to record healthy and stressed tomato and tobacco plants, first in a soundproofed acoustic chamber and then in a noisier greenhouse environment. They stressed the plants via two methods: by not watering them for several days and by cutting their stems. After recording the plants, the researchers trained a machine-learning algorithm to differentiate between unstressed plants, thirsty plants, and cut plants.

The team found that stressed plants emit more sounds than unstressed plants. The plant sounds resemble pops or clicks, and a single stressed plant emits around 30–50 of these clicks per hour at seemingly random intervals, but unstressed plants emit far fewer sounds. *“When tomatoes are not stressed at all, they are very quiet,”* says Hadany.

Water-stressed plants began emitting noises before they were visibly dehydrated, and the frequency of sounds peaked after 5 days with no water before decreasing again as the plants dried up completely. The

types of sound emitted differed with the cause of stress. The machine-learning algorithm was able to accurately differentiate between dehydration and stress from cutting and could also discern whether the sounds came from a tomato or tobacco plant.

Although the study focused on tomato and tobacco plants because of their ease to grow and standardize



in the laboratory, the research team also recorded a variety of other plant species. *“We found that many plants—corn, wheat, grape, and cactus plants, for example—emit sounds when they are stressed,”* says Hadany.

The exact mechanism behind these noises is unclear, but the researchers suggest that it might be due to the formation and bursting of air bubbles in the plant’s vascular system, a process called cavitation.

*“So now that we know that plants do emit sounds, the next question is—‘who might be listening?’”* says Hadany. *“We are currently investigating the responses of other organisms, both animals and plants, to these sounds, and we’re also exploring our ability to identify and interpret the sounds in completely natural environments.”*

*Cell, Khait, Lewin-Epstein, et al. ‘Sounds emitted by plants under stress are airborne and informative’ [https://www.cell.com/cell/fulltext/S0092-8674\(23\)00262-3](https://www.cell.com/cell/fulltext/S0092-8674(23)00262-3)*

*DOI: [10.1016/j.cell.2023.03.009](https://doi.org/10.1016/j.cell.2023.03.009)*

*Source: AusVeg*

## Hitchhiker pest guide

An outbreak of a hitchhiker pest in Australia could cost billions of dollars and cause serious damage to our industries, environment, health and lifestyle. Biosecurity is everybody’s business, and we need your help to protect Australia from this growing risk. The sooner we can spot these unwanted pests, the sooner



they can be eradicated and prevented from spreading across Australia.

To help raise awareness of the risk of hitchhiker pests, the Department of Agriculture, Fisheries and Forestry has launched a new website:

[agriculture.gov.au/campaigns/hitchhiker-pests](https://agriculture.gov.au/campaigns/hitchhiker-pests).

The new website provides information on key hitchhiker pests, the risks they pose, how to identify them, where to look and what to do if you suspect you have detected one.

The new website is part of a broader general awareness campaign on the risks of hitchhiker pests. This work stems from the Hitchhiker Pest Program which aims to build a more robust biosecurity system and guard Australia from the increasing threat of hitchhiker pests. You can learn more about the program [here](#).

## Coping with stress, anxiety, and mental health

We all understand that tough times on the land come and go like the seasons, but sometimes the pressures of farming, and lack of ability to see a way out, become too much.

[ifarmwell](#) is a free online tool kit to help farmers cope effectively with life's challenges and get the most out of every day, regardless of the circumstances they face. The tool kit has been designed based on what Australian farmers have said they want and what research shows will help.

The [ifarmwell modules](#) are designed to help farmers effectively manage things beyond their control and get the most out of life, regardless of the circumstances they face. They are free, farmer-focused, confidential, and accessible anytime via the internet. As well as the modules, [ifarmwell](#) has a range of [tips sheets](#).

## World Processing Tomato Council (WPTC): May 1998-May 2023

The World Processing Tomato Council was created in Pamplona during the 3rd Processing Tomato Congress in May 1998, and so celebrated its 25th anniversary on 25 May.

### UPCOMING EVENTS

The website for the 15th World Processing Tomato Congress & 17th ISHS Symposium on Processing Tomato in Budapest 2024 is now live at [www.worldtomatocongress.com](http://www.worldtomatocongress.com)

The website will continually be enriched with info on registration and programs in coming weeks.

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