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SOILLESS AUSTRALIA

Protected Cropping Australia Industry Trade Magazine

PCA

Gatton AgTech Showcase draws crowds

Top quality glasshouse drives successful plant breeding

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Shoot the cover: kit built gullwing tunnel house at Bambooland (by EnviroTec).

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SINCE 1990

Delegates cooling down and networking at the 'Sundowner' event.

Protected cropping centre launched at Gatton

The opening of a new research centre for protected cropping focuses on warm climate growing was a highlight of the Gatton AgTech Showcase in 2025. Col Douglas, Principal Horticulturist – Protected Cropping, QDPI, reports.

The Department of Primary Industries' Protected Cropping Centre for Mild Winter Climates was officially launched during the Gatton AgTech Showcase held on October 15–16, 2025. The event offered a unique and immersive experience for growers, industry representatives, suppliers, researchers, and students.

The protected cropping (PC) expo featured live AgTech and crop demonstrations, a speaker program, Q&A panels, and a vibrant exhibition and trade zone across two full days all inside the newly constructed retractable roof greenhouse at the Gatton Smart Farm. The PC Centre launch served as the centrepiece of this year's Showcase, which has grown to become Australia's largest AgTech field day.

A total of 1422 delegates attended the event, including 382 growers (64 of whom were engaged in protected cropping) as well as 185 tertiary and high school students eager to explore the latest innovations 'in the paddock' and under PC structures. While two-thirds of Showcase attendees came from Queensland, the remaining third was evenly split between interstate visitors and international delegates highlighting the event's expanding reach and relevance.

This year's Showcase featured 19 live in-field demonstrations, alongside dedicated 'Talking Tech' and 'Student Engagement' programs delivered by AusAgritech. A highlight of the event was the evening networking function held under the stars in DPI's retractable roof greenhouse. More than 400 delegates gathered to unwind and reflect on the day's discoveries, enjoying a canapé menu featuring snacking and gourmet tomatoes, as well as fresh produce from three Lockyer Valley protected cropping businesses.

Official opening underscores strategic importance of protected cropping

The Gatton AgTech Showcase and the new Protected Cropping Centre for Mild Winter Climates were officially opened by Queensland Minister for Primary Industries, Hon. Tony Perrett, MP. In his address, Minister Perrett noted protected cropping's important contribution to the state's goal to grow agricultural value (GVP) to $30 billion by 2030.

Industry leaders Brett Fifield (Hort Innovation Australia) and Michael Coote (AUSVEG) acknowledged the Gatton Smart Farm's pivotal role in advancing horticultural innovation, describing the event as "world class" and a milestone for Australian horticulture.

The Queensland Government's $3.5 million investment in protected cropping infrastructure marks the next phase of a decade-long research program focused on establishing the value of greenhouse production and supporting its adoption in tropical and subtropical regions. The event attracted 65 protected cropping growers from mild winter and temperate climate zones across Queensland, northern coastal New South Wales, Victoria, Tasmania, and Western Australia.

Glasshouse delivers great results for breeding

A state-of-the-art glasshouse in South Australia is delivering great results for plant breeding and improving Australia's field crop varieties. Jennifer Stackhouse reports on the high tech centre.

Set just off the highway and 60km north from Adelaide near Roseworthy, is a sparkling new glasshouse that's delivering top results for Australian farmers. The glasshouse is owned by research company, Australian Grain Technologies (AGT) and is one of the main hubs for the development of new grain varieties in Australia. It is part of a complex that includes offices, grow rooms, grain quality laboratories and trial paddocks.

The glasshouse was built for AGT in 2017 by Apex Greenhouses and is now filled with pots of wheat (including Durum) and other grains including barley and canola that are being bred for better yields, climatic tolerance and disease resistance.

The glasshouse site inspection was part of the Farm Tours held during PCA 2025 in Adelaide and was led by Glasshouse Operations Manager, Stuart Milde.

The glasshouse, laboratory, grow rooms and office complex is adjacent to fields used for early generation selections, and disease nurseries. In all the site occupies 100 hectares. Yield trials are still conducted on nearby Roseworthy Agricultural College land, where the AGT wheat breeding program stemmed from over 100 years ago. The attraction of the Roseworthy area is its climatic conditions, which allow for reliable yield trial data and excellent selection pressure.

AGT also operates breeding centres at Narrabri, Northam and Wagga Wagga, all strategically placed centres for plant breeding centres servicing the major grain growing areas.

Current research

Australian wheat is widely considered the best in the world. The country harvests 25 million tonnes annually with about 75 per cent being exported and the rest designated for domestic markets.

"AGT is constantly undertaking new research projects relevant to the challenges of grain growing and cropping systems," says Stuart.

The huge glasshouse is set on a large concrete pad.

LED lights are used to extend day length and the growth period.

AGT has had researchers and students working on topics such as the genetics of heat stress in wheat, barley and durum; the role of drones and aerial imaging for rapid phenotyping; nitrogen use efficiency; plant response to growth regulators in dry environments; response to grazing; and new technologies for the application of molecular markers to plant breeding. Wheat varieties bred by AGT at Roseworthy include Scepter, Calibre, Shotgun and Tomahawk CL Plus. Farmers who grow these varieties pay end point royalties on every tonne of grain delivered into the bulk handling system.

As he led the tour, Stuart Milde explained the importance of AGT's new site and its role in breeding new varieties faster.

"The protected cropping technology enables more genetic combinations per year, leading to faster development of new varieties for Australian farmers," he said. "To produce those new varieties, hundreds of cross combinations are made in a year producing hundreds of thousands of F1 seeds. Even with the assistance of glasshouse technology, it takes around 10 years to develop and bring a new variety to market."

Blueberry research needs grower input

Identifying the cause and prevalence of a costly disorder in blueberries is the goal of a team of researchers at The University of Queensland, who are calling for growers to help.

Scientists at UQ's Queensland Alliance for Agriculture and Food Innovation are leading an investigation into root wrapping and associated crown disorders, which causes significant fruit loss globally each year. Project lead Dr Alice Hayward said there was little published data on the disorder and what was causing it.

"Symptoms include roots wrapping around each other or restricting the crown – where the above ground parts of the plant meet the roots," Dr Hayward said. "It's an emerging problem where plants in the field are losing yield, especially under periods of high growth demand – canes or branches are dying and whole plants can die.

"We're trying to figure out the physiology of the disorder and if there are any practice changes in recent years that could be causing or amplifying it."

Blueberries are the second biggest berry industry across the world after strawberries. In Australia, the industry had a production value of more than $505 million in 2023-2024.

The QAAFI team along with the UQ's School of Agriculture and Food Sustainability, other project partners and growers Mountain Blue, Costas, and Hart's Nursery, is looking at a number of potential causes in research funded by Hort Innovation's blueberry collective industry fund.

"Ultimately we want to identify practise recommendations or an early screening tool that identifies if a plant is going to have problems," Dr Hayward said. "It doesn't look like it's a pathogen or a pest, so we are focusing on something physiological.

"We have a few hypotheses we want to test including looking at how the blueberry is propagated and taken through the nursery process to planting in the field.

"We are altering practises suspected to influence the disorder.

"We'll be also looking at root and shoot architecture and measuring hormone levels to determine if that has any correlation to symptom development.

"There is heavy investment in breeding for berries, so including different genetics is also important."

The team is hoping to better understand and quantify the extent of the problem in Australia by surveying the industry.

(Above left) crown restriction and snapping on blueberry.
(Above right) Dieback symptoms on blueberry plants. Photos courtesy Costa Group Pty Ltd.

Dr Alice Hayward with blueberry samples. Photo Megan Pope.

Do you have 10 minutes to spare?

QAAFI researchers need your input on root wrapping and crown disorders in blueberries. This short survey is a part of the Hort Innovation and industry-funded project 'BB23000: Understanding the cause of blueberry root wrapping and associated root crown disorders'. Your insights will help guide a Hort Innovation project tackling these emerging issues.

Plus, provide your contact details at the end of the survey, for the chance to win a $200 visa gift card (for those located in Australia only).

What is it about?

This survey aims to gain inputs from a wide range of blueberry industry stakeholders and growers to understand industry perceptions and experience with emerging physiological disorders involving root wrapping, crown restriction and stem occlusion. It's 20 questions and takes around 10 to 15 minutes to complete. Participation is very much appreciated but completely voluntary. You may withdraw at any time. Note that no personal identifying information will be shared or published.

This survey is approved with ethical clearance from UQ (research Ethics ID number: 2024/HE002356). You will be asked for your official consent on the first page of the survey. If you agree to participate, use the link: (https://uniofqueensland.syd1.qualtrics.com/jfe/form/SV_bjW2q6LhCKHDphY).

To reach out to the team, contact e.kong@uq.edu.au or a.hayward@uq.edu.au

Figure 1. TSM hotspot showing webbing and damage to foliage. When predators are established, hotspots may still require spot-spraying to assist control. Image source: Biological Services.

Webs of trouble

Stephanus Malherbe and James Altmann look at managing a global menace: two-spotted mite in greenhouse systems.

Two-spotted mite (*Tetranychus urticae*, TSM) is a serious pest of protected and outdoors crops worldwide. Highly polyphagous, it feeds on a broad range of hosts from greenhouse vegetables such as tomatoes, cucumbers and capsicums to ornamentals such as chrysanthemums, orchids and roses, and even berries including strawberries, raspberries and blackberries. It can also infest tree crops such as apples, peaches, and almonds. Tomatoes are particularly vulnerable, as their natural plant chemistry makes it difficult for predatory mites to establish and persist.

Recognising TSM activity and damage

TSM typically infest the undersides of leaves, piercing plant cells and sucking out their contents. Affected cells turn yellow, and this damage often appears on the upper leaf surface as small white-yellow speckles. As infestation progresses, leaves may turn completely yellow, lose their photosynthetic capacity, and die, sometimes leading to the death of the entire plant.

Both nymphs and adults produce webbing. In severe infestations, plants can be entirely covered in webs teeming with mites, resulting in permanent stunting or plant death (see Figure 1).

Greenhouses offer a perfect sanctuary

TSM is so common in greenhouse crops as greenhouses provide their ideal conditions: warm, dry environments with no rain or dew; high planting densities; and abundant food. They also exclude natural predators.

In greenhouses, mites spread easily between plants via the ground, crop wires, or even air currents. Adult mites can release themselves from plants using silk threads and travel on wind, machinery, clothing, or birds.

Jake Byrne, an Integrated Pest Management (IPM) Consultant based in New South Wales, recalls: “I still remember the day a crop worker took me up on the crop trolley, high above the crop, to show me how mites were moving along the wires. They were using the wires as highways and spreading throughout the crop.”

TSM are also excellent at overwintering. They survive on old plant debris, inside greenhouse structures, and even in soil or growing media. Freezing temperatures don’t kill them.

Cultural control in action

TSM thrive on a wide range of broadleaf weeds, especially nightshades. Host weeds both inside and outside of structures should be controlled at all times to reduce infection sources. Outbreaks often occur when plants are stressed for example due to heavy fruit loads (as in capsicums) or poor agronomic practices like over-irrigation. Healthy plants are more resilient to TSM.

Hot, dry conditions favour mites, while humidity supports predatory mites used in IPM programs. Maintaining humidity in the crop canopy can suppress TSM and boost beneficial mite activity (see Figure 2).

> Always scout or work in heavily infested areas last. Mites can be spread easily via clothing and equipment, infesting the entire crop.