



SA DEMO SITE CASE STUDY

KEY MESSAGES

- ✓ **Integrated pest management (IPM) refers to the combination of cultural, biological and chemical options for controlling pests in Australian vegetable crops.**
- ✓ **Andrew and Zurri Braham have used an IPM approach to control Western Flower Thrips (WFT) and other key pests for their glasshouse capsicum crops in Virginia, South Australia, since 2011.**
- ✓ **Despite challenges along the way, Andrew and Zurri have persevered with their IPM program and now consistently achieve control of pests in their glasshouses using this method. Their IPM strategy is continually updated, with new trials underway.**
- ✓ **An important aspect of their success is the attention to detail and fine-tuning of all other production aspects such as soil health, irrigation, nutrition and greenhouse climate as well as strict farm hygiene and biosecurity.**

PERSISTENCE AND ATTENTION TO DETAIL PAY OFF IN IPM APPROACH AT BRAHAM PRODUCE

When Andrew and Zurri Braham first considered an integrated pest management (IPM) approach for their capsicum crop in Virginia, South Australia, they were facing a serious thrips problem in their greenhouses.

Western Flower Thrips (WFT) was causing havoc in the Virginia region back in 2006, devastating capsicum and other crops through the transmission of tomato spotted wilt virus (TSWV).

Desperate to manage the pest, Andrew approached Biological Services – a commercial insectary and beneficial insect provider servicing growers across Australia – to purchase the predatory mite, *Cucumeris*. Due to high thrips/virus pressure *Cucumeris* alone could not give adequate control quickly enough as it only feeds on young juvenile thrips.

Fast forward to 2011 and Andrew once again tried his hand at IPM. He was buoyed by the progress of trials in Virginia led by researchers, growers and Biological Services who were pioneering the use of *Orius* – a predatory pirate bug 2-3mm in length that can feed on all stages of thrips including the adults.

“Nearly all growers in the Adelaide Plains area were using harsh chemicals on a regular basis to keep the thrips numbers down, but the pests had developed a high level of pesticide resistance from years of calendar spraying,” Biological Services Owner and Director Lachlan Chilman said.



A plant (centre) affected by tomato spotted wilt virus (TSWV).
Image: Biological Services.

“Andrew wanted to try a whole farm approach with IPM rather than in just one greenhouse. This approach works much better as there is less risk of chemical spray drift or spray tank contamination. Unfortunately, before we even started the whole crop had to be removed due to early infections from TSWV.”

Turning things around

Due to the high pest populations and thrips pupae in the soil from previous crops, it took some time to see progress.

The thrips predator *Orius* was released into the capsicum crop during the flowering stage. In 3-5 weeks, the predators established and were gaining control of the thrips, but TSWV was still impacting plants.

“Andrew and Zurri are progressive growers who understand the science of growing. Even though thrip numbers were dropping, some plants were being lost to virus because of earlier thrips feeding on them,” Lachlan said.

“Andrew had to re-plant crops at his own cost, which was a big financial loss. We also provided extra predators and service at no charge to get the IPM program working for Brahams and other growers, as it was important to continue the programs.”

While Andrew’s IPM program has now been in place for over a decade, the challenges continue. A move away from chemicals has increased the presence of secondary pests such as aphids and mirids that were previously kept at bay with the regular chemical sprays.

“It’s a continual learning curve. We’ve taken the time to better manage the secondary pests and understand the levels that growers can tolerate in different crop species and varieties,” Lachlan explained.

“We’ve also found that capsicum varieties which continuously produce flowers are the best for IPM as they better support predators like *Orius*, which need the pollen in flowers to keep their population high.”

Lachlan noted that sometimes accidental cross-contamination of chemicals can impact on IPM programs. This can occur from residues in spray tanks, spray drift from neighbouring properties, chemicals in the soil from previous years, or receiving seedlings from nurseries already sprayed with systemic residual chemicals. Pests can also come onto the property from neighbouring farms that do not have good control.

“One small mistake can impact the whole IPM program. If the predators can’t establish early and quickly it allows pests to gain an advantage which puts the crops at risk,” he said.

“IPM programs still utilise some chemical sprays to manage risks. However, these need to be selected carefully to ensure the predators are not affected, and are only used when really needed. The idea is that instead of weekly spraying for pests 30 times a season with toxic chemicals, you may spray 3-4 times per season with softer selective products when necessary. This approach also helps to save the useful chemical products from overuse and introducing chemical resistance problems.



Orius juvenile eating thrips. Image: Biological Services.



Next Steps

Braham Produce's IPM strategy will continue to be updated to maximise the effectiveness of both biological and chemical inputs and prepare for future pest threats.

For example, the parasitoid *Aphidius colemani* is an effective aphid parasite in mild conditions. However, in summer Andrew will utilise higher numbers of another wasp species, *Aphelinus abdominalis*. It can tolerate much hotter conditions and can also parasitise other aphid species. He will also [trial slow-release sachet technology](#) from Biological Services which provides an even placement and continuous emergence of predatory mites for about five weeks.

Much of Andrew and Zurri's success with IPM can be attributed to their commitment to the program and working closely with their staff and Biological Services to boost its effectiveness. Benefits of the program are not just limited to reduced chemical inputs, time spent spraying or concerns about re-entry periods and chemical residues. Now that the key pests are controlled their crops are healthier, more productive and grow much longer late into the season. The attention to detail in other crop, soil management and climate management aspects supports the success of the IPM program and longevity of the crop.

"It's a healthier environment for the staff and family to work in, especially for those living on site, the environment and the consumer," Lachlan said.

"A tough and stressful initiation 12 years ago has led to a sustainable and repeatable program today. Andrew's perseverance and attention to detail are commendable. The IPM program at Braham Produce is a great example for other growers on the Adelaide Plains on how to change their practices for the better."



Sachet technology will be trialled at Braham Produce for the release of beneficial insects. Image: Biological Services.

MORE INFORMATION

Contact Biological Services on 08 8584 6977
or info@biologicalservices.com.au

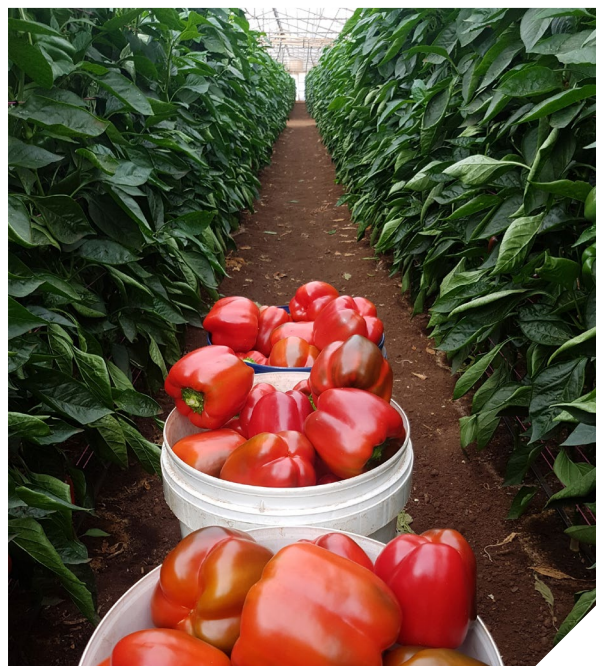
You can also search for integrated pest
management resources on the Soil Wealth ICP
website at: soilwealth.com.au

Top tips to get started with IPM

- 1.** If you are interested in starting an IPM program, don't wait until all the available chemical options are exhausted. Some chemicals are still necessary to assist the biological control options, and you don't want them to already have caused resistance issues in the pest population.
- 2.** Avoid spraying any residually toxic chemicals ahead of an IPM program. Take soil and leaf samples to check the current residue levels on your farm. You may have to wait for these chemicals to break down before using biological options. Sometimes this can take 6-12 months depending on the products still present.
- 3.** A 'whole farm' approach to IPM can avoid problems such as spray drift and pest transfer from non-IPM crops. A region-wide approach would be even better for everybody.
- 4.** Be proactive in the management of your IPM program. Monitor your crops and look for pest hot spots. Release extra beneficials in these areas or be prepared to apply spot sprays in some situations. When needed use the correct equipment to apply sprays and communicate regularly with your IPM consultant.
- 5.** Remember that IPM is a long-term commitment. There will be challenges along the way, but it is important for both growers and consultants to persevere and put in the necessary resources to reach your end goal.
- 6.** Successful IPM requires an overall 'monitor to manage' approach to optimise soil health, overall crop health, irrigation, nutrition and the greenhouse climate. Good farm hygiene and biosecurity are vital.



Examining beneficial insects that can help to manage pests in vegetable crops.



Harvested capsicums at Braham Produce.