NURSERY PAPERS
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FASTER DETECTION, FEWER SURPRISES

New tools are helping nursery growers catch thrips and plant viruses before they become a costly problem

What you'll learn from this Nursery paper

- Researchers from Agriculture Victoria can now identify multiple thrips species from a single sticky trap, including archived ones you've already collected
- A new genetic variant of Western Flower Thrips has been found in Australia but the impact on production systems needs further investigation
- Impatiens necrotic spot virus (INSV) has entered Australia multiple times and is an active risk right now
- A new virus, *Hoya tobamovirus 2*, has been detected in Australia for the first time
- A portable, on-farm detection tool for thrips and viruses is in development that could deliver same-day results without sending anything to a lab

Greenlife INDUSTRY AUSTRALIA
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This communication project has been funded by Hort Innovation using the nursery research and development levy and funds from the Australian Government.
Hort Innovation NURSERY FUND

By the time you see the damage, you're already behind.

Thrips are small, fast and easy to miss. But the real problem isn't always the insects themselves, it's the viruses they carry. A thrips population can move through a nursery and spread plant disease well before symptoms appear on your crop. And if you're waiting on a lab result to confirm what you're dealing with, that wait can cost you.

New detection tools being developed by Agriculture Victoria with the nursery industry could change that. The goal is faster, more accurate identification of thrips species and the viruses they carry, and ultimately results delivered on-farm without waiting on a lab.

Sticky traps are useful, but identification of thrips still takes time

Most nurseries use sticky traps to monitor for thrips. That's a solid starting point. But a trap only tells you so much on its own.

Working out exactly which species are present, and whether they're carrying viruses, currently requires specialist laboratory analysis. That process:

- Takes days, sometimes longer
- Requires expert knowledge most growers don't have on-site
- Can return incorrect results if the reference databases don't have up to date information to compare to

For nursery businesses the stakes are high. Thrips and the viruses they carry can mean crop losses, rejected stock and lost customer confidence. The challenge is that by the time most growers have a confirmed identification, the problem may have spread through the nursery.

What the research means for your nursery

Not all western flower thrips are the same

Western Flower Thrips has been present across Australia since the 1990s and is one of the most damaging pests in nursery and cut flower production. Recent research has confirmed a previously unrecorded genetic variant of this species in Australia.

What that means in practice is that not all Western Flower Thrips populations behave the same way. This variant may reproduce at a different rate or show different plant preferences, which means a management approach that works well against one population may be less effective against another. If you are not seeing the control results you expect, this could be part of the reason.

WHAT TO DO:
Don't assume the thrips in your nursery are all behaving the same way. If you're not getting the control results you expect, talk to your state biosecurity authority or agronomist about whether your approach needs updating.

Fig. 1. *Frankliniella occidentalis* (western flower thrips, WFT) caught on sticky trap

The research and why it matters

"Working in industry means I see the impact these pests and diseases can have on a nursery. This research is about giving growers better tools to get ahead of the problem."

Eyal Zeira is an agronomist at Ball Australia and is undertaking his PhD with Agriculture Victoria's School of Applied Systems Biology at La Trobe University based at AgriBio. His focus is developing tools that work in nursery production systems and can be used in day-to-day operations. The research has already produced several findings with direct relevance to growers.

Fig. 2. Thrips damage on verbena leaves caused by *Frankliniella occidentalis* (western flower thrips, WFT)

Your sticky traps could tell you a lot more

New genetic analysis tools using insect genetic barcodes mean that a single sticky trap can now yield far more information than it used to. Rather than sending a sample away and waiting for a result on one species, the same trap can be analysed to identify multiple thrips species at once. In testing, nine different species were identified from a single sample.

The method also works on older samples. Traps up to two years old can still be analysed, which means archived traps you've already collected could be re-examined to build a clearer picture of how thrips populations on your property have shifted over time and the seasonal risk posed by different species.

Importantly, steps have been taken to make sure thrips identification results are accurate. Researchers also identified errors in some public genetic databases that could affect species identification. To improve accuracy, the project developed a dedicated reference database containing verified thrips genetic barcodes.

That means more reliable results from the same traps you are already using.

WHAT TO DO:

Keep holding onto your sticky traps. As these tools become available, the standard traps you're already using will be compatible, no new equipment needed at your end.

Fig. 3. Unknown thrips species caught on a sticky trap in a nursery

Fig. 4. Symptoms of impatiens necrotic spot virus, INSV on (a) lisianthus, (b) basil and (c) *Hoya* varieties found in nurseries in NSW and VIC.

A virus we thought was gone has come back

Impatiens necrotic spot virus (INSV) was detected in Australia in 2010 and eradication was declared. Between 2018 and 2025, it was found again at eight nursery sites across southeastern Australia, in ornamental plants (such as lisianthus and *Hoya*) and fresh produce (basil and lettuce), and a cut flower facility.

Genetic testing showed these weren't all connected to a single outbreak. There appear to have been at least four separate introductions of INSV into Australia.

Both Western Flower Thrips and Onion Thrips can carry INSV, and both are widespread across the country. That means the risk is ongoing and not limited to one crop type or region.

The same surveillance work also detected *Hoya* tobamovirus 2 in *Hoya* plants, the first time this virus has ever been recorded in Australia.

WHAT TO DO:

If you're growing ornamentals, cut flowers, basil or lettuce, watch closely for unusual symptoms, distorted growth, ring spots, unusual mottling or necrosis. Report anything suspicious to your state biosecurity authority or contact your local agronomist straight away. Early reporting gives everyone a better chance of containing a problem before it spreads.

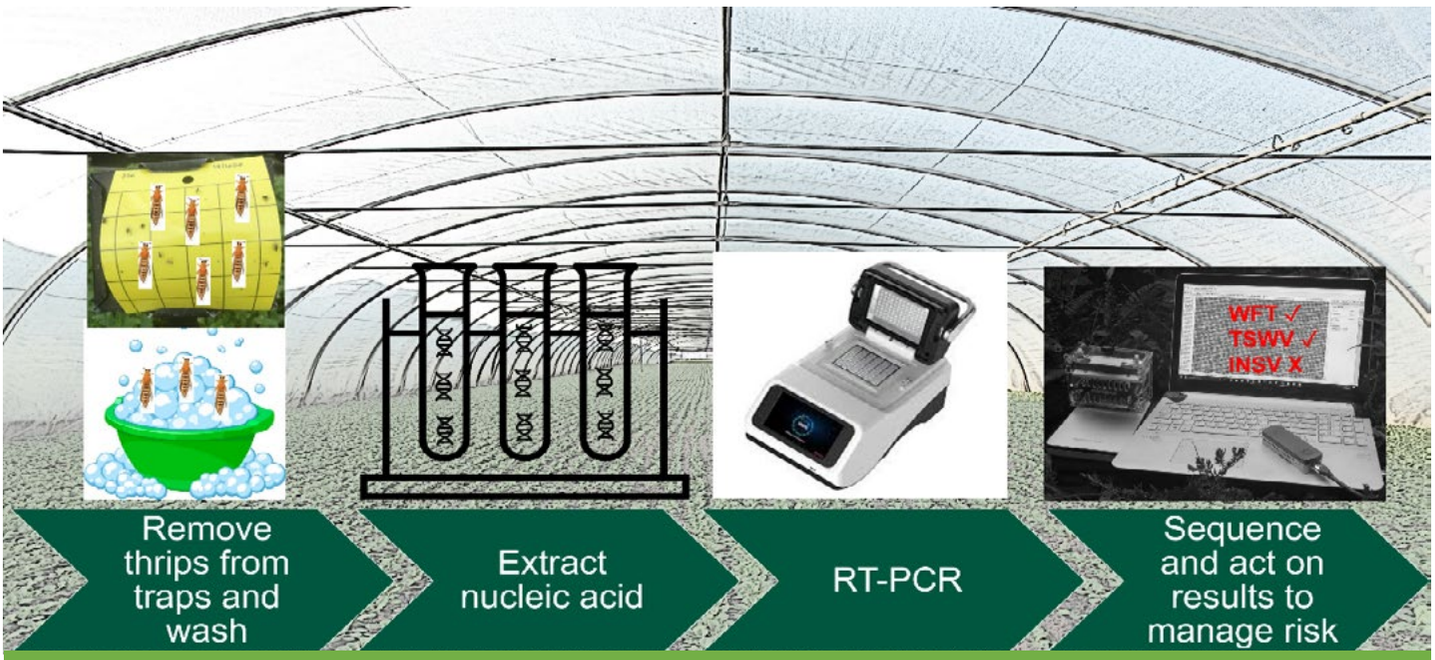

Fig. 5. A workflow that will be evaluated for field deployment to improve the efficiency of thrips and orthotospoviruses surveillance, at the nursery.

The tool that could change how you work

The next step is bringing these capabilities together into a single portable device that can be used directly on your nursery. Rather than sending trap samples to a lab and waiting days for results, the aim is a tool that delivers identification of thrips species and detection of plant viruses on the spot, using the sticky traps you are already running.

For growers, that means:

- Results the same day, not days later
- Decisions made on your property, with current information
- Earlier action, before populations build and viruses spread

The tool is currently in development and being refined for practical nursery conditions. Industry trials are expected within the next two years, with broader availability to follow depending on outcomes.

WHAT TO DO:

Keep an eye out for updates from Hort Innovation and Agriculture Victoria on when this technology will be ready for industry use. If you're interested in being involved in trials, contact Agriculture Victoria.

USEFUL CONTACTS:

UNUSUAL PLANT SYMPTOMS?
Report to your state or territory biosecurity authority

RESEARCH ENQUIRIES: Eyal Zeira Kleinman, Agriculture Victoria, ***eyal.zeira@agriculture.vic.gov.au***

INDUSTRY UPDATES:
Watch for communications from ***Hort Innovation*** and ***GIA***

FURTHER INFORMATION

- **Past nursery papers – *www.greenlifeindustry.org.au/news?type=36453***

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