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# PROJECT SUMMARY

## Improving surveillance strategies for tospoviruses and thrips to enhance the biosecurity of the nursery industry

**Project code: NY19007**

Funded by your Nursery R&D Levy through Horticulture Australia Limited (HAL)

Delivered by University of Queensland

Project duration: 2020–2024

### Thrips, viruses and surveillance: keeping nursery plants pest-free

Orthotospoviruses can devastate crops, and they're spread by tiny insects called thrips. This project explored low-tech and high-tech ways to detect both – from DNA barcoding to using spider lilies as living virus sensors.

### Why this matters

Early detection is critical. Without it, these viruses can spread fast and put entire production systems at risk. But traditional surveillance is complex, slow and costly. This project trialled new tools to make monitoring more efficient and effective.

### What was the issue?

Thrips are hard to identify, and tospovirus symptoms can look like other plant issues. Australia also lacked diagnostic tools tailored to local virus strains and insect populations – making it harder to detect, trace and manage incursions.

### What did the project do?

Led by a PhD student, the research focused on three core areas:

- Developing universal DNA barcoding tools for identifying thrips and orthotospoviruses
- Testing spider lilies (*Hymenocallis* spp.) as practical sentinel plants
- Expanding knowledge of native virus strains and identifying new vectors

It also documented two key disease findings — including Australia's first record of citrus leprosis virus C2 – and confirmed tomato spotted wilt virus can be spread by *Taeniothrips eucharii*.

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### Key findings

- New virus (PtBV) identified in native orchids — likely endemic, not a threat
- Spider lilies reliably showed early symptoms and could support cost-effective surveillance
- DNA barcoding primers were refined for metabarcoding field samples
- TSWV was shown to be transmitted by *T. eucharis* for the first time
- Virus spread in lilies occurred through both thrips and tubers

### What next?

These tools are now freely available for biosecurity agencies. The project recommends further research into virus-vector dynamics, DNA libraries for thrips, and broader use of metabarcoding in future surveillance. It also highlights the value of using ornamental plants as early warning systems.

### Learn more

👉 Read the NY08007 final report: <https://www.horticulture.com.au/growers/help-your-business-grow/research-reports-publications-fact-sheets-and-more/ny19007>