

Is Turnip yellows virus (Beet western yellows virus) still in SA canola? A study of aphids and crops from 2024

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Project info website



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Overview

- \$12M, five-year national project investigating viruses in a range of crops (GRDC project: DAW2305-003RTX)
 - Includes **disease and vector surveillance**, virus diagnostics, technology development, transmission research, virus resistance, and virus genetic variation.
- National project team: DPIRD WA with partners from SARDI, NSW DPI, Agriculture Victoria, Macquarie University, NSW DPI and DAF QLD.
- SA project team includes pathology, entomology, surveillance and molecular diagnostics.
- **Today: 2024 surveillance for Turnip yellows virus (BWYV) and its vector (Green peach aphid)**



TuYV is transmitted by aphids

- TuYV was previously known as Beet western yellows virus
- Caused outbreak in Canola in 2013 in SA
- TuYV is transmitted by Green Peach Aphid
- No recent outbreaks (?)

Research question

- Is TuYV still around ...
 - In aphids?
 - In the crop?

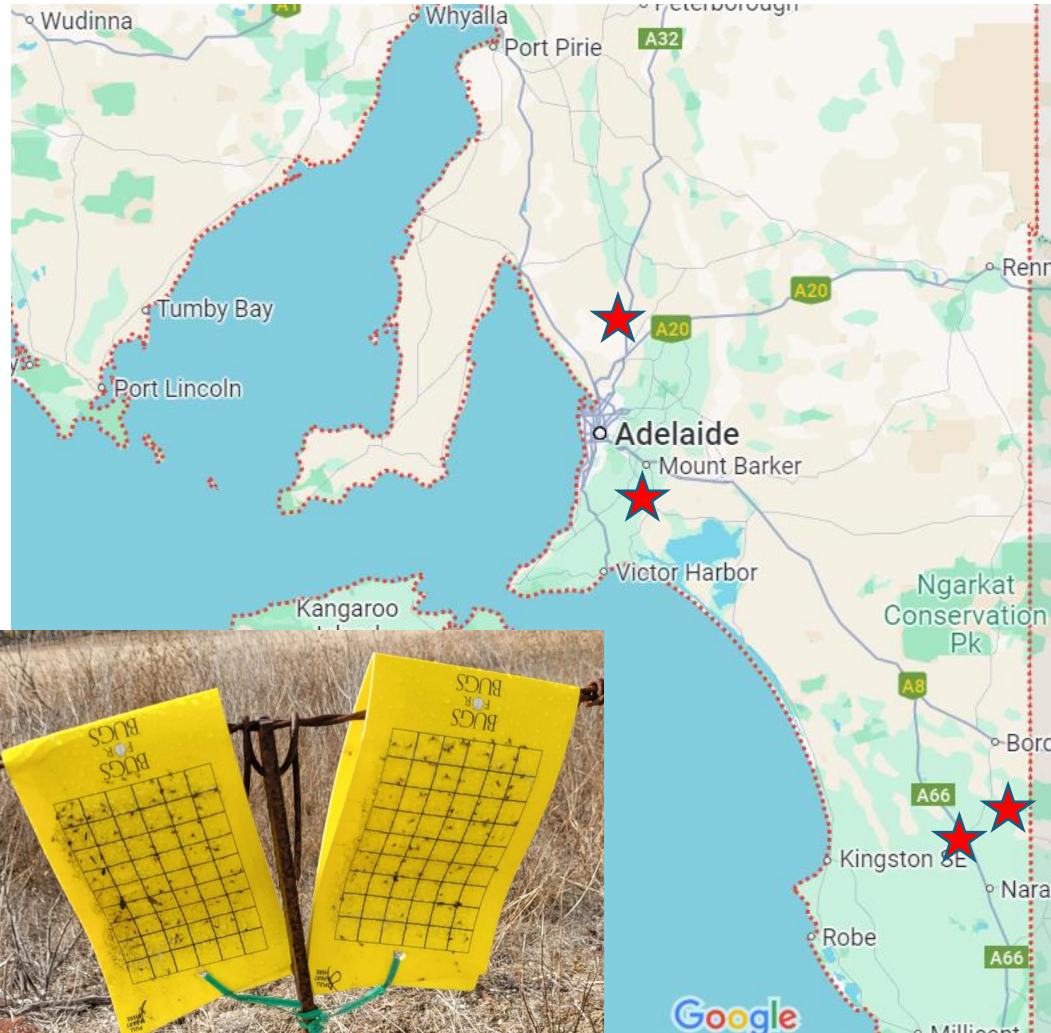


Image courtesy of DPIRD WA 'Pestfax'



Image courtesy of QDPI 'Beatsheet'

Canola sites for GPA/TuYV samples



Sites

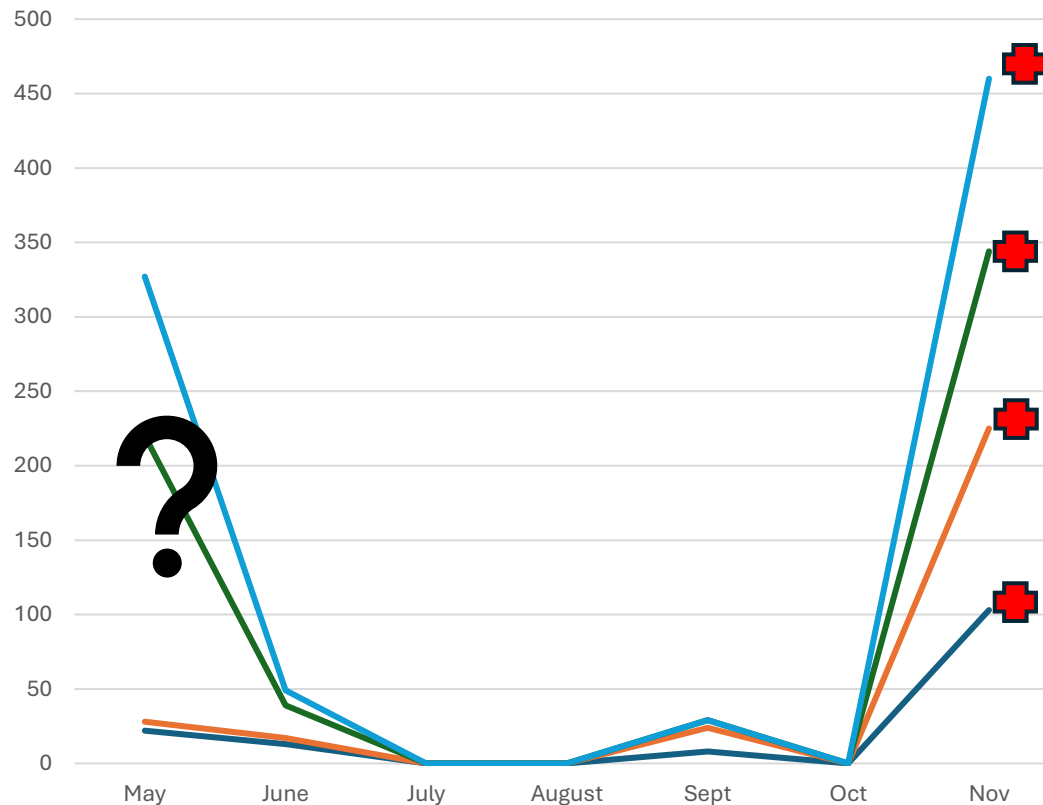
- Mid North (Tarlee, Hart, Turretfield)
 - Limited*
- **Upper Fleurieu**
 - **4 fields**
- **South East**
 - **3 fields**
- Frances
 - Limited*



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Canola: Upper Fleurieu location



Lines – aphid numbers at 4 sites

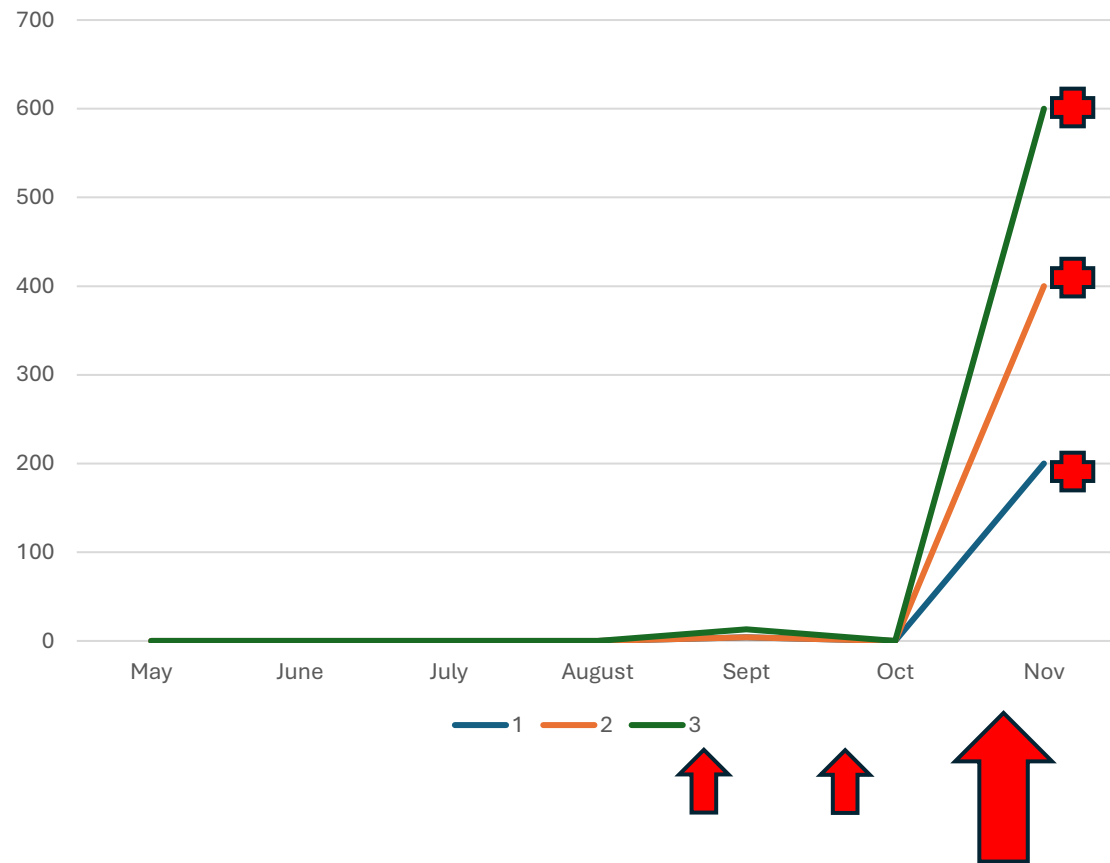
Arrows – TuYV in aphids

Cross – TuYV in crop

(Early season aphids may have been Cabbage aphid? Analyse in 2025)



Canola: South East locations

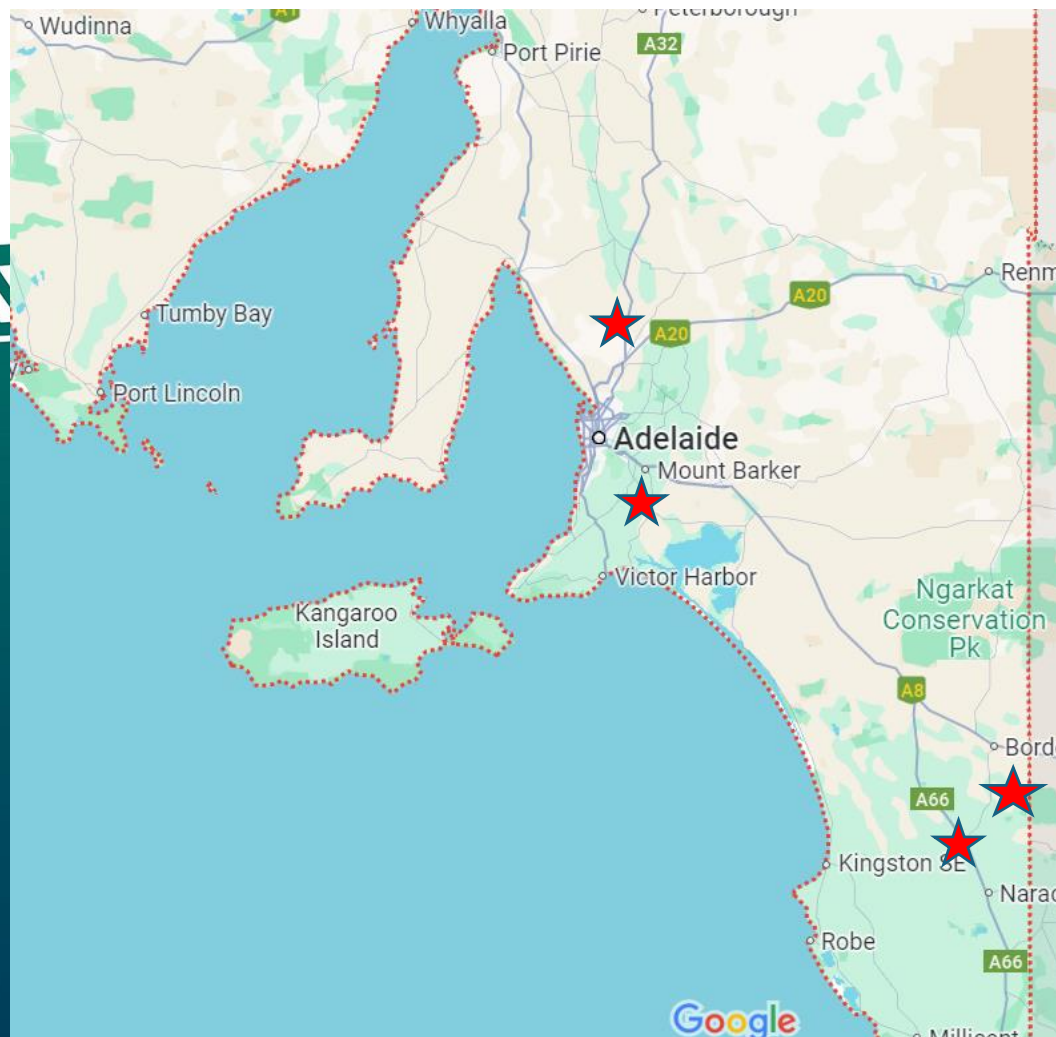


Lines – aphid numbers at 3 sites

Arrows – TuYV in aphids

Cross – TuYV in crop

Other traps and locations



Mid north traps

Near Canola

-> Found GPA with TuYV

Frances/Bordertown traps

Not adjacent to Canola

: No GPA with TuYV

BUT a randomly sampled
canola paddock was
positive for TuYV



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Conclusions

Turnip yellows virus is present in Mid North, Upper Fleurieu and South East SA

Is associated with high numbers of GPA, and adjacent to susceptible crops

No/very little disease symptoms or impact

- Late sown crop, no aphid flights
- Effective management practices
- Dry, so no aphid build up over summer?

Comparable to findings in Victoria for 2024

WA had some early infection resulting in losses



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Future work

Canola/TuYV/Aphid analysis

- Continue trap analysis for 2025
- Complete field surveys including early sampling in 2025
- Deploy traps in new areas for 2025
- New methods for analysing whole traps

Green bridge?

- Working with Maarten and Precious (SARDI entomology)
 - Green bridge/over summering of virus in weeds
 - Preliminary analysis is showing TuYV in weeds
 - Co-locating trial sites for 2025



Thanks

- SARDI Molecular Diagnostic Centre
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- SARDI Entomology
 - Maarten van Helden
 - Rebecca Hamdorf, Maryam Ehsangar, Kevin Powis, Precious Mavende
- SARDI Plant Health Surveillance
 - Rohan Kimber, Jamus Stoner
- National collaborators: DPIRD WA, AgVic, NSW DPI, QDAF, MU

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