



Screening for WSMV Tolerance in Wild Wheat Relatives

Caleb Sawyer, Ved Prakash, Aleksandra Zarzyńska-Nowak, and Shahideh Nouri



What are we looking for?

We screened 19 lines of WSMV infected wild wheat (*Aegilops tauschii*) from the KSU WGRC for WSMV

- ❖ Resistance
- ❖ Tolerance
- ❖ Susceptibility

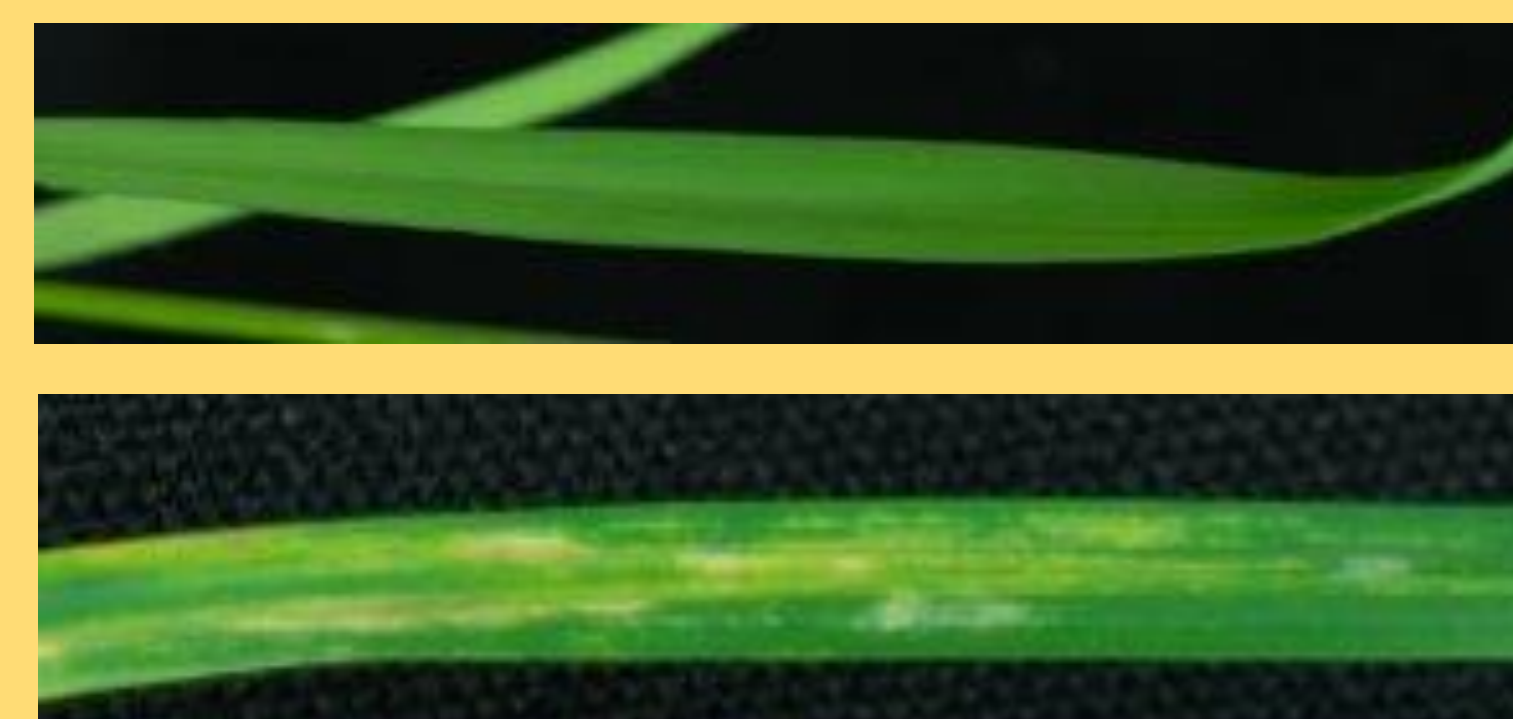
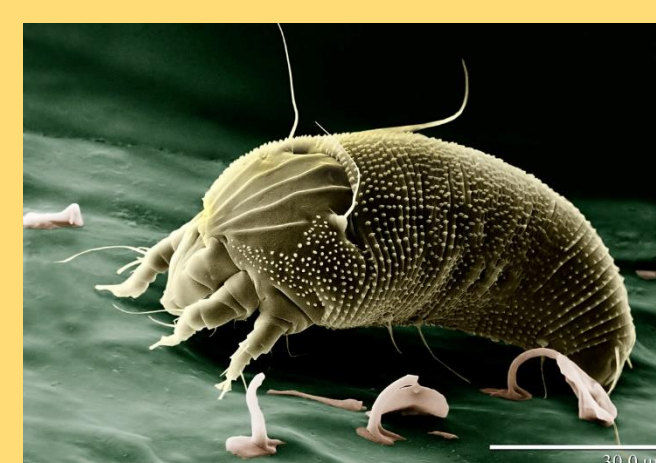
What is WSMV? Wheat

- Potyvirus that infects **wheat**
- Vectored by eriophyid mite
- Symptoms:

- **Yellow streaks**
- **Stunted growth**
- **Inedible grain**

- Outcome: **crop yield loss**

Streak
Mosaic
Virus

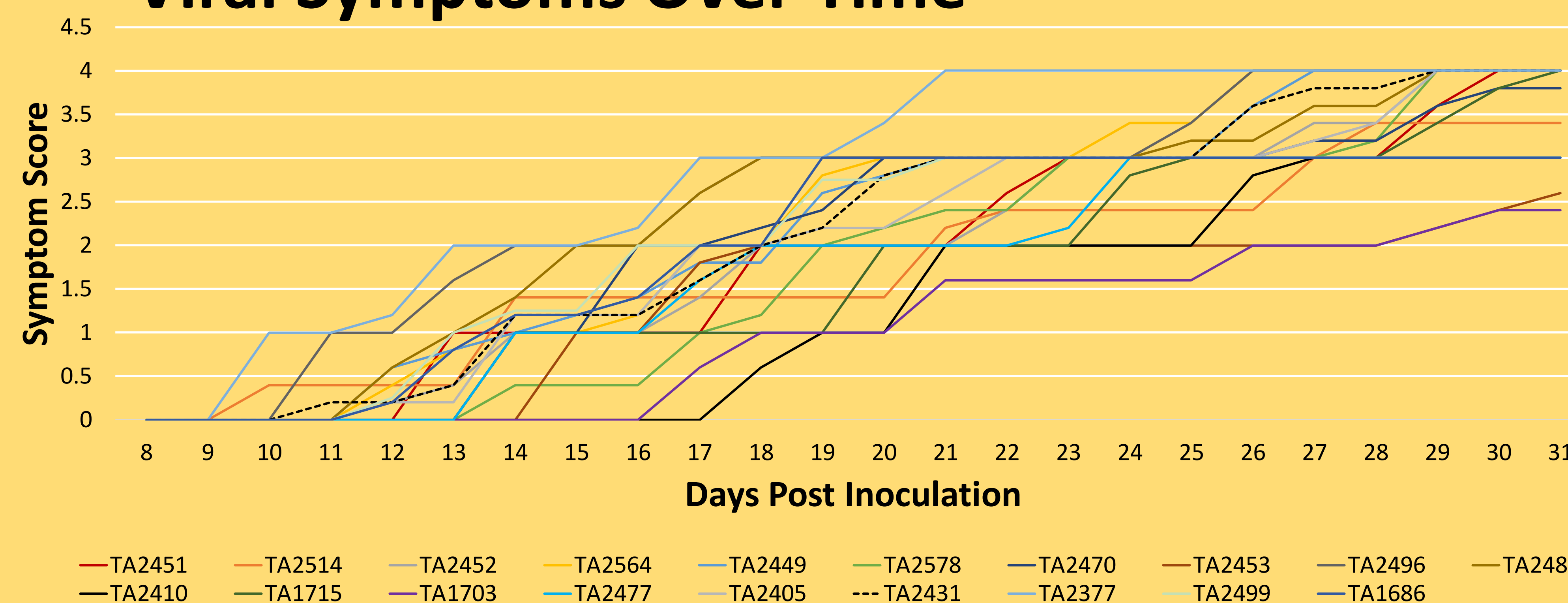


Our Process

- Sap inoculation with WSMV @ 3-leaf stage
- RNA extraction at intervals post-inoculation (14, 21, and 31 dpi)
- Absolute qPCR to measure viral titer



Viral Symptoms Over Time



What does it mean?

In relation to TA2431

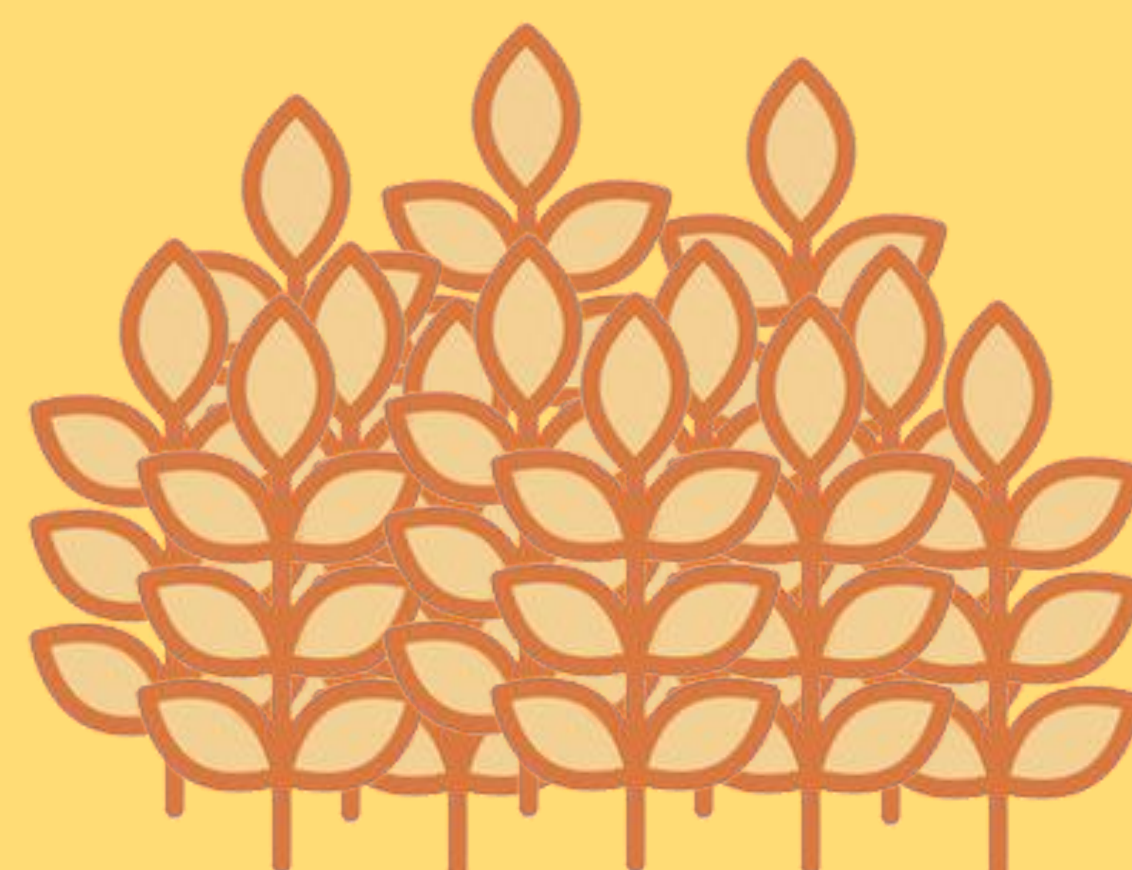
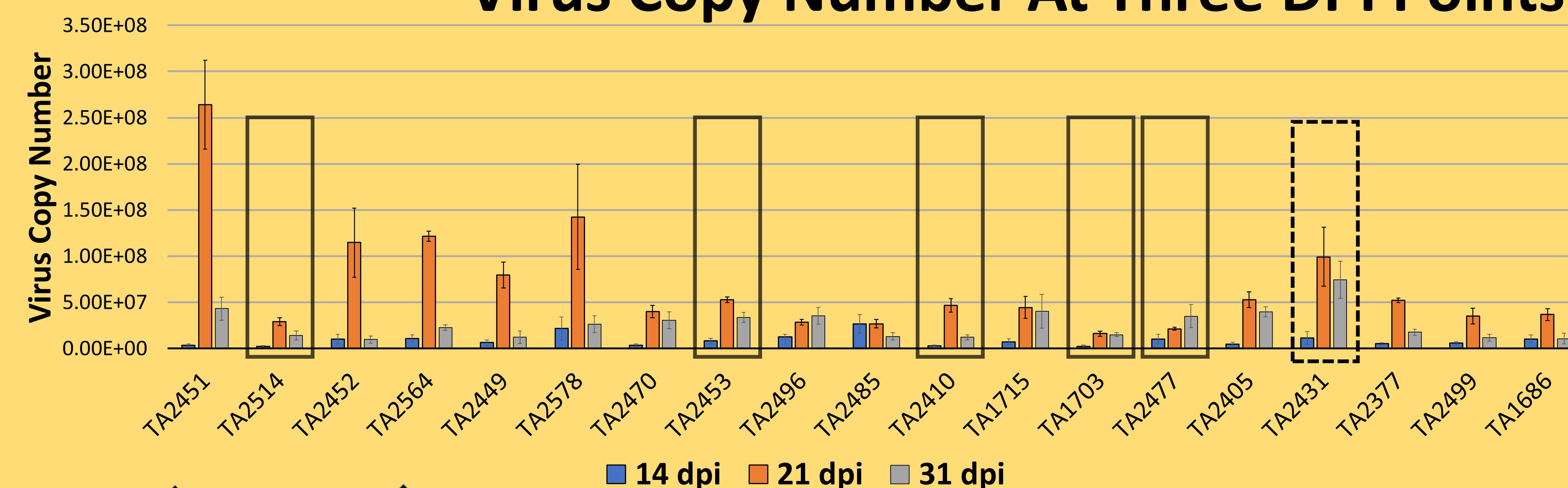
(Susceptible Line):

Resistant: No symptoms

Tolerant: Less symptoms

Susceptible: Higher Symptoms

Virus Copy Number At Three DPI Points



What did we find?

Out of 19, we found 5 wild wheat lines **potentially tolerant** to WSMV:

- ❖ TA1703
- ❖ TA2410
- ❖ TA2453
- ❖ TA2514
- ❖ TA2477

Now what?

- **The next step:** test these in the field
- **More data:** Screening ~300 lines total
- **In progress:** miRNA profiling to see epigenetic difference of susceptible v.s. tolerant lines
- **In the Future:** Tolerant lines will be subject to Genome wide association studies (GWAS).