

Improvements to field scouting for accurate disease ratings using multispectral imagery in watermelon and cucumber



SCBG:
2017-2019

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NFREC, University of Florida, UF Cooperative Extension, Agribugs, Glades Crop Care, UPenn

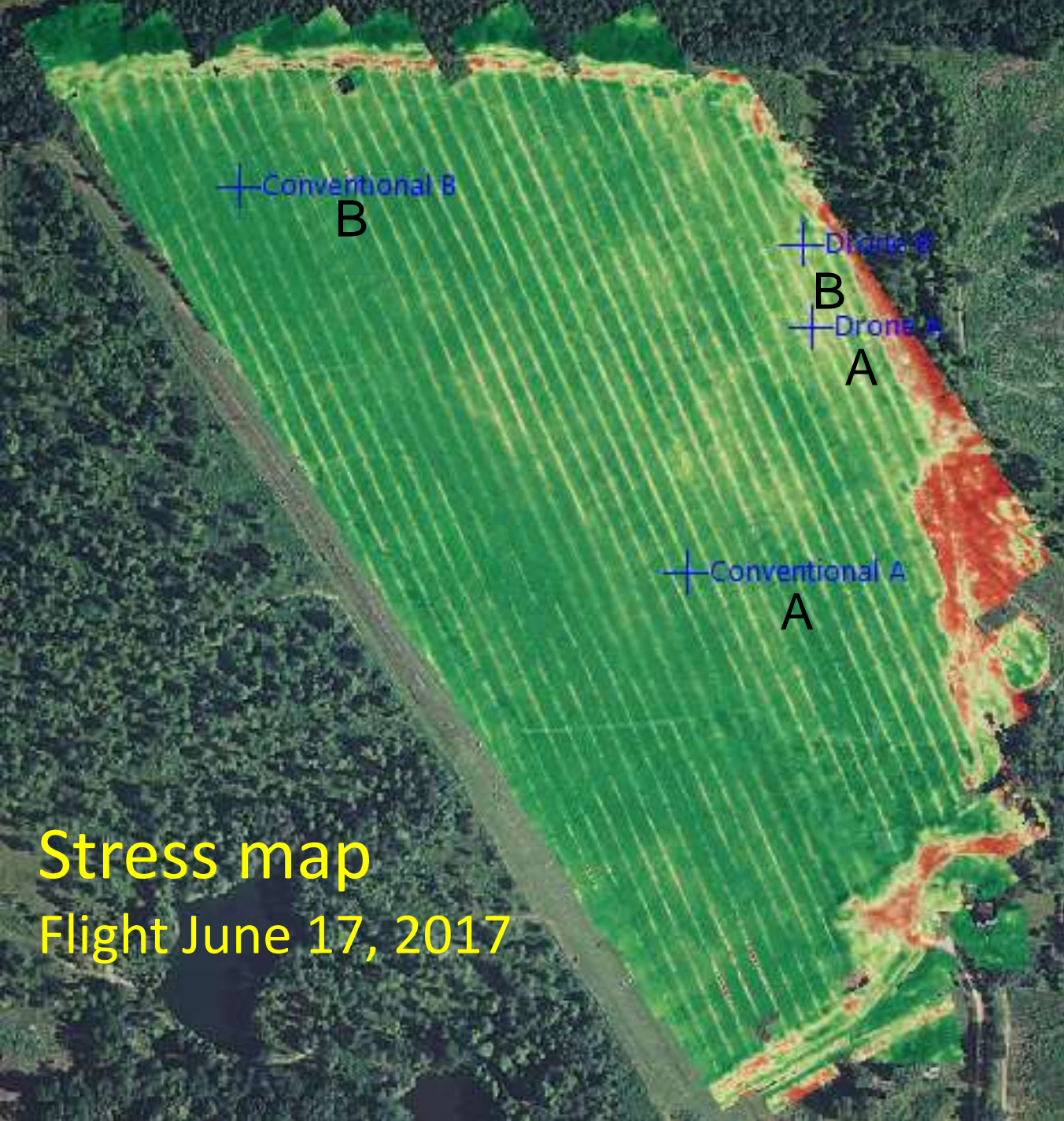
Tri-State Cucurbit Workshop, Jackson County Agriculture Conference Center, January 25, 2018

Research Questions

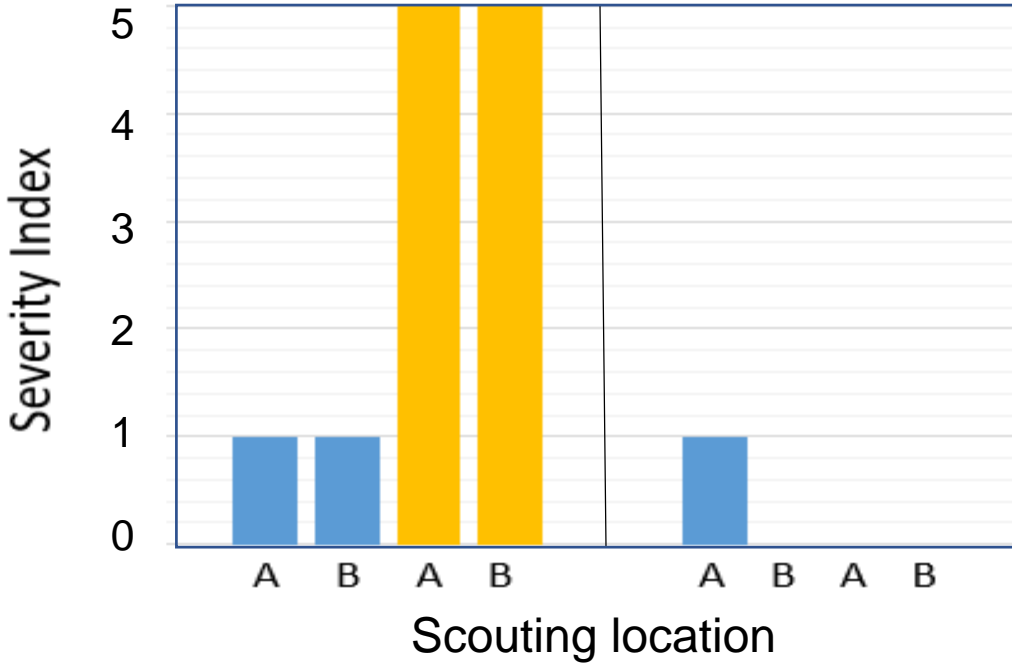
1. Can multi-spectral imagery using UAV improve diseases ratings compared to conventional scouting? (**extension agents**, commercial scouts)
2. Are the improvements different for less-experienced versus experienced scouts?
3. Is differentiation of diseases and abiotic stresses in cucurbits (watermelon and cucumber) possible using multi-spectral imagery? - Work in progress (preliminary data)

Watermelon Field #1

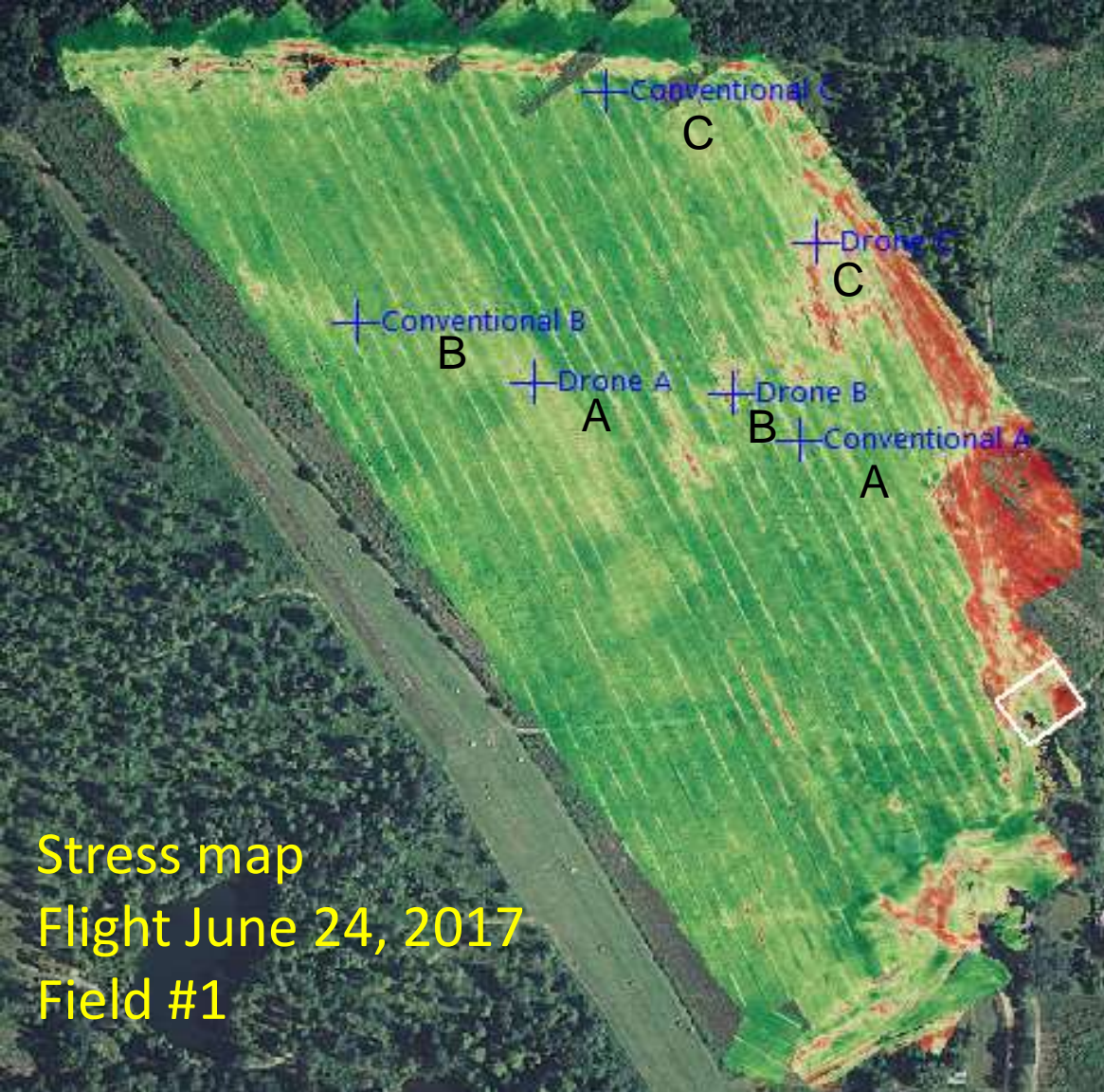
60.31 acres



Gummy stem blight Anthracnose

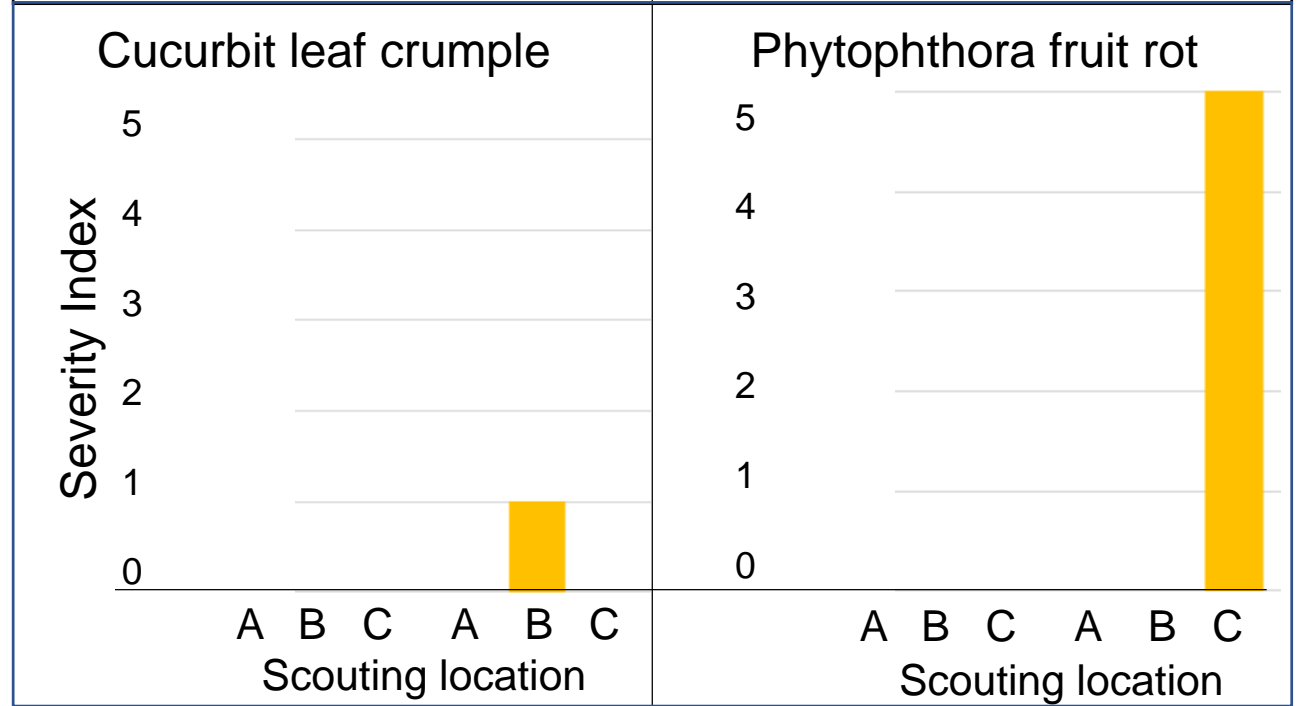
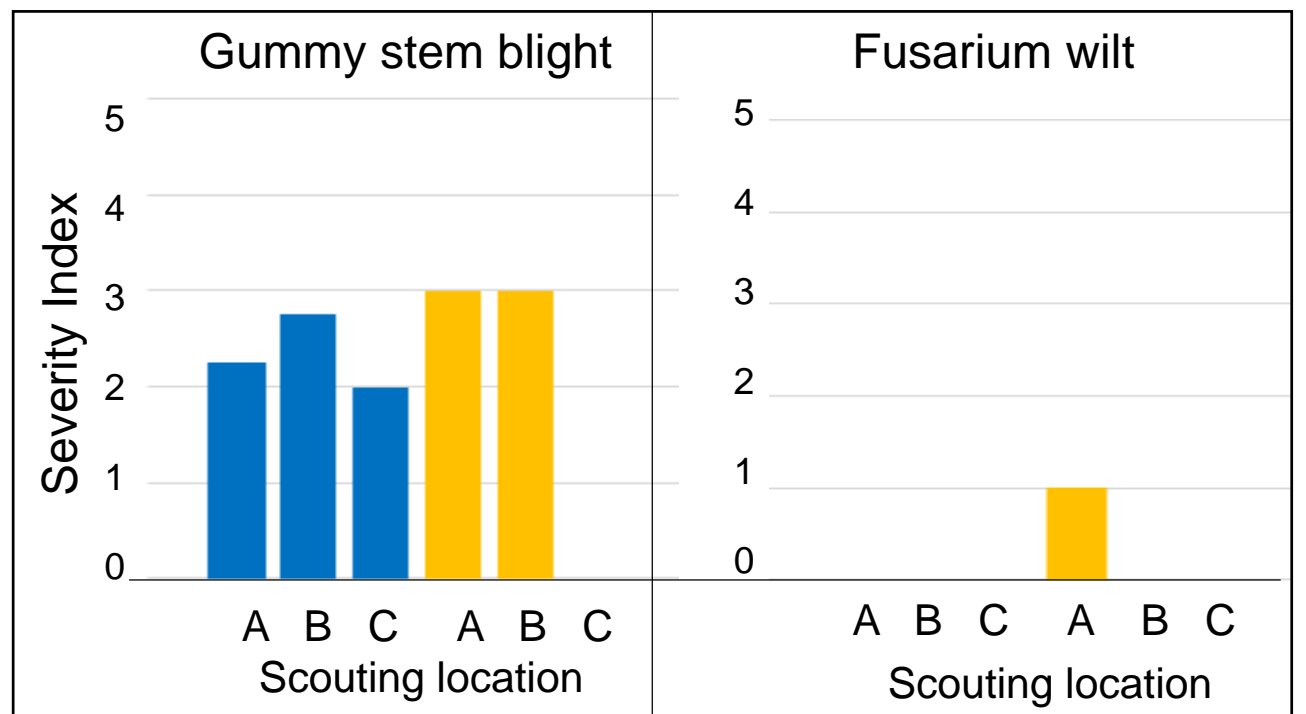


Conventional scouting
UAV - assisted scouting



Stress map
Flight June 24, 2017
Field #1

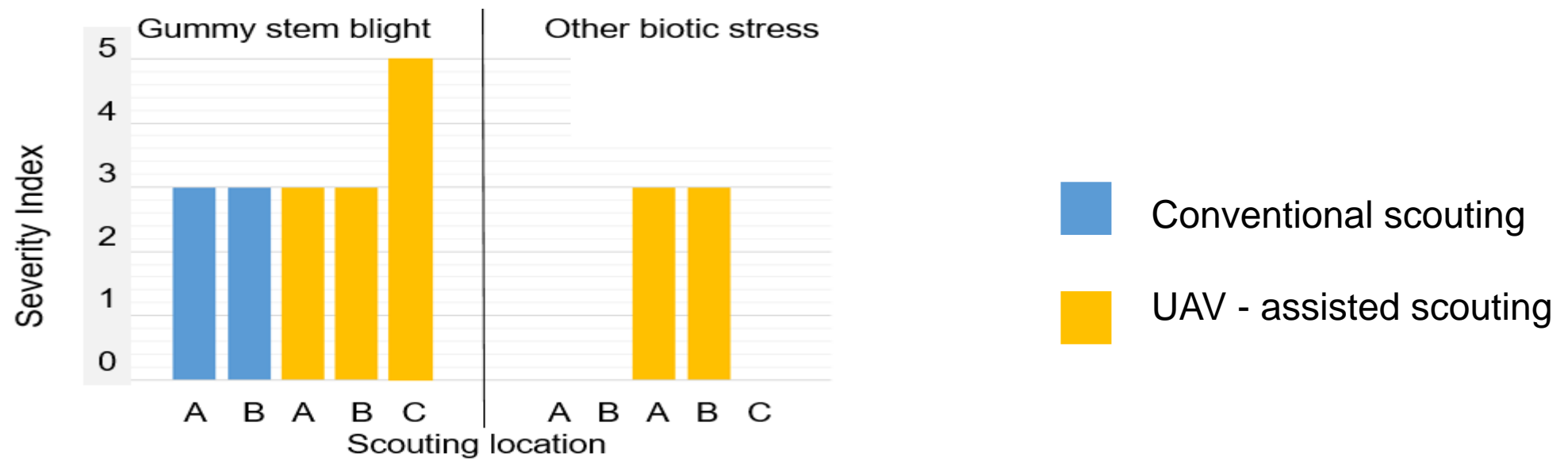
- Conventional scouting
- UAV - assisted scouting



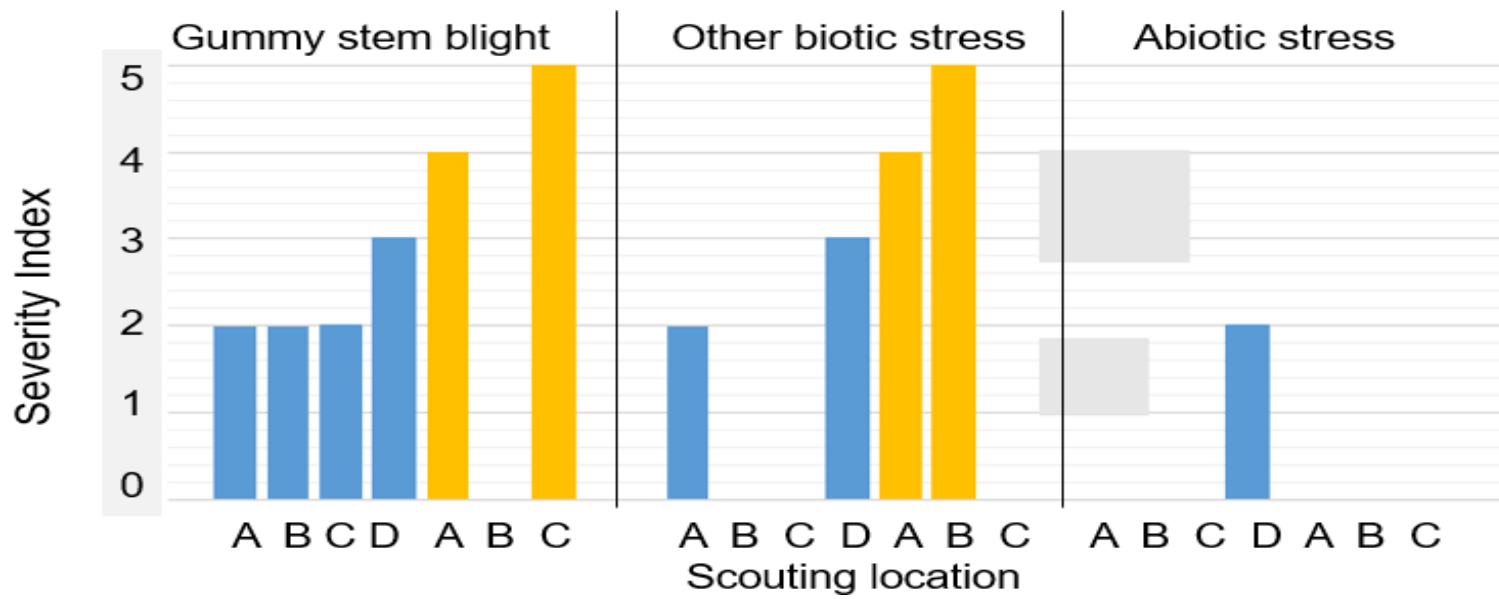
Watermelon Field #2 - 46.73 acres

Flight July 01, 2017

Less Experienced

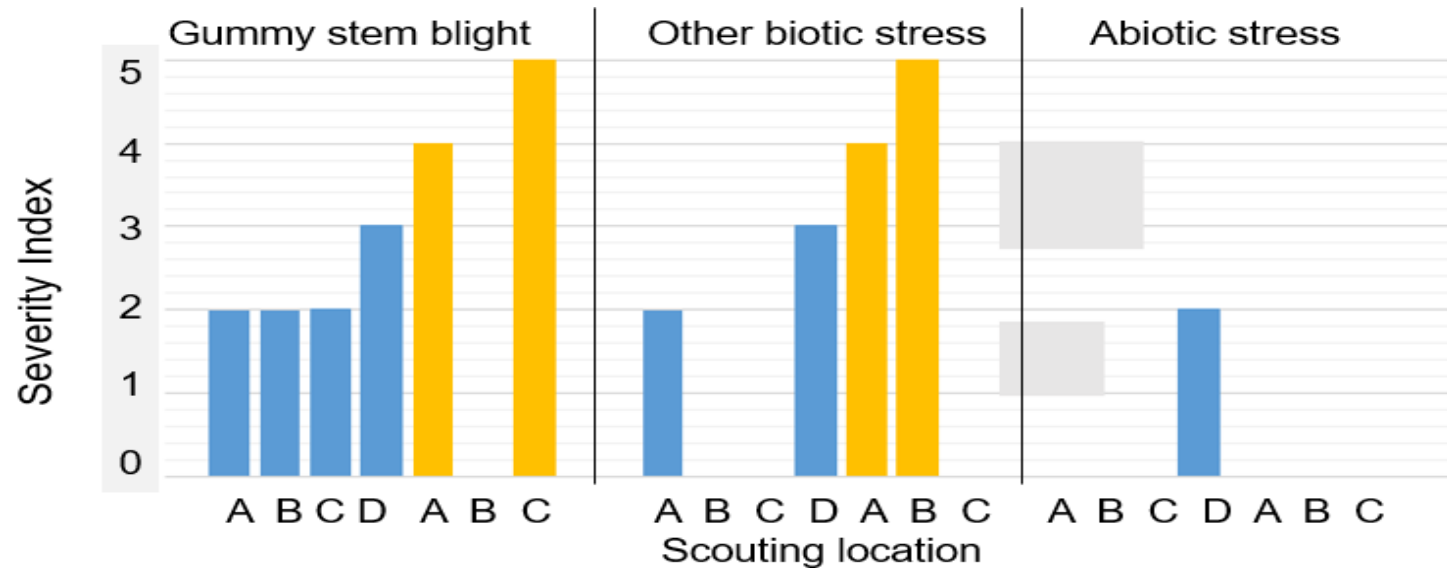
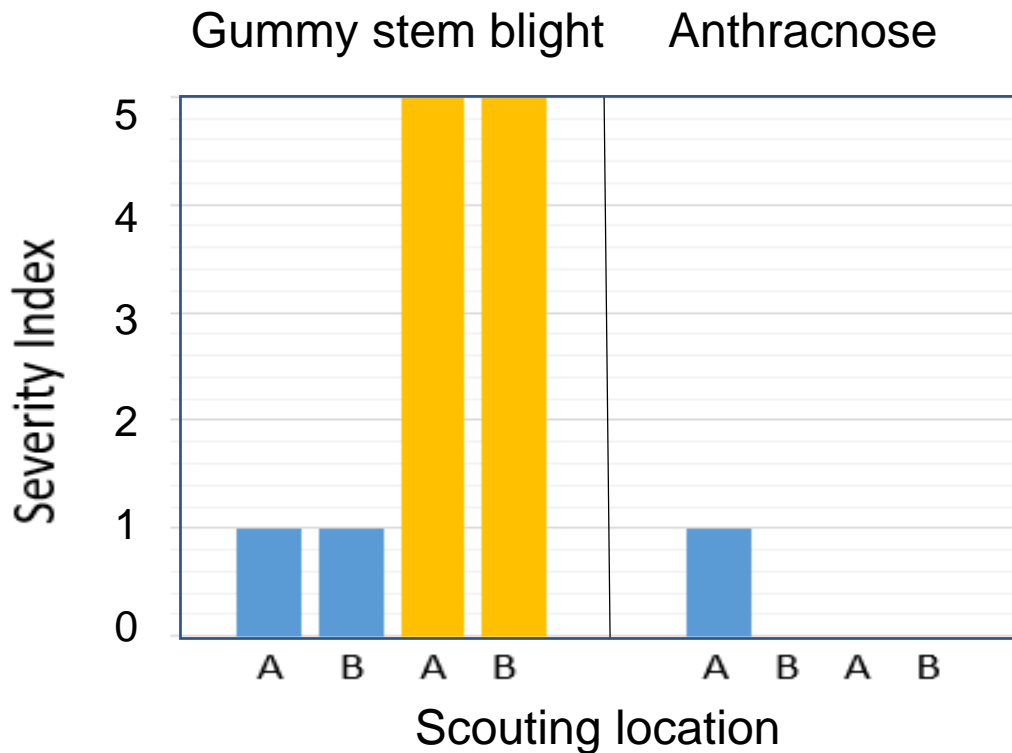
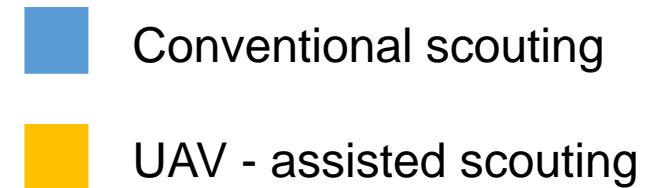


Experienced

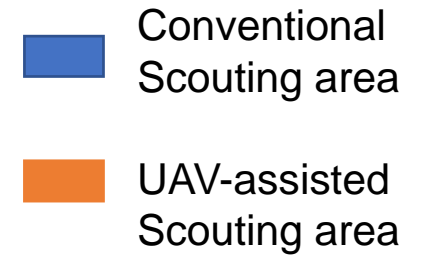
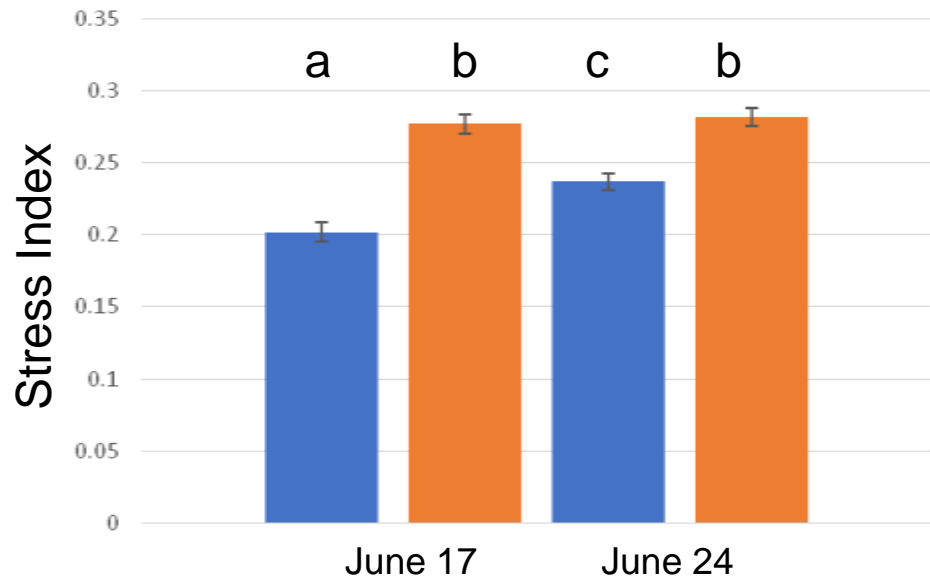
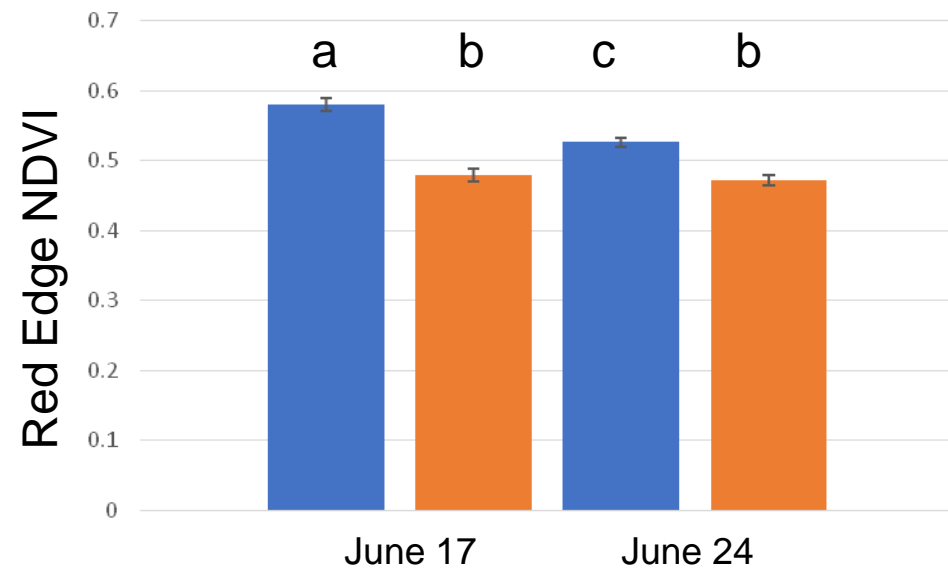
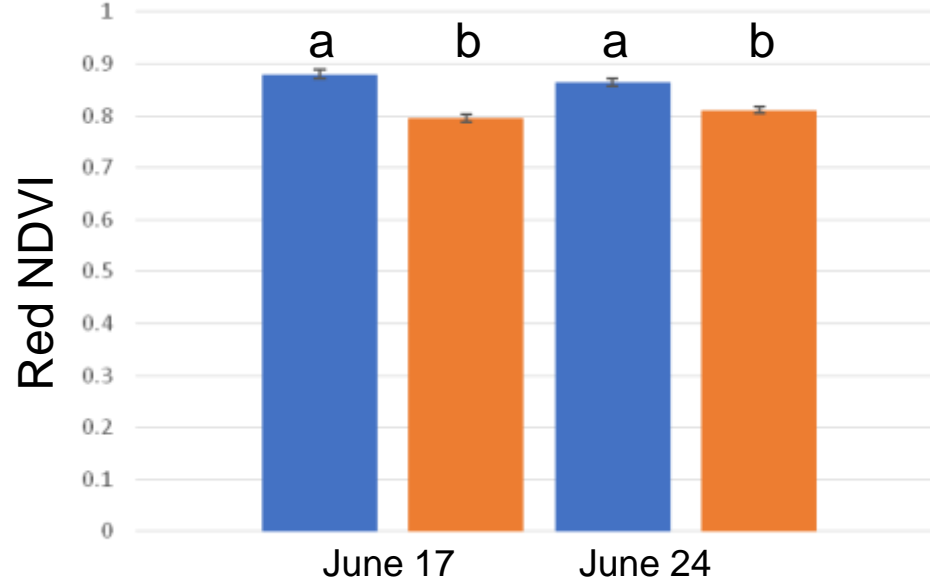
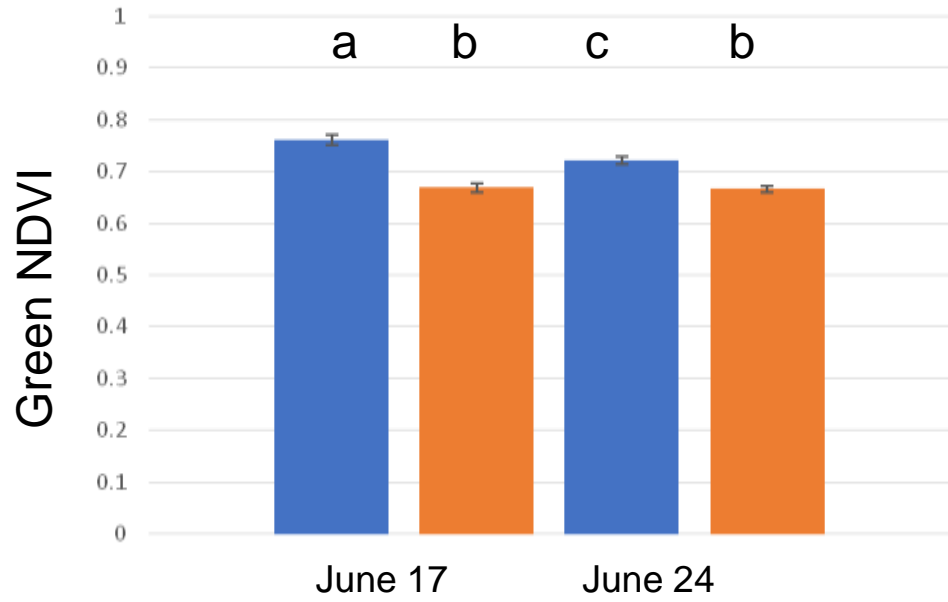


Scouting Improvement Summary

- UAV - assisted scouting locations had higher disease severity ratings
- Image helps to locate potential hot spots early
- Images improved the performance of less-experienced scouts
- Human validation of disease remains important



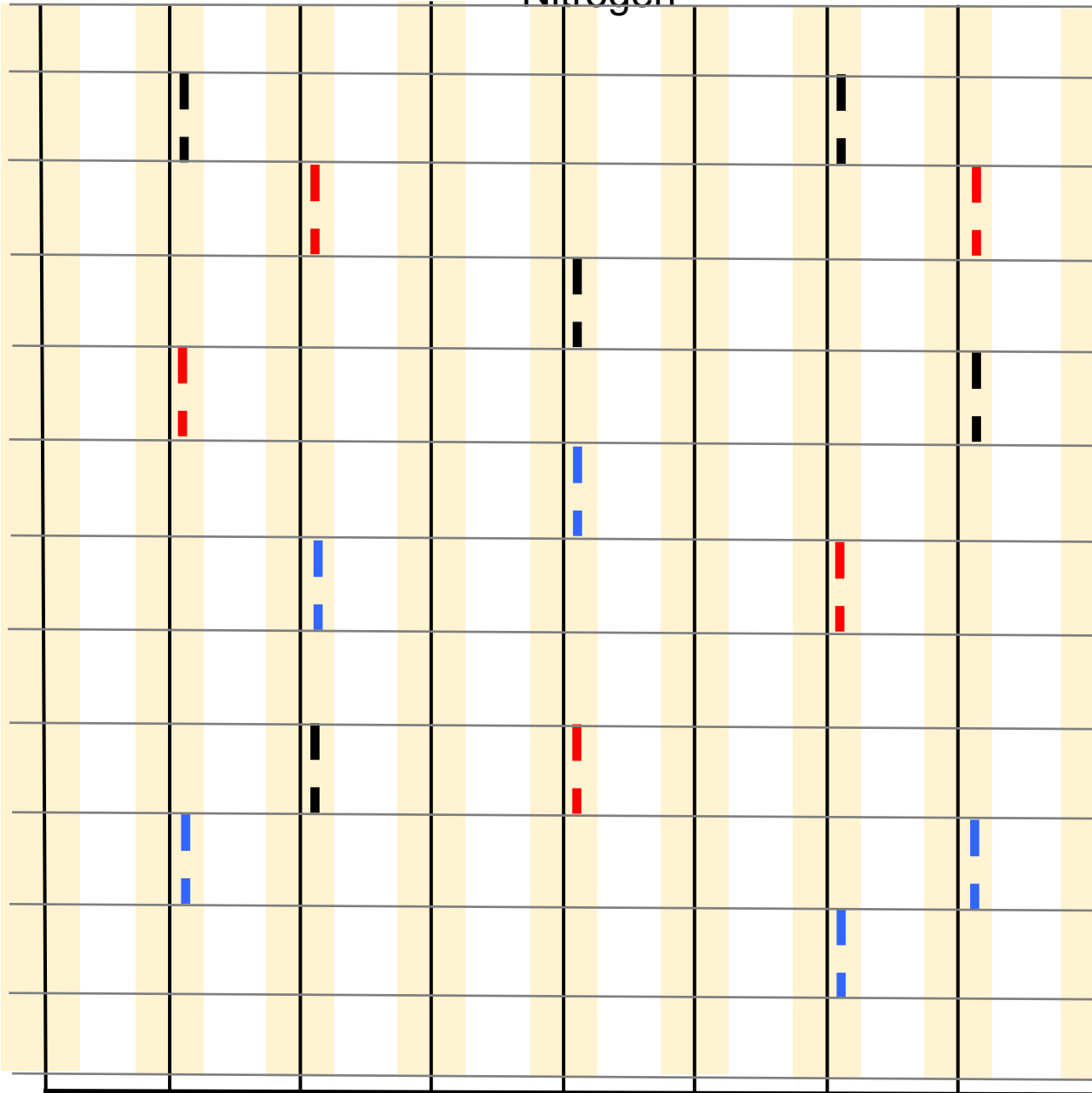
Field #1



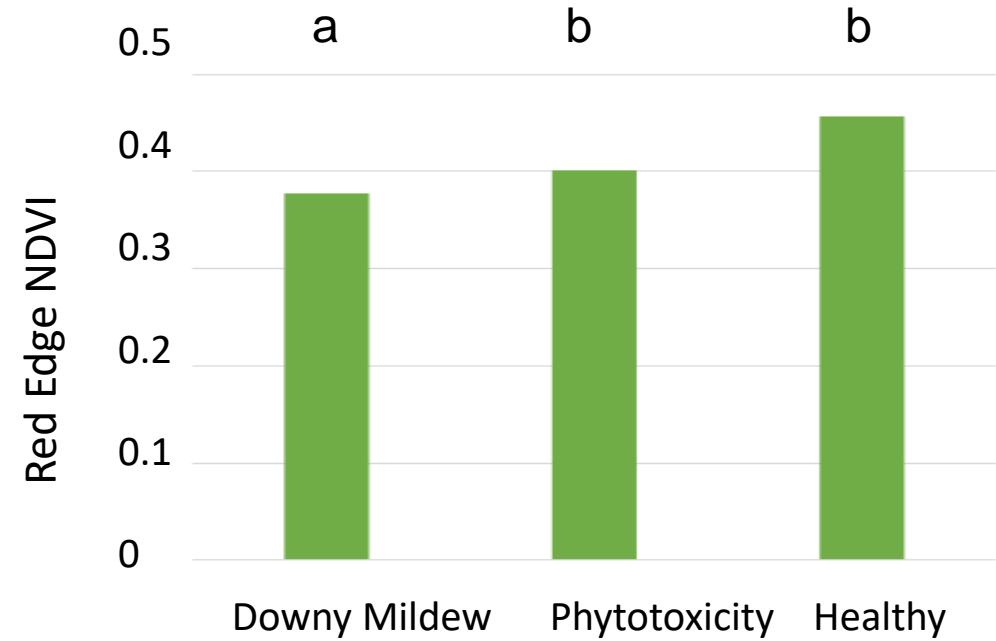
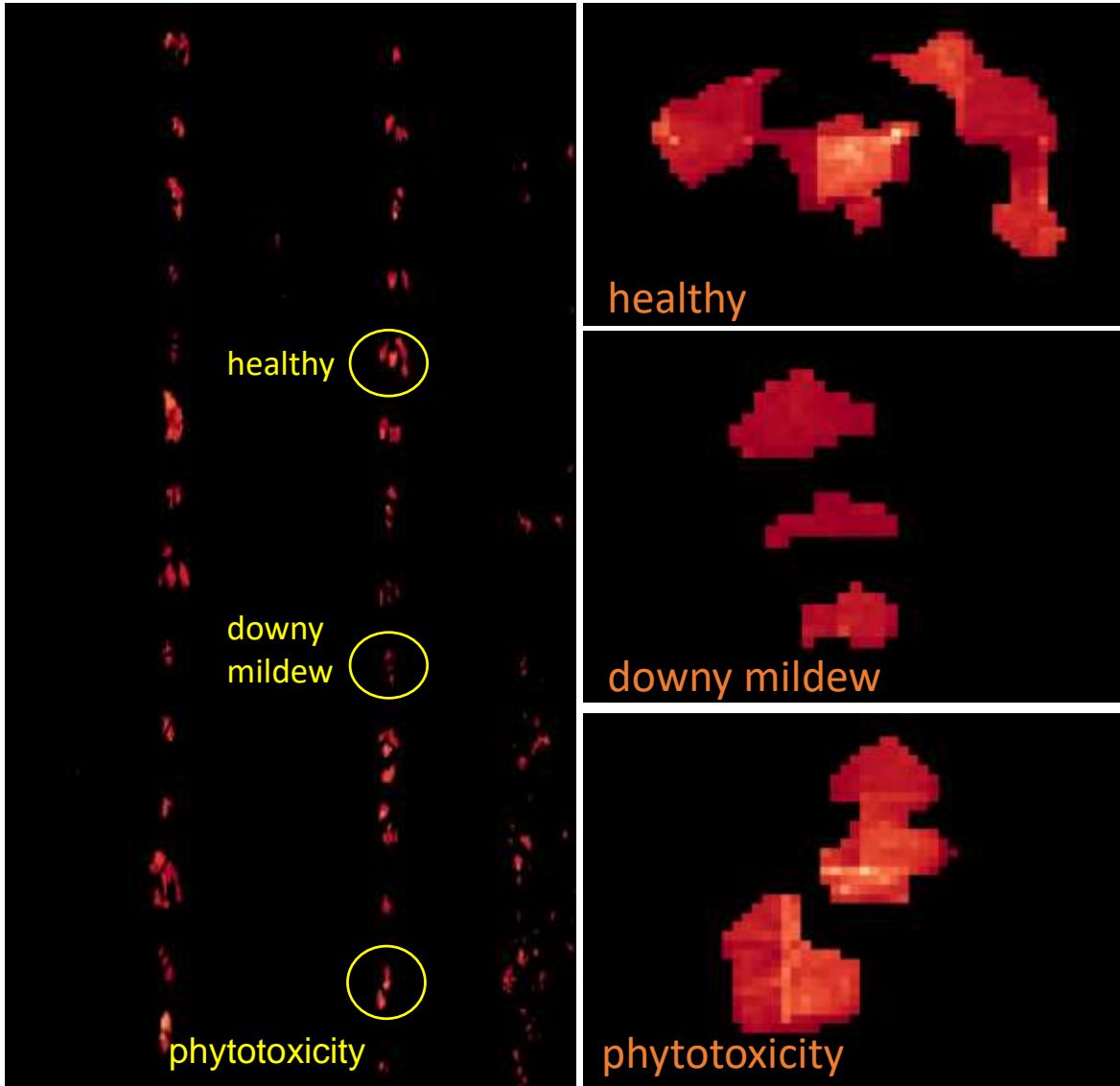
50% Flow rate

50% Nitrogen

50% Flow Rate + 50% Nitrogen



Can downy mildew infected leaves be differentiated from phytotoxicity and healthy leaves by using multispectral imaging?



4 weeks post seeding – Red Edge NDVI

1 site/season only

2nd site – spring 2018

Acknowledgements



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