



How Can I More Quickly, Easily and Cost-Effectively Assess SCN Presence in My Fields?

PROJECT REPORT

Using Multispectral Platforms to Manage SCN

Project Status: Complete

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HOW THIS RESEARCH MAY APPLY TO YOUR FARM

This research provides promising technology that can highlight hotspots and problem areas of SCN in farm fields to allow for better awareness and preparation in the next soybean growing season.

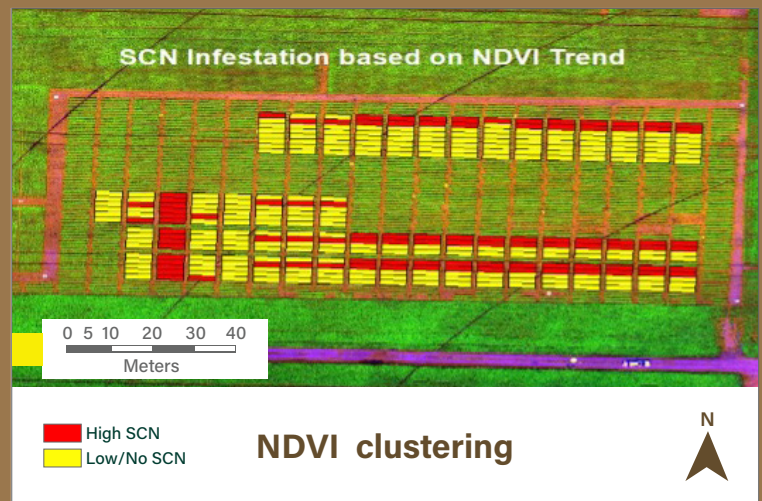
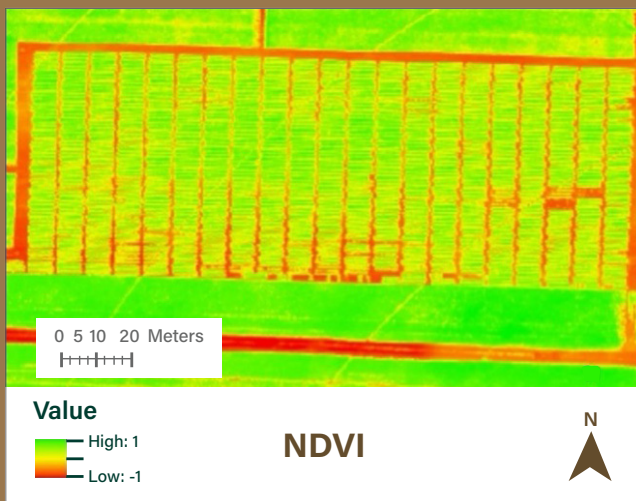
Researchers will be releasing a toolkit of Python codes containing algorithms and predictive modeling to help farmers analyze and interpret the imagery.

KEY OBSERVATIONS

- ⚠ The Normalized Difference Vegetation Index (NDVI) has shown significant correlations with SCN indicators, especially during later soybean growth stages.
- ⚠ Plots with high SCN infestation experienced more dramatic declines in soybean canopy vigor, or vegetation indicators, compared to plots with lower infestation.
- ⚠ Regular UAV flights help monitor crop health and SCN infestation levels.

CORRELATING NDVI AND SCN INFESTATION

Using soil samples to test for SCN presence as ground-truth data, we mapped the ground-truth data to the NDVI imagery and correlated the lower NDVI indices of yellow to red (indicating poor plant health) to SCN infestations. Once released, the Python code will be able to provide farmers and the industry with these interpretations.



WHY THIS RESEARCH MATTERS TO ILLINOIS FARMERS

- ✓ SCN costs U.S. soybean farmers more than \$1 billion annually in lost yield. Symptoms are not readily apparent. Identifying SCN infestation levels typically involves time- and cost-intensive soil sampling and root inspection.
- ✓ Using remote sensing and predictive modeling technology will give farmers a more clear and specific view of SCN population levels, activity and density across their fields. This will allow them to be more precise in their management of SCN.



RESEARCH APPROACH

- Field trials established in Carmi with fields ranging from 10 to 70 acres and mapped into 1/3-acre grids.
- Soil samples collected at planting, mid-season and harvest.
- Yield data collected at harvest.
- Used X5S RGB and Altum Multispectral/Thermal cameras to capture images from a Matrice 210 UAV.
- Hyperspectral data from controlled greenhouse trials helped identify the wavelengths most sensitive to SCN infestation.



Photo: Leo Rocha



See updates and learn more about this project, the research team and other projects at ILSoyAdvisor.com and [@ILSoyAdvisor](https://www.facebook.com/ILSoyAdvisor) on Facebook and X. Contact the ISA agronomy team: agronomy-team@ilsoy.org.

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