Monitoring leaf movement to determine water stress in corn and soybeans

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INTRO

- Water stress is one of the biggest factors affecting corn and soybeans yield. Early detection of water stress is critical for preventing yield loss. Automatic detection of water stress is expensive based on the mechanism that you utilize to monitor it. Therefore an inexpensive way to monitor and control water stress is needed.

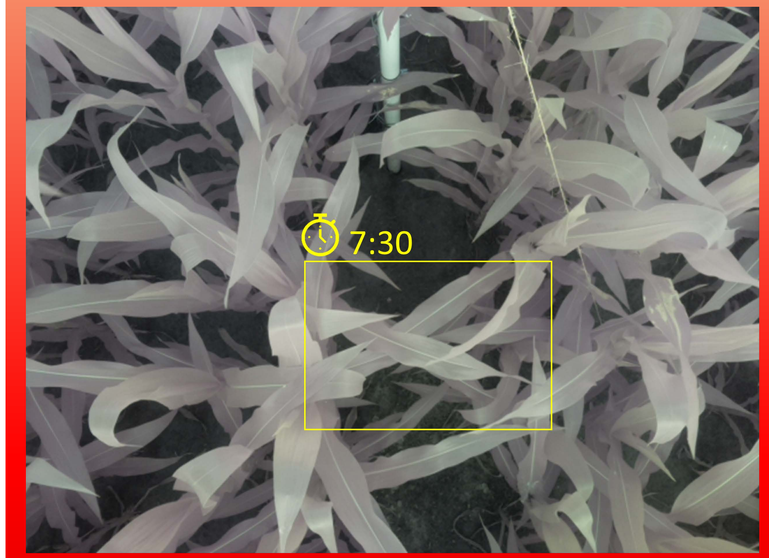
METHODS

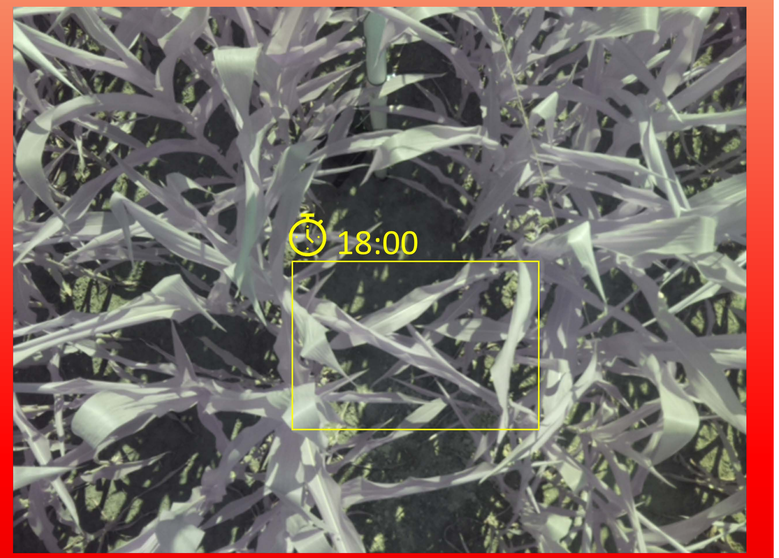
1. 16 time-lapse cameras were installed in soybean plots for 3 months.
2. 10 time-lapse cameras were installed in corn fields for 3 months.
3. Pictures were collected every 15 and 30 minutes for 13 and 15 hours for corn and soybeans respectively.
4. Images were manually scored for leaf curl in corn or leaf flip in soybeans.

NEXT STEPS

- Multi-state deployment (North Carolina and Maryland).
- Machine learning algorithm development for leaf movement detection in real time.
- IRT and humidity sensors addition.

Automated Drought Detection





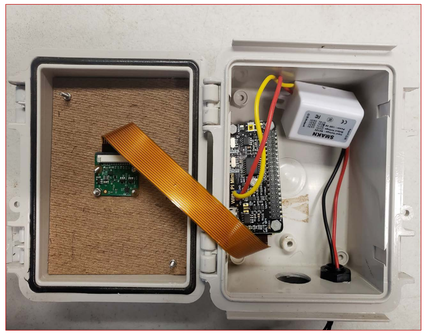
Take a picture to check the full project on GitHub

Raspberry Pi Camera

Raspberry Pi Zero W

Witty Pi mini (time and power management)

Power Supply



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