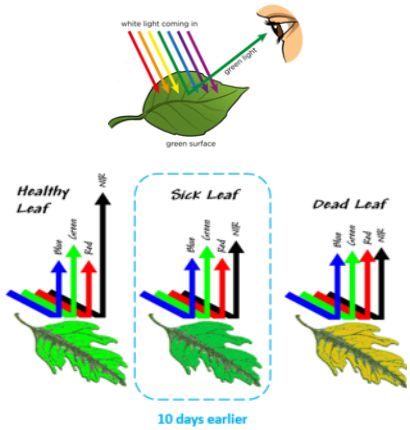
# Tool: Grounded "flying" sensors

## Near-infrared cameras for vegetation status monitoring

December, 2021

## Background

Near-infrared cameras are effective for vegetation status monitoring due to their sensitivity to leaf conditions. A sick leaf may still be displayed as green, but a **near-infrared camera** can detect a reduced response. This can already be detected **10 days in advance** of visible 'human eye' changes to the leaf, giving an early warning to crop conditions and potential yield loss.

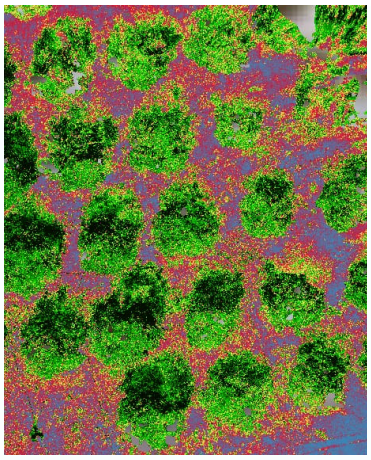



## Adaptive tool

As it was not possible to obtain a licence for using drones, our team created an alternative by attaching a near-infrared camera (from MapIR) to a 4-5m long stick. This **makeshift "flying" sensor** acquired images of the crop by walking systematically through the field. Images were stitched with Agisoft Metashape software to achieve the final results.

## Results

A **tangerine orchard** acted as Field School location. Several pictures were taken and stitched to achieve a near-infrared and vegetation status map of the field. The **variation in size and vegetation magnitude** of the different trees are highlighted with the near-infrared images, that have been translated to coloured vegetation status images. On the right you can see tree rows that are larger (or smaller) in size.



## Practical application

This system displays the added value of having **an areal view** of your farm field. Several trees look similar in size and health from the outside, whilst at an areal view, the difference is clear.

There are numerous **practical uses** for the tool, including:

- Relating spatial patterns with the irrigation system and determining discrepancies in the flow
- Predicting fruit harvest per tree row depending on the tree size
- Detecting early onsite of disease

## Project: A Practical Farmers' Toolkit

### Geodata for climate smart agriculture in Egypt

The Farmers Toolkit as presented in this project contains various geodata tools applicable for farmers to assist their decision-making and adopt **climate smart agricultural practices**. This project launches a training program on these tools:

- Flying Sensors
- IrriWatch Irrigation Advisory
- WaPOR Portal and Apps
- Climate Risk Assessments

The training providers consortium are tailoring the activities towards the requirements of the selected beneficiaries which are private companies, consultants, and NGO's, all active as **extension officers** in the agricultural sector of Egypt. The training program is a unique combination of face-to-face training, online teaching, and field schools conducted throughout the growing season of 2021.

YouTube

**Watch the project video**
https://youtu.be/aKE1dPGIqgg

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