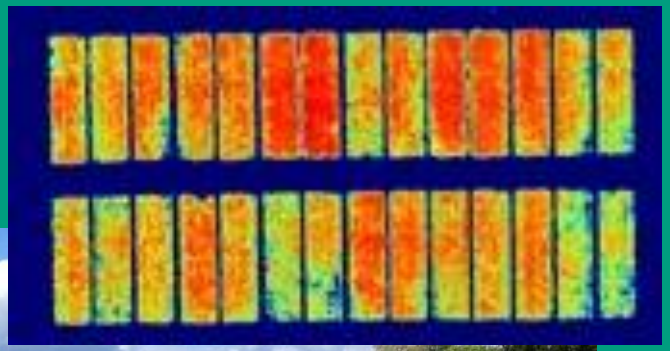
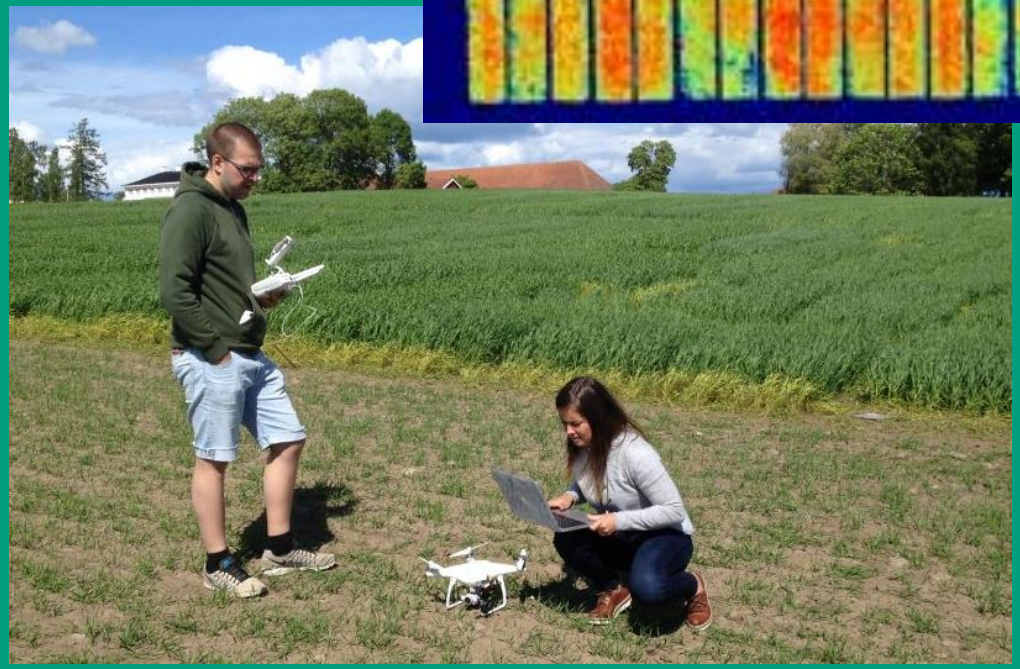
6P3: Improving methods and techniques for phenotyping





Morten Lillemo

NPPN workshop, 27.11.2020

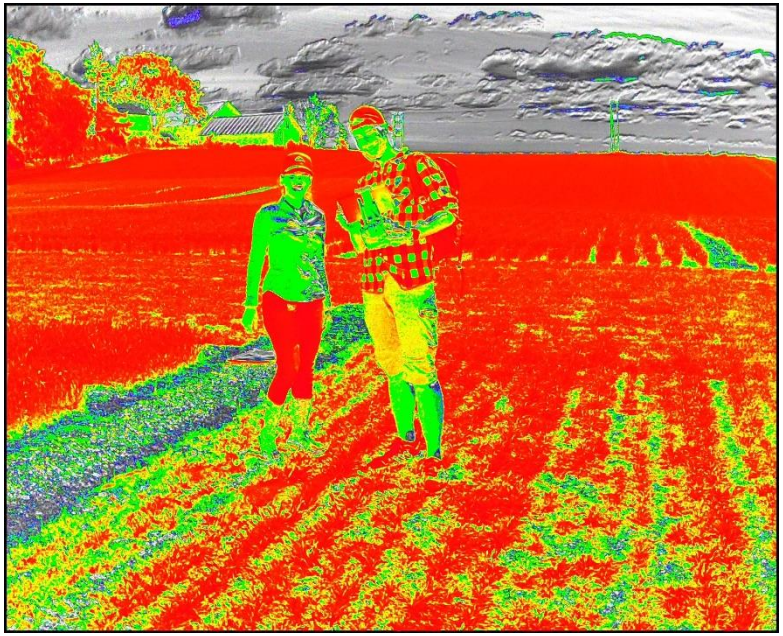
Phenotyping technology is developing fast

- For plant breeders:
  - important to make right choices when purchasing new equipment to get best value for money

- WP3 focus areas:
  - Monitor the market for new drones, cameras and instruments
  - Updated phenotyping protocols with new technology
  - Low altitude high resolution imaging → deep learning feature recognition (WP4)
  - Image-based seed phenotyping

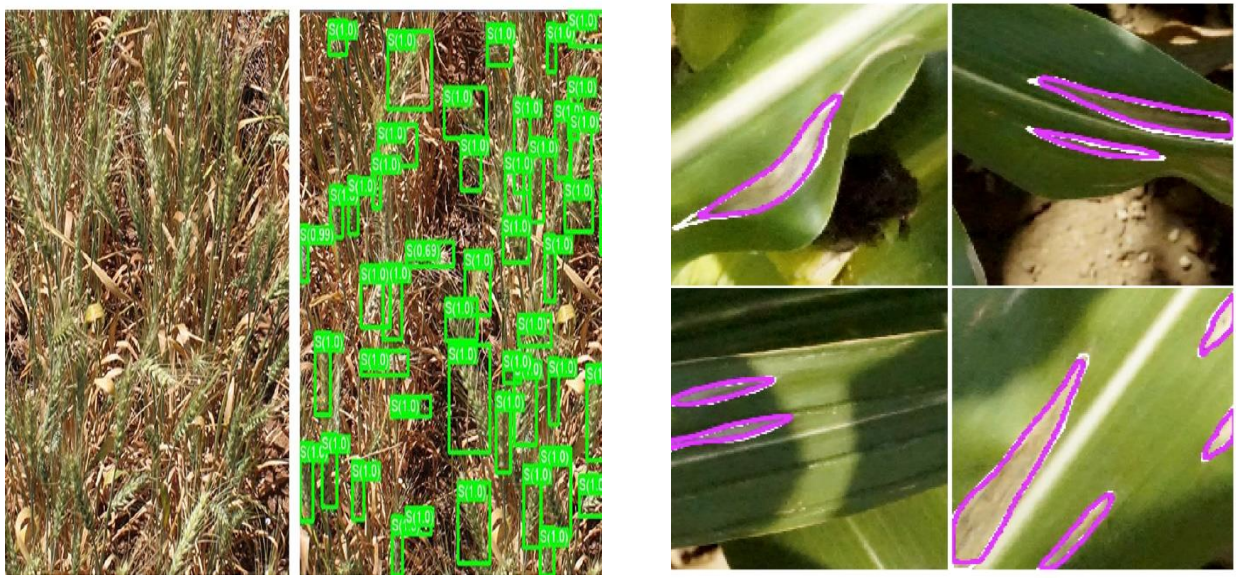
Example of affordable new technology

- Phantom 4 multispectral
  - Integrated multispectral camera and light sensor
  - Multispectral imaging as easy as RGB



Low altitude high resolution flights

- Can we push the technology limits to count cereal heads and quantify disese symptoms by UAV imaging?



Deep learning detection of wheat heads (left) and maize northen leaf blight (rightI)

Seed phenotyping

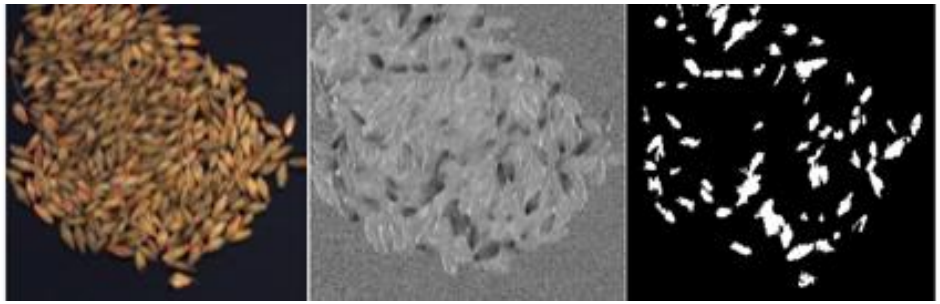
- Comparison of image-based approaches
  - seed morphological traits
  - disease detection?

Opto Agri

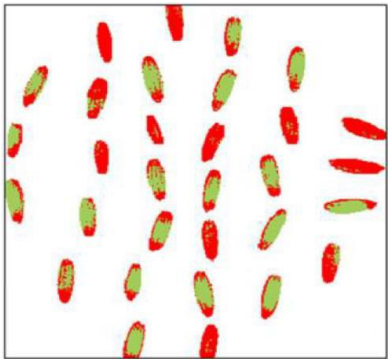
Marvin seed analyser

Seed phenotyping

- Comparison of image-based approaches
  - seed morphological traits
  - disease detection?



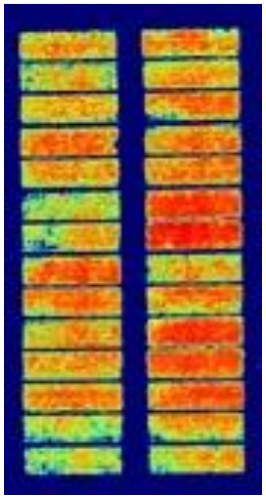
Detection of Fusarium-infected seeds by hyperspectral imaging



High throughput field phenotyping

NOVA PhD course of 5 ECTS

28 June – 2 July 2021, in Ås, Norway



A full week of practical, hands-on training

- Hand-held sensors
- Drone phenotyping
- Robot phenotyping
- Image analysis and trait prediction

Further info: www.nmbu.no/nova or morten.lillemo@nmbu.no