

EU Green Week
PARTNER EVENT

La giornata green del dottorato | Acqua, resilienza ed oltre

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#WaterWiseEU



ALMA MATER STUDIORUM
UNIVERSITÀ DI BOLOGNA

DIPARTIMENTO
DI SCIENZE E TECNOLOGIE
AGRO-ALIMENTARI

On the use of remote sensing vegetation indices for agricultural zoning: does the time matter?

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PhD in Agricultural, Environmental, Food Science and Technology
Research topic of Agricultural Engineering



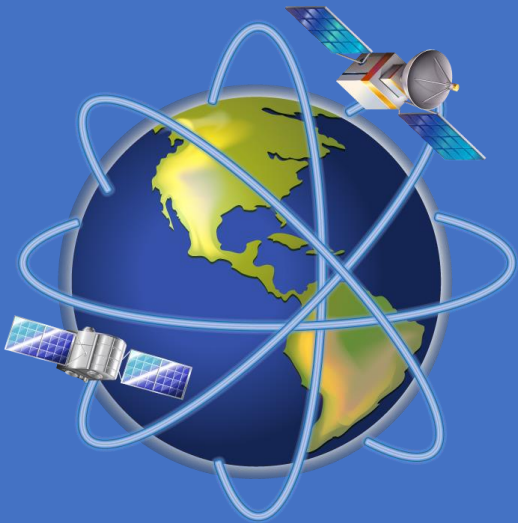
PHD PROGRAMME
AGRICULTURAL, ENVIRONMENTAL AND FOOD SCIENCE AND
TECHNOLOGY



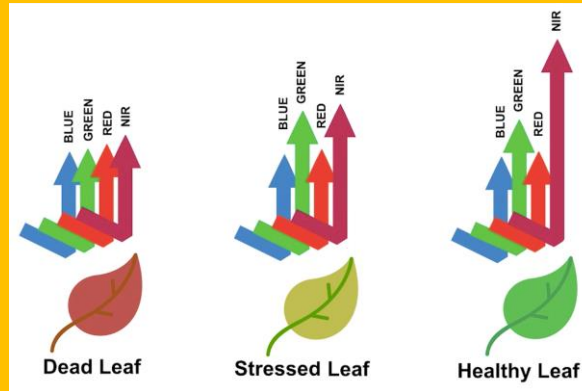
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Background and Objectives

Remote Sensing



Vegetation Indices



HEALTHY
VEGETATION REFLECTANCE

50% NIR 8% RED



NDVI = 0.72

STRESSED
VEGETATION REFLECTANCE

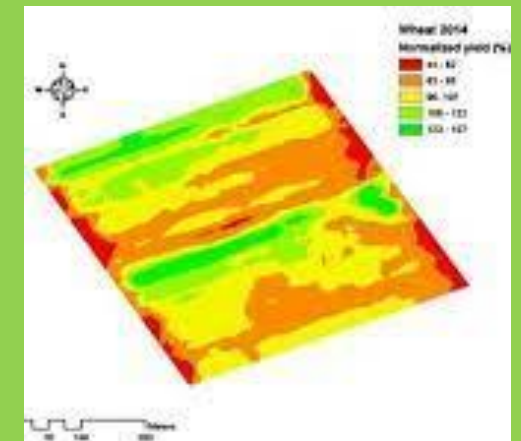
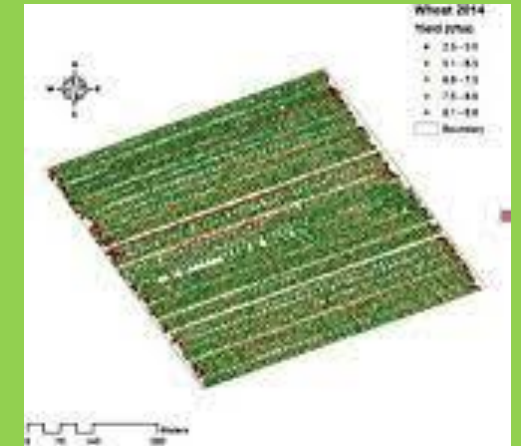
40% NIR 30% RED



NDVI = 0.14

$$\text{NDVI} = \frac{\text{NIR} - \text{RED}}{\text{NIR} + \text{RED}}$$

Agricultural Zoning

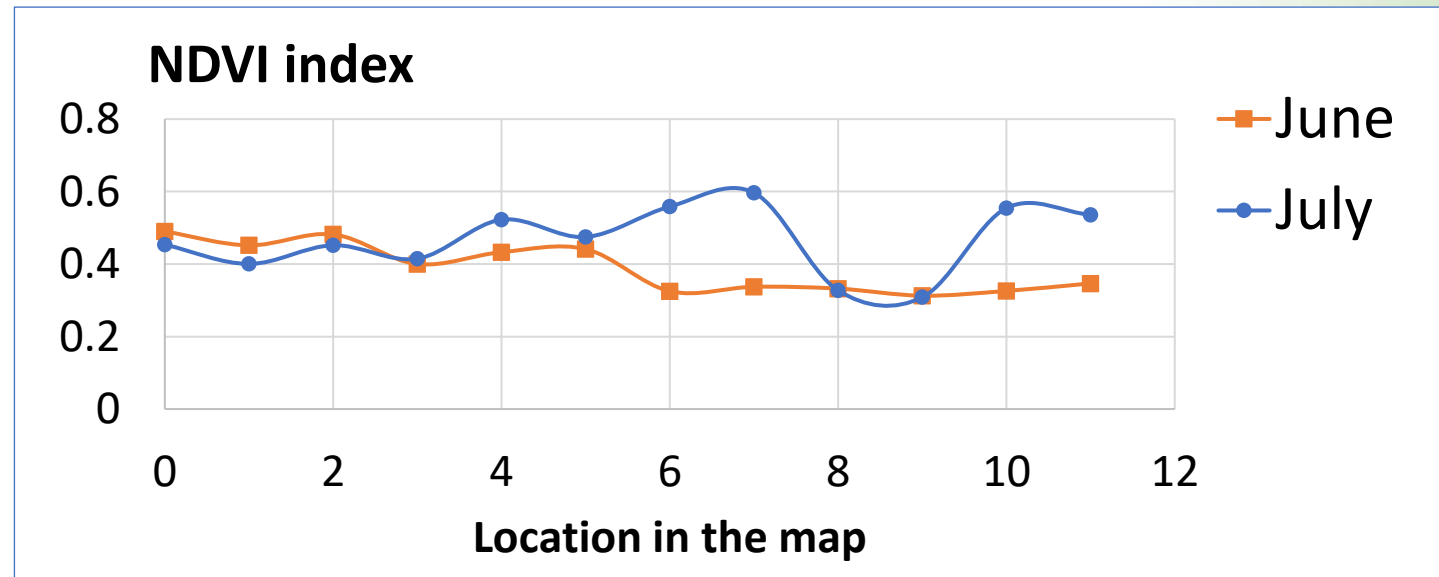
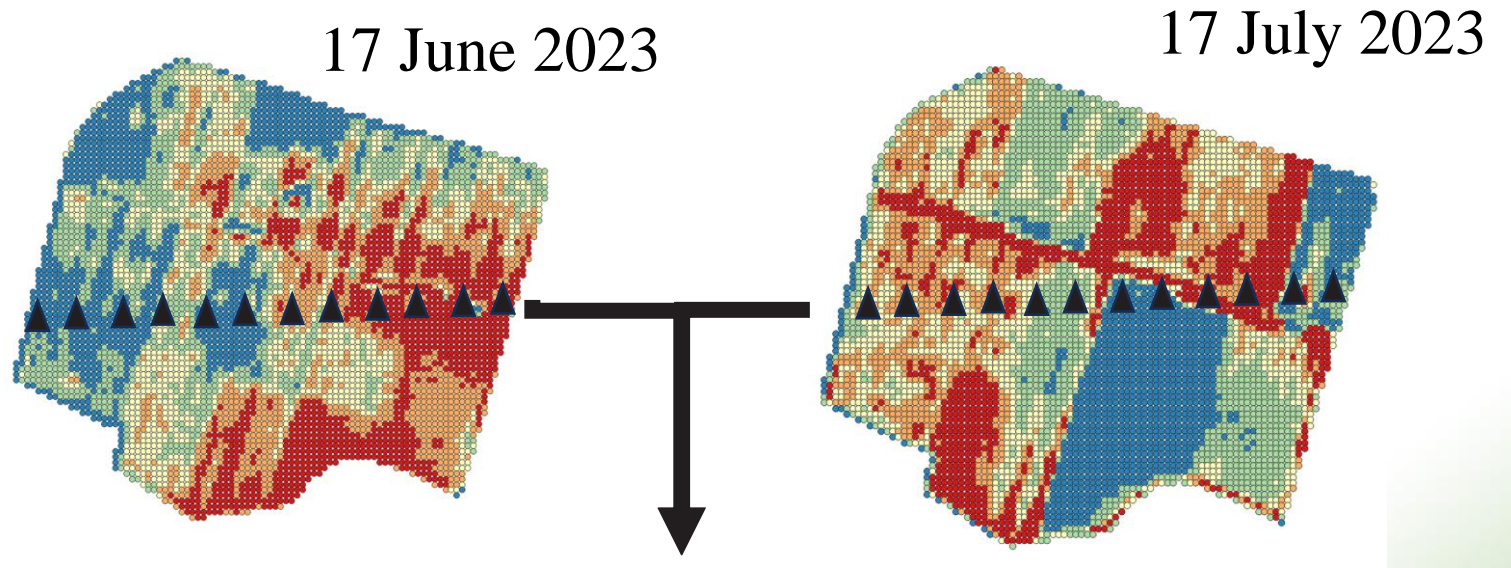


Experimental approach and main results

Bondeno, Italy
Nuts orchard, 56 ha



- The spatial variability of the vegetation index (NDVI) changes at different time.
- Zonation should account for that (e.g., agricultural practices)



Expected outcomes (what for?)

- We can observe how specific areas change over time and Agricultural expansion often involves the clearing of cutting, affect to significant changes in land cover
- Vegetation indices help in creating detailed maps for precision agriculture
- Continuous monitoring using remote sensing allows for real-time decision-making, improving crop yield and reducing environmental impact
- Zoning will help in making informed decisions regarding field measurement management and identifying risks such as soil erosion
- Accurate zoning leads to better crop selection and field management, enhancing productivity

