

The soil-water-plant agrisystem: a little about soil, water, and plants

- Area 1 – SPA Overview
- Lesson 2 – Variables and Systems
- Sequence ID – 7

UEVORA



Information about the teachers



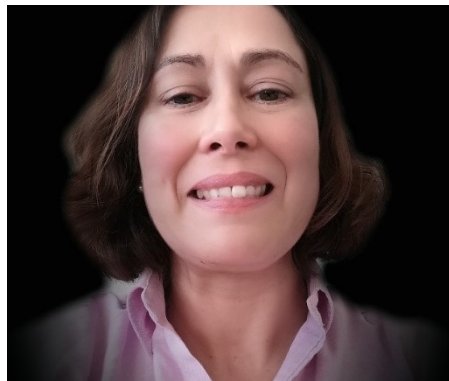
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DISCLAIMER

A1.L2.T1 The soil-water-plant agrisystem: a little about soil, water and plants:

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Objectives

- Identify variables connecting soil, water and plants
- Interactions
- Identifying anomalies and probable causes



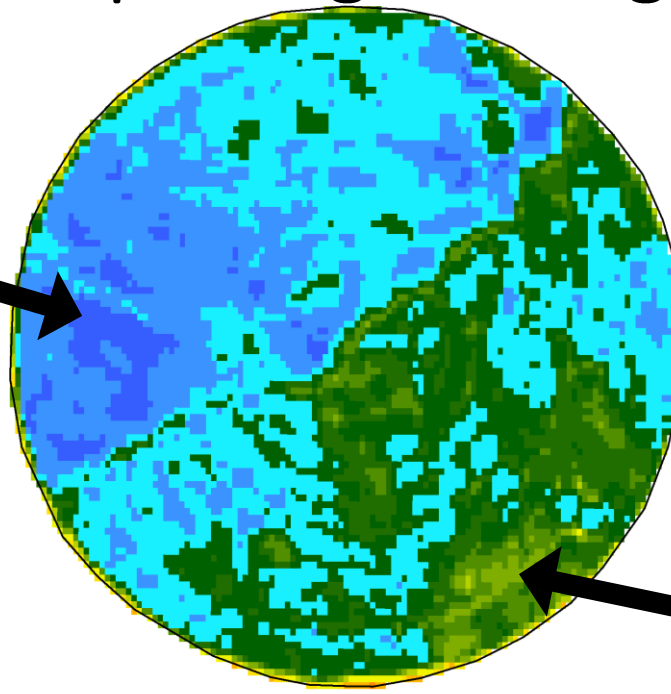
Soil, Water, and Plants

Why do we have different levels of chlorophyll?

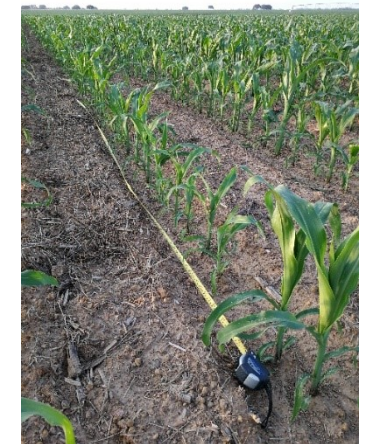


NDVI map
Crop emergence stage

Higher level of
chlorophyll



Lower level of
chlorophyll



Soil, Water, and Plants



How many seeds will germinate?

Test the germination capacity before sowing.

<https://2020seedlabs.ca/what-is-a-germination-test/>

Is the seeder working well?

Sample number of plants per hectare and sowing depth.



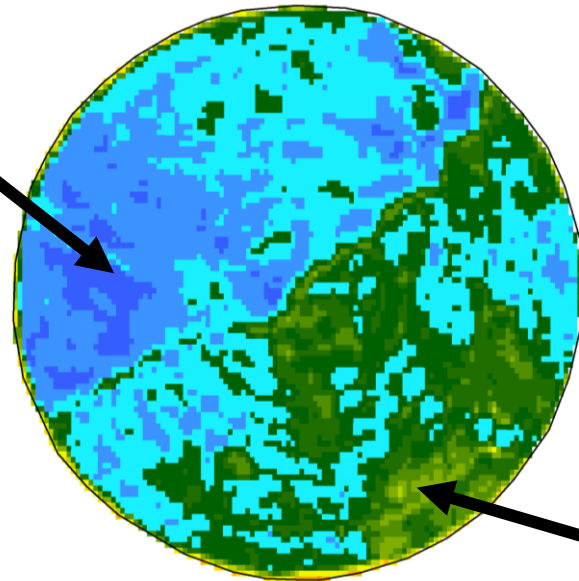
Soil, Water, and Plants

Soil type, soil temperature and moisture



NDVI map
Crop emergence stage

Less clay soils
↓ ↓
Higher (Lower)
level of chlorophyll



More clay soils
↓ ↓
Lower (Higher)
level of chlorophyll

More clay soils are colder and wetter



Lower germination capacity

Lower soil moisture



Clay soils provide higher germination capacity

Soil, Water, and Plants

Soil management

- Irrigation
- Nutrition
- Plots organization
- Trafficability

Parcels organization



Different types of soils



Different fertilization strategies



What's the level of nutrients?

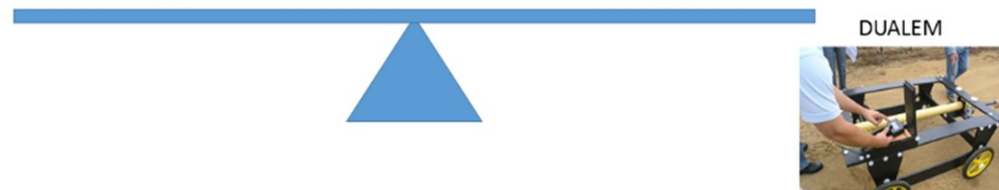
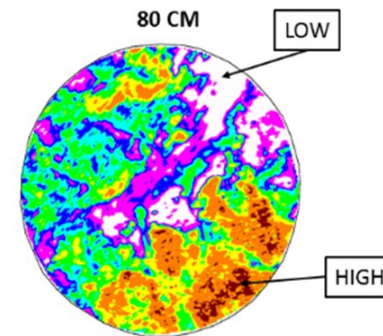
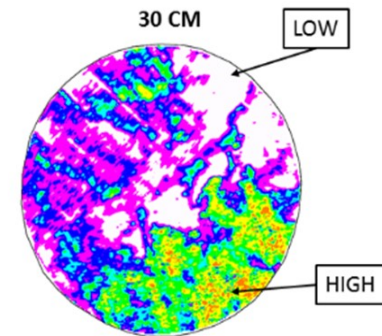


Type of nutrition depending on the crop

Maps of Apparent Soil Electrical Conductivity (ECa)



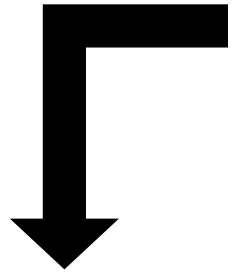
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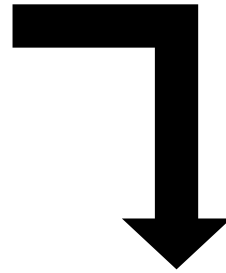
DUALEM

Soil, Water, and Plants

Type of soil affecting germination capacity



To sow differentially (VRT), more seeds in the area with lower NDVI



Phytotoxicity problems



VRT map to apply herbicides



Variable Rate Technology (VRT)

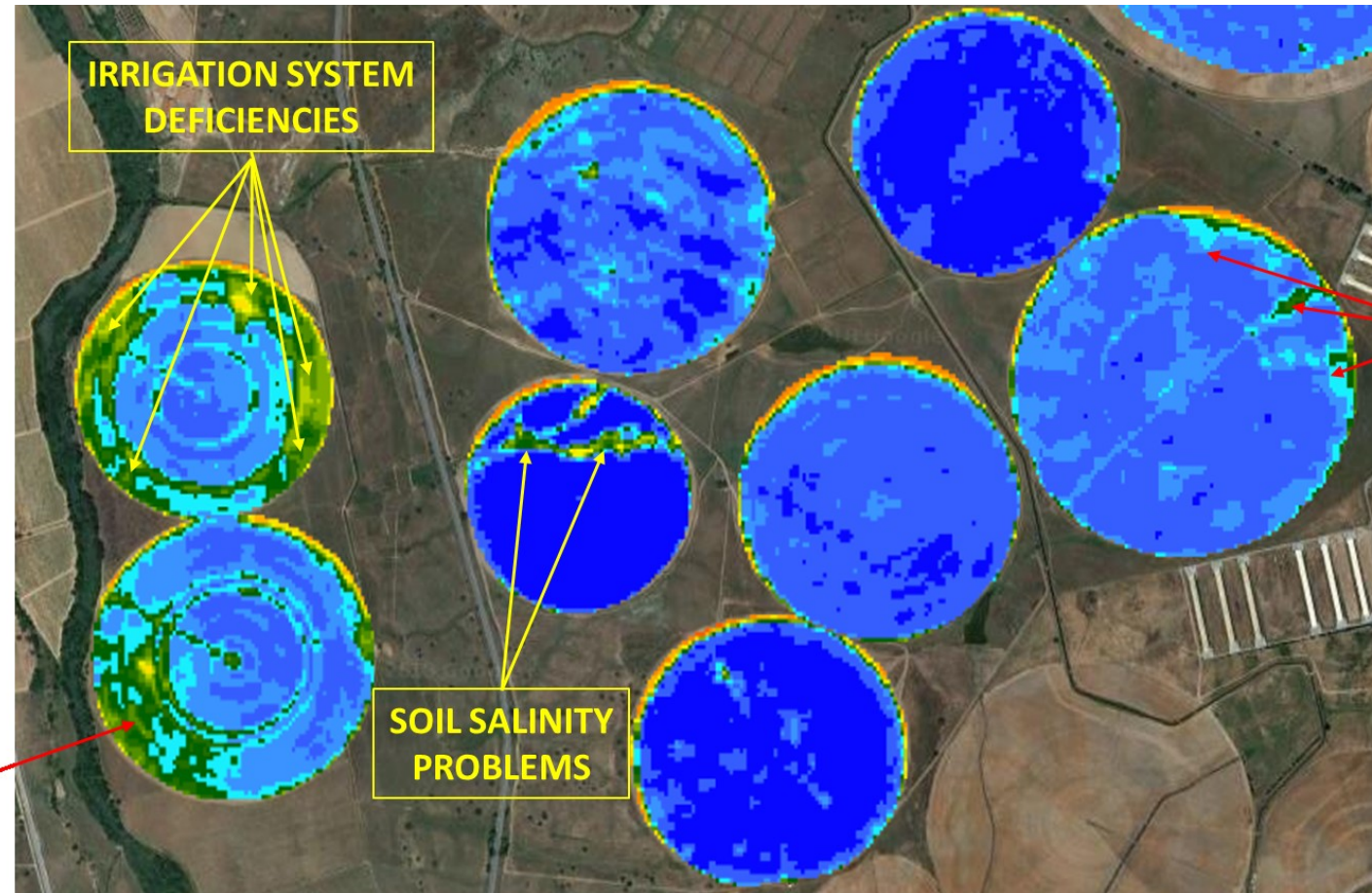
Differentially distribution of seeds, fertilizers and other production factors considering the best agronomic standards in order to obtain the highest possible efficiency.



Soil, Water, and Plants

Soil type and Water excess/deficit

Chlorophyll anomalies



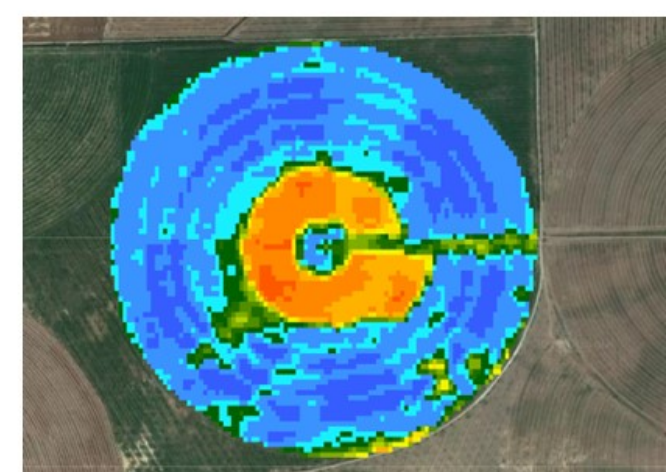
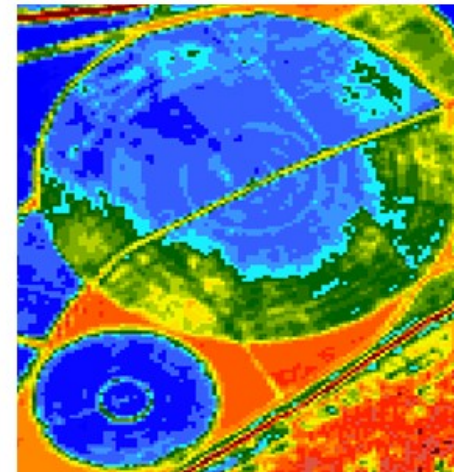
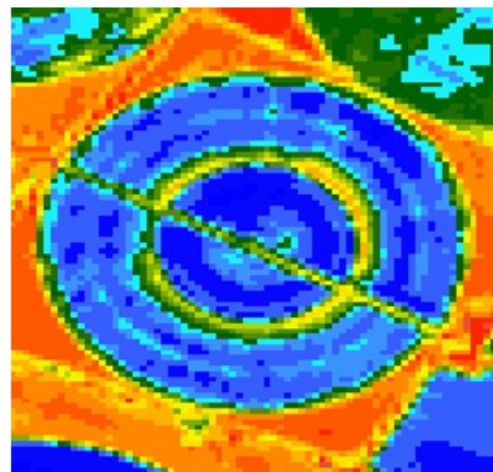
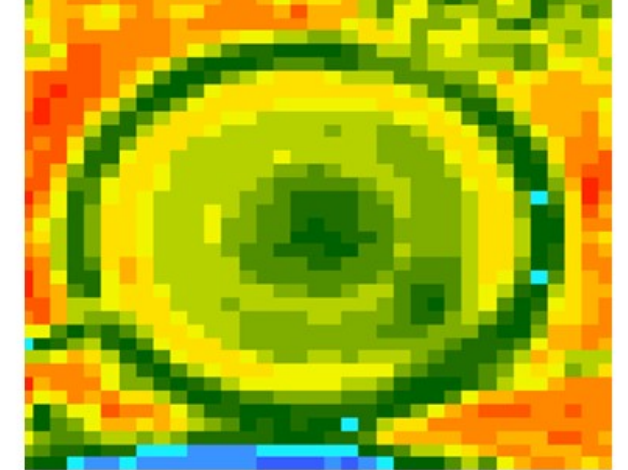
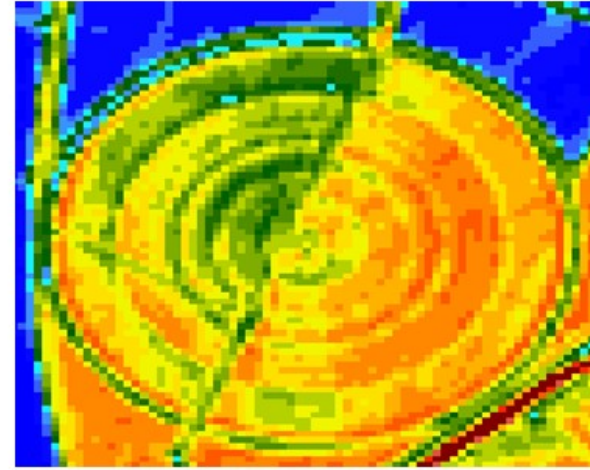
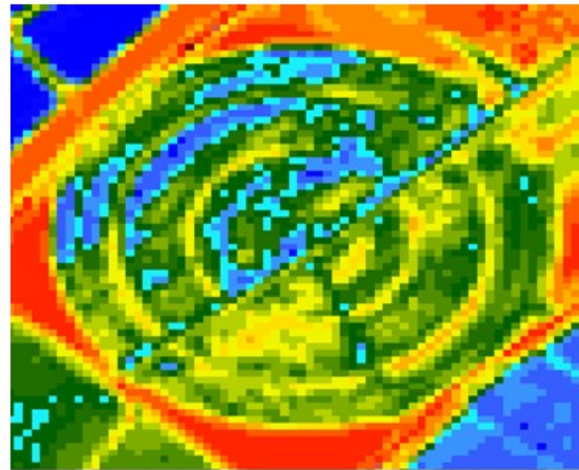
SANDY SOIL DRAINAGE PROBLEMS

SOIL SALINITY PROBLEMS

CLAY SOILS DRAINAGE PROBLEMS

Soil, Water, and Plants

Irrigation system problems





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