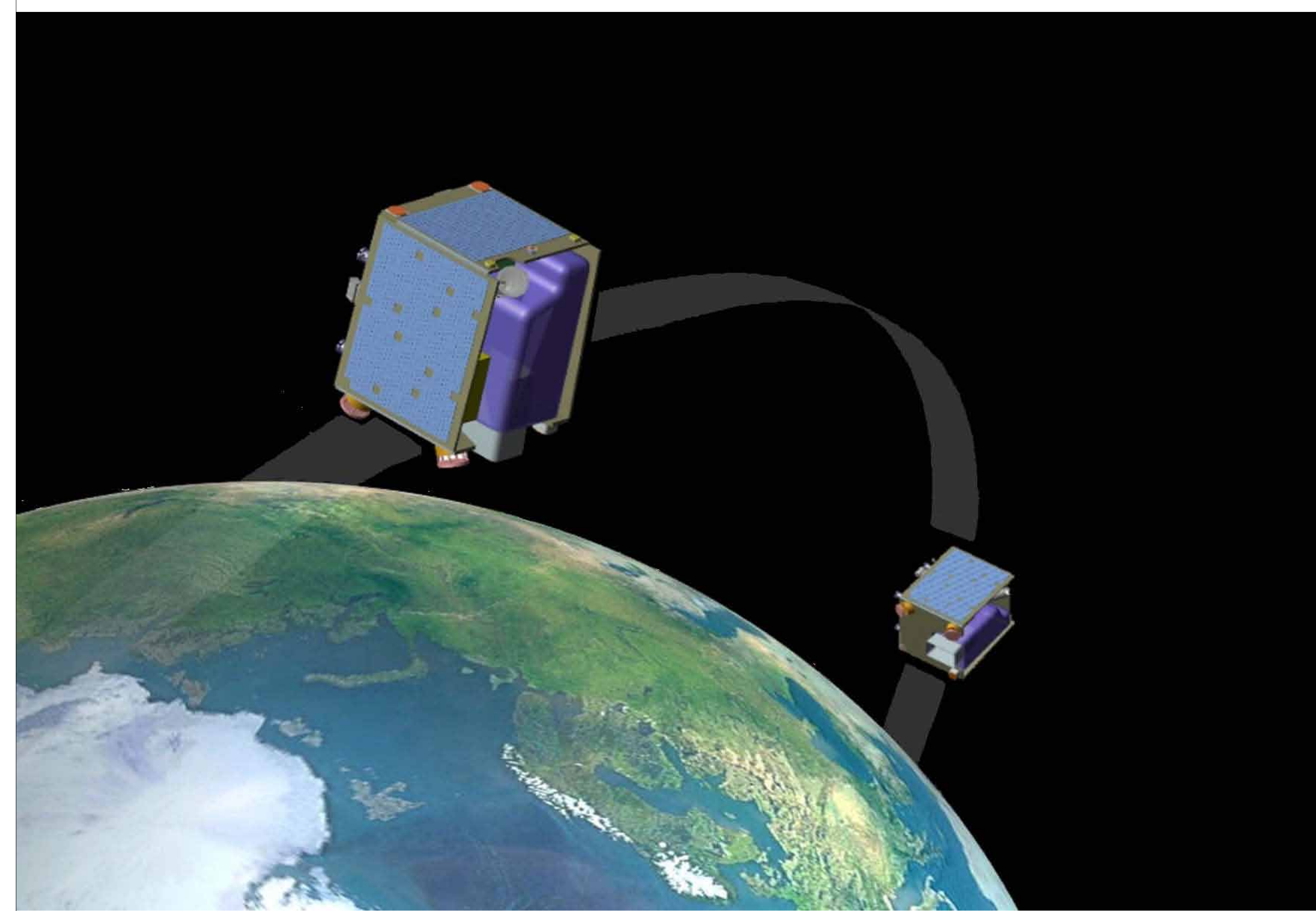


# Land Suitability Analysis by Using Vegetation Index



The Normalized Difference Vegetation Index (NDVI) is used to analyse remote sensing measurements. It shows the activity of a chlorophyll, which is directly connected with growth and development of a plant, and soil fertility. For this reason, our hypothesis predicted a connection between soil fertility/suitability and the NDVI index.



## Problem overview

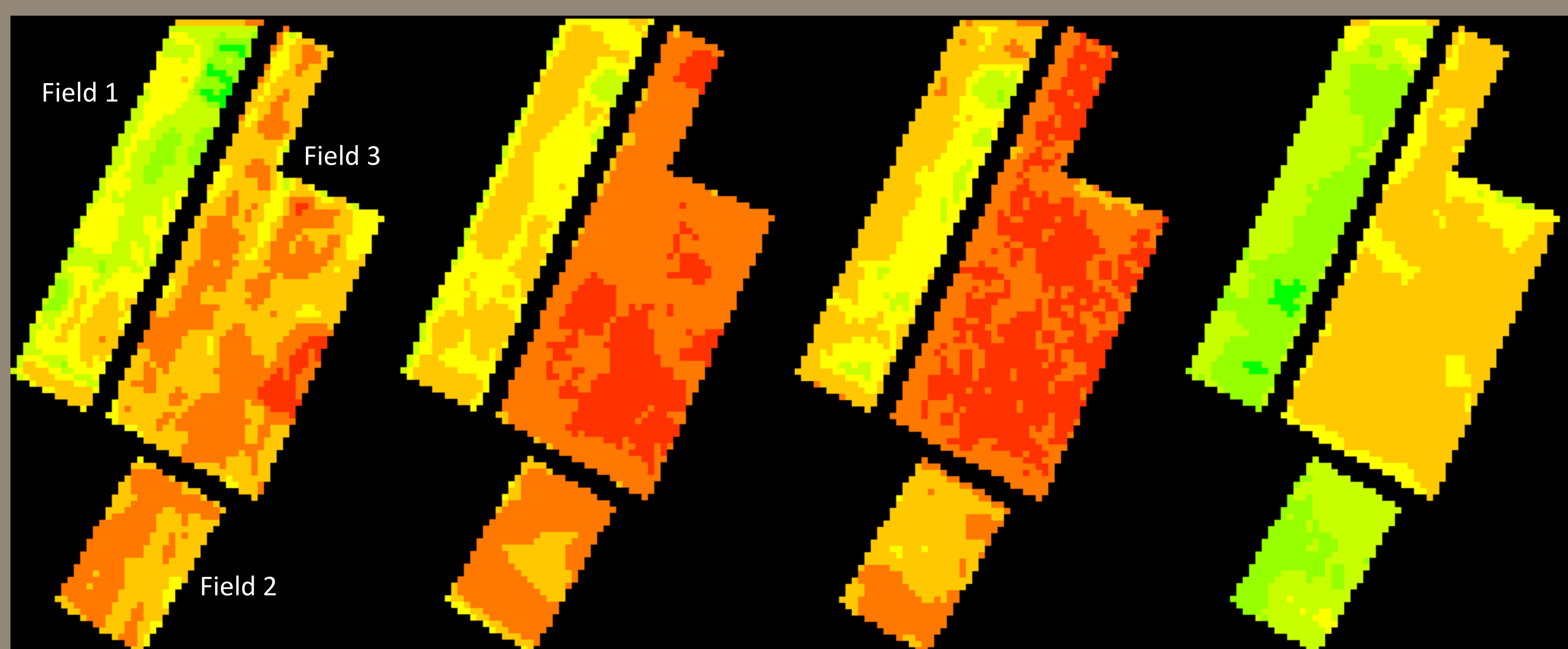
- Soil fertility is the ability of a soil to supply plants with nutrients and simultaneously support their development and growth.
- Soil fertility is a combination of physical, chemical and biological characteristics of a soil, which are interactive.
- Soil fertility study is a rather difficult agricultural task.

## Data

- Satellite Rapid Eye images (6.5 m) for 2011 (June, July, August, September),
- NDVI values,
- meteorological data.

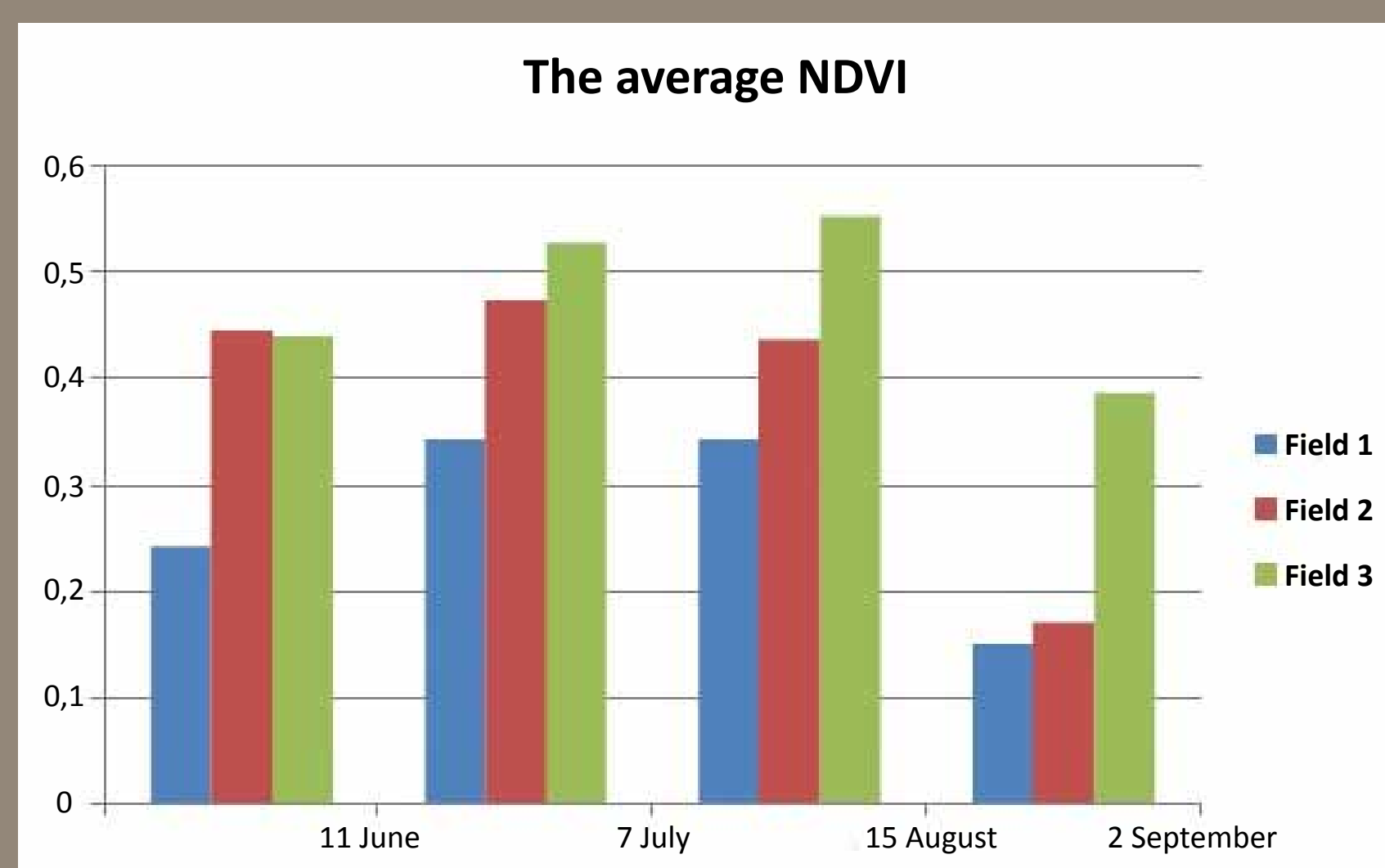
## Methods

- The analysis of vegetation index (NDVI) on a maize,
- the analysis of meteorological data,
- field inspections.

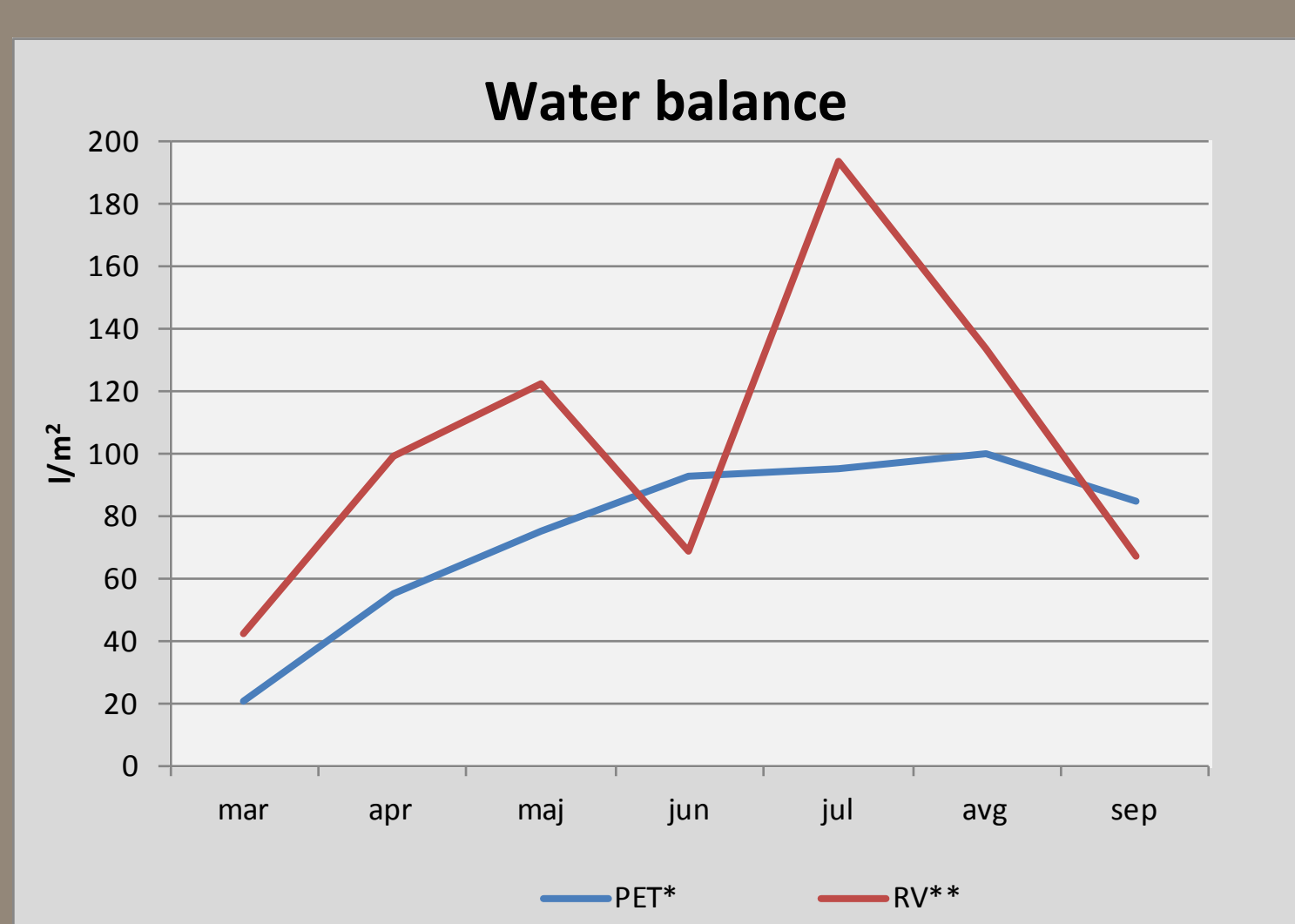


NDVI value	0 - 0.1	0.1 - 0.2	0.2 - 0.3	0.3 - 0.4	0.4 - 0.5	0.5 - 0.6	0.6 - 0.7
Color	Green	Yellow-Green	Yellow	Orange	Red-Orange	Red	Dark Red

The study of soil fertility (influence of deficit of moisture in a floor). Display of NDVI for different plots with equal crop (maize) and equal fertilization in four months (June, July, August and September, respectively).



Comparison of average NDVI for plots.



PET\* potential evapotranspiration  
RV\*\* available water in the soil



The consequences of water scarcity in the soil in different hybrids of corn.

## Conclusions

- The use of the NDVI could be an appropriate method for studying soil fertility.
- The NDVI could be used to evaluate the reaction of plants in unfavourable conditions, above all, the lack of water needed for growth and development of plants.
- The NDVI method could most likely be used to determine the time of appearance of temperature stress on crops (the assimilation stops).