



# HIDROSOPH

# Agrozoom

## Analysis of the spatial variability of crops from satellite images

See up close and from a distance for great results.

With the Irristrat platform it is possible to use several devices to monitor variables that influence, agriculture (weather stations, moisture sensors, tensiometers, pressure chambers, etc.) in a simple and integrated manner, providing farmers with the fundamental tools for obtaining optimal results. These equipment's provide very accurate and valid information, but specific to the point where they are installed.

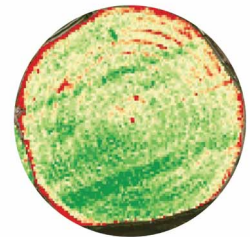
Through the use of aerial images and their combination with field information and readings recorded in Irristrat™, the Agrozoom service offers the farmer information about plant vigour, uniformity and consistency, increasing the reliability of data extrapolation in the crop areas.

## The Agrozoom service

### NDVI - VIGOUR ANALYSIS

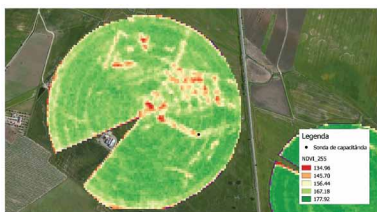
Through a sequence of digitally processed images classified according to a colour scale, the vigour of plant growth is analysed in the various plots. This analysis enables the identification of problem areas and assists in the identification of the causes (e.g. irrigation system, drainage, etc.).

- Analysis of the vigour of plant growth at a specific moment
- Temporal comparison (several periods)
- Spatial comparison (several plots)
- Analysis of the Final production/Vigour ratio at the various growth stages



HIDROSOPH NDVI calculado a partir de uma imagem de satélite de 18 de Agosto de 2013. 150 0 150 300 450 600 m

### HOMOGENEITY ANALYSIS



HIDROSOPH NDVI calculado a partir de imagens de satélite a 15 de Agosto de 2013. Área analisada homogeneamente devido à presença de canais mal drenados. 150 0 150 300 450 600 m

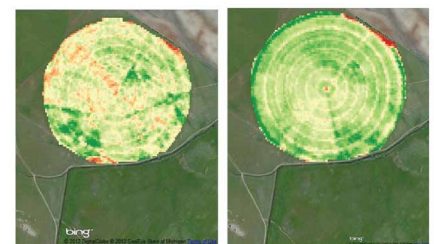
The images allow for precise characterisation of the plots, identification of problem areas, definition of homogeneity levels and obtaining the representativeness of the monitoring points on the land. Once this information is crossed with the Irristrat™ information, plots with different locations can also be easily compared and a decision can be made on the land's best monitoring points.

- Homogeneity of the plot
- Identification of problem areas
- Representativeness

### CONSISTENCY

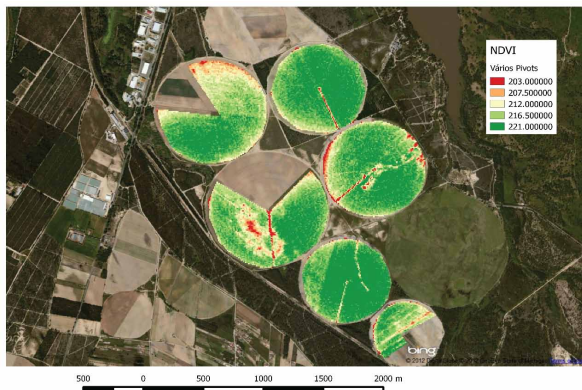
With the use of multiple images obtained during the same crop cycle, it is also possible to check if the deviations are consistent and if the crop progress is as expected for its cycle. In addition, it is also possible to analyse the impacts of in-depth interventions.

- Analysis of the vigour of plant growth at a specific moment
- Comparison with other moments and other plots



HIDROSOPH NDVI calculado a partir de imagens de satélite a 10 de Maio de 2013. NDVI calculado a partir de imagens de satélite a 27 de Agosto de 2013. 150 0 150 300 450 600 m

## An example with irrigation pivots



### VIGOUR

In this image, the spatial variability of the vigour of plant growth was represented in the form of a vegetation index map, calculated on the basis of the amount of reflected radiation: the NDVI (Normalised Difference Vegetation Index). Here it is possible to locate where the probe is installed and compare the value of that point with the rest of the plot.

### HOMOGENEITY

The crop area was represented with five colour levels, through the classification of the information on the image's map. The higher this index (dark green), the greater the vigour of plant growth. In contrast, the lower the index (red), the lower the vigour.

## REASONED DECISIONS

With this interpretation of the areas' statistics, we are also in possession of some very interesting elements for assessing the economic viability of some interventions that might be considered, in particular: drainage and the improvement of the irrigation and fertilisation system.

### REPRESENTATIVENESS

The probe is situated on the fourth level, representing approximately 30% of the plot. Therefore, irrigation management can be done taking into account that 20% of the area is above the representativeness of the probe and the remaining 50% of the area is below.

The Agrozoom service: information like you have never seen before

#### - AVERAGE INDEX

NDVI Average

#### - PROBLEM AREAS

Identification of areas with insufficient or excess vigour and possible causes

#### - NDVI IMAGE

#### - TECHNICAL COMMENTS

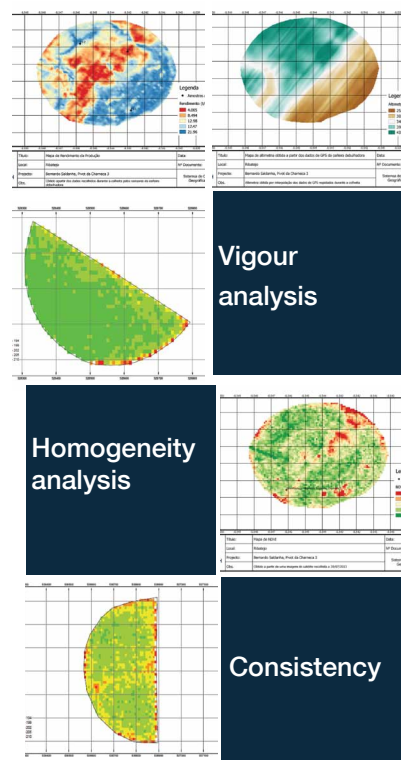
#### - VARIABILITY

% of the area in each vigour interval (NDVI)

#### - INTERPRETATION

Relation to NDVI at other moments and in other plots, with production fertilisation, irrigation, etc.

#### - INDEXES TABLE



## About HIDROSOPH

HIDROSOPH specialised in efficient and sustainable water management in agriculture. Since 2008, we have been developing and improving the Irristrat™ intelligent irrigation management software platform. We have been integrating and developing monitoring equipment and helping farmers and associations of producers by providing consulting and training services in irrigation management and precision agriculture.

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