

MHYSS – Measurement of Hydric Stress System –

"In agronomy and hydropedology, water potential is the potential energy of the water present in the soil relative to pure water in reference conditions. This parameter is used to measure the amount of energy plants have to consume to absorb water with their roots and is fundamental to calculations regarding irrigation." *Source Wikipedia.*

Assessing the water requirements of plants is of key importance because hydric stress can condition both growth and productivity.

There are now ICT solutions that can help tackle this issue, using wireless networks to transfer data from networks of sensors positioned among crops to gather and process data in real time.

The aim is to monitor plant growth in order to predict problems linked to hydric stress in particular.

The internet of things paradigm and wireless sensor networks can support farmers by exploiting the potential of precision agriculture.

THE SOLUTION DEVELOPED BY CSP

Mhyss is an integrated platform that measures the hydric stress plants are subjected to.

Using rain gauge and soil moisture sensors, dendrometers and an algorithm that calculates the Normalized Difference Vegetation Index (NDVI), it integrates data with photographic images and overviews, giving the farmer a complete overview that ranges from visual imagery to real time data.

Mhyss is designed to assess the level of hydric stress that crops are under, but can also be used for any grass surface, thus supporting not only agriculture but also settings where green spaces represent a key asset, from golf courses to football pitches, large parks and gardens.



TECHNICAL CHARACTERISTICS

MHYSS is based on a specific set of ICT systems that can be integrated to respond to the demands of the setting, and measures the levels of hydric stress plants are subjected to, using in particular:

- rain gauges and soil moisture sensors – dendrometers; ad hoc configuration to adaptation and interface with the node adapted;
- customised firmware to interface between the sensors and the wireless node.

The Normalized Difference Vegetation Index (NDVI) integrates data gathered by the sensors and panoramic images from aerial photography and other sources.

The control panel or dashboard visualises the health and growth of the plants being observed, with the possible addition, if required, of data regarding hydric stress, a function that the system currently presents separately. Different sensors communicate with the wireless node thanks to ad hoc firmware which can be integrated with the Geowhisper asset developed by CSP.

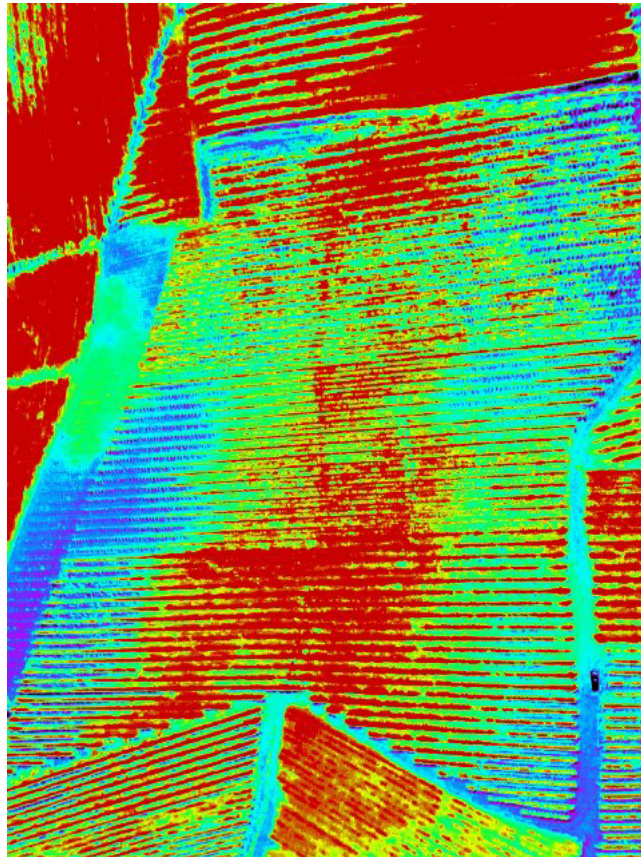


Figure 1 – Field testing: an example of data visualisation

