SMART AGRICULTURE

Precision Agriculture

Traditionally, agricultural practices are carried out spatially in a uniform manner, without taking into account the existing variability in the farms, which affects the production and the quality of the obtained crop. A uniform agricultural management is not efficient since different zones are treated in a homogeneous way.

SMART Agriculture is a methodology developed within the framework of Precision Agriculture concept that takes into account the existing variability in the farms in order to maximize quality, increase production and minimize the amount of inputs to be used.

Since 2004, we have developed and fine-tuned this precision agriculture methodology that is based on the integrated use of *"remote sensors"* and *"in situ sensors"* (plant-climate-soil-nutrition). While these last ones provide us, every 15 minutes, data of representative plants of the farm; the remote sensors provide us multispectral data from all the plants of the farm, weekly.

The integration of both types of sensors provides us with spatial and temporal, knowledge which is also digitally registered, allowing its analysis within the framework of a Decision Support System (DSS).

The collected data by this monitoring network are digitally stored as tables and maps, from which information is generated facilitating to farmers a differentiated decision making in the field.

SMART Agriculture integrates data from soil-plant-climate-nutrition sensors, field sampling, multispectral remote sensing and microclimatic forecasting, allowing the characterization of spatial and temporal variability in agricultural holdings

How SMART Agriculture is implemented?

SMART Agriculture methodology consists of 6 phases:

Implementation of a GIS.

Exploitation Zoning.

In situ installation of a sensor network.

Monitoring by spatial remote sensing.

Microclimatic forecasting.

DSS Implementation.

The first three phases are intended to establish a monitoring network in the field to be representative of the existing variability.

This monitoring network is completed with multispectral data provided by satellite images and a microclimatic prediction made from the recorded data by the installed climate sensors, allowing us to anticipate several days to climatic situations that affect the quality of our harvest (heat waves, pests...).

Finally, all this information is integrated into a DSS, which translates the different registered variables by the sensors into agronomic language and establishes an alarm system to program the daily tasks.


SMART AGRICULTURE v. 2019

Success stories

Dehesa Valquejigoso is a vineyard that has been using the SMART methodology since 2005, which has allowed it to parameterize the agronomic variables of the grapes of its farm, obtaining quality wines in an area of Spain, such as Madrid, with hardly any tradition and with important climatic limitations.

Dehesa Valquejigoso has achieved, with its wine *V2* of the 2008 vintage, to be among the 100 best wines in the world in 2016 according to the selection of *Wine Enthusiast* magazine.
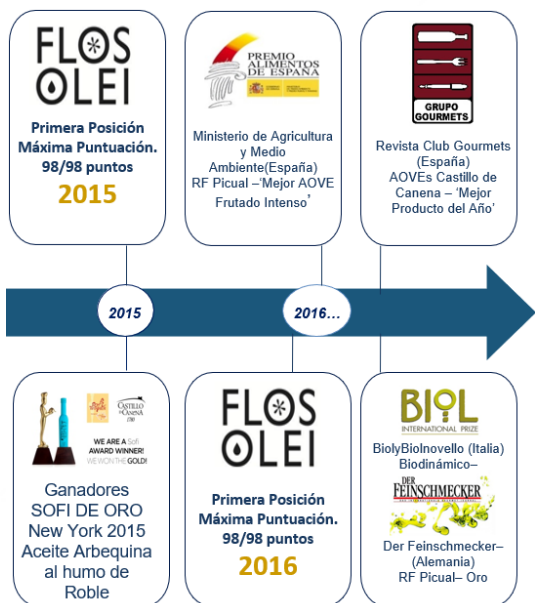
Castillo de Canena is a consolidated olive group and leader in the Premium Extra Virgin Olive Oil sector with recognized prestige and global leadership, which has won recurrently the most important Awards, both nationally and internationally.

The Group is present throughout the oil sector value chain represented by: *Cortijo Guadiana* (production, agricultural exploitation); *Cortijo de la Loma* (transformation, mill); *Castle of Canena Olive Juice* (marketing and distribution of own brands).

SMART methodology:

- Handles all types of crops.
- It can be implemented in phases.
- Registers the agronomic information of each campaign and can be linked to the economic information of the company.
- Improves the daily decision making.
- Allows the design of a mid-term work plan based on the real data record of our farm / crop.
- *Sirve para todo tipo de cultivo.*

Contact with:
Salomón Montesinos Aranda
smontesinos@geodim.es