

## Dealing with water scarcity

When water is scarce, irrigation scheduling and irrigation efficiency are especially important. New, innovative ways of obtaining real time feedback on irrigation management are currently being developed including digitally connected fruit measuring tools and online precise irrigation-scheduling algorithms.

### EIP-AGRI Focus Group on Water and Agriculture

The [EIP-AGRI Focus Group on Water and Agriculture](#) brought together 19 experts to find farm level adaptation strategies to deal with water scarcity. A number of farming management practices were identified aimed at increasing water availability for crops and livestock and improving efficient use of water and farm resilience when there is a lack of water. One of the types of practices that the Focus Group looked at was irrigation scheduling to improve irrigation efficiency.

### Keeping an eye on the irrigation schedule

Irrigation scheduling is about finding the right amount of water to apply, matching crop water requirements to reach the target yield and quality while minimising water losses. Calculating the crop water balance and the required water needs is the most common irrigation strategy; however, new innovative ways of obtaining real time feedback on irrigation management are now available. Here are two examples developed in orchard irrigation management:



### A fruit-based decision support system

In orchard systems, the fruit, of course, is the most essential part of the production in economic terms. How well it grows relies on many different physiological processes, and irrigation is especially important for this. The University of Bologna (Italy) in collaboration with the start-up business Horticultural Knowledge have developed a protocol to determine real time water demands based on the monitoring of fruit growth rate. During the growing season, fruit growth data can be collected directly by the grower using a simple measuring tool which is digitally connected. The fruit measurements are uploaded to a web portal which immediately generates feedback on

the orchard production performance and gives indications on how to correct irrigation and/or other management aspects. Brunella Morandi from University of Bologna - "The growers using this system said that it is nice to have feedback directly from the fruit on how the production is going, after all, the fruit is what you will harvest at the end of the season." For more information on this approach see the video here: <https://www.youtube.com/watch?v=G-pX1kENkXA>

### Online precise irrigation-scheduling

The Centro de Edafología y Biología Aplicada del Segura (CEBAS-CSIC, Spain) has developed "OPIRIS", an online precise irrigation-scheduling algorithm based on the combined interpretation of soil, plant-based and weather sensors. Growers can choose among different levels of services. One free access service it offers is the simple monitoring of the ET<sub>c</sub> (crop evapotranspiration) for a specific crop in a specific location. Growers can also opt for custom-tailored feedback on the actual time and amount of irrigation required by their crop for this one, growers install soil and plant-based sensors on the farm, installation and irrigation management is facilitated by the availability of professional support from the service providers. Diego Intrigliolo from CEBAS-CSIC said that "Farmers using this service consider that it gives us the possibility to visualise the soil moisture trend in the root-zone, a diagnostic just like radiography when we humans visit the doctor". [www.opiris.eu](http://www.opiris.eu)



Look out for the final report by the [Focus Group on Water and Agriculture](#) – coming soon.