# Smart technologies applied to water management in fruit growing

Riferimenti
Tipo di progetto
Gruppo Operativo

Acronimo
WAPPFRUIT

Tematica
Agricoltura di precisione

Information
Time frame
2020 - 2023

Durata
36 months

Partners (no.)
7

Regione
Piemonte

Comparto
Frutticoltura

Localizzazione
ITC11 - Torino
ITC16 - Cuneo

Costo totale
€580.321,91

Fonte di finanziamento principale
Programma di sviluppo rurale

Programma di sviluppo rurale
2014IT06RDRP009: Italy - Rural Development Programme (Regional) - Piemonte

Parole chiave
Soil management / functionality
Water management
Farming practice

Sito web
https://www.agrion.it/2018/06/26/psr-2014-2020-regione-piemonte-misura-16/

Project status
ongoing

Objectives
Main goal of WAPPFRUIT is of the innovation of farms by means of cutting edge technologies that will let the correct definition of the water requirement and the complete automation of the micro-irrigation system. Through sensors that measure matric water potential, the plants' water requirement will be indirectly identified. Sensor data will be read automatically by a control unit, and an algorithm will activate a localized irrigation system when needed. All data will be remotely available by means of a web interface and of a smartphone application.

Activities
Activities of this project will lead to the realization of sensor sistem to be buried in the soil. Such wireless and low power sensors will transmit informations of soil water content and potential. The control unit, following an algorithm developed in the project, will activate or not the irrigation in that sectors where the water is lacking.

Context
Irrigation represents a key step in the productive process of the fruit cultivation for the ultimate goal of high qualitative standard and low rate of diseases. In fact, qualitative and productive level of fruit cultivation is determined by different factors among which water content results to be crucial. Irrigation management should be cautious and rational to avoid negative impact on final production. Over-irrigations jeopardize water quality and develop optimal conditions to pathogenic agents. On the other hand, prolonged under-irrigations risk to compromise the production even before the fruit harvest. The knowledge of the correct water needs of fruit plants represents a fundamental know-how for all the fruit companies. In

literature, there are different pubblications that define water need calculations but they still do not work well for fruit plants. For this reason, fruit farms, still continue to irrigate following the habit without any objective reference with the risk to obtain very low quality fruit productions.

Partenariato

| Role | Azienda | Address | Telephone | E-mail |
|---|---|---|---|---|
| Leader | Politecnico di Torino - Dipartimento di Elettronica e Telecomunicazioni | C.so Duca degli Abruzzi, 24<br>10129 Torino TO<br>Italy | 011 0904210 | det.progetti@polito.it |
| Partner | Università degli Studi di Torino - Dipartimento Interateneo di Scienze, Progetto e Politiche del Territorio (DIST) | Viale Pier Andrea Mattioli, 39<br>10125 Torino TO<br>Italy | 011 0907427 | davide.canone@unito.it |
| Partner | Agrion - Fondazione per la ricerca l'innovazione e lo sviluppo tecnologico dell'agricoltura piemontese | Via falicetta, 24<br>12030 Manta CN<br>Italy | 0175 1953030 | info@agrion.it |
| Partner | Kynerion S.r.l. | Via Giuseppe Piazzi 30<br>10129 Torino TO<br>Italy | 011 19117071 | info@kynerion.com |
| Partner | Azienda Agricola Vassallo Paolo | via Gerbola, 6<br>12030 Manta CN<br>Italy | 3395427338 | |
| Partner | Azienda Agricola La Marchisa | via Pomarolo 122<br>12039 Verzuolo CN<br>Italy | 3357193100 | info@lamarchisa.net |
| Partner | Azienda Agricola Giuliano Sacchetto | via Savigliano, 6<br>12030 Lagnasco CN<br>Italy | 3338457633 | |

Pratice abstract

Description

"WAPPFRUIT main goal is to innovate fruit farms by means of new technologies that enable the knowledge of the correct need of water and the automatization of the microirrigation system. The most important innovation is the use of sensors buried in the soil in order to measure soil water potential to understand plants water need. In WAPPFRUIT data will be automatically collected by a control unit at chosen time intervals. A dedicated algorithm will activate the irrigation system depending on the water need. All data collected by the control unit will be remotely available through a web inteface and a smartphone application. In this way, the user can check, in real time, the different irrigation sectors and intervene remotely to switch the irrigation system on or off. Advantages of such solution are different:
1. Plants has always the correct water supply with a consequently positive repercussion on the qualitative features of the fruits.
2. The use of water is drastically reduced by optimizing consumptions with attention to environmental resources and economy for the company
3. With a single app it is possible to control all the irrigation systems even if they are located in different places
4. Irrigation sistems can be remotely swithed on or off
5. Irrigation sistems do not require anymore manual configuration thus enabling time saving farming (especially in case of land splitting, like in Piedmont)"

Link utili

| Titolo/Descrizione | Url | Tipologia |
|---|---|---|
| Sito web del partner Agrion | https://www.agrion.it/2018/06/26/psr-2014-2020-regione-piemonte-misura-16/ | Link ad altri siti che ospitano informazioni del progetto |
| Canale youtube della Fondazione Agrion | https://www.youtube.com/@fondazioneagrion3900/streams | Link ad altri siti che ospitano informazioni del progetto |