ALMA MATER STUDIORUM UNIVERSITÀ DI BOLOGNA

CIRI AGROALIMENTARE

CLUST-ER AGRIFOOD AGROALIMENTARE

BOLOGNA
14-16 SEPTEMBER 2021

EUFRIN WORKSHOP ON INNOVATIVE & SUSTAINABLE ORCHARD MANAGEMENT

A Third Mission event of the S30 Project

WEDNESDAY, SEPT. 15

08:30 PROTECTION METHODS AND IRRIGATION MANAGEMENT

- Results from the Interreg-Project "Model Orchards" - Andreas Naef, Agroscope
- Effect of light quality on the development of bacterial disease in fruit - Francesco Spinelli, Unibo
- Linking the root system distribution to water status of apple trees in conditions of soil replant disease and use of hail nets - MÉSZÁROS Martin, VSUO

10:00 WEED MANAGEMENT

- Different combinations of weed-control and water-measurements - Eric van der Hoeff, FruitConsult (private)

10:30 COFFEE BREAK

11:00 USE OF REMOTE/PROXIMAL SENSING

- Zoning orchards fields for precision irrigation by means of remote sensing and on-the-ground tools - Diego Intrigliolo, CSIC
- IRRIDESK: An automatic irrigation DSS which integrates crop modelling with sensoring and remote sensing data - Joaquim Bellvert, IRTA
- Smartland: A pilot study of sensor-based soil moisture assessment for precise irrigation scheduling in apple - Lorenzo Panizzon, Laimburg
- Fire Blight detection using a hyperspectral camera platform - Serge Remy, pcfruit

13:00 LUNCH

14:00 ADOPT DSS DECISION SUPPORT SYSTEMS

- Decision support in apple production to improve pesticide application and fruit storability - Konni Biegert, KOB - Bavendorf

14:30 USE OF PREDICTION MODELS

- Back to basics: The Impact Indicator, a decision support tool to facilitate IPM - Dany Bylemans, pcfruit

15:00 IMPROVING MONITORING SYSTEMS

- Use of sensors, camera's and AI to detect pests and diseases in the orchard - Peter Frans de Jong, Wageningen University & Research

15:30 USE OF BIOSTIMULANTS IN IRRIGATION WATER

- Interreg Bio4safe: the potential of innovative sensors and biostimulants to reduce the use of water and fertiliser in horticulture - Matevz Papp-Rupar, NIAB EMR (East Malling Research)

16:00 FIELD VISIT

18:30 END OF THE JOINT MEETING

THURSDAY, SEPT. 16

08:00 SEPARATE EUFRIN WORKING GROUPS MEETING (DSS, RESIDUES, WATER)

A project co-funded by the ROP ERDF, Program 2014-2020, Axis 1, Action 1.2.2 Call for Research Grouping and cofinanced by the Development and Cohesion Found

POR FESR EMILIA-ROMAGNA 2014/2020

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TUESDAY, SEPT. 14

13:30 **MEETING START - REGISTRATION**

14:00 **INNOVATIVE SPRAY APPLICATION**

- First results of a permanent spraying system in apple orchard protection - Daniel Bondesan, Edmund Mach Foundation
- Precision spraying of apple orchards - Charles Whitfield, NIAB EMR (East Malling Research)
- Innovative spray systems – bait sprays for SWD (Bethan Shaw/Michelle Fountain)- Michelle Fountain, NIAB EMR (East Malling Research)

15:30 **PROTECTION METHODS AND IRRIGATION MANAGEMENT**

- "Zebra Modules" for Photovoltaics: In addition to electricity, you benefit from rain protection, hail protection, frost protection and a new way of water management - Steinbauer Leonhard, Haidegg

16:00 **COFFEE BREAK**

16:30 **PROTECTION METHODS AND IRRIGATION MANAGEMENT**

- Using dynamic solar panels to protect fruit crops: combining field research, crop modelling and DSS to optimize solar panel management - Gerardo Lopez, Sun'agri
- Effect of a high-diffusivity shading net on physiology, productivity and water use in peach: The SUS-PEACH project - Pasquale Losciale, Uniba
- Rain cover & irrigation system on apples - Marcel Wenneker, Wageningen University & Research
- The fungal microbiome associated with grapevine rootstock genotypes and the fungus resistant varieties under different irrigation regimes - Lorena Butinar, University of Nova Gorica

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S3O

SMART SPECIALIZED SUSTAINABLE ORCHARD

eufrin

European Fruit Research Institutes Network

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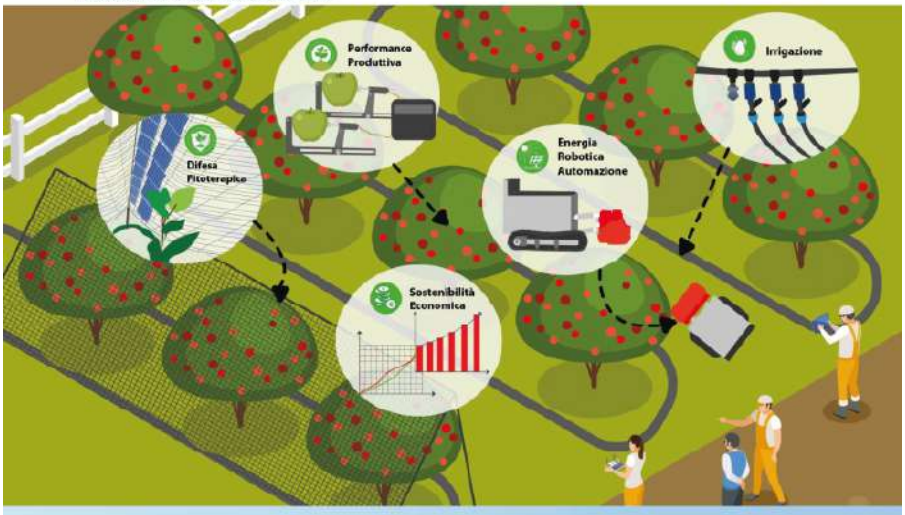

This demonstrator project provides an innovative approach to extracting further usefulness/sustainability from a smart combination of existing, innovative technologies, to improve the sustainability of our Region's Fruit Growing Sector by:

1. **Reduction of CO2 Emissions:** the project is developing a fully autonomous, electric rover, capable of carrying out normal cultivation operations, such as spraying and mowing; it is complemented by research on high efficiency power storage solutions, including smart, AI-adopting charge/discharge controllers, to enhance battery output and life. In the future, it is expected that photovoltaic plastics will be integrated in the cover system of the orchard, to increase its independence from grid power. This power can be used also by the irrigation and the fixed-point spraying system under testing.

2. **50% Reduction in irrigation:** the covers placed on the trees (anti-hail; anti-insect and raincovers) reduce light levels within the orchard by about 50%. This is the same percentage reduction in irrigation volumes that are being applied via a state-of-the-art irrigation system, managed in full IoT configuration by the IRRIFRAME DSS of the Canale Emiliano Romagnolo (CER) Irrigation Project.

S3O.it

3. **Reduction in pesticide use**: the demonstrator features anti-insect screens (against stinkbug and Carpocapsa) integrated with rain-shelters covering each individual row. By reducing leaf wetting, the covers improve the efficacy of the fixed-point spraying system, which should help reduce dosages, also in view of the much shorter time between fungal infection and application of treatment such a system allows.

4. **Reduction in wastage and improved resource management:** thanks to all the technologies adopted, and due to the innovative configuration they are placed in, the orchard maximizes the efficiency of all inputs. The widespread adoption of precision orchard management techniques and sensor arrays generates data flows that will be analyzed according to Big Data approaches.

5. **Life-cycle analysis:** the project will provide an economic assessment of the orchard configuration proposed, with particular emphasis on the desirability/convenience for growers to adopt the S3O.

This demonstrator orchard is a prototype of Precision Fruit Growing 4.0, and an example of how exciting this type of primary production is, and how it can provide a challenging, but rewarding working environment for young professionals.

PROJECT PARTNER'S:

Alma Mater Studiorum Università di Bologna

Alma Mater Studiorum Università di Bologna Interdepartmental Centre for Industrial Applications and Materials Technology

CRPV Lab

Canale Emiliano Romagnolo

BUSINESSES:

Orogel Fresco

Apofruit

Op Granfrutta Zani

Apo Conerpo

Drover innovative systems

Winet

Bragaglia

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