ALMA MATER STUDIORUM
UNIVERSITÀ DI BOLOGNA

NEW TECHNOLOGIES AND DIGITAL INNOVATIONS IN AGRIFOOD

Precision farming approaches and digitalization of agricultural and food production systems.

Digital innovations, biosystems engineering and innovative technologies are providing a number of major changes in the way agriculture production is managed and is linked to food and non-food processes, as well as to the way it connects with ecosystems and the natural environment. This field is just at its outset and is bringing a number potential opportunities and challenges.

Research at University of Bologna covers a wide range of issues:

- Precision agriculture applications, with a focus on machines, fertilisation, plant protection and irrigation
- Sensors and modelling for plant growth and product quality management
- Smart solutions and modeling for water management and reuse in agriculture
- Modelling the impact of climate change in agriculture and forest ecosystems, and adapting solutions for resilient production systems
- IoT, ICT and automation in farming systems
- Drones and remote sensing
- New sensors for monitoring soil, water, crops and applications to resource conservation
- Satellite mapping of agricultural and forest landscapes
- Energy saving in buildings and machinery
- Recovery of materials and energy from agri-food waste, wastewater, sludge
- Solutions for traceability from farm to fork
- Digitalization of machine operations, through the acquisition of tractor operating parameters on a fleet of machines

HIGHLIGHTS

FP7 and H2020 projects: **ELECTRA** - Electricity driven low energy and chemical input technology for accelerated bioremediation; **MOSES** – Satellite technologies to support irrigation water management; **SWAMP** – Use of IoT and ICT for smart water management and precision irrigation; **FIGARO** - Flexible and precise irrigation platform to improve farm scale water productivity.

Infrastructures: Official OECD test stations for the certification of agricultural and forestry tractors and performance measures.

Spin off: **Horticultural Knowledge srl** - a company that develops systems for precision fruit growing.