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 of 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.