



INTERUNIVERSITY PHD COURSE
“SUSTAINABLE LAND MANAGEMENT”
Cycle XXXVI

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Title of the Research Project	Remote sensing for precision management of innovative tree crops
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Summary of the Research Project

Fruit tree crop is one of the most valuable sectors of the Apulian rural economy. It contributes about 40% to the agricultural GDP (Gross Domestic Product) of the Apulia region. According to the Agricultural Accounting Information Network, by European Commission, the companies with the highest production are viticultural and olive farms. Furthermore, the ratio between net income and GSP (Gross sealable production) is 51% for winery companies and 50% for olive farms.

Due to the economic importance of the fruit sector in the Apulia region, it is necessary to invest new resources to introduce modern technologies and providing useful tools for technical consultants and improve farm sustainability.

The main objective of this research project is to provide innovative agronomic practices for farmers and promote the digital transformation of the regional agri-food sector.

Different cropping systems will be considered, such as super high-density olive orchards. In the field, eco-physiological parameters (such as stem water potential, stomatal conductance, net assimilation, net photosynthesis, analysis of photosystems activity) and the biometric parameters (volume of the canopy, length of shoots, trunk diameter) will be evaluated and measured. Besides, high-resolution images will be collected from an unmanned aerial vehicle in open field. Subsequently, a correlation of proximal measurements and remotely images will be performed.

Expected results are:

- optimization of agronomic techniques in innovative cropping systems;
- protocol for the remote monitoring of fruit tree crops;
- site-specific management of fruit tree cropping systems.