



### **GROWING: Geophysical Roots Observation for Water saving in arboriculture, viticulture and agronomy**

GROWING is a project dealing with the use of minimally invasive methods for roots monitoring, with the specific aim of improving water use in arboriculture, viticulture and agronomy. The aim of GROWING is to develop our capability of understanding, through measuring and modeling, the actions of the root system on water state and fluxes in the soil-plant-atmosphere system. This is particularly critical in areas of water scarcity, such as the Mediterranean region.

GROWING is based upon three scientific pillars: (a) an advanced plant root phenotyping technology using geophysical methods, overcoming current limitation in imaging roots under field working conditions; (b) a coupled above and belowground monitoring using geophysical, plant physiology and atmospheric measurements and (c) a data assimilation scheme that uses the data above to construct a hydrogeophysical model of water distribution in soil and exchanges with the atmosphere.

The scientific developments above will then foster the design of new tools and services for arboriculture, viticulture and agronomy with the ambition to transfer innovative knowledge to stakeholders, farmers, and winemakers in particular. The ground breaking nature of GROWING lies in the pooling of human, technical, and data resources, in order to better understand the hydric stress and roots response under a range of soil and agricultural practices.

In order to warrant effective dissemination of the project's results, I will work both with academic partners, the university in Padua (UNIPD) and the Lawrence Berkeley National Lab (LBNL) during the outgoing phase, and with farmers and stakeholders thanks to private companies' collaboration (FruitionSciences, Noble research institute). A two-way knowledge transfer is expected, with novel practical solutions to be developed in order to make non-invasive geophysical methods a state-of-the-art practice particularly in high-value crops.

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**Other Participants:** Lawrence Berkeley National Laboratory Energy Geosciences Division

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**Find out more:** <https://cordis.europa.eu/project/rcn/221806/factsheet/en>