

POSTDOCTORAL POSITION OFFER FORM

1. Job Position title: **Simulation of olive orchards for improved management, breeding and protection**

2. Keywords: best management practices, crop modelling, olive orchards

3. Researcher in charge in DAUCO:

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4. Research Group description (max. 2.000 characters)

The group AGR-119 “Soil-Water-Plant Relationships” is a team of eleven research scientists from the Department of Agronomy of the University of Córdoba (DAUCO) and the Institute for Sustainable Agriculture (IAS-CSIC). The group conducts research on agronomy and crop ecology, with emphasis on soil and water resources. The researchers of the group cover areas like crop modeling, remote sensing, irrigation engineering and hydrology, the response of crops to water stress, soil erosion and conservation agriculture. These elements and tools are combined in different research projects to find solutions and contribute new ideas that make our agriculture more productive and sustainable. Research facilities at Cordoba include laboratories, greenhouses, field plots and equipment for the measurement of actual ET and CO₂ fluxes with eddy covariance techniques, and soil water and plant water instrumentation. The group is involved in European, national and regional research grants that are also addressing other challenges beyond soil and water resources, like the ability of agricultural systems for carbon capture or the interaction of crops with biotic factors like pollinators or plant diseases. This shows the ability of the group members for interaction with scientists from other areas. The future of agriculture under climate change has also become one of the key topics for the group thanks to

the long experience in developing crop simulation models in both annual (e.g. DSSAT package) or perennial species (e.g. OliveCan). The research activity has also served to inspire some tools for teaching and extension (e.g. FertiCalc, CropET) that contribute to the international projection of the University of Cordoba in general and of DAUCO in particular.

5. Job position description (max. 2.000 characters)

The group AGR-119 “Soil-Water-Plant Relationships” is searching for a postdoctoral researcher with expertise in crop modelling to work on the development of OliveCan, a process-based model of water use, development, growth and yield of olive orchards. The envisaged position will involve the following tasks:

- Model improvement: development of new model routine for simulating processes that are not considered in the current version of OliveCan. Target aspects for development include the simulation of oil accumulation, the nitrogen budget in the soil-tree system or the impacts of diseases (olive knot disease) and pests (olive fruit fly), all of them in collaboration with other research groups of DAUCO.

- Model applications: this involves applying OliveCan for different practical research purposes aimed at identifying best management practices for optimizing the use of resources or enhancing ecosystem services under present and future climate conditions. Practical applications in the context of olive breeding include the assessment of olive ideotypes, which may help determining which genetic traits would be the most profitable to manipulate to maximize yields and economic returns for specific environments and management conditions.

Other responsibilities of the candidate will be:

- Supervision of field experiments and data analysis
- Write and publish articles in peer-reviewed journals
- Support teaching activities and supervision of students

A PhD degree in agronomy or similar will be a prerequisite for applicants. The candidate should also have experience in the development of crop simulation models in VB.NET and olive ecophysiology. Experience on measurement techniques assessing water and carbon fluxes within tree orchards is also desired. It is also required:

- A proven record of research papers in peer-reviewed indexed journals
- Experience in international crop modelling research projects
- Initiative and ability to work independently