



**Researcher in Remote Sensing for Precision  
Irrigation and Water Management  
for the  
EFFICIENT USE OF WATER IN  
AGRICULTURE Program**

**IRTA** is a research institute owned by the Government of Catalonia ascribed to the Department of Agriculture and Livestock. It is regulated by Law 04/2009, passed by the Catalan Parliament on 15 April 2009, and it is ruled by private regulations. IRTA is one of the CERCA centers of excellence of the Catalan Research System.

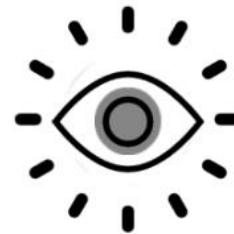
**IRTA**'s purpose is to contribute to the modernization, competitiveness and sustainable development of agriculture, food and aquaculture sectors, the supply of healthy and quality foods for consumers and, generally, improving the welfare and prosperity of the society.

## MISSION



Contribute to the modernization, competitiveness and sustainable development of the agrarian, food and aquaculture sectors, to the provision of healthy and quality food for consumers and, in general, to improve the welfare of the population.

## VISION



Become a scientific reference, an engine of innovation and technology transfer. We want to be the strategic ally of the agri-food sector.

## VALUES



1. Commitment
2. Creativity
3. Learning
4. Innovation
5. Leadership
6. Respect
7. Vocation of service

## THE EFFICIENT USE OF WATER IN AGRICULTURE PROGRAM

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IRTA's Efficient Use of Water in Agriculture research program is located at the Fruitcentre Building, in Lleida. The Efficient Use of Water program aims to provide information and new knowledge that are useful to improve water management, specifically, irrigation water. The current lines of work are:

- **Strategic Irrigation Management.** Determination of crop water requirements. Optimization of irrigation systems. Seasonal sensitivity to water stress. Management of irrigation under severe drought conditions.
- **Modelling water relations and irrigation.** Analysis of the water productivity functions in different crops and cropping conditions. Water relations and crop physiology under regulated deficit irrigation. Crop development, irrigation requirements and yield under climate change scenarios.
- **Automated supervision and control of irrigation.** The focus of this line of work is the study of approaches behind irrigation decision support systems and automated scheduling. More precisely, it deals with the development and analysis of the algorithms involved in the unmanned irrigation management.
- **Remote Sensing and spatial heterogeneity.** Remote sensing for Precision Irrigation. Detection of crop water status and crop evapotranspiration using high-resolution remote sensing technologies. Irrigation management and predictions of water consumption at irrigation districts. Models in the use of water in changing climate scenarios. Remote sensing for crop yield monitoring and forecasting.
- **Irrigation interactions, mineral nutrition and agricultural practices.** Interaction of irrigation with mineral nutrition. Management of fertigation. Soil management. Irrigation management under salinity stress.

## ROLE PROFILE

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IRTA is currently seeking a researcher to join the current team of precision irrigation. The selected candidate will lead and execute research projects and contracts dealing with the application of Remote Sensing (RS) technologies into Precision Irrigation and Agricultural Water Management. The expertise areas include remote sensing for evapotranspiration and Geographic Information System (GIS) applications on precision agriculture. R+D contributions on this line will be applied by the whole team to regional accounting of water use in agriculture and to precision irrigation.

Within this framework, IRTA is proposing a research position with the following characteristics.

## DUTIES AND RESPONSIBILITIES

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- To lead a research line on the development and optimization of remote sensing of vegetation focused at monitoring the development and water state of crops. The expected outputs of the research line will be R+D contributions to advance the State of Art in providing data for assessments of agricultural water usage at regional scale as well as a source for precision irrigation in farms. This research line focuses at the RS workflow of data acquisition and processing and will complement existing research lines on the smart usage of those data for decision making in agricultural water management.
- To participate actively in the preparation of proposals for national and international public calls.
- To be involved in the transfer of knowledge and technologies to the private sector.
- To participate in dissemination activities related with the research line.
- To create synergies with other research lines at IRTA.

## REQUIRED EXPERIENCE

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### Essential requirements:

- PhD related with Remote Sensing or Geospatial Sciences applied to Agriculture, Forestry or Environmental Sciences.
- At least 2 years of postdoctoral research.
- Demonstrated scientific production in remote sensing (RS) technologies.
- Knowledge about applications of RS and GIS to precision agriculture.
- Experience or knowledge in the application of RS methods to the assessment of vegetation traits and water relations.
- Capacities for teamwork, project management and transfer of R+D outputs to the agricultural and water management sectors.
- Experience in writing project proposals.
- Dissemination skills: solid presentation/communication skills, scientific (peer-reviewed journals) and technical writing skills.
- Good level of English, both spoken and written. Catalan and Spanish will be valued.
- Full driving license for Europe and travelling availability.

### Desirable requirements:

- MSc degree on remote sensing, Geographic Information Systems, Geomatics or similar
- Experience with the data workflow from different RS platforms (airborne & satellite) addressed to retrieve information of interest for agricultural water

management, such as biophysical parameters of the vegetation, surface temperature and evapotranspiration.

- Experience with ground truth for vegetation remote sensing, using instruments such as portable spectroradiometers, eddy-covariance systems, etc.
- Skills in Geographic Information Systems (GIS) Programming Skills, especially with Python
- Skills in machine learning techniques.
- Demonstrating an attractive publication record and participation in funded projects.
- Network of collaborators at a national and/or international.
- Proven experience in technical and scientific initiatives, at an international level, and eventually national level.
- A proactive profile, solutions-focused approach to work, with ability to adapt to changing requirement.
- Capacity to perform high quality work and commitment.

#### **Personal profile:**

- Strong organizational capability and ability to learn and successfully work within multidisciplinary teams.
- Teamwork skills and ability to establish and build relationships that will allow pursuing the objectives of the R&D activities.
- Willingness to organize and share information. Proactive in suggesting improvements.
- Flexibility and adaptation. To be able to prioritize tasks effectively. Capacity to anticipate, plan and write R+D projects, reports and technical documents.
- Receptive to challenges, ability to align the professional objectives and institutional priorities and strategy.

## **TERMS OF THE APPOINTMENT**

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This is a full-time position with the possibility of the successful candidate to be recruited as IRTA's permanent staff after a probationary period of one year. Gross salary will be commensurate with the qualifications and experience.

IRTA offers a rich environment for knowledge development and exchange where to develop a scientific career, and possibilities for professional promotion according to the attained achievements.

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## LOCATION: FRUITCENTRE, LLEIDA

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Lleida is the capital of “El Segrià”, a large county on the western edge of Catalonia that takes its name from the River Segre, which crosses the county. Lleida is the economic and demographic hub of inland Catalonia.

The streets of Lleida, with their rich historical and monumental heritage, also bear witness to the business activities and initiatives befitting a major modern city that looks towards the future.

Lleida is the capital of one of the most fertile areas in Europe and its agri-food industry is one of the main drivers of its economy. Many benchmark companies have their headquarters in Lleida, including a large number of R&D firms that have set up in the Gardeny Agri-Food Science and Technology Park to take advantage of its international potential.

Lleida’s climate is continental, with hot summers and cold winters.

There is an extensive public and private transport network for travelling to Lleida. The AVE high-speed train is a good alternative. There is also a modern road network, including the AP2 Northeast motorway, the A2 Lleida-Barcelona motorway and the C25 motorway linking Lleida and Girona. Now, it is also possible to fly into Lleida-Alguaire airport.

## KEY STEPS IN THE SELECTION PROCESS

If you wish to be considered for this position, please, go to the link:

<http://www.irta.cat/en/work-at-irta/>

and register yourself. You should load your **CV in Adobe Acrobat pdf** format before the 18<sup>th</sup> of January 2021. All information will be in the strictest confidence.

During the recruitment process, Human Resources Department will keep you informed on which step is your application.

Register to have full access to our job vacancy publications and future opportunities



Deadline timing job ref. 47/20 Researcher in Remote Sensing for Precision Irrigation and Water Management	
60 days	Publication and diffusion of the job advertisement on IRTA's website, EURAXESS Jobs, social networks and other specific recruitment places.
5 following working days	Distribution of the pre-selected CVs which match eligibility criteria to the Selection Committee. Communication via e-mail with the not pre-selected candidates who will not be further included in the process.
20 following working days	Selection Committee: <ul style="list-style-type: none"> <li>- Communication via e-mail with the not-selected candidates by the Selection Committee.</li> <li>- Interview with selected candidates by the Selection Committee.</li> <li>- Accord of the Selection Committee stating the selected candidate and detailed reasoning for the decline of the rest of the candidates.</li> <li>- Communication via e-mail with the interviewed and not-selected candidates.</li> </ul>
5 following working days	Provision by the selected candidate of requested legal and official documentation to the HR department to coordinate the start of the candidate.
First trimester of 2021	Start of employment (approximately)