# Position Details

## CSIRO Early Research Career (CERC) Postdoctoral Fellowship– CSOF4

|  |  |
| --- | --- |
| The following information is for applicants | |
| Advertised Job Title | CSIRO Postdoctoral Fellowship in Farming System Design |
| Job Reference | 77761 |
| Tenure | Specified Term of 3 years  Full-time |
| Salary Range | AU$89,926 to AU$98,504 pa + up to 15.4% superannuation |
| Location(s) | Canberra, ACT |
| Relocation Assistance | Will be provided to the successful candidate if required |
| Applications are open to | All candidates |
| Position reports to the | Team Leader |
| Client Focus – Internal | 100% |
| Client Focus – External | 0% |
| Number of Direct Reports | 0 |
| Enquire about this job | Julianne Lilley, [julianne.lilley@csiro.au](mailto:julianne.lilley@csiro.au) |
| How to apply | Apply online at <https://jobs.csiro.au/>  Internal applicants, please apply via **Jobs Central**  If you experience difficulties when applying, please email [careers.online@csiro.au](mailto:careers.online@csiro.au) or call 1300 984 220. |

**Acknowledgement of Country**

CSIRO acknowledges the Traditional Owners of the land, sea and waters, of the area that we live and work on across Australia. We acknowledge their continuing connection to their culture and pay our respects to their Elders past and present. View our [vision towards reconciliation](https://www.csiro.au/en/about/Indigenous-engagement/Reconciliation-Action-Plan).

### Role Overview

**CSIRO Early Research Career (CERC) Postdoctoral Fellowships** provide opportunities to scientists and engineers who have completed their doctorate and have less than three years of relevant postdoctoral work experience. These fellowships aim to develop the next generation of future leaders of the innovation system through:

* A differentiated career development program to deliver capability excellence and breadth across all facets of the national innovation system.
* Research training via strategic research and development projects with a clear focus that will deliver real impact through science and engineering excellence;
* An innovative culture supporting the development and demonstration of original thinking and expertise leading to peer recognition; and
* Opportunities to develop skills and experience in collaborative research teams to effectively work within national and global multi/transdisciplinary and multi-stakeholder environments.

CERC Postdoctoral Fellows **are appointed for three years or part-time equivalent.**

The CSIRO Data61 and Agriculture and Food business units recently established a new 3-year project to develop complex agriculture systems using novel digital and autonomous systems. As a member of this multidisciplinary team, you will work with CSIRO scientists, engineers and collaborate with national and international university partners to explore how concepts from polycultures and multispecies cropping systems may be exploited to benefit conventional mixed farming systems in Australia. The work will specifically focus on the development of novel, complex farming systems.

The postdoctoral researcher will work closely with leading farming systems and digital agriculture scientists in CSIRO Agriculture and Food to develop systems which manage and monitor the farming systems for maximum productivity and ecological sustainability and engage with Data61 scientists in developing autonomous technology and machine learning. The farming system research will seek to optimise across multiple dimensions of productivity, profitability, environmental sustainability and resilience. This is likely to include exploration of complex systems that integrate climate, crop, livestock, soil and plant nutrition. Autonomous systems need to understand the agricultural system, and this project will define the key agricultural management and monitoring tasks to integrate with autonomous robotic workflows. Research will focus on optimising these innovative farming systems and developing new technologies and methods for future farming systems.

The successful candidate will work within national and international settings and as part of a diverse multidisciplinary team. The developed frameworks will be tested and deployed on real-world robotics platform in a range of settings such as field research station and on-farm. They will present the findings in appropriate top-tier journals or conferences.

### Duties and Key Result Areas:

Under the direction of senior research scientists and engineers in CSIRO, the successful candidate will:

* + Evaluate an existing Australian broadacre farming system, with crop models, to determine what aspects of the system need to be monitored to enable the automated management of the farming system.
  + Develop novel, polyculture, or dual-row farming systems, using advanced crop modelling techniques that can increase Australian agricultural productivity and sustainability.
  + Design novel farming systems to integrate with novel and emerging automated management practices.
  + Publish results in relevant international scientific venues (high-level journals and conferences).
  + Carry out innovative, impactful research of strategic importance to CSIRO that will, where possible, lead to novel and important scientific outcomes.
  + Collaborate with members of a diverse project team and external partners to ensure research directions can lead to lasting impact in application domains.
  + Communicate effectively and respectfully with all staff, clients, and suppliers in the interests of good business practise collaboration and enhancement of CSIRO's reputation.
  + Adhere to the spirit and practice of CSIRO's Code of Conduct, Health, Safety and Environment procedures and policy, Diversity initiatives and Making Safety Personal goals.
* Other duties as directed.

[**The CERC Postdoctoral Fellow learning and development program**](http://www.csiro.au/en/Careers/Student-and-graduate-programs/Postdoctoral-fellowships)is developed between the CERC Postdoctoral Fellow and their CSIRO supervisor. The program will focus on enhancing the Fellows' capabilities to the level expected of an independent researcher and will include on-the-job and course-based development encompassing:

* Discipline-specific techniques and protocols
* Professional growth
* Project management
* Communication and influencing skills
* Working and collaborating with others

## **Required Competencies:**

* **Teamwork and Collaboration:** Cooperates with others to achieve organisational objectives and may share team resources in order to do this. Collaborates with other teams as well as industry colleagues.
* **Influence and Communication:** Uses knowledge of other party's priorities and adapts presentations or discussions to appeal to the interests and level of the audience. Anticipates and prepares for others reactions.
* **Resource Management/Leadership:** Allocates activities, directs tasks and manages resources to meet objectives. Provides coaching and on the job training, recognises and supports staff achievements and fosters open communication in the team.
* **Judgement and Problem Solving:** Investigates underlying issues of complex and ill-defined problems and develops appropriate response by adapting/creating and testing alternative solutions.
* **Independence:** Recognise and makes immediate changes to improve performance (faster, better, lower cost, more efficiently, better quality, improved client satisfaction).
* **Adaptability:**Copes with ambiguity or situations that lack clarity. Adapts readily to changing circumstances and new responsibilities (which may include activities outside own preferences) in the interests of achieving team objectives. Recognises the need for and undertakes personal development as a result of changes.

## **Selection Criteria**

#### Essential

*Under CSIRO policy, only those who meet all essential criteria can be appointed.*

1. A doctorate (or will shortly satisfy the requirements of a PhD) in a relevant discipline area, such as agricultural science, farming systems, digital agronomy.

*Please note: To be eligible for this role, you must have* ***no more than 3 years*** *(full-time equivalent) of postdoctoral research experience.*

1. Demonstrated understanding of the drivers of productivity and profitability in agricultural systems.
2. Demonstrated understanding of farming systems, and familiar with the use of advanced crop modelling (e.g. APSIM, DSSAT, AquaCrop) and proximal sensing monitoring techniques (e.g. CropCircle).
3. Awareness of multi species cropping systems, and the advantages they may bring to agriculture.
4. High-level written and oral communication skills including journal publication and effective presentation of complex research ideas to research scientists and external stakeholders.
5. A record of science innovation and creativity, including the ability and willingness to incorporate novel ideas and approaches into scientific investigations.

## **Desirable:**

1. Experience with the analysis of high-dimensional, spatio-temporal data, including development of analytical workflows in R or Python, and source code versioning systems such as Git.
2. Awareness of how agricultural machinery and logistics contributes to production efficiency in agricultural systems.

To be appointed as a CERC Postdoctoral Fellow within CSIRO, candidates are required to have **submitted** their PhD at the time of commencement, as a minimum requirement, if PhD conferment has not been obtained. If a candidate has submitted, but their PhD has not yet been formally attained, the starting salary will be CSOF4-1 ($87,068). Upon CSIRO receiving written confirmation that the PhD has been awarded (within a six month period from commencement date), the salary will be increased to the negotiated level and the difference will be back-paid to the Officer’s start date.

Special Requirements

* The successful candidate will be asked to obtain and provide evidence of a National Police Check or equivalent. Please note that people with criminal records are not automatically deemed ineligible. Each application will be considered on its merits.
* If the successful candidate is not an Australian Citizen or Permanent Resident, they may be required to undergo additional security clearances, including medical examinations and an international standardised test of English language proficiency (i.e. IELTS test, https://ielts.com.au/).

**Our value proposition**

We want CERC Postdoc Fellows to join our world-class science, engineering, and digital teams to solve big, complex problems that make a real difference to the future of Australia and the world.

You'll get to work with some of the most talented minds in their fields, not just in Australia but also in the world. At CSIRO, we spark off each other, learn from each other, trust each other and collaborate closely to achieve more than we could individually.

CSIRO Early Research Career (CERC) Postdoctoral Fellow Experience Employee Value Proposition (EVP). Find out more [here](https://www.csiro.au/en/careers/postdoctoral-fellowships)!

## **About CSIRO:**

We solve the greatest challenges through innovative science and technology. To find out more visit us [online](http://www.csiro.au/)!

demonstrate behaviours aligned to our values of:

* 1. People First
  2. Further Together
  3. Making it Real
  4. Trusted

Find out more about CSIRO [Agriculture and Food](https://www.csiro.au/en/Research/AF)

Find out more about CSIRO [[Data61](https://data61.csiro.au/)](https://www.csiro.au/en/about/people/business-units/Data61)