# Position Details

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

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| The following information is for applicants | |
| Advertised Job Title | CSIRO Postdoctoral Fellowship in Resilient Farming Systems |
| Job Reference | 96922 |
| Tenure | Specified Term of 3 years  Full-time |
| Salary Range | AU$96,329 to AU$105,517 pa  plus up to 15.4% superannuation |
| Location(s) | Adelaide, Toowoomba/Forest Hill, Brisbane negotiable |
| Relocation Assistance | Will be provided to the successful candidate if required |
| Applications are open to | All Candidates |
| Position reports to the | Research Team Leader, Resilient Systems, Agriculture and Food |
| Client Focus – Internal | 0% |
| Client Focus – External | 100% |
| Number of Direct Reports | 0 |
| Enquire about this job | Contact Therese McBeath via email at [therese.mcbeath@csiro.au](mailto:therese.mcbeath@csiro.au) or phone +61 422500449 |
| 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 areas 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).

**Child Safety**

CSIRO is committed to the safety and wellbeing of all children and young people involved in our activities and programs. View our [Child Safe Policy](https://www.csiro.au/en/about/policies/child-safe-policy).

### Role Overview

**CSIRO Early Research Career (CERC) Fellowships** provide opportunities to scientists and engineers who have completed their doctorate and have less than three years relevant research 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 Fellows **are appointed for three years or full-time equivalent.**

There are more than five million hectares of sandy soils in the southern Australian cropping region. Sandy soils can significantly constrain grain crop productivity due to a compacted layer that prevents root proliferation, a water repellent surface layer causing poor crop establishment, soil pH issues and/or poor nutrient supply. CSIRO led farming systems research has recently shown that high soil disturbance techniques (e.g. deep ripping, inclusion ripping and spading) to break up high soil strength layers and/or mix repellent layers) could increase crop yields by up to 200%. However, the techniques are costly, can elicit variable responses and may cause soil erosion if poorly implemented.

The CERC Fellow will work within the GRDC funded ‘Sandy Soils II-Management to sustain production potential in the low to medium rainfall environments of the Southern cropping region’ project team. They will focus their efforts on a program of work within this project that seeks to use spatial science techniques to predict where in the landscape soil amelioration techniques will deliver the best outcomes for crop production, which amelioration technique is best suited to deliver the crop production outcome and how frequently the treatment should be applied.

The CERC Fellow will collaborate with a team of researchers from within CSIRO who have expertise in soil science, spatial analysis and agronomy and will work closely with a postgraduate student to be hosted by the University of Sydney. Additionally, they will have the opportunity to collaborate with the Spatial Sciences team at the University of Sydney, the Agricultural Engineering team at the University of South Australia, along with other collaborating research agronomists.

This position presents and exciting opportunity to develop novel farming systems approaches which provide greater insight into the spatio-temporal complexity of agricultural soils to transform sandy landscapes in the southern cropping region of Australia. The CERC Fellow will have the opportunity to work across different spatial scales (paddock level to regional level) and will work with farmers/advisors to implement and analyse commercial-scale soil amelioration trials.

This CERC Fellow will be able to develop their skills, reputation and build a national network with researchers from within and beyond CSIRO.

### Duties and Key Result Areas

Under the direction of senior research scientists and engineers, this CERC Fellow will:

* + Design, conduct and analyse field-based farming systems experimentation involving crop, soil, climate and tillage dimensions, including the application of new digital technologies for soil, crop and environmental sensing.
  + Develop spatial models to predict where and when in the landscape to ameliorate soil constraints for profitable and sustainable cropping outcomes.
  + Advance spatial trial analysis techniques using data from On-Farm-Experimentation (OFE).
* Produce high quality scientific papers suitable for publication in high quality international journals and conferences.
* Work effectively as part of a multi-disciplinary research team, to undertake independent scientific investigations and carry out associated tasks under the guidance of more senior Research Scientists/Engineers.
  + Recognise and exploit opportunities for innovation and the generation of new theoretical perspectives, and progress opportunities for the further development or creation of new lines of research.
  + Communicate research findings to diverse audiences including farmers, advisors, industry bodies and policy makers.
  + Carry out research investigations requiring originality, creativity and innovation.
  + Proactively undertake development to grow effective researcher capabilities to support career goals.
  + Adhere to the spirit and practice of CSIRO’s Values, Code of Conduct, Health, Safety and Environment procedures and policy and diversity initiatives.
* Other duties as directed.

The CERC Fellow learning, development and training programis developed between the CERC Fellow and their CSIRO supervisor. The program will focus on enhancing the Fellow’s 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

## **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). The doctorate must be in a relevant discipline area, such as agricultural/ environmental/ soil science or related disciplines. Please note: To be eligible for this role you must have **no more than 3 years** (or full-time equivalent) of relevant research experience.
2. Experience and skills in programming (eg. R or Python), data manipulation, model development using statistical and machine learning algorithms, and aptitude for the use of high-performance computer (HPC) facilities for the prediction of soil and land properties, processes, and functions.
3. **Experience and/or demonstrated knowledge of GIS and precision agriculture techniques and/or experience in developing and deploying Digital Soil Mapping (DSM) technology at paddock and regional scale.**
4. Demonstrated ability to conceive and undertake original and innovative research by generating and pursuing novel ideas and solutions to scientific research problems.
5. A demonstrated publication history of authorship on scientific papers in peer reviewed journals and/or reports, grant applications or inventorship on patent applications.
6. A proven ability to work effectively as part of a multi-disciplinary team, plus the motivation and discipline to carry out autonomous activities.
7. High level written and oral communication skills with the ability to represent the research team effectively internally and externally, including the presentation of research outcomes at national and international conferences.

## **Desirable**

1. **Demonstrated knowledge and application of contemporary data management approaches, including spatial data analysis and analysis of large data sets.**
2. An understanding of soil processes and functions and the impacts of land management practices on soils across different landscapes and land uses.
3. **Understanding or experience with working in large collaborative teams.**
4. **An aptitude for delivering impactful outcomes for agricultural industry.**
5. **Agronomic understanding of dryland broadacre cropping systems.**
6. **Possession of an Australian C class (motor vehicle) licence or ability to obtain one.**

## **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.

To be appointed as a CERC Fellow within CSIRO, candidates are required to have **submitted** their doctoral thesis 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 ($93,267). 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

Appointment to this role is subject to provision of a pre-employment background check and may be subject to other security/medical/character clearance requirements.

* The successful candidate will undertake a pre-employment background check. Please note that individuals 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, which may include 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 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 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.

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

## **About CSIRO**

We solve the greatest challenges through innovative science and technology. Visit [CSIRO Online](http://www.csiro.au/) and [CSIRO Agriculture and Food](https://www.csiro.au/en/about/people/business-units/agriculture-and-food) for more information.

CSIRO is a values-based organisation.  In your application and at interview you will need to demonstrate behaviours aligned to our values of:

* People First
* Further Together
* Making it Real
* Trusted