

## **PhD Opportunity: CSIRO iPhD Strategic silage use for productivity and sustainability and drought resilience**



The Research Institute for Northern Agriculture ([RINA](#)) is seeking applicants for an exciting PhD project that will improve NT beef producers' resilience to climate shocks whilst enabling them to improve the economic efficiency and sustainability of their enterprises. This project is a rare industry integrated research opportunity with the privilege to influence decisions affecting millions of cattle across Northern Australia.

### **Scholarship and financial support:**

- A stipend of approximately \$47,000/year for 4 years, open to Australian citizens/residents or New Zealand citizens, for domestic students and tax exempt
- University relocation allowance of up to \$2,000 may be available
- Generous project expense and development package of \$13,000/yr

### **About the project:**

Beef producers in the NT primarily rely on rainfed native pastures for the nutritional needs of their cattle. During extended periods of low rainfall, producers frequently do not have enough feed to provide adequate nutrition for all their animals and often must sell their livestock into a saturated market, receiving low returns that sometimes fail to even cover transportation costs.

Increasingly, NT beef producers are seeking improved feedbase opportunities to maintain better production, but silage production and forage conservation has remained low compared to the potential across the region. Little information exists to support these northern producers to make decisions around optimising silage use on-farm; when the dry season begins and pasture availability declines, which class of cattle should be prioritised for silage feeding to maximise economic and herd viability outcomes?

This project aims to provide data-informed silage feeding strategies that are optimised for economics and sustainability to help NT beef producers decide which class of animal to feed and when. This will have massive impact; there are 1.7 million head of cattle in the NT, but currently only ~110,000 cattle can be supported from the current volume of conserved silage. Increasing this number will improve NT producers' resilience to climate shocks whilst enabling them to improve the economic efficiency and sustainability of their enterprises.

### **This PhD will:**

- Map historical drought events and cattle market responses

- Identify cattle classes that lose value most rapidly during drought-induced market pressures
- Analyse how large-scale cattle sell-offs impact market stability
- Use on-station trials and modelling to develop strategies for regular, robust beef supply during droughts using conserved forage

This project will work with CSIRO, Lallemand Australia and CDU to combine feeding trials on commercial properties in the NT with economic and sustainability modelling to develop economically- and sustainability-optimised silage feeding strategies to improve beef production and climate resilience. The outcomes will provide Northern Territory cattle producers with clear, evidence-based guidance on how to best utilise silage to survive and recover from drought. The successful candidate will influence decisions affecting millions of cattle across Northern Australia.

**About you:**

- You have a research background in agriculture, animal science, economics, business or similar field and bring a high level of academic merit consistent with RTP stipend scholarship requirements
- Hold an Australian driving license or the capacity to obtain one
- Would ideally be based or willing to relocate to Darwin or Alice Springs, other location possible by negotiation
- Willing and able to travel to regional and remote locations
- Can work independently with a high level of initiative

**Benefits to you:**

- Generous stipend and support for project costs
- Opportunity to work and travel to the remote and spectacular regions of the Northern Territory
- A professional development training program delivered alongside the PhD
- A 60-day Industry Engagement component provided by the industry partner
- Quality Supervision by CDU, CSIRO and Lallemand Australia
- Development of skills in stakeholder engagement, working closely with land owners
- Play an integral role in a highly collaborative multidisciplinary research team
- Contribute to research with real-world impact
- Access to Student Support Services and Wellbeing Support Program
- Work with a University committed to changing people's lives for the better through training, education, and research

**Selection criteria:**

- First Class Honours, MSc or equivalent containing a substantial research component in a relevant field such as agriculture, animal science, economics/business or similar field
- Experience in livestock and/or sustainability modelling desirable
- Livestock handling skills essential with experience with animal trials desirable
- Understanding of nutritional requirements of beef cattle
- Must meet RTP stipend requirements, including being either an Australian permanent resident or citizen, or a New Zealand citizen, with intention to be a domestic student

**How to apply:**

Email an expression of interest to Beth Penrose ([beth.penrose@cdu.edu.au](mailto:beth.penrose@cdu.edu.au)), including:

- A curriculum vitae, including a list of any peer-reviewed publications, conference presentations and relevant work and/or research experience

- A brief statement, not exceeding 500 words, describing your background, research experience and interest in this research project/area
- Names and contact details of two academic referees

**Application closing date:** Midnight 13 October 2025

**Commencement date:** Early 2026

**Supervisory and Advisory Team:** Beth Penrose (CDU), Di Mayberry (CSIRO), Matt Bekker (Lallemand Australia), Jordan Minniecon (Lallemand Australia)

**Enquiries:** Associate Professor Beth Penrose ([beth.penrose@cdu.edu.au](mailto:beth.penrose@cdu.edu.au)), 0436 839 662.

**Diversity and Inclusion:** At CDU, we actively celebrate our diversity. We innovate, embrace new ideas, and act with courage and kindness. We're about what we can give to the world rather than what we take, and we believe in the transformative power of education. We work hard to make sure every member of our university community feels that they truly belong. Understanding that it is through our focus on our people and leveraging our differences that will make CDU the most connected university in Australia, we are striving to ensure that our culture and our community are inclusive of all our staff, students and visitors. We are committed to maintaining a culture where everyone feels respected, safe, encouraged to speak up and supported in achieving their professional goals. You make CDU. And we want you to be exactly who you are.