



A life in the Central Australian pastoral industry starts here – creating future land managers through Rangeland Management Courses

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Abstract

The Central Australian Rangeland Management Course (RMC) is a free, one-day workshop that is delivered on-station for new staff. It has been designed specifically for the beef cattle industry operating in arid regions with an extremely variable climate and land capability. The course introduces pasture dynamics, species identification, carrying capacity, cattle nutrition, poisonous plants, weeds and fire management. Participants learn about arid zone ecological processes and climate characteristics that drive pasture production.

The course has a strong practical component and one of the most popular activities involves taking participants into the paddock to find and identify pasture species. Participants also learn how to assess land capability and land condition. For many participants, who are often new to the region, these activities are their first introduction to the plants that form the basis of the grazing enterprise, and they are often amazed at the variety of species.

The first course was conducted in early 2024. Overall, the feedback shows a positive response to the course. Many participants did not feel they had good prior knowledge but found the course very valuable; with the accessibility of the course attracting participants who would not normally attend on their own accord. There has been considerable interest for ongoing connection and support for graduates of the course in the form of WhatsApp groups or a similar platform.

Delivering the courses in a familiar ‘home’ environment, surrounded by peers, facilitates a positive and relevant introduction to rangeland management. In addition, it introduces people new to the industry to Extension Officers and other professionals they might work with throughout their career.

Introduction

The Central Australian Rangeland Management Course (CARMC) is a free, one-day workshop created by the Northern Territory Department of Agriculture and Fisheries (DAF) designed to upskill early career station hands in Central Australia. It is based on the highly successful Rangeland Management Courses that have been offered on the Barkly Tablelands and the Katherine district for the past 20 years. The courses offer an introduction to pasture dynamics, species identification, carrying capacity, cattle nutrition, poisonous plants, weeds, fire management and biosecurity. However, the northern courses are designed for a pastoral system that is based on a relatively reliable wet season and on extensive, uniform Mitchell grass pastures, quite different to the highly variable climate and landscapes of the arid Centre. With funding from the Northern Western Australia and Northern Territory Drought Resilience Adoption and Innovation Hub ([Northern Hub](#)), we

customised the Rangeland Management Course to address the unique, environmental challenges of grazing cattle in arid regions.

The course is specifically designed to suit early career station staff. For many participants, this is their first time working in arid Australia. While they bring plenty of enthusiasm and energy to their work, and perhaps some experience handling cattle, they often haven't yet had the opportunity to gain any arid rangeland management knowledge. The course contains lots of practical activities and is designed to be delivered on-station.

Methods

We used the existing RMC as a starting point for designing the Central Australian version. To make it regionally relevant we reviewed the content of existing publications which are aimed at the station management level. The primary resources included the Central Australian Grazing Land Management (GLM) EDGE workshop (Chilcott et al. 2005), various field day presentations designed for Central Australian cattle producers (Kain, pers. comment.), case studies and recommendations from local reports on fire and weed management (Edwards and Allan 2009, DEPWS 2021) and historical documents relating to poisonous plant events in the region. We also took advice from local producers about the information they wanted their staff to know.

While the northern RMC describes a grazing model designed for a relatively predictable wet/dry season, the CARMC needed to describe the fundamental ecology of the arid environment in Central Australia.

One of the strengths of the original RMC is that it is designed to be delivered on-station. On the very large, Barkly properties it is quite common for stock camps to have 10 or more early career staff. It makes sense to train them in a group and on-property, as there is no travel time and the benefits of working with their peers are two-fold; participants are often more relaxed around people they know, and they can share their learnings and experiences after the course. However, in Central Australia, many properties only have 2 or 3 staff which isn't enough to support good group learning. Sometimes it is possible for neighbouring stations to get together and host a course. However, we also had to find a way of getting larger groups together.

Results

Course content

We have created a series of modules using an updated PowerPoint presentation with plenty of practical activities. The Pasture Dynamics module is the first of its kind in explaining the fundamentals of arid Australian ecology and how it relates to pastoral activities to early career station hands.

Our primary focus was to describe the variability of rainfall (within and between years), the importance of understanding 'pasture growth events', the effect of winter rain vs summer rain, how to distinguish between a seasonal rainfall response and land condition, identify different land types and their capability, and identify pasture species (Photo 1) and their grazing value.



Photo 1: Early career station hands use pasture identification guides to identify native grass species and their grazing value.

While most people associate Central Australia with low rainfall, the reality is much more complex and variable. Very high rainfall years do occur, but long periods of low rainfall are more common. When it does rain, almost half the rainy days will occur as isolated occurrences, just enough to settle the dust but not grow any pasture. Hence the concept of *growth events*. Soil moisture levels need to remain conducive to growth for at least a week to stimulate plant growth and germination of new plants. For plants to reach maturity and grow a good bulk of pasture, soil moisture needs to be available for about 4 weeks. In central Australia, this requires at least 60mm of rain and on average, to occur once per summer – critical information for people who rely on pasture growth for their business!

We also discuss the characteristics that make Central Australia pastorally productive. The landscape is old, highly weathered, and often nutrient poor, creating significant landscape variability and areas of low pastoral capability, but also patches of moderate soil fertility. The combination of moderately fertile soil and low rainfall results in plant growth with high nutrient concentration and some of the highest quality pasture in the Northern Territory. In addition, the landscape supports a suite of vegetation that can take advantage of both summer and winter rain, small rainfall events and floods. Building an understanding of landscape function allows us to explain how grazing can influence land condition and ultimately pastoral production.

We have also updated the course to include a module on Biosecurity. In recent years, the pastoral industry has become more acutely aware of the threat of foreign disease incursions into Australia (e.g. Lumpy Skin Disease, Foot and Mouth Disease). It was considered timely and appropriate to include a new module into the RMC syllabus to address this emerging issue and it has been well received.

Table 1: Examples of feedback from Central Australian Rangeland Management Course participants.

‘It’s okay to take a day away from work, when the course is so interesting and directly relevant to our everyday jobs’.
‘I found it interesting how you worked out the amount of grass in the paddock.’
‘I’d love to have done this as a first-year ringer – I think it would have changed my perspective on everything.’
‘It was useful to identify the weeds and grasses growing out in the paddock.’
‘It was interesting to learn about the impact phosphorus deficiency can make to cattle.’
‘Working out carrying capacity, forage budget and identifying land types was interesting. Learning about nutrition and how to maintain optimal gut health was a standout.’
‘The paddock walk was interesting, getting a better understanding of pastures in the area.’
‘Explaining the value of all the different grasses was interesting. Carrying capacity, land condition and how they affect management was useful.’

The course has a strong practical component, well suited to an audience who often choose their career based on a love of adventure and outdoor activity. Perhaps surprisingly, the pasture identification activity is the one that everyone loves the most (Table 1). For many participants, who are often new to the region, these activities are their first introduction to the plants that form the basis of the grazing enterprise, and they are often amazed at the variety of species. We talk about the species that cattle prefer, how grazing can change the pasture composition and what you can do to maintain healthy pastures.

Talking about land condition can be a sensitive subject, but learning how to identify change and the impacts it has on production is important. It is exciting when we go out into the paddock and assess land condition and see the participants analyse how the grazing business and the ecosystem function together. It's one of the things that station managers asked for, to give their staff the skills to distinguish good land condition (desirable, perennial, abundant pasture species) from a flush of green, but short-lived species that won't last long.

Course delivery

Presenting the RMC on-station is ideal because participants get to test their learning immediately on their own country and often the manager will attend too. Ideally, we would have between 8-14 participants however, some stations only have 2 or 3 early career station hands on the property and that would be a very intense learning environment. To ameliorate this, we offer regular courses on the DAF operated Old Man Plains Research Station (OMP). The courses are also offered sub-regionally, for example, in the dining room at roadhouses, so that participants from several stations can gather, see land types familiar to their home station for practical exercises and not have to travel too far.

We have also initiated a program of learning for graduates to keep them informed of current activities and seasonal observations, as well as encouraging them to share their personal experiences around the course content.

Discussion

Being the only truly customised course on pasture dynamics in Central Australia makes this an important addition to livestock production in the region. The realities of long-term rainfall variability and the management implications of discreet growth events are important for pastoral managers and their staff. The human memory is often unreliable and while we certainly remember the very dry years, it's easy to forget that the very good rainfall experienced in recent years is not the 'new normal'.

For managers, this course provides a unique opportunity to train new staff in the fundamentals of rangeland management directly relevant to the station they work on. While the early career staff member isn't likely to be making any high-level decisions about grazing management or cattle health, they are a valuable set of eyes-on-the-ground that become far more useful with increased knowledge. It also helps with job satisfaction, performance, and staff retention when staff understand why they might be asked to do certain jobs and better understand their environment. Participants in the course consistently report that the information they gain is relevant to their daily work, interesting and increases their knowledge.

Offering courses on the Old Man Plains Research Station (OMP) has provided several unexpected benefits. It encourages participants to interact with research and farm staff and learn a bit more about current research projects and results. When the courses are held at OMP, we can offer presentations from other Department of Agriculture and Fisheries staff e.g. Regional Veterinary Officers. Creating relationships between industry support staff and the next generation of land managers leads to beneficial future collaborations. In addition, talking about land condition decline and recovery is often easier to do on neutral ground. This leads to critical thinking and robust discussion about how grazing can impact landscape processes.

Ultimately, some of today's new staff will go on to become the next generation of experienced managers in the Northern Territory pastoral industry. Graduates from the original Barkly Rangeland Management Course from the early 2000's are doing just that and when DAF staff work with them now it's clear that their knowledge

and experience of grazing management principles has grown with them (Pettit, pers. comment.). It is hoped that the Central Australian Rangeland Management Course is just the start of a lifetime in the pastoral industry for our next generation of land managers.

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