



The Northern Territory Rangeland Management Course: growing the next generation of land managers

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Abstract

Productive rangelands are vital to the Northern Territory (NT) pastoral industry but require careful management of grazing pressure to prevent rangeland deterioration. This is generally the responsibility of station managers, who often began their careers as station hands. However, despite it being a large component of a pastoral business, rangeland management is not often included in station hand training.

The NT Rangeland Management Course (RMC) aims to bridge knowledge and awareness gaps in grazing land management within the NT pastoral industry. The RMC is a free, one-day, on-station workshop, designed using hands-on, interactive learning for NT cattle station staff new to the region/industry. It is a series of classroom and paddock presentations and activities, covering topics including pasture composition and dynamics, land condition, carrying capacity, weeds and poisonous plants, cattle nutrition and using fire as a management tool.

In 2021, the RMC was upgraded and expanded. Between 2022 and 2024, the course was attended by 219 staff from 25 cattle stations, representing over seven and a half million hectares of pastoral land. The feedback received from the NT RMC participants during this period indicated increased interest in the topics covered, and suggested the course structure and delivery is effective in providing a practical introduction to rangeland management that is relevant to their station duties. The annual recruitment of new station hands and high turnover of staff in land management service delivery agencies means there will be an ongoing need and demand for the RMC in the future.

Background

Productive rangelands are vital to the Northern Territory (NT) pastoral industry. They provide low input, low-cost pasture allowing cattle producers to run large numbers of cattle (over large areas) where it is not always feasible to grow or buy in other livestock feed due to climate and remoteness. However, Australian rangeland pastures have evolved with very little grazing pressure. This is especially the case in the NT where, prior to infrastructure development, the landscape had limited water available for native grazing animals (e.g. macropods) for much of the year (James *et al.* 1999). The introduction of livestock (predominately beef cattle) has led to higher, more continuous and more selective grazing pressure, which has led to the loss of palatable pasture species, reduced ground cover and contributed to decline in land condition. This directly impacts pastoral businesses by reducing the productive capacity of the landscape.

Matching grazing pressure (i.e. stocking rates) to the safe carrying capacity of the country is a key practice station managers can implement to prevent deterioration of pasture and land condition or help mitigate the effects of historic overgrazing (O'Reagain *et al.* 2014). Doing so requires knowledge of pasture species, pasture yield, land condition monitoring, cattle numbers and feed intake, cattle nutrition, and strategies or tools available to assist in calculating and achieving sustainable stocking rates. However, the career progression into a station management role often begins as a station hand and does not usually involve exposure to or training in grazing land management until the person is in the decision-making role. Ideally, future station managers would start building their understanding of NT rangelands and maintaining long-term productivity well before they are required to make decisions, but it is uncommon for station hands to be aware of, trained or involved in the rangeland management side of pastoral businesses.

The Northern Territory Rangeland Management Course (RMC) is a workshop originally developed and delivered by the Northern Territory Department of Agriculture and Fisheries (NT DAF). Its' purpose is to provide pastoral businesses access to relevant, entry-level rangeland management education for early-career station hands. The RMC provides station staff, who have often come to the property as school-leavers from interstate, with an introduction to the unique environment and production system they work in, an awareness of the impact grazing can have on rangeland pastures (and in turn, cattle production), and an understanding of what grazing management strategies they are unknowingly assisting with in their day-to-day roles on their properties.

While the RMC has been delivered on stations since the early 2000s, this paper assesses RMCs run throughout 2022, 2023 and 2024, looking at the course structure, feedback received, the suitability of the course to the target audience and potentially other industries or regions.

Method

Prior to 2021, the RMC had been a relatively small and home-grown product, funded by the Northern Territory Government for almost 20 years. It was initially designed for stations in the Barkly region (Central-east NT) and then adapted for the Victoria River District (VRD) (North-west NT). In late 2021, the Australian Government, through the Northern Hub, funded the Next Generation Land Managers project which funded all RMC activities from 2022 to 2024, including upgrading the content and delivery of more courses.

The existing course content (PowerPoint presentations, accompanying activities and a printed workbook) was updated throughout 2022, both to incorporate new research findings and create more modern and visually appealing materials for the target audience (station staff, generally 17 – 25 years of age). A new version of the RMC with content relevant to the arid region was created for Central Australian stations, so that three regionalised versions of the course were available: Barkly Region, Big Rivers Region (replacing VRD) and Central Australian RMC. A modernised look was developed and applied across the suite of materials. Branded merchandise was introduced to use as course materials and prizes for participants (pens, notebooks, caps).

The general structure of the RMC was not altered much from the existing course. From 2022 to 2024, the RMC was offered free of charge to stations across the NT though public advertising and existing connections between NT DAF and station managers. It was delivered on-station by NT DAF extension and rangeland research staff who travelled to each station with all materials and equipment required. Stations were requested to have 8 to 20 participants in the course, which could include staff from neighbouring properties, and was not limited to staff in station hand roles. Each course was flexible according to what suited each station and would generally begin after breakfast (e.g. 7am) and finish mid-afternoon. Participants were welcomed with an icebreaker activity upon arrival and provided with resources/materials (workbook, notebook, pen, textbooks/guidebooks, optional resources). Throughout each course, NT DAF staff facilitated a series of PowerPoint presentations, group discussions tailored to the station, and both indoor and outdoor interactive practical activities. Topics covered in the series of modules included: climate variability, pasture dynamics, species identification and pastoral value ("3P" concept), land condition and monitoring (ABCD framework), forage budgets and carrying

capacity, cattle nutrition, weeds and poisonous plants, using fire as a management tool, resources and tools available, and how these things can be applied on NT cattle stations.

Prizes were awarded to participants who were the most engaged at each course, and feedback forms were completed by each participant. Where the station manager couldn't participate in the course, the deliverers liaised with them afterward to discuss what their staff had learnt, offer to work with them further, and gauge interest in them hosting another course the following year for new staff.

Results

Between 2022 and 2024, NT DAF delivered 20 Rangeland Management Courses. The 219 participants were from 25 different cattle properties (11% of all pastoral leases), representing 75,837km² of grazed land, and 13% of the total pastoral lease area in the NT. This included two Western Australian properties (east Kimberley region). Most participants were early-career station staff (~77%); with some station management staff (~7%), and service providers, agricultural business representatives, and research staff (~16%) also attending.

The average feedback score out of 5 for whether participants would usually have attended a course like this, and their prior knowledge on the topics covered were 3.6 and 2.6 respectively (Fig. 1, orange colour group). For questions on the presentation, delivery, structure and inclusion of activities, the average score was between 4.6 – 4.9/5, except for “should there have been more time spent on activities/in the paddock?”, which received 3.1/5 (Fig. 1, blue colour group). All questions on whether participants will use learnings from the course in future and increased interest in the topics scored 4 – 4.5/5 (Fig. 1, green colour group). The average overall value score was 4.6/5 (Fig. 1).

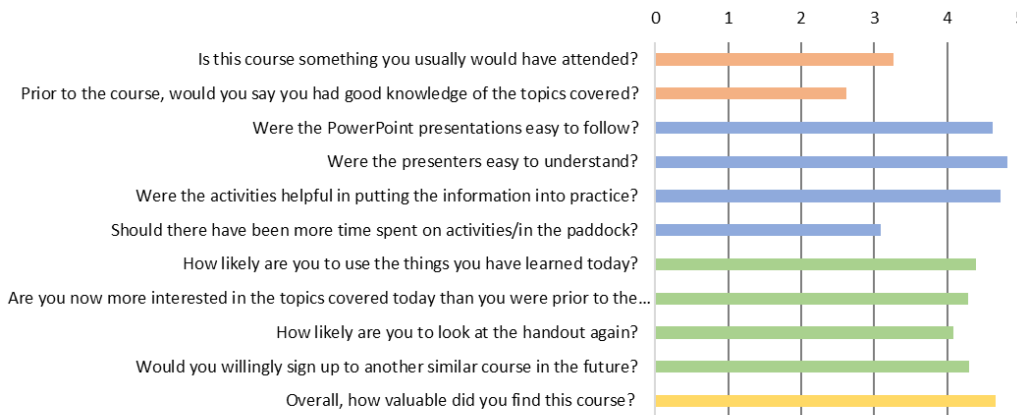


Fig. 1: Feedback from RMC participants from 2022,2023 & 2024, for questions which asked for a 0-5 rating (0 being very unlikely or very low, and 5 being definitely or very high)

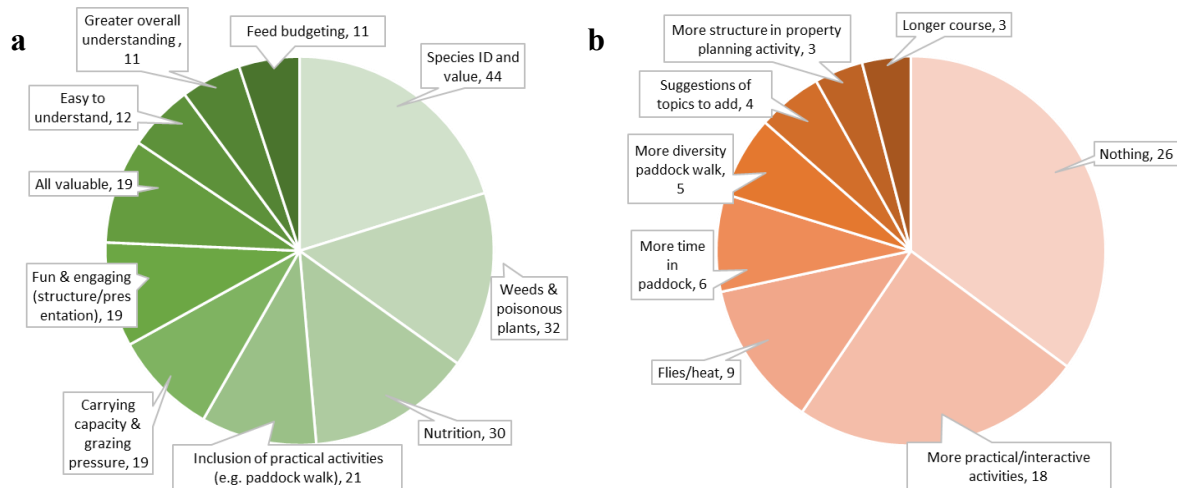


Fig. 2: RMC participant feedback from for the questions a) "Any standout things that were useful, interesting or surprising?" and b) "What wasn't so great, what should we change before we run the next course, or any other comments?". Answers are grouped as themes and ranked by occurrence (out of 219 participants)

When asked for standout/interesting/surprising things from the course, the most common themes in feedback included: species ID and value (44), weeds and poisonous plants (32), nutrition (30) and the inclusion of practical activities (21) (Fig. 2a). The most frequent feedback themes on what could have been done better included: nothing (26) and more practical/interactive activities (18) (Fig. 2b).

Discussion

Many stations offer training for first-year station hands, such as cattle handling, horsemanship schools and other skills required in day-to-day work, but there are few stations with staff inductions that include training on rangelands or pastures. There is other grazing land management training available to station staff for a fee. However, it is at a higher level than first- or second-year station staff need to know. In 2022, 2023 and 2024, 25 cattle stations/properties opted to host or send staff to an RMC, indicating that there are a large number of pastoral properties interested in providing this training for early-career staff. In addition, the RMC was free and could be run on their stations with content tailored to them, which, may have reduced barriers that prevented stations seeking similar training before. Having 25 pastoral properties involved in RMCs also facilitated connections between DAF staff and 25 station managers, which is valuable in that the remoteness of stations can be a barrier to forming industry-government relationships, and for the significant amount of pastoral land in the hands of these 25 managers.

The way the RMC was structured and delivered rated highly in the feedback received. The target audience are often kinesthetic and/or visual learners and not usually the type of people that enjoy textbooks and lectures. It is also not uncommon for literacy and numeracy to be a barrier for some station staff, particularly those that found classroom learning difficult in school. To ensure the RMC catered to this kind of audience, multiple visual, verbal and interactive components were incorporated. These included activities that involved group discussions so that participants could share knowledge/experiences, hands on activities that simulated putting theory into practice (e.g. using property maps to calculate carrying capacity), and a visit to the paddock to relate what they had learnt inside to how it looks on their property. The paddock visits included participants collecting and identifying pasture species, scoring the land condition as a group, discussing soil types and biocrusts, estimating yield, and pasture cuts to estimate yield. High feedback scores for course structure and inclusion of activities, particularly the time spent in the paddock, indicate that this approach was engaging and effective for this audience. Additionally, some feedback suggested the RMC could include even more interactive activities.

Many participants indicated they had limited prior knowledge of rangelands, northern pastures or the northern beef industry, both through written and verbal feedback. Most station staff in the NT have come from a variety of different agricultural and non-agricultural backgrounds, in vastly different areas and climates (pers. obs.).

Hence, the RMC content was designed to be understood by someone with no previous knowledge of the region and no science or agricultural background. Presenters used plain English, or slang terminology where possible to describe technical concepts and processes, rather than using scientific language that participants may not be familiar with. The deliverers were also flexible in the way each topic was presented, spending more time on things that were highly relevant or of interest to participants, and adapting presentation styles to the people in the room based on where they were from or what previous livestock/pasture experience they had. The average rating for how easy presenters were to understand was 4.8/5, so the level of language used to describe scientific processes that can be quite complicated was effective. The rating for if participants were more interested in the topics covered after the course was 4.3/5, and while this is not directly a measure of knowledge increase, it indicated that participants were much more aware of what was covered, and therefore more inclined to seek further information in future.

Delivering the RMC was also a valuable opportunity for new DAF staff to learn about rangeland management, enhance their public speaking and facilitation skills, expand their networks, and engage directly with producers. From 2022 to 2024, six DAF staff delivered their first RMC and worked with producers they had not met before. This, along with the positive feedback received from station managers and course participants has led to support from multiple organisations for the course to continue, and there has been interest to expand the course into other states. The RMC could also be used as a model to provide education to on-ground staff in other rangeland-based industries, offering an introduction to best practice land management and the “why” behind management strategies, and encouraging staff to seek a deeper understanding of the environment they work in. The annual recruitment of new station hands and high turnover of staff in land management service delivery agencies means there will be an ongoing need and demand for the RMC in the future.

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