

Do regenerative grazing management practices improve vegetation and soil health in grazed rangelands?

Preliminary insights from the Great Barrier Reef catchments

Regenerative grazing, which usually involves rotational grazing with strategic rest, is increasingly seen as a profitable management approach that can accelerate landscape recovery. This study demonstrated that improvements in vegetation, soil and land condition can be obtained by implementing regenerative grazing principles in semi-arid rangeland areas of Northern Australia, however, it is likely to take a minimum of 3-5 years and up to 15-20 years for statistically significant improvements to be measurable at a site.

What is regenerative grazing?

Regenerative agriculture seeks to profitably produce food in a way that is kind to the environment. There are numerous terms used to describe the components of regenerative grazing, including holistic, rotational or timed rest systems. The emphasis is on providing strategic rest to pastures and soils and protecting the natural capital of the grazing enterprise (i.e. soil, vegetation, and water assets).



What did this project do?

This 2-year space for time study collected vegetation and soil data from a range of properties in the Burdekin catchment that have implemented regenerative grazing strategies for between 5 and 20 years. Data were collected from several sites where grazing had been excluded for about 30 years. Coincident data were also collected at adjacent control sites that did not undergo regenerative grazing, but where more traditional, continuous set-stocking grazing approaches had been applied.



This Project is funded by the partnership between the Australian Government's Reef Trust and the Great Barrier Reef Foundation, and CSIRO, University of Southern Queensland, NQ Dry Tropics and MLA.

What did we find?

- Results suggest that improvements in vegetation, soil and thus land condition, can be obtained by implementing regenerative grazing principles. Although, it is likely to take at least 3–5 years, and up to 15–20 years for statistically significant improvements to be measurable at a site, particularly for areas that are moving from a very degraded baseline condition. The key message is to avoid degradation where possible, as it can take a long time to recover land condition.
- Vegetation attributes such as biomass, plant basal area, and litter incorporation all appeared to be better surrogates for quantifying improved land condition and soil health than percentage ground cover.
- Sites that maintained remotely sensed percentage ground cover at or above the minimally disturbed reference benchmark levels for >10 years (Figure 1), as well as having statistically higher biomass, basal area and litter, had significant increases in total nitrogen and soil organic carbon relative to the local control site. Proportional increases in soil organic carbon can be higher or as high at long-term regenerative grazing sites (relative to an un-treated control) compared to sites that have had no grazing for c. 30 years.

What does this mean for graziers?

- Implementing regenerative grazing strategies will likely improve your soil and vegetation condition in the long term. However, careful thought needs to be given to the grazing system applied, which will vary with the size and structure of the grazing business.
- Collecting and recording pasture and soil data in the paddock at regular (c. 5 year) intervals will be important for monitoring improvements over time. Remote sensing is useful; however, it currently only represents vegetation cover. Additional data on biomass, plant basal area, litter, species diversity, soil health will be important for monitoring land condition changes.
- Anecdotal evidence suggests that these grazing strategies are likely to improve the economic outcomes for grazing enterprises in most (but not all) situations. Further work is needed on the costs and benefits of these approaches.

Read the full article: Bartley, R., Abbott, B.N., Ghahramani, A., Ali, A., Kerr, R., Roth, C.H. and Kinsey-Henderson, A. (2023) Do regenerative grazing management practices improve vegetation and soil health in grazed rangelands? Preliminary insights from a space for time study in the Great Barrier Reef catchments, Australia. The Rangeland Journal, 44(4), 221-246. doi.org/10.1071/RJ22047

What does this mean for investments in the GBR catchments?

This project has provided important data and evidence that changes in vegetation, soil (carbon) and land condition can be achieved using regenerative grazing approaches. Ancillary research suggests that better land condition will lead to improvements in runoff and water quality. This project has provided data and knowledge to support investment in innovative financing schemes such as Reef Credits and the Land Restoration Fund, and strengthened evidence for the broader roll-out of these approaches across the Great Barrier Reef grazing systems.

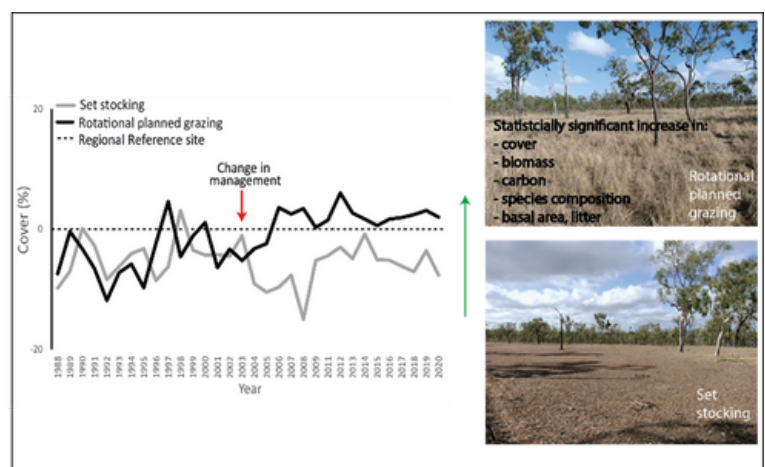


Figure 1: Comparison of climatically corrected ground cover % at a site that has undertaken planned rotational regenerative grazing compared to a neighbouring property using set stocking.

