Achieving drought resilience in the grazing lands of northern Australia: preparing, responding and recovering

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Northern Australia is characterised by high rainfall variability and extended droughts which challenge sustainable and profitable management of grazing properties. Emphasis has historically been on drought response and recovery rather than on preparation. However, there is a recognised need for policy, research and extension to also improve drought preparedness and hence drought resilience (Australian Government 2020).

In this study we developed a decision-making framework based on farm-management economic principles (Malcolm *et al.* 2005) as an approach to enable more profitable and drought resilient extensive livestock production systems across northern Australia. Herd, flock and economic modelling software (Holmes *et al*. 2017) was used to conduct analyses for four regions across Queensland (Central Qld, CQ; Northern Gulf, NG; Northern Downs, ND; and Central West Qld, CWQ) to identify key approaches.

Preparing. The critical importance of sound investment decisions to improve enterprise resilience through building equity over the longer term was demonstrated. For example, farm-level economic analysis indicated that more appropriate management strategies could improve profit in CQ by up to $50K p.a. (e.g. establishing perennial, legume-grass pastures). Other commonly applied strategies could decrease annual profit by up to $50K p.a. (e.g. annual forage crops or custom feedlotting). These were substantial differences in relation to a base property operating profit of $110K p.a. However, most strategies that increased profit also increased management complexity and risk. In CWQ integrating either one or a combination of meat goats or wool sheep into beef cattle production systems diversified income sources and improved the stability of farm profit over time and thus decreased risk from climate variability. For example, integrating meat goats into a beef cattle production system, although requiring additional infrastructure, improved farm profit by more than 25%.

The importance of implementing low-cost strategies prior to drought, to achieve optimal herd structure, steer sale age and breeder body condition for drought preparedness, was also demonstrated. For instance, in the NG managing breeder nutrition through grazing management and appropriate use of inorganic N and P supplements so that body condition is >3 (5-point scale) going into a drought would substantially reduce the mortality rate of mature and aged cows (ca. 15% of the herd 9+ years old) which are likely to lose >10% LW. Further, reducing the cow cull age from 11-12 to 8-9 years was $7K p.a. more profitable as well as reducing mortality risk due to drought. In the ND, increasing the sale age of steers from weaners to 31 months provided $70K p.a. benefit which was relatively substantial compared to other management strategies considered.

Responding. A key finding of drought-related herd reduction analysis was that assessment of the sale of alternative classes of cattle should consider the impact on both future profit and future cash flow, and all classes of cattle should be assessed. The most favourable result will depend on the market prices and opportunities available at the time of assessment. Retaining a core herd of breeders, during four droughts over a 30-year historical period in CWQ, was less profitable and less sustainable than a greater level of destocking and restocking responsiveness to pasture availability.

Recovering. The analyses demonstrated substantial differences among various drought recovery strategies on their ability to rapidly return the property to the most profitable herd structure and age of turnoff within the considerations of production and financial risk. Depending entirely on natural increase (retained progeny) to rebuild the herd was likely to seriously reduce the ongoing viability of the property. Utilising spare grazing capacity by accepting cattle on agistment improved cash balances in the short term during herd rebuilding. However, agistment income was expected to be less profitable than cattle trading over the longer term but with less risk.

In conclusion, the study demonstrated the importance of improving profitability and equity as essential steps in building drought resilience. Using a farm management economics framework to inform decision-making in drought response and recovery phases also enhanced drought resilience by minimising damage to the business and aiding return to profitable enterprise and herd structures and long-term cash-flow.

References

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