Pasture development using the Action Learning Cycle: A case study

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Introduction

Large areas of sown pastures in the Brigalow Belt Bioregion of Queensland suffer from pasture rundown where the gradual reduction of plant-available nitrogen limits pasture and beef production. The most profitable long-term remediation is to establish perennial legumes, and in some cases, to also include new sown grasses if undesirable species are present (Peck *et al.* 2022). Adoption of perennial legume plantings has increased across this region, however there is still potential to significantly increase the area sown. In this case study, the Action Learning Cycle was used to guide pasture development on a commercial beef property in central Queensland.

Methods

The case study site is on a commercial beef property located South East of Moura, Queensland, suffering from pasture rundown. The development of a new pasture on this site was guided using two rounds of the Action Learning Cycle (Fell 2005). Cycle one was completed as follows. ***Plan.*** The producer offered to host a pasture research trial site with DAF and in 2020 planning for pasture establishment was conducted by DAF and the producer. ***Act.*** The producer and DAF conducted the site preparation and planting together (2020/21 summer) which included the best management pasture establishment steps detailed by Peck *et al*. (2022). ***Reflect***. Four site visits were conducted in 2021-22 including establishment and pasture yield assessments to determine outcomes. ***Learn*****.** Discussions between the producer and DAF staff included what were the key practices and other factors that lead to establishment success. The plan and act part of the action learning cycle was then repeated by the producer without DAF input, to plant a new pasture in a nearby paddock.

Results

The producer paddock had very good establishment of most species planted. Rhodes grass (*Chloris gayana)* was dominating with small amounts of shrubby stylo (*Stylosanthes scabra)* and caatinga stylo (*Stylosanthes seabrana)* but no Buffel grass (*Cenchrus ciliaris)* despite being included in the seed mix.

Discussion and conclusion

After reflection with the producer, it was determined that a seed germination test for each species was not provided before seed purchase. It was possible that the quality of buffel grass seed was low and germination unlikely, and the proportion of stylo seed in the mix was low, allowing the Rhodes grass to outcompete the establishing legume seedlings. The learning was that the producer had followed most steps for successful pasture establishment but needed to pay more attention to sourcing higher quality seed and a blend with a higher proportion of legumes. The Action Learning Cycle has guided the successful establishment of new legume-grass pastures on paddocks suffering from pasture rundown. The *plan – act – reflect – learn* process was used two times and a third round is currently underway with the producer planning to incorporate the learnings from the most recent cycle.

References

Peck *et al*. (2022) Final Report, Project B.PAS.0354, Meat and Livestock Australia, Sydney.
Fell (2005) Proceedings APEN Natural Resource Management Symposium, Toowoomba.

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