

PASTURE OPTIMISATION FOR DRY TIMES

CASE STUDY #5 JULIAN MAUL

Julian Maul of Barossa Angus in Mount Crawford, SA, is improving pasture resilience through soil management and species diversification. Trials in 2023–2024 tested serradella and other legumes under different grazing strategies, showing that longer grazing intervals helped maintain pasture composition, despite dry conditions. His ongoing focus on strategic grazing, soil health, and pasture diversity supports productivity and drought resilience.

Name: Julian Maul, Barossa Angus

Property: Mt Crawford, South Australia

Average annual rainfall: 450-650 mm

Existing pastures: Mixture of historic subterranean clovers (cv Dinninup – oestrogenic) and perennial grasses (native and exotic)

Soil types: Sandy loam, pH 6.35 (post liming in 2021)

Enterprise: Black Angus stud

Trial area: 20 hectares



Figure 1. Julian Maul amongst his Black Angus stud bulls. Photo credit Jem Nash.

CURRENT FARMING PRACTICES

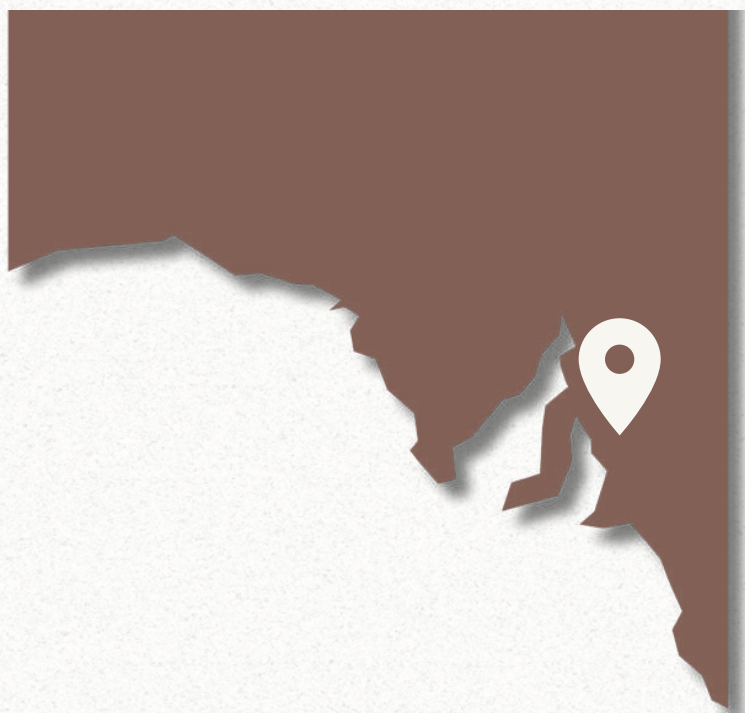
Julian manages a farm operation based at Mount Crawford, South Australia, with additional land leased at Lyndoch. The Mount Crawford property spans 40 hectares and benefits from reliable annual rainfall of approximately 650 mm. The soils are predominantly sandy loams, varying in sandiness and acidity. Lime application over the past two years has brought soil pH levels close to neutral.

The leased Lyndoch property of 10 hectares receives average annual rainfall of 450 mm and features calcareous soils that are historically deficient in boron. Over the past decade, Julian has used foliar sprays to address this deficiency and improve pasture performance. This property primarily supports weaned or pregnant Black Angus cattle, providing grazing during the winter months.

Julian's enterprise focuses on producing Black Angus seed stock, maintaining a herd of 25 breeders and follow-on heifers. On average, 8–12 bulls are turned off annually.

PASTURE MANAGEMENT & LIVESTOCK SYSTEMS

At Mount Crawford, pastures consist of a mix of historic and modern species. Old subterranean clovers and annuals dominate, alongside remnant native species. In 2024, following successful establishment of serradella the year prior, Julian introduced broadcast reseeding to establish Persian clover, serradella, cocksfoot, perennial ryegrass, and modern phalaris. The reseeding efforts focus on regenerating less productive and degraded paddocks, which are rested to promote establishment.



At Lyndoch, pastures primarily comprise of annual ryegrass and a variety of clovers. Medics have been introduced to areas with lower rainfall. Past efforts to improve soil carbon included applying hay, straw and grape marc, which significantly increased soil organic matter. This improvement enhanced moisture retention and pasture productivity.

The grazing system at Mount Crawford incorporates rotational grazing with strip-grazing techniques, incorporating portable electric fences (tumble wheels). Shelter belts created by extensive tree cover protect livestock from wind stress, helping to maintain their condition. At Lyndoch, a laneway-style paddock system is used for strip grazing with similar effect.

Julian has a large focus on breeding quality Angus seed stock. He uses reproductive tools such as fixed-time artificial insemination, embryo transfer, and in vitro fertilization, which are employed to optimize herd fertility and performance. Feed quality plays a huge role in breeding performance, hence why Julian is passionate about making the most from his pastures, ensuring he has selected the best fit for his livestock system and location.

INTRODUCTION OF SERRADELLA

After researching its performance in Western Australia, Julian's curiosity towards serradella was piqued due to its adaptability to sandy, acidic soils and its nitrogen-fixing potential. Additional species were also incorporated into his farming system to diversify pastures and address specific challenges, such as degraded paddocks subjected to heavy grazing.

In May 2023, three cultivars of serradella and five other improved pasture legume cultivars were introduced in 6x10 m trial plots at Mount Crawford, using a small plot seeder. In 2024, a broadcast reseeding program was used to refresh plots after a failed spring in 2023, and to sow a larger trial area (10 ha) in the paddock surrounding the trial.

MANAGEMENT PRACTICES AND OBSERVATIONS

In 2023 and 2024, Julian hosted a simulated grazing experiment to address knowledge gaps about the introduction of novel pasture legume cultivars, and their responses to livestock grazing. The study assessed plant growth responses of eight improved pasture legume cultivars comprising of serradella (cv. Fran2o, SerraMax, Margurita), subterranean clover (cv. Campeda), balansa clover (cv. Vista), spineless burr medic (cv. Scimitar), arrowleaf clover (cv. Zulu II) and woolly pod vetch (cv. RM4) under continuous and periodic simulated grazing.

In 2023, competing pasture species and weeds were controlled with herbicide early in the season. Under these conditions, several cultivars responded positively to continuous grazing with increased biomass production, improved feed quality, enhanced plant greenness indices, and an extended growing season. Despite below-average rainfall during the growing season, the experiment achieved ground cover ranging from 20–30%, dry matter biomass of 1.1 t/ha, and feed test results exceeding minimum sheep requirements.

Since Julian had already incorporated some serradella into his program, and recognised its benefits as a legume, he wanted the opportunity to evaluate which variety would best suit his grazing system, while ensuring optimal feed availability without compromising pasture productivity.

Ground cover assessments conducted on 27 October 2023 revealed lower cover percentages in bi-weekly cutting treatments, due to intensive biomass removal via mowing (Figure 2). However, no difference in ground cover was observed between control and six-week cutting treatments during the second six-week cutting (on the same date), implying that longer grazing intervals allow vegetation to recover without significantly impacting ground cover.

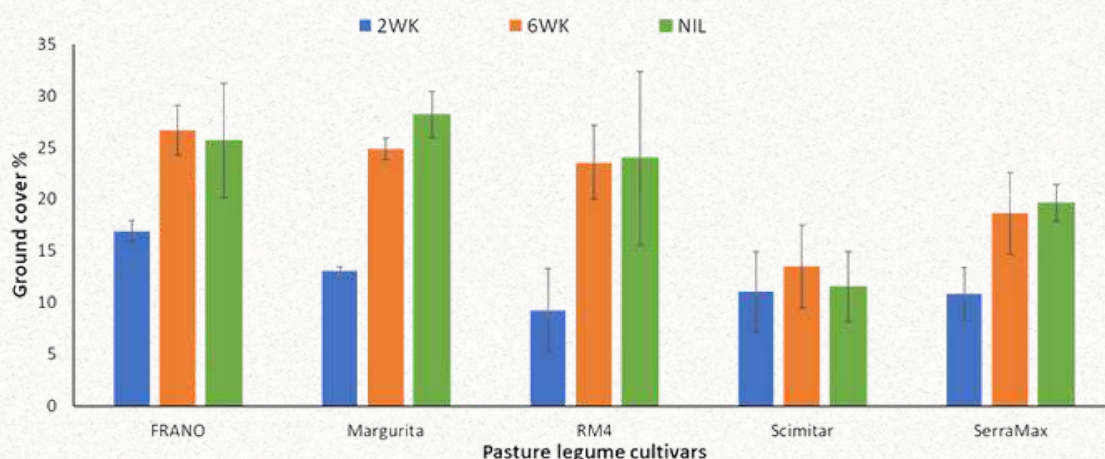


Figure 2. Ground cover measured at the second 6 week cutting treatments on 27 October 2023.

In 2024, the background of pasture species and weeds were allowed to grow alongside the target legume species, to assess competitiveness in response to different grazing patterns. This practice was designed to replicate how Julian would potentially manage a second-year pasture.

It was a very challenging season, with only half the average growing season rainfall received. The target legumes (serradella) were well represented early in the season (August-late October), making up 25-35% of the pasture composition, however this tended to drop away by mid-November.

When these larger plots underwent simulated grazing, the 2 week grazing treatment (representing constant grazing) reduced the proportion of the target species, in favour of the background sub clover early in the season, then broadleaf weeds later in the season, as the dry conditions continued. Target species were better maintained in the 6 week and Nil treatments.

Grazing treatments led to higher overall biomass yields in both 2023 and 2024, and improved feed values, including dry matter digestibility, crude protein, and metabolizable energy. Serradella cultivars 'Fran2o' and 'Margurita' and the arrowleaf clover 'Zulu II' were notable for their continued growth late in the season, capitalizing on out-of-season rainfall in November and December 2023. At Lyndoch, boron application and soil management practices effectively addressed nutrient deficiencies, resulting in greener and more productive pastures.

WHAT'S NEXT?

Julian plans to explore irrigation systems, such as a K-line system, to extend green pick availability during dry autumns. Shelter belts and tree cover on the Mount Crawford property will continue to provide valuable livestock protection and firewood production.

Strategic pasture management and ongoing soil improvement efforts position the farm for sustainable productivity, despite challenges like dry years and soil degradation. Maintaining strong supplier relationships for hay and other feed inputs ensures operational resilience.

After observing the "Pasture Optimisation for Drought Solutions (PODS)" project demonstration site in 2023, Julian could see that serradella had the potential to provide his pasture system with many benefits. Sowing serradella in 2024 has continued to spark his interest in the alternative pasture species, and Julian will continue to assess variety suitability for his pasture and livestock systems.

RESOURCES

[GRDC - Resilient pastures for low rainfall mixed farms - crop and system benefits provided by legumes](#)

[WA DPIRD - French Serradella - use and management](#)

[AIR EP - Pastures Optimisation for Drought](#)

[AWI 10 minute talks](#)

[South Australian Drought Hub](#)

ACKNOWLEDGEMENTS

Thanks to all farmers involved in hosting demonstrations and trials as part of the "Promoting best-practice feedbase management to deliver improved drought resilience in low to medium rainfall regions through on-farm demonstrations and case studies" project. This project was led by the University of Adelaide and has been funded through the Australian Government's Future Drought Fund, and supported by the SA Drought Resilience and Adoption Hub. Project delivery partners are Agricultural Innovation & Research Eyre Peninsula (AIR EP), Barossa Improved Grazing Group (BIGG), Lowbank Agricultural Bureau, South Australian Research & Development Institute (SARDI) and the Sheep Industry Fund.

DISCLAIMER: No person should act on the basis of the contents of this publication without considering their specific conditions and first obtaining specific, independent, professional advice. AIR EP does not endorse or recommend the products of any manufacturer referred to and will not be liable for any loss, damage, cost or expense incurred or arising by reason of any person using or relying on the information in this publication.



Australian Government
Department of Agriculture,
Fisheries and Forestry



Future
Drought
Fund



SA
DROUGHT
HUB



THE UNIVERSITY
of ADELAIDE

This program received funding from the Australian Government's Future Drought Fund



AGRICULTURAL
BUREAU
of South Australia



Government
of South Australia
Department of Primary
Industries and Regions



SARDI
SOUTH AUSTRALIAN
RESEARCH AND
DEVELOPMENT
INSTITUTE

