Modelling Report

Upscaling the Barooga drought resilient pastures demonstration site

Rotational grazing vs set stocking and April vs June lambing: enhancing pasture utilisation, livestock production and drought resilience.

To upscale the demonstration sites that were established by a consortia of project partners, Susan Robertson (Charles Sturt University) used GrassGro software to compare different practices using representative enterprise details for the region. This document contains key take aways from the upscaling of Riverine Plains pasture species demonstration site at Barooga, NSW.

This model was developed based on a First Cross ewe joining with a Dorest ram enterprise.

The Barooga *pasture grazing* model

The grazing simulation aimed to answer; 'does rotational grazing, in comparison with set stocking, and November joining compared to January joining; increase pasture utilisation, sheep production and drought resilience?'

The model revealed that rotational grazing notably enhanced weaner growth rates during drought years for June lambing ewes when compared to the set stocked ewes.

There was a limitation in the models fixed six-week grazing period requirement for this simulation, causing results to show a lack of benefit for rotational grazing. Instead of a fixed period rotation, stock should be rotated based on a Food on Offer basis.

Figure 1: Barooga demonstration site, 30 October 2023

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In drought conditions, the weaning weights of lambs were greater from the April lambing ewes, however, this could be attributed to the earlier onset of supplementary feeding. In non-drought years, the weaning weights of lambs from the June lambing ewes were significantly heavier than from the April lambing ewes. This may be due to better ewe nutrition during late pregnancy and lactation around the June lambing.

Upscaling the model

The modelling showed that April lambing ewes experienced a greater decline in condition score during late pregnancy and lambing. Further, the number of lambs marked per ewe joined was positively associated with the condition score of ewes at joining.

Rest periods are essential for maintaining the long-term productivity of lucerne-based pastures, especially during drought conditions, as lucerne is sensitive to heavy grazing during these periods. Therefore, it is recommended to implement rotational grazing strategies to improve lucerne persistence, benefitting both the plant and enhancing the productivity of grazing livestock.

Key messages

- Fixed periods of rotational grazing may reduce production benefits. It is recommended to rotate based on a Food on Offer basis.
- Perennial pastures, such as lucerne, can provide more feed from January through to April, supporting higher condition scores and reducing supplementary feeding.
- Well-managed lucerne pastures serve as valuable assets for enhancing livestock farmers' drought resilience.
- In drought, rotational grazing can support greater weaner growth.
- If summer pasture is limiting, April lambing ewes require greater supplementary feeding than June lambing ewes, to maintain condition score during pregnancy and lactation.
- The condition score of ewes at joining was positively associated with the number of lambs marked.
- Rotational grazing or rest periods are required to allow lucerne pastures to persist, particularly through periods of drought.

For more information

Details about the demonstration sites, as well as the results, are published in Research for the Riverine Plains, 2024.

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