

Assessing management options for the autumn feed deficit using *GrassGro*

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The Problem

- Seasonal rainfall and weather conditions often generate feed shortages in autumn and winter (Fig. 1).
- Supplementary feeding costs due to feed deficits can threaten the sustainability of a grazing enterprise.
- We examined this issue for a cross-bred ewe enterprise at Wagga Wagga, using the GrassGro decision support tool.



Management Options

We used GrassGro to examine the relative benefits of five key management options for reducing the autumn / winter feed deficit and increasing profitability:

- **business as usual** (no change in management)
- **reduce stocking rate** (from 6 to 5 ewes/ha)
- **increase soil fertility** (apply 130 kg super/ha/yr)
- **change lambing time** (lambs born/sold 1 month later)
- **change pasture species** (sow phalaris into pasture)

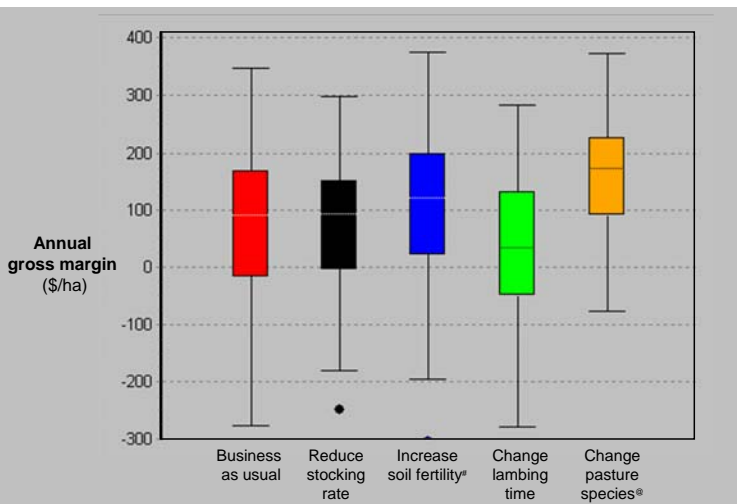


Figure 2: Distribution of annual gross margins for the five management options over the simulation period 1950 to 2007 for the cross-bred ewe enterprise at Wagga Wagga NSW.

soil fertility scalar increased from 0.8 to 0.9, @ *Phalaris aquatica* added to existing annual pasture

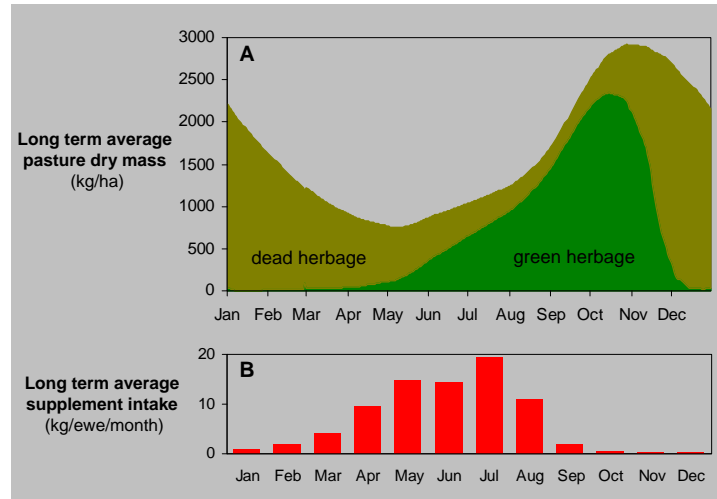


Figure 1: A. Long term average green and dead pasture dry mass, and; B. long term average supplement intake, for a simulated cross-bred ewe enterprise at Wagga Wagga (NSW) for 1950 – 2007 (business as usual). Mean annual precipitation was 575 mm, pasture species were annuals (annual ryegrass and subterranean clover), the soil was a moderately fertile clay loam over a medium clay, the ewe flock was Border Leicester x Merino at 6 ewes/ha, lambing occurred on 21 July, lambs were sold when they reached 45 kg or by 10 December. A supplement of whole wheat was fed when the condition score of the thinnest animal fell below 2.

Results

- Adding a perennial grass (phalaris) to the pasture had the greatest effect in reducing supplementary feeding costs and increasing gross margins (Fig. 2, Table 1).
- Increasing soil fertility also increased gross margins and reduced feeding costs.
- Lower stocking rate and later lambing time reduced feeding costs, but also reduced gross margins, due to lower income from lamb sales.

Table 1: Long term mean annual production values over the simulation period (1950-2007) for each management option.

	Pasture growth (tonnes/ha/yr)	Supplementary feed costs (\$/ha/yr)	Gross margin (\$/ha/yr)	Net present value over 25 yrs* (\$/ha)
Business as usual	6.65	122	75	858
Reduce stocking rate	6.72	90	72	905
Increase soil fertility	7.57	99	103	1,168
Change lambing time	6.53	115	28	320
Change pasture species	6.60	74	155	1,409

* Net present values calculated using a tax rate of 30%, real discount rate of 4%, assuming the following costs: sowing phalaris \$230/ha repaid over 5 years, ewes \$74/head, superphosphate \$460/tonne, whole wheat \$195/tonne; lamb prices 280 to 350 c/kg dressed (dependent on lamb weight).

Conclusion

- GrassGro can provide important information on the potential consequences of management decisions when addressing key grazing issues.
- Changing more than one management factor may further reduce feeding costs and increase profitability.

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Acknowledgements

Application of GrassGro® to grazing industry issues is funded by Australian Wool Innovation Pty Ltd.

We thank J. Donnelly and R. Simpson for constructive comments on our analysis.

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