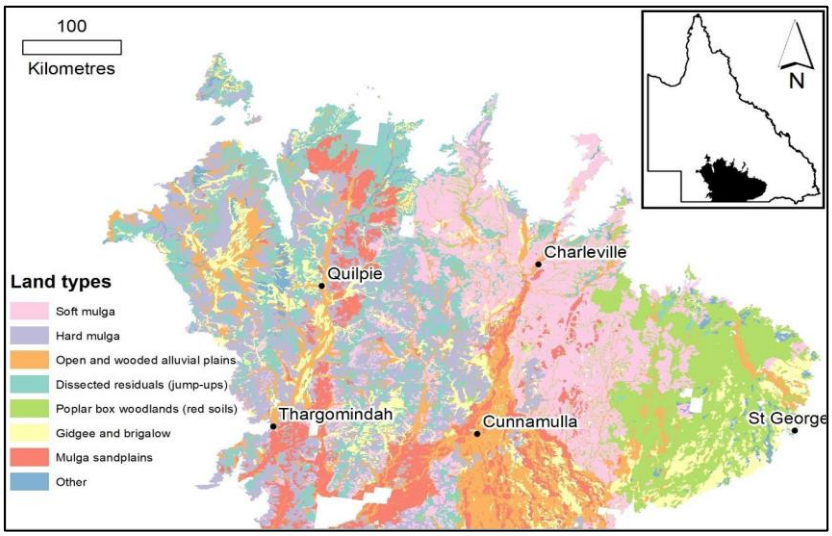
Mulga Lands – Factsheet 1: Evaluating grazing management strategies to improve drought resilience

Purpose
To describe the representative property and herd along with the key economic findings from the strategies evaluated.

The Mulga Lands encompass 18.6 million ha of cattle and sheep grazing land. Much of the area has been drought declared 40-50% of the time between 1964 and 2019. Consequently, the Queensland Department of Primary Industries (DPI) evaluated the economic implications from implementing management strategies that build profitability and drought resilience.



Representative property and herd

A representative property and herd were developed based on research, industry surveys, local producers and DPI staff. The property has 20,000 ha of soft and hard mulga (75% of property) and black soil land types and carries 600 adult equivalents (AE's) at 33 ha/AE, similar to often used stocking rates in the region. Using modelling forecasts, the safe carrying capacity across seasons is 500 AE (40 ha/AE). The table shows production, sales and gross margin. The herd was a self-replacing, continuously mated, Bos indicus crossbred breeding herd with two main musters to castrate male calves, identify cull breeding cows (i.e. saleable) and sell steers.

Production, sales & gross margin	
Weaning rate	47.5%
Herd mortality rates	7.6%
% of females sold	30.5%
Total cattle carried	752
Total breeders mated	458
Total calves weaned	218
Cows and heifers sold	46
Steers & bullocks sold	104
Average net female price	$712
Average net steer price	$452
Net cattle sales	$79,859
Variable costs	$6,726
Herd gross margin	***$73,132***

The property relied on mulga browse for about 6 months every 2 years to provide sufficient feed. No weaning activities occurred and steers were sold off their mothers at 12 months. Young females were not culled based on reproductive status and more culling pressure was applied to older cows. The herd received no vaccinations or supplements. Conception rates, calf losses and mortalities were modelled to reflect these circumstances along with drought impacts, low management input and low nutritive value of forage.

Long-term average Roma saleyard cattle prices were used (2010-19) with input costs from 2020. Steers were sold 12 months old at 209 kg for $2.45/kg, cull cows (3+ years) at 428 kg for $1.85/kg, and bulls at 665 kg for $1.80/kg. Commission (3%), selling costs ($17/head) and freight (with 5% weight loss) were also deducted.

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Strategies to improve profitability and resilience

To help inform decision-making, an analysis was undertaken evaluating changes in cash flow over 30 years from implementing a range of management strategies. Four key strategies were initially considered in a step-wise approach:

1. Reduce stocking from 600 to 500 AE to match safe carrying capacity (strategy 1).
2. Strategy 1 (above) ***plus*** weaning, pregnancy testing and vaccinations for botulism, leptospirosis and vibriosis.
3. Strategy 2 ***plus*** optimising the age of steer turnoff.
4. Strategy 3 ***plus*** providing supplements to supply adequate sulphur (S), phosphorus (P) and nitrogen (N).

Further strategies were then evaluated assuming the above four strategies had already been implemented (reduced stocking, weaning, vaccination, supplementation etc.). The table below outlines the annualised net present value (NPV), rate of return, payback period and peak deficit for strategies found to either maintain or improve profitability.

For example, the results identified that implementing the four key strategies listed above (with S & P year round and N in the dry period) increased profitability each year by $4,074 (NPV). The producer would need to sustain a negative cash flow of -$33,527 in year 6 (peak deficit) before paying back in year 11. Please note, the results below are specific to the assumptions used and producers must consider their own circumstances before implementing any changes.

Management strategy	**NPV ($/yr)**	**Rate of return**	**Payback period**	**Peak deficit (year of)**
1. Implementing a safe carrying capacity (strategy 1)	$520	n/c	n/a	n/a
2. Strategy 1 *plus* weaning, preg testing and vaccinations	$173	n/c	n/a	n/a
3. Strategy 2 *plus* increase steer turnoff age from 12 to 18 months	$12,405	n/c	n/c	n/c
4. Strategy 3 *plus* supplements:				
(1) S & P in growing period or	$7,080	n/c	4 years	n/c
(2) S & P year round and N in the dry period	$4,074	18%	11 years	-$33,527 (yr 6)
The strategies below start with the property that had already implemented the safe carrying capacity, weaning, preg-testing, vaccinations, steer sale age of 18 months, and supplements (S & P year round and N in the dry period).				
Development of a buffel grass paddock	$1,717	14%	16 years	-$10,578 (yr 7)
Destock during drought^ by selling 50% of breeders:				
(1) Restock by natural increase of cattle numbers:				
– Less fodder harvesting reduces costs* by 10%	$880	n/c	n/c	n/c
– Less fodder harvesting reduces costs* by 20%	$5,100	n/c	n/c	n/c
(2) Restock by purchasing pregnancy tested in-calf breeders	$8,000	n/c	n/c	n/c
Destock during drought^ by sending breeders on agistment (for 72 weeks) costing from $3 to $7 each week per adult equivalent	$4,700 to $7,500	n/c	6 to 8 years	$25,000 to $52,700 (yr 5)

*n/c: not able to be calculated. n/a: not applicable. ^ Every 10 years. * Costs: fuel, labour, repairs & maintenance costs across farm.*

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This project is jointly funded through the Australian Government's Future Drought Fund and the Queensland Government's Drought and Climate Adaptation Program.

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