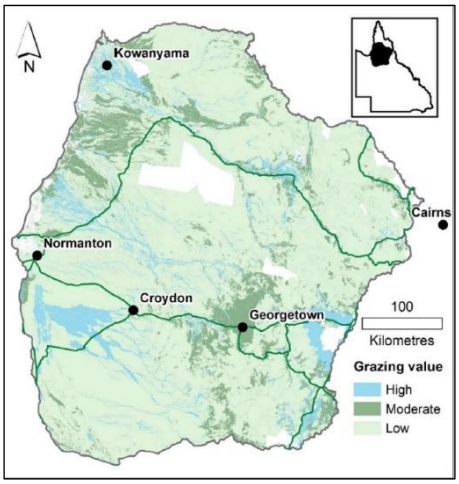
Northern Gulf – Factsheet 1: Evaluating grazing management strategies to improve drought resilience - Representative property

Key finding
Continued high stocking rates and declining land condition over 30 years reduced the annual herd gross margin by $67,000 (-33%).

Northern Gulf producers face inherent challenges with low productivity and declining land condition. The Northern Gulf Resource Management Group and DPI have surveyed and recorded significant land condition decline in the region since 2003, particularly due to preferred pasture species decline and woody vegetation thickening.

Financial pressures appear to be contributing to high stocking rates, which will inevitably further decrease land condition, productivity and profitability. The Queensland Department of Primary Industries has modelled the impact of this land condition decline on beef enterprise profitability, and evaluated the profitability of implementing management strategies that improve drought resilience on a representative Northern Gulf beef property.



Representative Northern Gulf property and herd

A representative property and herd were constructed based off research and industry surveys. The representative property had 30,000 ha of native pastures with numerous less productive land types and carried 2,500 adult equivalents (AE) at 12 ha/AE. Given the country was rated at a safe carrying capacity of 1,500 AE (18 ha/AE), it was stocked at 1.5 times safe carrying capacity.

The herd was a self-replacing, continuously mated, Brahman breeding herd with existing supplementation (lick blocks) failing to address a Phosphorus (P) deficiency. The conception rates of breeders and calf losses were modelled to reflect the region.

It was assumed that land condition would decline over 30 years from 65% to 50% of the original carrying capacity of the land in A condition (0.5%/yr decrease). Declining land condition reduces reproductive performance and increases mortality.

Long-term average cattle prices (2006-18) and input costs from 2018 were used. Steers and heifers were sold for live export at ~365 kg (at 29 or 41 months) for $2.40 & $2.10/kg. Cows and bulls sold to slaughter markets for $1.70 and $2.00/kg.

The table on the right compares production, sales, costs and gross margin results for the representative property in the first year and after 30 years. Modelling predicts that a continued decline in land condition will reduce herd gross margins and farm profitability.

Production traits	Year 1	Year 30
Weaning rate	47.4%	46.9%
Steer liveweight gains	86 kg	82 kg
Mortality rates	7.5%	10.5%
Cull cow sale weights	410 kg	390 kg
% of PTE heifers sold	50%	10%
% of females sold	40%	32%
Total AE	2,500	2,410
Total cattle carried	3,270	3,289
Total breeders mated	1,651	1,653
Total calves weaned	782	776
Cows and heifers sold	214	142
Steers & bullocks sold	324	295
Average female price	$578	$563
Average steer price	$729	$722
Net cattle sales	$360,332	$293,081
Variable costs	$154,892	$154,726
Herd gross margin	**$205,439**	**$138,355**

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Strategies to improve profitability and resilience

The longer-term deterioration in farm profitability highlights the urgent need to implement management strategies that improve profitability.

The first two key strategies evaluated were to improve land condition and drought resilience including:

1. Implementing a safe stocking rate and wet season spelling.
2. A safe stocking rate, wet season spelling and adequate wet season P supplementation.

An investment analysis was undertaken evaluating the changes in cash flow that occurred over 30 years. The table below outlines the annualised net present value (NPV), rate of return, payback period and peak deficit for several strategies that were found to either maintain or improve profitability relative to a base property. The representative property is the base property for strategies 1 and 2. For example, the results identified that the safe stocking, spelling and adequate P strategy increased profitability each year by $59,800 (annualised NPV) relative to the representative property. Further strategies (strategies 3 to 8) were then evaluated assuming the strategy 2 had already been implemented. Please note, these results are specific to the assumptions used for the analysis.

Management strategy	NPV ($/yr)	Rate of return	Payback period	Peak deficit	Comments
1. Implementing a safe stocking rate and wet season spelling	$15,100	n/a	n/a	n/a	An option everywhere
2. A safe stocking rate, wet season spelling & adequate wet season P supplementation	$59,800	n/a	n/a	n/a	
The strategies below start with the property that had already implemented the safe stocking rate, wet season spelling and adequate wet season P supplementation (strategy 2).					
3. Over-sowing a large area of native pasture with stylos to grow out all steers	$31,000	10%	15 years	-$270,600	An option everywhere
4. Over-sowing a 500 ha paddock of native pasture with stylos to grow out some steers	$5,100 to $17,300	11-20%	9 to 12 years	-$66,400 to -$92,700	
5. Fertilising existing stylo paddocks with Phosphorus for steers	$12,700	22%	6 years	-$70,600	Good returns if already established
6. Delaying age of steer turnoff to 41 months	$32,500	24%	8 years	-$95,500	Determine optimal age of turnoff
7. Objectively selecting home-bred bulls to reduce replacement costs	$16,600	59%	3 years	-$25,000	Reliant on objective bull selection & costs
8. Establishing leucaena-grass pastures on frontage country	$54,600	16%	10 years	-$464,200	Requires suitable frontage country

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