Northern Gulf – Factsheet 2: Evaluating grazing management strategies to improve drought resilience - Improving land condition & P supplementation

Managing a grazing business in the Northern Gulf presents significant challenges, from tough climatic conditions to low productivity. The economic impact of a range of management strategies and technologies was analysed by Queensland's Department of Primary Industries, to identify potential strategies that could make grazing businesses in the Northern Gulf more profitable and drought resilient.

Key finding
Improving land condition by implementing safe stocking, spelling and supplying adequate wet season P supplementation increased profitability each year by $59,800 relative to the representative property.

Strategies to improve land condition

Two key strategies were evaluated 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 Phosphorus (P) supplementation.

The first strategy reduced grazing pressure from 2,500 to 1,500 AE (-40%) to match pasture growth and systematically spelled 20% of the property every wet season. These measures were assumed to provide a linear improvement in land condition from 65% to 72.5% of the original carrying capacity in A condition over 30 years (+0.25% per year).

In addition to the above strategy, the second strategy also included adequate wet season P supplementation. Due to difficulties achieving adequate P intake with lick blocks, this strategy involved a change from blocks to a loose mix in bulka bags to achieve required intakes. The cost per head of feeding P supplements increased from $2.24 to $3.33 for weaners (+50%), $4.48 to $8.33 for heifers and steers (+85%), and $6.72 to $11.83 for breeding females (+76%).

The table on the right compares a range of production traits before and after 10 years of implementation. The safe stocking rate and wet season spelling was assumed to decrease herd mortality rates and gradually increase conception rates, weaning rates, cull cow sale weights and the proportion of pregnancy tested empty (PTE) heifers sold. Also including adequate wet season P supplementation was assumed to gradually increase liveweight gains as well as additional improvements in other traits. From year 10 to year 30, the stocking rate for both strategies were gradually increased from 1,500 to 1,813 AE in line with the assumed improvement in land condition.

Production traits	No change	Safe stocking & spelling	Safe stocking, spelling & adequate P
	First year	After 10 years	After 10 years
Weaning rate	47%	50%	58%
Steer liveweight gains	86 kg	86 kg	113 kg
Heifer liveweight gains	82 kg	82 kg	107 kg
Herd mortality rates	7.5%	5%	2.5%
Cull cow sale weights	410 kg	430 kg	450 kg
% of PTE heifers sold	50%	75%	100%
% of females sold	40%	45%	48%

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The table below compares production, sales, costs and gross margin results for the representative property (No change) at key times. Although the number of cattle carried, mated and sold falls significantly with the safe stocking and spelling strategy, the improvement in herd performance attributable to improving land condition reduces variable costs, gradually increases carrying capacity (after 10 years) and eventually produces a better gross margin.

When adequate P supplementation was also included, herd performance improved and cattle sales increased to produce the highest gross margin.

Productivity and profitability indicators	No change		Safe stocking & spelling		Safe stocking, spelling & adequate P
	First year	After 30 years	After 10 years	After 30 years	After 10 years
Adult equivalents	2,500	2,410	1,500	1,813	1,500
Total cattle carried	3,270	3,289	1,907	2,305	1,739
Total breeders mated	1,651	1,653	938	1,131	805
Calves weaned	782	776	468	565	465
Cows and heifers sold	214	142	167	202	202
Steers & bullocks sold	324	295	207	250	220
Average female price	$578	$563	$586	$586	$671
Average steer price	$729	$722	$729	$729	$842
Net cattle sales	$360,332	$293,081	$248,670	$300,578	$321,056
Variable costs	$154,892	$154,726	$82,900	$108,449	$89,416
Herd gross margin	$205,439	$138,355	$158,897	$192,129	$231,640

Were the changes profitable?

An investment analysis was undertaken evaluating the changes in cash flow that occurred over 30 years. It was assumed that no upfront investment was needed to implement either strategy. The results identified that the safe stocking rate and spelling strategy increased profitability each year by $15,100 (annualised net present value) relative to the starting representative property (no change). If an investment was required, up to $232,600 could be spent before the investment becomes unprofitable (breakeven).

The same strategy also including adequate P supplementation increased profitability each year by $59,800 indicating that it is the most profitable option. In this case, up to $918,700 could be spent before the investment becomes unprofitable. Please note, these results are specific to the assumptions used for the analysis.

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