

ECONOMIC BENEFITS OF SUPPLEMENTING PHOSPHORUS

Image 1. Cows supplemented with P at the conclusion of the Kidman Springs trial, May 2019

DPI economists evaluated the farm profitability implications from supplementing breeders with Phosphorus (P) using data collected from the NT DITT Kidman Springs trial¹ on breeder performance on acutely deficient soils (Colwell P of 2.5 - 3.1 mg/kg). The Breedcow tool was used to develop 'with and without P' herd scenarios assuming the property carried 1,000 adult equivalents. Dynama was then used to model the cash flow impacts when shifting to supplementing breeders with P over a 10-year period. The results using current prices (\$1882/t P price, \$3.70/kg steer price, \$2.33/kg female price) indicated that farm **profitability increased by \$101,300 per year (annualised Net Present Value, 5% discount rate) and provided a 752% internal rate of return (7.5-fold return each year)**. See Table 1 for the rates of return at different phosphorus and cattle prices.

This increase in profitability is due to the **combined benefits of supplementing P on production**. These benefits include:

- Up to 106kg heavier LW of cows
- Up to 63% higher pregnancy rate in lactating cows
- 33kg heavier weaners on average
- 11% higher weaning rates
- 12% less mortality

*The price of Phosphorus would have to be **greater than \$11,000 per tonne** (Table 1) for it to not be worth the investment of feeding Phosphorus!*

Table 1. Rate of Return at Different Cattle and P Prices

Phosphorus Price (Biofos) \$/t

	\$941	\$1,882	\$2,823	\$3,764	\$11,425
\$1.85 / \$1.17	404%	122%	64%	36%	loss
\$3.70 / \$2.33	∞	752%	242%	141%	5%
\$5.55 / \$3.50	∞	∞	1092%	354%	39%

∞ The investment is cashflow positive from the first year (e.g. additional cattle sales outweigh supplement costs in year 1, 2, etc).

Can you afford not to P supplement?



Image 2. Cows not supplemented with P at the conclusion of the trial, May 2019.

How to feed P

- Loose mix in the open
- Loose mix under shelters
- Loose mix in bulk bags
- Blocks
- Medicated water

Typical wet season mixes

- 1**
 - 70% di-calcium phosphate (DCP)
 - 25% salt
 - 5% lime*
- 2**
 - 50% salt
 - 40% DCP
 - 10% sulphate of ammonia
- 3**
 - 50% salt
 - 50% DCP

*Only required when fed in open to create crust in wet weather, preventing spoilage. A maximum of 10% lime in any mix.

Calculating cost of P in different supplements

Cost of supplement = \$930/t
Phosphorus content of supplement used = 21%
Weight of phosphorus per tonne of supplement = 210kg
Thus the cost of the phosphorus (210kg) in this mix is \$930 / 210kg = \$4.43/kg P
or ~ 4 cents per day per cow during the wet season for a 10g intake of supplement

Example of calculating how much P to feed for a supplement that is 70% Kynofos and 30% salt

How much P is in the supplement?
% of P source (Kynofos) in total lick recipe (70%) x % P in the P source (21%) = % P in lick (14.7%)

How much supplement to feed to meet the requirements of 10g/day for breeders during the wet season?

P requirement/day (10g) / % P in lick (14.7%) = Lick requirement/hd/day (68.5g)

The total amount of supplement required will be Lick requirement/hd/day x Number of head x days over the wet season x number of animals in the paddock = Total lick requirement

P Requirements

Wet Season P Requirements	Dry Season P Requirements
6g P/day for growing cattle	2 – 5g P/day for all cattle
10g P/day for breeding animals	

Keep records to monitor intake.

If cattle are ingesting the lick too quickly, or too slowly, the recipe will need to be modified.

There are many considerations when trialling a P supplement for the first time and speaking to an industry professional to create a plan will result in the best outcome.

futurebeef.com.au/contact-us



¹ Data and images sourced from the NT DITT Kidman Springs Study: <https://futurebeef.com.au/kidman-springs-study-finds-substantial-benefits-from-phosphorus-supplementation/>