

The economic effects of supplement and nitrogen within beef systems

13th May 2010

Summary

This analysis shows that if pasture cover is too low to get all stock through winter, feeding a relatively low cost supplement (such as PKE) or applying extra nitrogen is likely to be more profitable than reducing stocking rate. This analysis was undertaken within a bull finishing system but the results are likely to be similar within other cattle finishing systems. The results are based on assumed increases in schedule and store cattle prices during winter and actual deviations from these assumptions will affect the results dramatically. It is also for a generalized farming situation and calculations should be undertaken for each individual farming situation rather than proceeding with these recommendations.

Don't forget the general recommendation: do your feed budget, work out how much you need and **contract supply** to guarantee that you get it when you need it.

Background

Prolonged drought conditions during summer and autumn 2010 have left most Northland farmers with reduced pasture covers. Despite recent rain in many areas of Northland and even though most farmers have substantially reduced stocking rates, many are realising they have not got enough pasture cover to get present numbers through winter and are considering further destocking. However, Most commentators are predicting a significant lift in beef schedule prices during winter and high stocking rates make the most increases in stock value. The economics around supplement and nitrogen use are therefore being pondered over and compared to destocking options. To assist decision making the analysis in this report undertaken using the context of a bull finishing system to examine this issue.

How the analysis was undertaken

An example bull finishing system was the basis for the analysis and used Farmax software to examine the biological and financial impacts of supplement use.

The scenario involved the bull finishing system having too many stock to get through winter. In numbers the bull system had two thirds R1yr bulls and one third R2yr bulls. The analysis is all around the decision as to whether to quit some of the R2yr bulls or keep them. The R1yr bulls were not changed between the systems tested. Some nitrogen was already being applied 10th May and 10th August. The scenarios tested were:

1. **Sell & Buy** - Sell all of the R2yr bulls store in mid May and then purchase the same number back in mid July once pasture cover has lifted
2. **Sell half** - Sell half of the R2yr bulls store in mid May and take the other half through
3. **Balage** – Keep all R2yr bulls and feed balage to get them through

4. **PKE** - Keep all R2yr bulls and feed palm kernel extract (cattle winter growth rates were increased as a result of PKE feeding)
5. **Extra N** - Keep all R2yr bulls and put on an extra 60 kg nitrogen/ha (split between May and August)
6. **PKE & extra N** - Feed PKE and apply an extra 40 kg nitrogen/ha

Assumptions

- Average pasture cover was 1400 kg DM/ha at 1 May
- All R2yr bulls are sold by mid October
- Where pasture cover is lifted significantly during June – August then pasture growth is lifted by either 1 or 2 kg DM/ha/day (grass grows grass)
- Nitrogen was priced at \$1.70/kg N
- Where extra nitrogen was applied then response rates were reduced by 1 kg DM/kg N across all of the nitrogen (higher rates expect slightly lower response)
- Balage was priced at \$100/bale (66¢/kg DM, includes some cost of feeding)
- PKE was priced at \$350/tonne (38¢/kg DM – to include cost of freight and some allowance for feeding cost)
- Store bull prices are based on Farmax current predictions
- Schedule price movements were based on ifarm predictions and are outlined below for a 295kg carcass bull

May 2010	June	July	August	September	October
\$3.70	\$3.85	\$4.05	\$4.25	\$4.30	\$4.26

Results

The gross margins for the different systems tested are outlined below.

	Sell & Buy	Sell half	Balage	PKE	Extra N	PKE & N
Gross Margin \$/ha	\$ 747	\$ 761	\$ 622	\$ 802	\$ 834	\$ 843

Sell & Buy back

The selling of all R2yr cattle and then buying back in mid July proved to be slightly less profitable than selling half the R2yr bulls. Reducing stocking rate is a quick way to increase pasture cover but this analysis based on an the assumed increasing schedule and a assumed increase in store bull prices showed these destocking options are less profitable than some other options.

Balage

Retaining all bulls and feeding balage was significantly less profitable than all other options, due to balage being a high cost feed. The more balage fed to support liveweight gains (LWG) the lower the profitability of the system, as the returns from feeding balage were lower than the cost of the balage.

This option would only be competitive with other options if the price of the balage was somewhere near halved (i.e. \$50/bale).

PKE

Retaining bulls and feeding PKE increased the gross margin compared with the destocking options. In addition, increasing the amount of PKE fed to increase cattle LWG increased the system profitability. This shows the return/kg DM eaten is predicted to be greater than the cost of PKE. The feeding of PKE will not suit all situations and requires some equipment. These costs were not accounted for as they vary greatly between farms.

Extra nitrogen

Nitrogen was already used within the system (it was considered that most bull finishers will be using it already this season). Retaining all bulls and applying additional nitrogen increased the gross margin compared to most other options, despite the total response/kg N being reduced because of the higher amount of N being applied. The relative low cost of the extra feed grown drives the increased profitability. One constraint with extra nitrogen input is that it is not immediate and the response rate is variable depending on climatic and pasture conditions. However the small extra labour requirement and low equipment requirements make it versatile to fit within many farm systems. There is a small risk of nitrate poisoning occurring with high nitrogen inputs.

PKE & extra nitrogen

This was the most profitable of the systems tested due to a combination of the low feed costs of nitrogen and the immediate increase in pasture cover and bull LWG during winter due to the PKE inputs. Again the use of PKE will be situation dependent, but the benefit of the combined effect shows in the higher gross margin.

General comments

The context of this analysis was a bull finishing system, however the results are likely to be similar within a steer or heifer finishing system. This analysis was based on the information available at the time. Changes in stock prices could be quite different than those used in this analysis and would affect the results of these scenarios dramatically. In addition, this analysis is generalized and does not include all interactions that may occur within specific situations. Calculations should be undertaken for a specific farm system. For example, retaining the extra R2yr cattle could result in additional pugging damage and therefore reduce spring pasture growth rates and this should be taken into account if that is a likely within a specific situation.

Remember – don't rely on always getting PKE on the spot market! Important to do your feed budget, work out how much you need and contract PKE supply to guarantee that you get it when you need it.