

IS UNDEGRADABLE PROTEIN SUPPLEMENTATION A REQUIREMENT FOR SILAGE BASED DIETS TO FINISH BEEF CATTLE ?

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Traditionally finishing beef cattle in summer-autumn in the south west of Western Australia (WA) has relied on the use of high-grain diets under opportunistic feedlot conditions. However, recent work (Jacobs *et al.* 1992) has shown that when silage is used as a major component of such dietary regimen to finish cattle, liveweight gains in excess of 1 kg/day can be achieved. The performance of animals fed silage-based diets can further be improved if additional protein is offered in a rumen undegradable form (Jacobs and Zorrilla-Rios 1993). The aim of this study was to determine the potential of finishing beef cattle on silage-based diets supplemented with either lupins with an estimated degradability of 0.8 (rumen degradable protein) or lupins plus fishmeal (rumen undegradable protein).

This trial was conducted on a commercial property in the south west region of WA with an average rainfall of 1100 mm. Pasture silage individually wrapped in round bales was made on the property during the previous spring with the aim of feeding any weaners that did not achieve slaughter weight to qualify for the young, prime beef category. Thirty-eight Simmental-cross steers, with average initial liveweight 340 kg (s.e \pm 23.9) were offered silage *ad Zibitum* as the sole feed for 57 days. After this time the animals were split into 2 groups and continued on silage *ad libitum* but supplemented with either 2 kg lupins (L) or 1.5 kg lupins and 0.5 kg fishmeal (LF) per head and fed for a further 42 days or until the producer considered the animals were suitable for slaughter. The liveweights of the 2 groups at the commencement of supplementation were 385 kg (\pm 24.9 (L, n = 18)) and 378 kg (\pm 27.1 (LF, n = 20)).

The silage used for the trial was considered to be of good quality with a dry matter content of 500 g/kg and a digestible dry matter content (DMD) and crude protein (CP) of 70.3% and 140 g/kg DM respectively. The DMD and CP of the 2 protein supplements were 87.7 and 311 (L) and 88.1 and 432 (LF) respectively.

Daily liveweight gain (ADG) when silage only was offered was 0.77 kg/day which although a reasonable ADG for a diet of only silage was considered inadequate to finish the cattle within the desired time. When the protein supplements were offered there was an increase in growth rate (> 1.4 kg/day) compared with the silage only ration and an increase in ADG for the LF group compared with the L group (1.6 vs 1.4 kg/day). After 26 days feeding the supplemented diets the producer considered 15 animals ready for slaughter (6 L , 9 LF). All other animals were fed for a further 16 days before a further 17 were slaughtered (7 L , 10 LF). The remaining animals (5 L , 1 LF) were not slaughtered at this stage and were returned to pasture. Slaughter data indicated no differences in carcass weight (215.6 kg and 220 kg), back fat (P8 site) (6.1 mm and 5.5 mm) or value of the carcass (\$557.62 and \$555.43) for L and LF respectively.

The results of this trial suggest the only value in providing a rumen undegradable protein supplement such as fishmeal was that 19 of the 20 animals were slaughtered in April compared with 13 of the 18 fed silage with lupins. However the question which needs to be addressed is whether there is an alternative source of undegradable protein. The current cost of fishmeal is in the region of \$1,000/t and it is unlikely that it would be economical to use on a large scale.

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