SUPPLEMENTATION OF A CARPET GRASS (AXONOPUS AFFINIS) PASTURE FOR BREEDING BEEF COWS

R.D.H. COHEN*

SUMMARY

Beef cows grazing unfertilized carpet grass (Axonopus affinis) received no supplement or supplements of phosphorus, molasses-urea-phosphorus or linseed meal-phosphorus. The supplements did not influence cow live weight or fertility. There was a small live weight advantage at weaning in calves from cows which consumed the linseed meal-phosphorus supplement. The results suggest little or no advantage in feeding these supplements to beef cattle grazing carpet grass pasture.

I. INTRODUCTION

Carpet grass (Axonopus affinis) is the dominant pasture species on many low fertility soils on the North Coast of New South Wales. It provides a pasture which is low in phosphorus, nitrogen and digestible energy (Cohen 1972). When supplements of phosphorus, molasses-urea-phosphorus or linseed meal-phosphorus are given to cows rearing calves and grazing carpet grass dominant pasture the responses are unknown. This paper describes the responses obtained in one such experiment.

II. EXPERIMENTAL METHODS

In June 1972, 36 pregnant cows and 32 pregnant heifers were randomly allocated to four herds of nine cows and eight heifers. They grazed an unfertilized 200-ha area of carpet grass which was subdivided into five paddocks. The four herds grazed separately and to minimize paddock effects they were rotated each week through all paddocks.

A herd was given one of the following supplements on a per head per day basis: nil (C); 10 g phosphorus and 50 g molasses (P); 500 g molasses, 50 g urea and 10 g phosphorus (MUP); or 450 g linseed meal and 7 g phosphorus (LP). Sodium di-hydrogen orthophosphate (NaH$_2$PO$_4$) was used as the phosphorus supplement. P, MUP and LP supplements provided the same amount of phosphorus and the MUP and LP supplements provided approximately the same amounts of metabolizable energy (National Academy of Sciences 1970) and nitrogen. The P and MUP were given in a roller licker and the LP was given in an open trough. All supplement containers were raised sufficiently to prevent calves from gaining access to the supplement. The supplements were given twice a week and were entirely consumed.

Angus bulls, one per cow group, were introduced for mating for 12 weeks commencing October 1, 1972 and October 6, 1973. Every week, bulls were changed to different cow groups. Six bulls were used on a four 'joining' two 'resting' basis. Each week one 'joining' bull was replaced by a 'rested' bull. The two 'resting' bulls grazed pasture with an ad libitum supplement of lucerne hay. Calving commenced in July each year and calves were weaned in April 1973 (mean age 270 days) and March 1974 (mean age 220 days).

Cows were weighed every 4 weeks during 1972/3 and every 6 weeks during 1973/4. Calves were weighed at birth; at a mean age of 70 days;

* Department of Agriculture, Agricultural Research Station, Grafton. N.S.W.

253
and thereafter with the cows.

III. RESULTS AND DISCUSSION

(i) Live weight

There were no significant differences in mean live weights of cows at any time. Their live weights ranged from yearly maxima of 445 kg in June 1972, 402 kg in April 1973 and 392 kg in March 1974 to yearly minima of 346 kg in November 1972 and 335 kg in September 1973. Calf live weights at birth and weaning are presented in Table 1.

**TABLE 1**

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Supplement</th>
<th>C</th>
<th>P</th>
<th>MUP</th>
<th>LP</th>
<th>Pooled S.P.</th>
<th>LSD of mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calf live weight (kg)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Birth 1972</td>
<td></td>
<td>28</td>
<td>27</td>
<td>29</td>
<td>28</td>
<td>1</td>
<td>N.S.</td>
</tr>
<tr>
<td>1973</td>
<td></td>
<td>27</td>
<td>26</td>
<td>27</td>
<td>29</td>
<td>1</td>
<td>N.S.</td>
</tr>
<tr>
<td>Weaning 1973</td>
<td></td>
<td>161</td>
<td>169</td>
<td>163</td>
<td>166</td>
<td>5</td>
<td>14</td>
</tr>
<tr>
<td>1974</td>
<td></td>
<td>131</td>
<td>127</td>
<td>126</td>
<td>120</td>
<td>6</td>
<td>16</td>
</tr>
<tr>
<td>Calving percentage</td>
<td></td>
<td>64.7</td>
<td>76.5</td>
<td>67.7</td>
<td>79.4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

From these results it is concluded that feeding supplements of monosodium phosphate to cows under these conditions will not stimulate either live weight or milk production sufficiently to be of any benefit to the calf. Similarly, a supplement of molasses-urea-phosphorus, as used in this experiment, had no effect on live weight or apparent milk production of cows. However, the supplement of linseed meal-phosphorus slightly stimulated milk production as reflected by increased calf growth in 1973/4. When calves were 200 days old in 1972/3 those in the LP group held a 13 kg weight advantage over those in the C group (p<0.05), which also suggests a stimulation of milk production by the supplement. Beyond 200 days of age, when milk becomes a less important source of nutrients to the calf, compensatory growth of those calves in the C group took place. Therefore the LP supplement may only be of value when calves are to be weaned before they are 220 days old.

(ii) Fertility

The 2-year cumulative (1973-74) calving percentages of cows in the four groups are presented in Table 1. There were no significant differences in calving percentages between any of the groups (C vs LP $\chi^2 = 1.83; p>0.10$). However, the reliability of the fertility data may be influenced by the small numbers of cows and the fact that
data are for two calving periods only. Because a small increase in fertility may result in a large economic benefit to the producer, irrespective of live weight responses, further experiments are required using larger herds.

(iii) Potential Use of Supplements

Reports on supplementation of beef cattle on the North Coast of New South Wales are meagre. The lack of a response to phosphorus supplements is consistent with the results of a previous experiment (Cohen 1972). A daily supplement of 500 g molasses for 12-month-old steers weighing 162 kg has resulted in reduced live weight loss (Cohen 1974) and it is therefore possible that in the present experiment a larger amount of energy supplement for the cows, which weighed 300-450 kg, may have resulted in a greater response.

Sparke and Lamond (1968) obtained live weight responses in heifers given a linseed meal supplement. The amount of supplement given in their experiment provided a higher proportion of the daily energy and protein requirements than was the case in the experiment reported here, when comparative live weights and physiological status such as pregnancy and lactation are considered. They offered the supplement during the winter months only and concluded that "for supplementation to be economically sound one would need to select for feeding only those heifers that have a high probability of becoming pregnant as a result of receiving a supplement".

The biological and economic benefit of providing more energy supplement than that given in the present experiment and the advantages/disadvantages of providing the supplement at 'strategic' times, or year round, require further investigation. However, the probability of the supplement becoming a substitute for, rather than a supplement to, pasture intake should not be overlooked if larger amounts are given.

The increase in beef production following linseed meal/phosphorus supplementation in this experiment was much less than that following pasture improvement in the same area using superphosphate and naturalized white clover (Trifolium repens) (Cohen and O'Brien 1974). From the information currently available it seems therefore that provision of the supplements used in this experiment will not offer a viable alternative to the use of superphosphate and legumes in this area as a means of increasing beef production.

IV. ACKNOWLEDGEMENTS

The assistance given by Mr. G.J. Tarrant and Mr. W. Lee is acknowledged with gratitude.

V. REFERENCES


255