THE RESPONSE OF EARLY SUMMER CALVING BEEF COWS AND THEIR CALVES TO THREE FORMS OF SUPPLEMENTARY FEEDING AT ANNUAL PASTURE

D. HAMILTON* and R.C. SEIRER*

SUMMARY

Three supplementary feeding practices were tested in one year and one in a second on early summer calving cows and their calves. The practices were grain to cows or to calves from summer until the end of winter, or hay to cows and calves during late autumn and winter. Calf carcass weight at weaning was not significantly affected by treatment. These treatments appear to offer little promise of consistent economic benefit.

Keywords: beef cows, supplements, calf carcasses

INTRODUCTION

In regions of annual pasture in north-eastern Victoria some farmers are now calving in early' summer when producing beef calves for slaughter at weaning. With this time of calving there could be merit in using supplementary feed to boost animal performance during the long period of poor quality or scarce pasture that usually follows calving. Therefore, three supplementary feeding practices were tested in one year and one wasrepeated in the next year. One practice was a protein supplement to the cows, because it could complement the use of body reserves for milk production (Ørskov et al. 1980).

MA-TERIALS AND METHODS

The main part of the experiment was conducted during 1984 and the remainder in 1985. Only the 1984 circumstances are described in detail, and the performance of the control animals indicates differences in the pasture situation between years.

The pasture comprised Trifolium subterraneum (cv Woogenellup), Lolium rigidum and Hordeum leporinum. Single superphosphate, had been applied at 125 kg/ha every second year for the last 10 years; and at double this rate earlier.

On average, the annual rainfall is 580 mm and there is green pasture from late April until mid November. Rainfalls for the successive months of 1984 were 117, 63, 26, 27, 10, 13, 92, 112, 47, 72, 10 and 15 mm. Mean maximum and mean minimum daily temperatures for the month ranged from a high of 29 and 12°C in February to a low of 12 and 1°C in July. Heavy rain in January resulted in some germination, and'later rain kept some plants alive. Plants that survived were stimulated by rain in July, and general germination occurred in August.' The pasture remained green until mid November.

The lupins, wheat and pasture hay used for supplementary feeding, contained, respectively, 5.98, 1.84 and 1.35% N in the DM. The wheat and lupins were coarsely cracked, and 1.0% of salt and limestone were added. The hay, comprising mainly Lolium rigidum, had been made 'when seeds were forming.

* Rutherglen Research Institute, Dept Agriculture & Rural Affairs, Vic. 3685

The Angus cows were mated to bulls of the same breed for eight weeks each year to begin calving on 20 November. They calved for their second time just before the start of the experiment. At the start of this calving they were about 42 months old, of mean live weight 537±41 kg, and of mean condition score 3.6±0.3 on the 1 to 5 scale of extremely lean to grossly fat proposed by Lowman et al. (1976).

The stocking rate was 0.8 cows and calves per hectare and it had been maintained since the previous autumn. Initial animal allotment was at random from three strata of live weights, and any cow failing to calve was replaced with one of equivalent weight.

There were three replicates of four treatments, on randomized blocks, with three cows per plot. Supplementary feed was to be provided during winter only if pasture scarcity warranted it. The eventual treatments were:

N - no supplementary feeding;

C - creep feed with one part lupins and two parts wheat freely available to the calves from 16 March to 31 August

P - a daily supplement of 1 kg of lupins and 0.5 kg of wheat per cow/d from 24 January until 37 August;

H - hay to appetite without wastage three times a week from 11 May to 31 August.

The treatments continued until the calves were weaned and slaughtered at the end of October 1984, and treatments N and C were repeated on the same plots in *1985.*

The creep feed was provided in covered feeders, located at the regular camping spots. The grain supplement to the cows was provided in troughs that excluded the calves; During mating, all cows on the same treatment grazed together, and were rotated round their plots.

The cows were dosed with anthelmintic in late January, April and August. They were also vaccinated in January, February and June against clostridial diseases, and were treated twice in early winter to control lice. The calves were treated similarly, except for no dose of anthelmintic in January. Male calves were castrated in January.

The animals were weighed monthly. Milk consumption at the N and P treatments was measured at the same time, by the weigh/suck/weigh method, starting at 0800 h, after the calves had been separated at noon on the previous day and allowed to suck at 2000 h. The calves were slaughtered two days after weaning at the end of October. Chilled carcass weight was estimated as *97%* of hot weight with the tail, kidneys and kidney fat included. Thickness of fat cover was recorded on half of each carcass, as the mean of two measurements over the eye muscle between the 10th and 11th ribs.

Quantity of pasture was measured at representative times of the year, by cutting 10 quadrats, each 2,044 cm^2, to ground level on each plot. The samples were washed in water, dried at 100°C, and sorted into the fractions representing green pasture and dry.

An analysis of variance was applied to the plot means, using the Genstat computer programme (Rothamstead Experimental Station, Harpenden).

RESULTS

The mean quantities of pasture in 1984 and S.E. s were:

Date	Pasture DM/ha (kg) Green pasture	Dry pasture
1 February	300±49	2,500±370
9 April	700 106	2,100 247
12 July	500 78	1,700 261

Mean calving dates in 1984 for the treatments N, C, P and H, respectively, were 7 December, 29 November, 8 December and 26 November. The other animal results are shown in Table 1.

Table 1. Mean results per animal in 1984

		Treatment N	C	P	H	S.E.
a)	Supplement/cow and calf (kg)	-	300	315	1330	
b)	Cow weight change (kg/d)					
	1/2-4/5	-0.09	0.14	0.01	0.01	0.08
	4/5-4/9	0.02	-0.30	-0.03	0.14	0.10
	4/9-31/1	1.44	1.55	1.35	1.41	0.09
c)	Calf weight change (kg/d)					
	1/2-4/5	0.89	1.15	0.99	1.02	0.05
	4/5-4/9	0.64	0.63	0.69	0.76	0.06
	4/9-31/10	1.20	1.13	1.13	1.10	0.06
d)	Milk consumption (kg/d)					
	1/2-4/5	5.3	-	6.8		0.5
	4/5-4/9	3.3	-	4.5		0.6
	4/9-31/10	1.3	-	4.4		0.5
e)	Calf weaning weight (kg)	301	334	323	335	14.6
f)	Carcass weight (kg)	160	178	174	181	7.9
g)	Fat thickness (mm)	8.8	7.3	10.1	7.9	1.1

The only significant differences ($P<0.05$) in result were for calf growth between treatments N and C for period 1/2-4/5 and for milk consumption between treatments N and P for period 4/9-31/10.

In 1985, mean birth date was 29 November and 5 December for treatments N and C, respectively. In the other results, which are presented in Table 2, carcass weight tended to be heavier than in 1984, and the response to creep feeding tended to be poorer. The only significant difference in result was for calf growth between the two treatments during period 3.

Table 2. Mean results per calf in 1985

		Treatment N	Treatment C	S.E.
a)	Supplement (kg)	-	227	
b)	Weight change (kg/d)			
	5/2-1/5	0.71	0.60	0.06
	1/5-4/9	0.90	1.00	0.06
	4/9-30/10	1.11	1.03	0.06
c)	Carcass weight (kg)	184	191	1.6

DISCUSSION

Clearly none of the supplementary feeding treatments had a significant effect on calf carcass weight despite substantial amounts of supplement being given. In 1984 this result applied when the sequence of pasture conditions should have resulted in about an average response to treatments C and P and an above average response to treatment H.

Results from other centres have also shown an uneconomic response in cows and calves to supplementary feeding. In this respect, Robinson and Cameron (1960) found it uneconomic to increase supplementary feeding above an assumed minimum when producing cattle for slaughter at 88 weeks -old. Also, in present economic circumstances it would have been unprofitable to buy hay to support a heavier cow stocking rate in the results of Bailey et al. (1972), and only the' cost of the oats would have beenreturned in the results of Corah and Bishop (1975) for creep-feeding in the few months before weaning in late summer or autumn. At present the annual variable cost per cow is about $140, oats and hay cost about $110 and $100 per t, respectively, and'calf live weight returns about $1.10 per kg.

Overall, therefore, there seems to be little promise of consistent economic benefit from supplementary feeding only to increase calf growth.

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