USE OF SYNTHETIC OESTROGENS FOR PROMOTING WEIGHT GAINS IN BEEF STEERS GRAZING ON NATIVE PASTURES

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SUMMARY

In two trials on unimproved pasture at the Beef Cattle Pasture Research Station, "Brian Pastures," Gayndah, beef steers implanted at levels of 30 mg and 60 mg with the synthetic hormone hexoestrol made significantly greater liveweight gains than comparable untreated cattle. Treated animals had a slightly better depth of eye muscle and carried less fat cover than the controls. In one trial, carcasses of the control animals graded higher than those of the treated animals, but in the other trial the carcasses of both treated and untreated cattle graded equally well. Certain adverse effects were noted in steers treated at both levels.

I. INTRODUCTION

In recent years there have been numerous reports of an increase in growth rate of cattle following treatment with oestrogenic hormones, either by oral administration or by subcutaneous implantation (Burroughs *et al.* 1954; O'Mary *et al.* 1953; O'Mary and Cullison 1956). Most reports of increased growth rate refer to cattle in feed lots, but more recent information from overseas countries indicates that significant responses to treatment have been obtained by implantation of cattle grazing on high quality pasture and crop (O'Mary and Cullison 1956; Kercher 1958).

The observations in this study were made on cattle implanted with hexoestrol at two levels and dependent solely on unimproved pasture for grazing.

II. MATERIALS AND METHODS

Two trials were carried out at the Beef Cattle Pasture Research Station, "Brian Pastures", Gayndah. This property receives an average annual rainfall of about 29 in. and has a pasture consisting mainly of black spear grass (*Heteropogon contortus*) and a number of blue grasses (species of *Bothriochloa* and *Dichanthium*). These are essentially summer-growing species and are virtually non-productive during the winter months.

The first trial was commenced in November 1957, and drought conditions prevailed for the first 56 days of the trial. Three groups of cattle each comprising 16 3-year-old Hereford steers, four 4-year-old Hereford steers and three 3-year-old Hereford–Aberdeen Angus steers were used in a randomized block design. The

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three treatments involved were an implant of 30 mg hexoestrol, one of 60 mg hexoestrol, and no implant. Initial weights were taken and the stock were weighed regularly at 28-day intervals. At the termination of the trial on April 26, 1958, the stock were slaughtered and carcass grade and measurements of the eye muscle and fat cover were obtained.

The second trial was commenced in December 1958 and terminated in April 1959. Forty-six 3-year-old Hereford steers were split into two groups for paired comparison. One group was retained as the control group and the animals in the other group were given an implant of 30 mg hexoestrol.

In both trials the animals were depastured in the same paddock.

III. RESULTS

The growth rates of the groups in the two trials are shown in Figure 1. The difference in initial weight and overall growth rate between the two trials is due to the drought conditions prevailing prior to and during the early part of the first trial. Table 1 shows the essential growth rate information from both trials. Significant differences were recorded in rate of gain in both trials. In the first trial the two levels of hexoestrol were associated with gains significantly greater than those of the control animals ($P<0{\cdot}05$). In the second trial, the 30 mg implant was again associated with increased gains, the difference again being significant at the 5 per cent. level.

The dressed weight of the carcasses in the first trial reflected the differences shown in the rate of gain, both treated groups again exceeding the control group

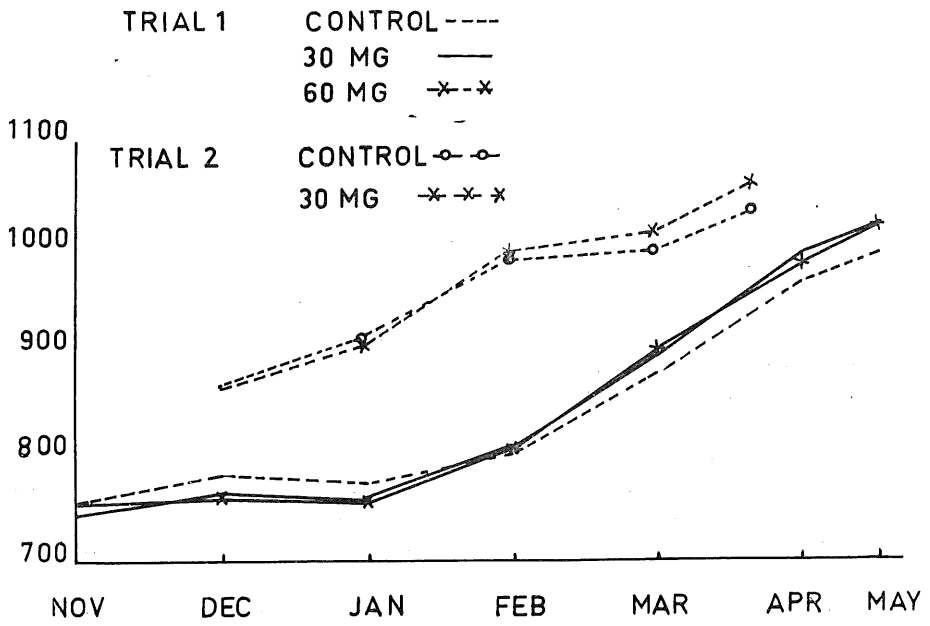

Fig. 1.—Graph of the average weights (in lb) of the steers in the treated groups during the two trials.

Table 1

GROWTH RATE DATA

Group	Average Initial Weight (lb)	Average Daily Gain (lb/day)	Average Final Weight (lb)	Average Dressing Weight (lb)	Eye Muscle Depth (cm)	Fat Cover (cm)
Trial 1						
Control	751	1·6	987	510	4·8	2·2
30 mg implant ..	744	1·8	1,022	523	4·9	1·8
60 mg implant ..	752	1·7	1,021	529	5·1	1·8
Trial 2						
Control	865	1·6	1,038	553	4·8	1·8
30 mg implant ..	861	1·9	1,059	560	5·1	1·7

($P<0·01$). However, there was no significant difference between the average dressed weight of the implanted group and that of the control group in the second trial.

The differences in eye muscle depth and fat thickness over the eye muscle between the treated groups and the control group in both trials were not significant.

In the first trial, the control group averaged a higher grade than the two treated groups, lack of finish being the major factor responsible for the lower grading of the carcasses in the treated groups (Table 2). In the second trial, there was no difference in grade between the carcasses from either the control or the treated group. However, the carcasses in the second trial were not graded on the same basis as those in the first trial.

Table 2

GRADING OF CARCASSES

Group	Grade		
	Chiller	First	Second
Trial 1			
Control	18	4	1
30 mg implant	9	12	2
60 mg implant	10	10	3
Trial 2*			
Control	..	23	0
30 mg implant	..	23	0

* In the second trial, the chiller grade was not operating and first grade was the highest grade.

IV. DISCUSSION

Under the conditions which existed during the 1957–58 trial, steers treated at both levels showed an increased growth rate over the control steers but the quality of their carcasses was inferior to that of the untreated steers. However,

the plane of nutrition on which the animals were maintained during the first two months of the trial was low, so reasonable gains were not obtained.

In the 1958–59 trial, steers treated at the 30 mg level also showed an increased growth rate over the untreated steers. However, at slaughter, the carcasses of both groups graded equally well.

The plane of nutrition throughout the trial was high. The cattle were in good forward condition at the time of implantation and at slaughter both treated and untreated animals had reached a desirable degree of finish.

Body changes and changes in behaviour were noted in steers in the treated groups in both trials. The body changes took the form of elevation of the tail head, with accompanying tail depressions, sideways sloping of the rump, swayback, some coarseness over the shoulders and teat development.

The costs of the synthetic hormone used represented 1s. per head for animals treated with 60 mg and 6d. per head for animals treated with 30 mg.

In both trials the differences in value between carcasses of the treated and untreated groups were very small. In the 1957–58 trial the down-grading of carcasses of treated animals offset the increase in carcass weight due to treatment. The group treated with 30 mg netted 4s. 5d. per head less and the group treated with 60 mg 1s. per head less than the controls. These differences were not significant. As differences in carcass weight in the 1958–59 trial were not significant, the differences in net returns per head were also not significant.

V. ACKNOWLEDGEMENTS

The assistance of other officers of the Cattle Husbandry Branch, Department of Agriculture and Stock, in the collection and compilation of the data is acknowledged. The statistical analyses of the data were carried out by Mr. A. W. Beattie and Miss D. E. Nunn. The co-operation of the management and staff of Thomas Borthwick and Sons (Australasia) Ltd. (Moreton Freezing Works) and of officers of the Commonwealth Department of Primary Industry made possible the collection of the carcass information.

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(Received for publication September 5, 1959)