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It has been well established that bulls gain faster than heifers in the feedlot. Castration reduces the rate of growth, but steers gain faster than intact heifers and show a greater growth response to diethylstilbestrol (DES). In previous experiments, DES or zeranol appeared to have no growth stimulating effect on feedlot bulls. However, bulls used in the experiments had been roughed through one winter and grazed pastures one season before being put in the feedlot at about 18 to 20 months of age and at weights of about 800 lb.

The objective of this experiment was to determine the response by feedlot bulls to DES and zeranol when administered at a younger age (about 10 months) and a lighter weight (about 500 lb.).

Procedures

The bulls used in the experiment were progeny of an experimental cow herd used in pasture research at the Pasture Research Center, Norbeck. The animals were from Hereford cows where an A.I. program with semen from one Hereford bull was used for about 6 weeks. Yearling Hereford bulls which were half-sibs or from half-sib sires were then turned with the cows with one bull to each experimental pasture of 8 to 10 cows.

The calves were weaned in mid-November and trucked to Brookings. They were offered a ration composed of 3 lb. of whole oats, 2 lb. of protein supplement and alfalfa-bromegrass haylage to appetite until put on the experiment about 3 months after weaning.

The cattle were allotted into 8 pens of 8 each for 4 replicated treatments. Experimental treatments were a control, 36 mg. zeranol implant, 36 mg. DES implant and 60 mg. DES implant. The implants were administered at the beginning of the experiment and again at the same levels after 4 months.

Rations after reaching a full feed contained 3 lb. alfalfa-bromegrass haylage, 2 lb. of a 40% protein supplement and whole corn grain to appetite. The protein supplement contained the following ingredients (%): soybean meal (44%), 50.5; ground corn grain, 26.0; urea (281%), 5.5; ground limestone, 6.0; trace mineral salt, 6.0; dicalcium phosphate, 3.0 and potassium chloride, 3.0. Vitamin A and E were added to furnish 10,000 and 100 I.U., respectively, per pound of supplement.

At the beginning of the experiment, the cattle were fed 20 lb. of alfalfa-bromegrass haylage and 3 lb. of corn. The haylage was reduced by 1 lb. per head daily to the 3 lb. level. Corn grain was increased by 1 lb. daily to full feed

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and then fed in amounts to be nearly consumed by the next feeding. The cattle were fed in outside, paved pens without access to shade or shelter. Feeding was once daily.

The experiment was terminated after 231 days. Carcass data were obtained upon slaughter.

Results

Results of the experiment are summarized in table 1. Differences in rate of gain, feed intake and feed efficiency between treatment groups were small. The small differences in weight gains at the end of the experiment appeared to result from some apparent growth stimulation during the first and second months of the experiment. After 2 months on the experiment, there was a 7 and 10% advantage for zeranol and 60 mg. of DES. An advantage of this magnitude was obtained with the 36 mg. level of DES only during the first month of the experiment. These advantages in weight gains gradually became smaller during the course of the experiment.

Differences in carcass characteristics measured were small in most instances. It would, therefore, appear that the treatments at the levels used had no important effects on the carcass characteristics measured. There did appear to be a slight reduction in amount of marbling for all implanted groups and a lighter color of the meat in comparison to the control group.

Summary

Results of this experiment with bull calves (500 lb.) are in agreement with previous studies with yearling bulls (800 lb. initially) which showed little or no improvement in feedlot performance when implanted with zeranol or DES. A level of 60 mg. of DES administered initially and after 4 months offered no advantage over 36 mg. during the 231-day experiment. Age appeared to be a factor affecting the response to these compounds. While there was a greater growth rate for about 2 months when the bull calves were implanted with zeranol or DES, this effect was largely overcome by the end of the experiment.

Implanted bulls tended to have less marbling and lighter color of lean. Other carcass characteristics measured were about the same for implanted and control bulls.

Table 1. Response of Feedlot Bulls to DES or Zeranol
February 25, 1971-October 13, 1971--231 Days

	Control	Zeranol 36 mg.	DES 36 mg.	DES 60 mg.
Number of animals	16	16	15	15
Init. shrunk wt., lb.	493	494	502	501
Final shrunk wt., lb.	1164	1179	1180	1183
Avg. daily gain, lb.	2.90	2.96	2.93	2.95
Avg. daily feed, lb.				
Corn grain	16.5	16.4	16.2	16.9
Haylage	3.5	3.5	3.5	3.5
Supplement	2.0	2.0	2.0	2.0
Total	22.0	21.9	21.7	22.4
Feed/100 lb. gain, lb.				
Corn grain	568	553	552	571
Haylage	122	119	120	118
Supplement	68	66	67	67
Total	758	738	739	756
Dressing percent	62.3	62.9	62.8	63.1
Conformation[a]	20.8	20.9	21.0	21.0
Marbling[b]	4.6	3.9	3.3	3.8
Carcass grade[a]	20.2	20.0	19.8	20.0
Maturity[c]	22.5	22.1	22.0	22.0
Color[d]	4.2	3.2	3.1	4.0
Firmness[e]	5.4	4.8	4.9	5.4
Kidney fat, %	3.0	2.8	2.7	2.8
Fat thickness, in.	0.65	0.63	0.64	0.65
Loin eye area, sq. in.	12.02	12.52	11.74	12.27

[a] Good = 17; Choice = 20. Graded to one-third grade.
[b] Slight = 4; small = 5; modest = 6.
[c] A+ maturity = 22; A maturity = 23.
[d] Cherry red = 4; light cherry red = 5.
[e] Moderately firm = 5; firm = 6.