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Growth Stimulating Products for Feedlot Heifers Fed High-Concentrate Diets of High-Moisture Corn

J.D. Burkhardt
South Dakota State University

L.B. Embry
South Dakota State University

South Dakota State University
Brookings, South Dakota

Department of Animal Science
Agricultural Experiment Station

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Growth Stimulating Products for Feedlot Heifers Fed High-Concentrate Diets of High-Moisture Corn with Hay or Haylage

J. D. Burkhardt and L. B. Embry

This experiment was one in a series to determine the response by feedlot heifers to various growth promoting products. Products tested were diethylstilbestrol (DES), zeranol and melengestrol acetate (MGA) under conditions of high-concentrate diets with high-moisture grain and hay or haylage.

Procedure

Fifty-six Hereford heifers were used in this experiment. They were allotted into 8 pens with 7 animals per pen. The experimental diets were composed of 1 lb. of a 40% protein supplement, 2 lb. roughage dry matter and a full feed of rolled, reconstituted, high-moisture corn (24.5% moisture). All animals received 20,000 I.U. of vitamin A and 70 mg. bacitracin per head daily. Four pens were fed dry, chopped, alfalfa-brome hay (13% moisture) and the other four pens received haylage (52.8% moisture). The haylage was from the same source as the hay but was reconstituted and stored in an oxygen-limiting silo (Harvestore).

Growth promoting experimental treatments were control, 36 mg. zeranol implants, 10 mg. DES per head per day or 0.4 mg. MGA per head per day. Each of these treatments was administered to cattle fed hay or haylage.

The cattle were fed for 127 days and the experiment terminated. At time of slaughter the livers were examined for abscesses and carcass measurements were taken after an 18-hour chill.

Results

Growth Promoting Products

Results of the experiment with the growth promoting products averaged for hay and haylage diets are presented in table 1.

Weight gains were high for the heifers during this 127-day experiment. Heifers fed 10 mg. DES or 0.4 mg. MGA daily gained at essentially the same rate. The improvement over controls was 6.4%. Heifers implanted with 36 mg. zeranol gained at a lower rate than those fed DES or MGA (3.4% more than controls).

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Feed consumption was about the same for all treatment groups including the control. There were slight improvements in feed efficiency from the growth promoting compounds. The percentage improvements amounted to 5.7, 4.7 and 3.5, respectively, for DES, MGA and zeranol over control heifers.

Differences in carcass characteristics measured were small. Heifers fed DES had a lower dressing percent, less marbling, less fat thickness, a lower carcass grade but a larger rib eye in comparison to the controls. Those fed MGA were quite similar to controls but with less fat covering. Heifers implanted with zeranol appeared to differ from controls mainly in a larger rib eye and less fat covering.

Hay vs. Haylage

Results of comparisons between hay and haylage averaged for the growth promoting products are presented in table 2. Rate of gain was slightly higher for the heifers fed haylage (2.3%). Feed intake (90% dry matter) was about the same for hay and haylage with about the same difference in feed efficiency (2.1%) as for rate of gain in favor of haylage.

There appeared to be no important differences in carcass characteristics of heifers fed hay or haylage. Incidences of abscessed livers were 5 for haylage-fed group (17.9%) and 8 for hay-fed group (28.6%).

Summary

Feedlot heifers were fed alfalfa-bromegrass hay or reconstituted haylage with reconstituted high-moisture corn in conjunction with diethylstilbestrol (DES), melengestrol acetate (MGA) or zeranol from weights of about 590 to 980 lb. DES at 10 mg. daily or MGA at 0.4 mg. daily resulted in about the same improvement (6.4%) in weight gain over controls. Response to zeranol implants (36 mg.) was at a lower rate (3.4%). There were small improvements in feed efficiency, 5.7, 4.7 and 3.5%, respectively, for DES, MGA and zeranol.

The DES treatment appeared to result in a slightly lower dressing percent, less marbling, less fat thickness but a larger rib eye. Zeranol appeared to have similar but less pronounced effects as DES on carcass characteristics. Carcasses from heifers fed MGA were similar to controls.

Differences in rate of gain and feed efficiency between hay and haylage were quite small, 2.3% more gain with 2.1% less feed in favor of haylage. However, the forages made up only about 10% of the ration dry matter. Converted to a ton of forage dry matter, the small differences became rather substantial. The economic importance would depend upon the consistency in performance of cattle under the treatments.

Table 1. Growth Promoting Products for Feedlot Heifers
(June 15 to Oct. 20, 1972--127 days)

	Control	Zeranol 36 mg. implant	DES 10 mg. daily	MGA 0.4 mg. daily
Number	14	14	14	14
Init. wt., lb.	591	590	589	591
Final wt., lb.	967	979	989	990
Avg. daily gain, lb.	2.96	3.06	3.15	3.14
Avg. daily feed, lb. (90% dry matter)				
Rolled high-moisture corn	17.27	17.23	17.36	17.48
Hay or haylage	2.04	2.04	2.04	2.04
Protein suppl.	0.99	0.99	0.99	0.99
Total	20.30	20.26	20.39	20.51
Feed/100 lb. gain, lb. (90% dry matter)				
Rolled high-moisture corn	583	563	551	557
Hay or haylage	69	67	65	65
Protein suppl.	33	32	31	32
Total	685	662	647	654
Carcass wt., lb.	604	611	612	616
Dressing percent	62.4	62.3	61.9	62.2
Conformation[a]	21.4	21.0	21.1	21.4
Marbling[b]	5.5	5.7	5.0	5.5
Carcass grade[a]	18.9	19.0	18.6	19.0
Maturity[c]	23.0	23.0	23.0	23.0
Color[d]	4.6	4.7	4.6	4.9
Firmness[e]	6.2	6.1	6.0	5.9
% kidney fat	2.8	3.0	2.8	3.0
Loin eye area, sq. in.	9.66	10.28	10.16	9.81
Fat depth, in.	0.68	0.53	0.58	0.59
Abscessed livers	3	2	5	3

[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.

Table 2. Hay or Haylage with Rolled High-Moisture Corn
(June 15 to Oct. 20, 1972--127 days)

	Hay	Haylage
Number	28	28
Init. wt., lb.	591	589
Final wt., lb.	978	985
Avg. daily gain, lb.	3.04	3.11
Avg. daily feed, lb. (90% dry matter)		
Rolled high-moisture corn	17.36	17.32
Hay or haylage	2.02	2.07
Protein suppl.	0.99	0.99
Total	20.37	20.38
Feed/100 lb. gain, lb. (90% dry matter)		
Rolled high-moisture corn	571	557
Hay or haylage	66	67
Protein suppl.	33	32
Total	670	656
Carcass wt., lb.	607	614
Dressing percent	62.1	62.3
Conformation[a]	21.3	21.2
Marbling[b]	5.6	5.3
Carcass grade[a]	18.9	18.9
Maturity[c]	23.0	23.0
Color[d]	4.5	4.9
Firmness[e]	6.0	6.1
% kidney fat	2.9	2.9
Loin eye area, sq. in.	9.92	10.04
Fat depth, in.	0.56	0.63
Abscessed livers	8	5

[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.