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Numerous experiments during past years have shown that performance of growing and finishing feedlot steers and heifers is improved when they are administered diethylstilbestrol (DES), Synovex or zeranol. The improvement has been reported from an early age of the suckling calf throughout growing and finishing by implanting and reimplanting at appropriate intervals. Products available to be included in the feed include DES for steers and heifers and melengestrol acetate (MGA) for heifers. This route of administration is an effective one for improved weight gains and feed efficiency for these two products. Improvement in animal performance from these implants and feed additives has been reported with numerous types of rations as to levels and sources of energy, protein and other essential nutrients. However, the degree of response may vary with the nutritional adequacy of the ration.

Comparisons between DES, Synovex and zeranol implants and a nonimplanted control under various conditions of growing and finishing are more limited. The experiment reported here is a continuation of research comparing implants of the three products during feedlot finishing of steers.

Procedures

Steers used in the experiment were fed all-concentrate rations or similar rations plus 2 lb. of wheat straw or 2 lb. of bromegrass-alfalfa hay. Each type of ration was fed with 2 lb. per head daily of a soybean meal-based supplement (17% protein) or a corn-based supplement fortified with adequate levels of minerals, vitamin A, vitamin E and chlortetracycline. The three roughage treatments each with or without supplemental protein were offered to four pens of six steers per pen.

Within each of the six dietary treatments, one pen served as the non-implanted control, one pen of animals was implanted with 36 mg of DES, one with Synovex-S (20 mg estradiol and 200 mg progesterone) and one with 36 mg zeranol. Implant treatments were administered at the beginning of the 140-day finishing experiment. All steers had received 36 mg zeranol implants at the beginning of a growing experiment about 6 months prior to the start of this finishing experiment. A preliminary period of 6 weeks was allowed between this experiment and a previous growing experiment in which the ration was corn silage with protein supplement. Adaptation to an all-concentrate ration was accomplished during this preliminary period. The various dietary treatments were initiated when the cattle were weighed and sorted for the experiment.

Animals were allotted to 24 pens of 6 each on basis of weight. Feeding was once daily in amounts to be nearly consumed by the next feeding. The steers were confined to outside, concrete-paved pens without access to shade

or shelter. Weights were taken at 4-week intervals in early morning before feeding. In addition, initial and final weights were taken following an overnight stand (about 17 hr.) without access to feed and water. The experiment was terminated after 140 days, animals marketed and carcass data obtained.

Results

There were no apparent interactions between dietary treatments and implant treatments. Therefore, results for implant treatments presented in the table are averages for six replications across dietary treatments.

Nonimplanted steers gained 2.80 lb. daily. All implant treatments resulted in faster weight gains. Differences over nonimplanted controls amounted to 0.15, 0.28 and 0.22 lb. daily for DES, Synovex-S and zeranol, respectively. Improvements expressed as a percentage over control in the above order amounted to 5.4, 10.0 and 7.9%. The differences shown for Synovex-S and zeranol over nonimplanted controls were significant ($P<.05$), but there were no significant differences between implant treatments.

Implant treatments appeared to have only small effects on feed intake. Therefore, implant treatments resulting in higher rates of gain also resulted in improved feed efficiency. The improvement as a percent of nonimplanted controls amounted to 6.9, 8.6 and 5.5%, respectively, for DES, Synovex-S and zeranol. All differences were significantly ($P<.05$) different from controls but not between implant treatments.

Differences in carcass characteristics measured were small. Implanted cattle making faster rates of gain had heavier carcasses with a tendency toward larger rib eyes and more fat covering.

Summary

Implants of 36 mg diethylstilbestrol (DES), Synovex-S (20 mg estradiol and 200 mg progesterone) and 36 mg zeranol and a nonimplanted control were compared in a finishing experiment using 144 steers averaging about 680 lb. initially with 6 pens of 6 each per treatment group. All steers had been implanted with 36 mg of zeranol about 6 months prior to the finishing experiment. Rations during the 140-day experiment were all-concentrates or similar ones plus 2 lb. of either wheat straw or bromegrass-alfalfa hay.

Nonimplanted steers gained 2.80 lb. daily. All implant treatments resulted in faster rates of gain. Improvements over controls amounted to 5.4, 10.0 and 7.9%, respectively, for DES, Synovex-S and zeranol. Implant treatments had only small effects on feed intake but resulted in improvements in feed efficiency of 6.9, 8.9 and 5.5% for DES, Synovex-S and zeranol, respectively. Differences in carcass characteristics were small. Implanted cattle making faster gains had heavier carcasses with a tendency toward larger rib eyes and more fat covering.

Implant Treatments for Finishing Cattle with High Corn Diets
(June 10 to October 23, 1975--140 days)

	Control	DES	Synovex-S	Zeranol
Number of animals	36	35[a]	36	36
Init. shrunk wt., lb.	680	683	679	679
Final shrunk wt., lb.	1071	1095	1110	1101
Avg. daily gain, lb.	2.80	2.95	3.08	3.02
Avg. daily ration, lb.	23.39	22.93	23.50	23.81
Feed/100 lb. gain, lb.	835	777	763	789
Hot carcass wt., lb.	664	679	688	683
Marbling[b]	6.3	6.2	5.8	6.0
Carcass grade[c]	19.9	19.7	19.6	19.5
Maturity[d]	23.1	23.0	22.8	23.0
Color[e]	4.9	4.9	4.7	4.7
Firmness[f]	5.8	5.7	5.7	6.0
Percent kidney fat	2.5	2.6	2.3	2.3
Rib eye area, sq. in.	11.16	11.16	11.42	11.46
Fat thickness, in.	0.66	0.72	0.71	0.70

[a]One loss occurred not believed to be related to conditions of the experiment. Results presented for this treatment group are for 35 head.
[b]Modest = 6, small = 5.
[c]Choice = 20, Good = 17. Graded to one-third grade.
[d]23 = A maturity.
[e]Higher number represents darker meat.
[f]Higher number represents firmer meat.