

**South Dakota State University**  
**Open PRAIRIE: Open Public Research Access Institutional**  
**Repository and Information Exchange**

---

South Dakota Cattle Feeders Field Day Proceedings  
and Research Reports, 1972

Animal Science Reports

---

1972

# Diethylstilbestrol, Melengestrol Acetate and Zeranol During Growing and Finishing of Feedlot Heifers

P. J. Thiex  
*South Dakota State University*

L. B. Embry  
*South Dakota State University*

Follow this and additional works at: [http://openprairie.sdstate.edu/sd\\_cattlefeed\\_1972](http://openprairie.sdstate.edu/sd_cattlefeed_1972)

 Part of the [Animal Sciences Commons](#)

---

## Recommended Citation

Thiex, P. J. and Embry, L. B., "Diethylstilbestrol, Melengestrol Acetate and Zeranol During Growing and Finishing of Feedlot Heifers" (1972). *South Dakota Cattle Feeders Field Day Proceedings and Research Reports, 1972*. Paper 13.  
[http://openprairie.sdstate.edu/sd\\_cattlefeed\\_1972/13](http://openprairie.sdstate.edu/sd_cattlefeed_1972/13)

This Report is brought to you for free and open access by the Animal Science Reports at Open PRAIRIE: Open Public Research Access Institutional Repository and Information Exchange. It has been accepted for inclusion in South Dakota Cattle Feeders Field Day Proceedings and Research Reports, 1972 by an authorized administrator of Open PRAIRIE: Open Public Research Access Institutional Repository and Information Exchange. For more information, please contact [michael.biondo@sdstate.edu](mailto:michael.biondo@sdstate.edu).

South Dakota State University  
Brookings, South Dakota

Department of Animal Science  
Agricultural Experiment Station

A.S. Series 72-28

Diethylstilbestrol, Melengestrol Acetate and Zeranol  
During Growing and Finishing of Feedlot Heifers

P. J. Thiex and L. B. Embry

Hormone and hormone-like compounds are commonly used for feedlot heifers. Effects on feedlot performance and carcass characteristics appear to vary depending on compounds used, levels administered including frequency of implanting, stage of growth and fattening, and dietary conditions. This experiment was one in a series to study the effects of melengestrol acetate (MGA) and implants of diethylstilbestrol (DES) or zeranol administered to heifers during growing and finishing or during finishing only.

Procedures

Ninety-six heifers were used in this experiment. They were obtained from the experimental cow herd at the Pasture Research Center, Norbeck. The heifers were from Hereford cows where an A.I. program with semen from one Hereford bull was used for approximately 6 weeks. Yearling Hereford bulls which were half-sibs or from half-sib sires were used as cleanup bulls with one bull to each experimental pasture of 8 to 10 cows. The heifer calves were fed and managed in a similar manner during the nursing period.

At weaning the heifers were allotted into two groups on basis of weight. Eight calves with each group were implanted with 36 mg. of DES and eight were implanted with 36 mg. zeranol. Both groups were managed alike and received a full feed of prairie hay, 2 lb. of oats and 2 lb. of a 40% protein supplement fortified with minerals, vitamin A and chlortetracycline. The heifers were fed this diet at the Pasture Research Center for a period of 108 days. At this time the heifers were shipped to Brookings. Diets were changed to 4 lb. corn grain, 2 lb. 40% protein supplement and a full feed of ground alfalfa-brome hay. They were fed this diet for another 72 days before starting the finishing phase of the experiment.

For the finishing phase of the experiment, the 96 heifers were allotted into 12 pens of 8 each. They were allotted on basis of previous pen group, implant treatment and weight. Six replicated treatments for the two phases were as follows:

	<u>Growing</u>	<u>Finishing</u>
1	Control	Control
2	Control	36 mg. zeranol implant
3	Control	36 mg. DES implant
4	Control	0.4 mg. MGA daily
5	36 mg. zeranol implant	36 mg. zeranol implant
6	36 mg. DES implant	36 mg. DES implant

---

Prepared for the Sixteenth Annual Cattle Feeders Day, October 27, 1972.

At the beginning of the finishing phase of the experiment, each heifer receiving 2 pounds of a corn-urea-soybean meal, 40% protein supplement fortified with vitamin A, E, and minerals, 20 lb. of reconstituted alfalfa-brome haylage and 4 lb. of whole shelled corn. Each day the alfalfa-brome haylage was reduced by 1 lb. and whole shelled corn increased by 1 lb. When the level of haylage reached 3 lb., it was kept constant and corn increased to a full feed. Feeding was once daily in outside, paved pens. The implanted cattle were reimplanted at the same levels after about 3½ months.

Accepted management practices were followed. Records were kept on individual rates of gain, feed consumption by pens and observations on effects of treatments on general appearance of the cattle. At slaughter carcasses were graded and carcass data obtained. The experiment was terminated at 162 days when the animals reached a desirable market weight and finish.

### Results

Results for feedlot performance and carcass characteristics are shown in table 1 with percentage differences between treatment groups presented in table 2.

Feed consumption data could not be obtained by treatment groups during the growing phase because of the allotment procedures. Weight gain data is shown for each phase, and feed data shown is for the finishing phase only.

Four heifers implanted with DES during the growing phase and reimplanted twice during finishing developed vaginal prolapses. Two of these had to be removed from the experiment. Data presented are for those completing the experiment. One heifer each from the MGA and zeranol treatments also suffered from vaginal prolapses.

Increases in rates of gain from the implant treatments during the growing phase were small in actual amounts. However, because of the low rates of gain, percentage improvements over average for all controls amounted to 11.4% for zeranol and 6.7% for DES.

Heifers receiving DES implants during finishing gained more than the controls. When implanted during the finishing phase only, gain was 5.9% more than controls with 3.4% lower feed requirements. The response was greater than for those implanted during both phases (3.4% for gain but with 5.8% higher feed requirements). Overall gain for the two DES groups was the same but with lower feed requirements when DES was implanted only during finishing.

Results obtained from zeranol implants during the finishing phase was about the same on weight gains as for DES. Those implanted only during finishing phase gained more than those implanted during both growing and finishing. While the advantage of implanting during both phases was small, it would amount to about 20 lb. per head over the 342 days involved. Heifers implanted during both phases consumed more feed than controls during finishing resulted in equal feed requirements. On the other hand, implanting during finishing only resulted in slightly lower feed requirements.

Highest rates of gain during finishing were obtained from feeding MGA, 11.3% more than controls. Also, the most total improvement for both phases (7.1%) was obtained with this group. However, feed requirements differed only slightly from heifers implanted with DES or zeranol during finishing only.

Effects of treatments on carcass characteristics appear small. Marbling appeared to be reduced by DES but improved by zeranol or MGA. Fat thickness also appeared reduced when DES or zeranol was implanted during the finishing phase only.

#### Summary

DES or zeranol implants resulted in improved weight gains when administered as implants to heifers fed growing rations for gains of slightly over 1 lb. daily. More improvement over controls was obtained with zeranol (11.4%) than with DES (6.7%).

Similar response was obtained in rate of gain from zeranol (6.3%) and DES (5.9%) with 3.7 and 3.4% improvement in feed efficiency when implanted during finishing only. A smaller response was obtained from each compound when previously administered during the growing phase. There was no advantage of DES during both phases in comparison to during finishing only. With zeranol, implanting during both growing and finishing was more beneficial in higher weight gains for both phases (5.9%) than implanting only during finishing (2.4%).

Highest weight gains were obtained with MGA--11.3% more than controls during finishing and 7.1% over both phases of the experiment. Effects of MGA on feed efficiency during the finishing phase were about the same as with DES or zeranol.

Effects of treatments on carcass characteristics were small. DES appeared to reduce marbling. Slightly less fat covering was associated with DES and zeranol implants administered only during finishing.

Four of 16 heifers implanted with DES during both growing and finishing suffered from vaginal prolapses. The level may have been high (36 mg.), but this problem has been encountered with 24 mg. DES implants in previous experiments when administered during both growing and finishing. One heifer fed MGA and one implanted with zeranol also suffered from vaginal prolapse.

Table 1. Effects of Diethylstilbestrol, Zeranol and Melengestrol Acetate on Performance of Feedlot Heifers

Growing phase	Control	Control	Zeranol	Control	DES	Control
Finishing phase	Control	Zeranol	Zeranol	MGA	DES	DES
Number	16	16	16	16	14	16
Initial wt., lb.						
Wintering	355	369	362	361	370	359
Finishing	547	551	572	551	571	548
Final shrunk wt., lb.	933	961	973	981	970	957
Avg. daily gain, lb.						
Wintering, 180 days	1.07	1.01	1.17	1.06	1.12	1.05
Finishing, 162 days	2.38	2.53	2.48	2.65	2.46	2.52
Total, 342 days	1.69	1.73	1.79	1.81	1.75	1.75
Avg. daily feed, finishing phase						
Corn	16.57	16.94	17.49	18.10	16.87	17.04
Haylage	3.79	3.81	3.81	3.82	3.68	3.80
Supplement	1.69	1.94	1.96	1.95	1.87	1.97
Total	22.32	22.69	23.26	23.87	22.42	22.81
Feed/100 lb. gain, finishing phase						
Corn	696	675	705	681	747	676
Haylage	159	150	153	144	162	151
Supplement	82	77	79	73	82	78
Total	937	902	937	898	991	905
Dressing percent	62.2	62.5	61.9	61.9	61.7	61.4
Conformation <sup>a</sup>	20.2	19.9	20.7	20.3	20.3	20.0
Marbling <sup>b</sup>	4.8	5.3	5.0	5.5	4.4	4.7
Carcass grade <sup>a</sup>	18.1	18.4	17.6	18.6	17.7	18.0
Maturity <sup>c</sup>	22.9	22.9	22.6	22.5	22.8	22.7
Color <sup>d</sup>	5.0	5.1	4.7	5.0	4.8	5.0
Firmness <sup>e</sup>	6.0	6.0	6.0	6.0	6.0	6.0
Kidney fat, %	3.20	3.03	3.03	3.28	2.82	2.90
Fat thickness, in.	1.44	1.25	1.49	1.51	1.53	1.27
Loin eye area, sq. in.	10.84	10.27	10.92	10.15	10.89	10.43

<sup>a</sup>Good = 17; Choice = 20. Graded to one-third grade.

<sup>b</sup>Slight = 4; small = 5; modest = 6.

<sup>c</sup>A+ maturity = 22; A maturity = 23.

<sup>d</sup>Cherry red = 4; light cherry red = 5.

<sup>e</sup>Moderately firm = 5; firm = 6.

Table 2. Percentage Difference Between Treatment Groups for Feedlot Heifers

	Growing	Finishing
DES both phases vs. control		
Avg. daily gain	4.7	3.4
Feed consumed	--	0.5
Feed/100 lb. gain	--	5.8
DES finishing only vs. control		
Avg. daily gain	--	5.9
Feed consumed	--	2.2
Feed/100 lb. gain	--	3.4
Zeranol both phases vs. control		
Avg. daily gain	9.3	4.2
Feed consumed	--	4.2
Feed/100 lb. gain	--	--
Zeranol finishing only vs. control		
Avg. daily gain	--	6.3
Feed consumed	--	1.7
Feed/100 lb. gain	--	-3.7
MGA vs. control		
Avg. daily gain	--	11.3
Feed consumed	--	6.9
Feed/100 lb. gain	--	-4.2