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Numerous experiments have shown improvements in growth rate and feed efficiency when feedlot lambs are implanted with 12 mg zeranol (trade name Ralgro) or 3 mg diethylstilbestrol (DES). Differences in feedlot performance between the two implants have been small and somewhat variable.

The required 120-day interval between implanting and slaughter for DES has been a disadvantage for the implant since many feeder lambs do not require a feeding period this long. The required interval between implanting and slaughter for zeranol is only 40 days. This allows the use of the implant for a large percentage of feeder lambs and reimplanting those requiring a long finishing period.

Previous work at this station (Embry and Swan, A.S. Series 75-12) has indicated a small advantage for reimplanting with zeranol when compared to a single zeranol implant. The reimplant must be done at least 40 days prior to slaughter which might be beneficial for lambs to be fed for periods of 3 or more months. Based on these observations, this experiment was conducted to determine if reimplanting lambs with 12 mg zeranol would improve the feedlot performance as compared to an initial implant of 3 mg DES or 12 mg zeranol in a feeding period of about 4 months.

Experimental Procedure

This experiment was superimposed across treatments in an experiment studying the effects of graded levels of limestone supplementation (results in another report). The lambs were randomly allotted on the basis of weight to four treatment groups including a control, 12 mg zeranol, 12 mg zeranol plus 12 mg reimplant at 65 days and a 3 mg DES implant. There were four pens of 10 lambs each initially (five ewes and five wethers) per treatment group.

The basal diet consisted of ground corn, 84.4%; ground alfalfa-brome hay, 8%; and soybean meal (44%), 6%, with supplementary minerals and vitamins A and E making up the remaining part. The pretreatment feed was baled alfafa-brome hay. On day one of the experiment, residual hay was removed from the feed bunks and the lambs were offered 3 lb of the complete mix diet per head. They were fed ad libitum for the remainder of the 121-day trial.

The initial average weight of the lambs was 61 pounds. It was estimated that these lambs could be fed for the necessary 120 days to a reasonable market weight. The lambs were weighed every 21 days and feed consumption was recorded daily on a pen basis. Feed consumption and feed efficiency data were analyzed after being corrected for added limestone. The average weight at slaughter was 120 pounds. Carcass data were collected 24 hours after slaughter.

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Results

Results obtained from implant treatments averaged for dietary treatments are shown in table 1. Dietary treatments appeared to have no effect on the response to implant treatments. During the first weigh period, some deaths did occur. The cause of death was diagnosed as rumen acidosis by the South Dakota Animal Disease Research and Diagnostic Laboratory. Data presented are only for animals finishing the experiment and feed consumption has been adjusted accordingly.

During 1 to 64 days, lambs that were implanted had improved gains (P<.05) when compared to the nonimplanted controls. Differences in gain for those lambs receiving zeranol or DES were small at this time. During the interval from 65 to 121 days, lambs receiving a zeranol implant, zeranol implant plus reimplant or DES implant had 6.6, 32.6 and 13.4% higher average daily gains, respectively, than the nonimplanted controls. At the end of the experiment, gains averaged over the entire 121-day feeding period showed a 13.5, 25.5 and 16.5% improvement in average daily gain for those lambs receiving the zeranol, zeranol plus reimplant or DES treatment, respectively.

Since implanted lambs made faster gains with similar feed intakes, the treatments also improved feed efficiency. At the end of the experiment, there were 5.1, 12.7 and 9.6% decreases in feed required per pound of gain for the lambs receiving the zeranol, zeranol plus reimplant or DES treatments, respectively.

Summary

Results from this experiment show an advantage in weight gains and feed efficiency for the lambs implanted with DES or zeranol. The 13.5% and 16.5% improvements in weight gains for lambs receiving the zeranol and DES treatments, respectively, are higher than frequently reported. The implant treatments appeared to have no important effects on the carcass characteristics measured.

When compared to initial implants of zeranol or DES, reimplanting with zeranol improved weight gains by 10.6 and 7.8%, respectively. This could be of major economic importance if the finishing period was 3 to 4 months in length and the reimplanting was done at about the mid-point of the feeding period. The improvement was somewhat higher in this experiment than previous work at this station had indicated.

Table 1. Zeranol and DES Implants With High Concentrate Diets (August 20 to December 19, 1975—121 Days)

	Control	12 mg zeranol initially	12 mg zeranol initially and at 65 days	3 mg DES initially
No. animals	27	33	30	27
Initial wt., lb	61.2	60.4	60.6	60.9
Final wt., lb.	113.4	119.5	126.1	121.7
Avg daily gain, lb				
1-64 days	.496	.583*	.599*	.586*
65-121 days	.359	.383	.476	.407
1-121 days	.431	.489*	.541**	.502*
Avg daily ration, lb				
1-64 days	2.46	2.65	2.65	2.50
65-121 days	2.75	3.00	3.11	2.67
1-121 days	2.61	2.81	2.86	2.75
Feed/100 lb gain, lb				
1-64 days	496	455**	442**	427**
65-121 days	766	783	653	752
1-121 days	606	575*	529**	548**
Carcass wt., lb	61.0	63.5	66.7	63.5
Conformation grade[a]	13.3	13.2	13.5	13.4
Maturity[b]	2.1	2.1	2.2	2.2
Flank streaking[c]	13.6	13.7	13.1	13.0
Feathering[c]	16.6	16.3	15.4	16.2
Grade[a]	12.5	12.5	12.1	12.4
Dressing percent	53.70	53.12	52.93	52.20

[a] Choice = 11, Prime = 14. Graded to one-third grade.
[b] A- maturity = 1, A+ maturity = 3.
[c] Slight = 11, Small = 14, Modest = 15.
* Significantly improved over control (P<.05).
** Significantly improved over control (P<.01).

Table 1. Death Losses From Rumen Acidosis During Phase 1

Treatments[a]	No. of deaths
Basal	12
2% sodium bentonite	2**
2% sodium bicarbonate	2**
2% sodium bentonite + 2% sodium bicarbonate	0**

[a] Sixty-four lambs per treatment group initially.
** Significantly lower than control (P<.01).

Table 2. Sodium Bentonite and Sodium Bicarbonate in High-Concentrate Diets (August 13 to October 27, 1975--75 Days)

1-21 days	Basal	2% NaB[a]	2% NaB	2% $NaHCO_3$[b]	2% $NaHCO_3$	2% NaB + 2% $NaHCO_3$	2% NaB + 2% $NaHCO_3$
22-75 days	Basal	Basal	1% NaB	Basal	1% $NaHCO_3$	Basal	1% NaB + 1% $NaHCO_3$
No. animals	52	31	31	29	32	30	32
Initial wt., lb	72.8	72.4	72.3	72.3	72.4	72.3	73.2
Final wt., lb	113.3	112.2	118.8	110.3	113.9	115.5	116.6
Avg daily gain, lb							
1-21 days	.365	.250	.537	.310	.345	.540	.445
22-75 days	.608	.640	.652	.583	.633	.588	.630
1-75 days	.540	.531	.621	.507	.552	.575	.578
Avg daily ration, lb							
1-21 days	1.89	1.66	2.20	1.83	1.91	2.27	2.24
22-75 days	3.21	3.22	3.39	3.17	3.24	3.24	3.36
1-75 days	2.84	2.78	3.06	2.80	2.86	2.90	3.05
Feed/100 lb gain, lb							
1-21 days	518	664	410	590	554	420	503
22-75 days	528	503	520	544	512	534	533
1-75 days	526	524	493	552	518	504	528

[a] Sodium bentonite.
[b] Sodium bicarbonate.