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# Effect of Anabolic Agents on Marbling in Yearling Crossbred Steers

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## Summary

A total of three hundred and twenty-four crossbred yearling steers were used in a two year study to determine the effects of anabolic agents on carcass characteristics. Steers were fed in a commercial feedlot for an average of 123 days, slaughtered and carcass data were collected. Implanted cattle gained significantly more weight ( $P < .05$ ) than nonimplanted cattle. Steers that were implanted with Revalor-S gained weight more rapidly ( $P < .05$ ) than Synovex-S implanted cattle. Implants significantly ( $P < .05$ ) increased hot carcass weights and rib eye area when compared to nonimplanted cattle and Revalor implanted cattle tended ( $P = .0564$ ) to have heavier hot carcass weights than Synovex implanted cattle. Implants did not significantly affect yield grades. Implanted steers had lower ( $P < .05$ ) marbling scores than control steers. Steers that were implanted with Revalor showed a significant ( $P < .05$ ) decrease in marbling score when compared to the Synovex groups. The percentage of choice carcasses for no implant, Revalor, and Synovex treatments were 78.85, 58.82, and 67.68, respectively.

Key Words: Implants, Marbling, Yearling Steers

## Introduction

Implants are currently aggressively used in the beef industry to improve growth rates, feed conversion, and cutability. However, some studies have shown that implants may reduce

marbling scores and, therefore, reduce USDA quality grades. According to the National Beef Quality Audit, \$21.68/carcass is lost due to insufficient marbling scores. As the beef industry moves toward a value based marketing system, understanding factors influencing marbling score will become increasingly important.

The objective of this study was to examine the impact of implants on marbling score in yearling steers.

## Materials and Methods

Three hundred and twenty-four crossbred yearling steers (770 lb) were delivered to a commercial feedlot<sup>3</sup> in central South Dakota. Steers had been on pasture in western South Dakota and had not been implanted during the grazing season.

At processing, cattle were weighed, vaccinated, treated for parasites with Ivomec<sup>4</sup> and randomly assigned to either no implant, Revalor<sup>5</sup> or Synovex<sup>6</sup> treatment groups. Implants were administered at processing using sponge and paint tray procedures to disinfect between cattle. In year 1, 84 of the heaviest conditioned steers were slaughtered after 111 days on feed. The remaining 90 steers were slaughtered after 140 days on feed. In year 2, 75 randomly selected steers were slaughtered after 114 days on feed. The remaining steers were slaughtered after 127 days on feed. Carcass data were collected

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<sup>3</sup>R and L Feedyard, Kimball, SD.

<sup>4</sup>Product of MSD AGVET, Rahway, NJ.

<sup>5</sup>Hoescht-Roussel, Somerville, NJ.

<sup>6</sup>Syntex Animal Health, Des Moines, IA.

after a 24-hour chill. Final weight was determined by dividing hot carcass weight by average dressing percent for each slaughter date.

Average daily gain and carcass traits were analyzed using GLM procedures of SAS. Class variables in the model were treatment and year. Treatment means were separated using orthogonal contrasts.

Results and Discussion

Year effects and treatment by year interactions were not ( $P > .10$ ) significant. Therefore, only treatment effects are shown. Table 1 shows the effect of implant on weight and average daily gain. Implants had a significant effect ( $P < .05$ ) on average daily gain compared to controls. Steers implanted with Revalor had greater ( $P < .05$ ) average daily gains when compared to Synovex implanted steers.

Table 2 displays carcass data for the steers. Implants significantly ( $P < .05$ ) decreased marbling scores as compared to nonimplanted steers. Revalor implanted cattle had significantly lower marbling scores ( $P < .05$ ) when compared to Synovex cattle. Percentage choice carcasses for control, Revalor, and Synovex were 78.85, 58.82, and 67.68, respectively. These differences were statistically significant ( $P < .10$ ) as determined by Chi-square analysis.

Implants significantly increased hot carcass weight, and rib eye area when compared to nonimplanted cattle. Revalor implanted steers had a significantly larger rib eye area when compared to Synovex implanted steers. Implants had no significant effect on 12th rib fat thickness or yield grade.

These data suggest that implants reduce carcass quality. The probable method of marketing the cattle is an important consideration when designing an implant program.

Table 1. Weight and average daily gain (lb)<sup>a</sup>

Item	Control	Revalor	Synovex
Initial weight	767 ± 7.45	768 ± 7.33	773 ± 7.35
Final weight	1157 ± 10.44	1243 ± 10.27	1220 ± 10.29
Average daily gain <sup>bc</sup>	3.18 ± .068	3.88 ± .067	3.65 ± .067

<sup>a</sup>Means ± standard error.

<sup>b</sup>Implant vs control ( $P < .05$ ).

<sup>c</sup>Revalor vs Synovex ( $P < .05$ ).

Table 2. Implant effect on carcass traits<sup>a</sup>

Item	Control	Revalor	Synovex
Hot carcass weight, lb	760 ± 6.30	758 ± 6.19	745 ± 6.21
Fat thickness, in.	.431 ± .018	.459 ± .018	.466 ± .018
Rib eye area, in. <sup>2</sup>	12.01 ± .136	12.60 ± .133	12.18 ± .134
Yield grade, units	2.81 ± .075	2.88 ± .075	2.99 ± .074
Marbling score, units <sup>bcd</sup>	5.39 ± .094	5.03 ± .092	5.27 ± .093
Percentage choice <sup>e</sup>	78.85	58.82	67.68

<sup>a</sup>Means ± standard error.

<sup>b</sup>4.00 = slight<sup>o</sup>; 5.00 = small<sup>o</sup>.

<sup>c</sup>Implant vs no implant ( $P < .05$ ).

<sup>d</sup>Revalor vs Synovex ( $P < .05$ ).

<sup>e</sup>Chi-square analysis ( $P < .10$ ).

**"CORRECTION"**

Unfortunately, an error may be found in Table 2 on page 44. Hot carcass weight for control cattle was 706 lb not 760 lb as indicated by the table.

  
John J. Wagner