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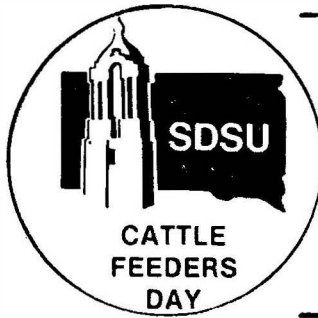
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THE EFFECTS OF BREED AND IMPLANT ON BULLOCK BEEF

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CATTLE 83-4

Summary

Ninety-seven Angus and 98 Gelbvieh crossbred bulls were used to evaluate the effects of Ralgro, Synovex-H and Synovex-S implants on the growth, carcass and palatability traits of young bulls. The influence of the growth promoting implants on the feedlot performance of the bulls was dependent on their breed type and their stage of growth. Percentage retail yield was the only carcass characteristic that was affected by the implants. The implanted bulls yielded carcasses with more external fat and less desirable yield grades than the controls. Rib eye area was not affected by the implants.

Breed influenced feedlot performance, carcass composition and quality and palatability attributes more than the implants. The large-framed, late maturing Gelbvieh crossbred bulls grew faster and produced carcasses yielding higher percentages of boneless trimmed retail cuts than the Angus bulls. The quality grades and palatability traits of the Gelbvieh bulls were marginal.

The Angus bull carcasses had very acceptable yield grades (YG-2) and more desirable quality grades and sensory evaluations than the Gelbvieh crossbred bulls. Thus, the use of medium-framed intact males may be more appropriate than the larger framed breeds to produce a more acceptable product for both the packer and the consumer. Packer acceptability needs to be enhanced to make the use of intact males economically feasible for the producer.

Introduction

The need to reduce production costs for the American farmer and rancher and satisfy world demand for lean beef has renewed interest in the feeding of young bulls for slaughter. Early research has shown bulls possess advantages in rate of gain, feed conversion and yield of trimmed boneless retail cuts over steers and heifers. The effects of implants on young bulls have been reported in only limited studies. This experiment was conducted to compare feedlot performance, carcass characteristics and palatability attributes of young bulls of two breed types implanted with common growth-promoting compounds.

Procedures

Two hundred bull calves, consisting of 100 Angus and 100 Gelbvieh crossbred, were purchased from three ranches in South Dakota and trucked to the Southeast Experiment and Extension Farm at Beresford, South Dakota. Following acclimation of 1 month, all calves were weighed and assigned to one of eight pens by breed and weight. At the onset of the trial, one group from each breed was implanted with Ralgro, another with Synovex-H and another with Synovex-S. The fourth pen of each breed served as a control.

The bulls were housed in outside dirt mound lots with fence-line bunks at the Southeast Experiment Farm, Beresford, from November 1980 through August 1981. All bulls were fed a 70% corn silage diet during the growing phase and a 90% high moisture shelled corn diet during the finishing phase. Those bulls that were implanted at the beginning of the trial were reimplanted during the finishing phase with the same implant.

At the conclusion of the feedlot period, the bulls were slaughtered at a commercial packing plant. Approximately 24 hr postmortem, quality and yield grade factors were evaluated with the assistance of a USDA grader. A portion of the wholesale rib from the right side of each carcass was transported to the SDSU Meat Lab and used to provide samples for taste panel evaluation, Warner-Bratzler shear and proximate analysis.

Results

Feedlot Performance

Feedlot performance mean values by breed are reported in table 1. Variation in the number of days on feed was due to the end point selected for each breed and scheduling restrictions at the packing plant.

The larger framed Gelbvieh had a higher average daily gain than the Angus for the growing phase and the entire feedlot period. Gains were severely hampered during the last 30 days of the finishing phase for the Angus and the last 60 days for the Gelbvieh due to extremely hot weather.

The responses of the two breeds to the various implants during either of the two phases or the entire feedlot period were not consistent. This suggests there are differences in the effectiveness of implants on intact males depending on the breed type and their stage of growth.

TABLE 1. MEAN VALUES FOR FEEDLOT PERFORMANCE BY BREED

Item	Angus	Gelbvieh
No. bulls	97	98
Initial shrunk wt, lb**	526.6	561.5
Midterm shrunk wt, lb***	836.8	909.2
Final shrunk wt, lb***	1122.6	1218.0
Total days on feed	199	211
Average daily gain, lb/day		
Growing***	3.10	3.48
Finishing	2.90	2.78
Overall*	3.00	3.11

* P<.05.

** P<.01.

*** P<.001.

Carcass Composition and Quality

The mean carcass characteristic values are presented by breed in table 2. All traits evaluated varied due to breed except percentage kidney, pelvic and heart fat. The Gelbvieh had heavier live weights and thus dressed out heavier carcasses that were trimmer and possessed larger rib eye areas than the Angus. These factors contributed to the USDA yield grade which indicated the Gelbvieh carcasses would yield a higher percentage of boneless trimmed retail cuts.

The Angus carcasses received final quality grades two-thirds of a grade higher than the Gelbvieh. Average marbling scores were one full marbling level higher for the Angus carcasses (average slight compared to average traces).

Table 3 presents mean carcass trait values across both breeds by implant group. The implanted bulls were fatter than the controls, with the Synovex-S implanted bulls being the fattest group. Carcass weight, rib eye area and percentage kidney, pelvic and heart fat were not affected by implant. Variations in USDA yield grade were primarily due to fat thickness differences. The yield grade variation between the Ralgro and Synovex-S groups was due to a combination of fat thickness and rib eye area differences. Marbling scores and quality grades were comparable for all groups.

TABLE 2. MEAN VALUES FOR CARCASS TRAITS BY BREED

Item	Angus	Gelbvieh
Hot carcass wt, lb***	709.2	776.1
Fat thickness, in.*** ^a	.49	.20
Rib eye area, sq in.***	12.6	13.9
KPH, % ^b	1.9	1.8
Yield grade*** ^c	2.76	1.86
Marbling grade*** ^d	8.49	5.48
Quality grade*** ^e	5.50	3.10

*** P<.001.

a

Measured over the rib eye between the 12th and 13th ribs.

b

KPH = Kidney, pelvic and heart fat.

c

Estimation of the yield of boneless closely trimmed retail cuts from the round, loin, rib and chuck, 1.0 = 54.6%; 2.0 = 52.3%; 3.0 = 50.0%.

d

Traces average = 5.0; Traces + = 6.0; Slight - = 7.0; Slight average = 8.0.

e

High Standard = 3; Low Good = 4; Average Good = 5

TABLE 3. MEAN VALUES FOR CARCASS TRAITS BY IMPLANT

Item	Control	Ralgro	Synovex-H	Synovex-S
Hot carcass wt, lb	730.7 ^f	743.8 ^{fg}	738.3 ^{fg}	757.8
Fat thickness, in. ^a	.29 ^f	.33 ^{fg}	.37 ^{fg}	.39 ^g
Rib eye area, sq. in.	13.12	13.59	13.30	13.17
KPH, % ^b	1.9	1.7	1.9	2.0
Yield grade ^c	2.20 ^h	2.15 ^h	2.34 ^{hi}	2.53 ⁱ
Marbling score ^d	7.12	6.54	7.13	7.16
Quality grade ^e	4.30	4.00	4.44	4.50

abcde

See corresponding footnotes for table 2.

fg

Means in the same row not bearing a common superscript differ (P<.001).

hi

Means in the same row not bearing a common superscript