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Delayed Implanting Improves Quality Grade in Steer Calves

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Summary

One hundred steer calves were used to evaluate the effect of delaying initial implanting on feedlot and carcass characteristics. One-half the steers were implanted with Synovex S[®] after a 14 day acclimation period, the remainder were implanted 30 days after the 14 day acclimation period. All calves were re-implanted 112 days after the beginning of the study with Synovex Choice[®] and harvested 100 days later. Neither final weight (1269 lb) nor ADG (3.74 lb/day) were affected by implant regimen. Delayed implant steers had a higher percentage grading Choice (92 vs 68%). Delaying implanting resulted in a 24% increase in cattle grading Choice at harvest without compromising feedlot performance.

Introduction

A common perception is feedlot cattle have to be fed for a certain length of time before they will grade Choice, suggesting marbling develops late in the feeding period. However, it appears management factors early in an animal's life can impact the development of marbling. Hypertrophy of adipocytes begins after 100 to 200 days of age (Vernon, R.G., 1980, Prog. Lipid Res. 19:23). Additionally, the age

lipogenesis and adipocyte growth occurs is highly related to the age cattle are started on a high concentrate diet. Number of days on a high concentrate diet and a propionate fermentation are likely major determining factors (Fluharty, F.L., <http://beef.osu.edu/library/mgtdiet.html>). Early weaned calves fed a high concentrate ration tend to grade better than later weaned calves. Numerous reports have also demonstrated calves treated for respiratory disease have lower final quality grades and this respiratory illness generally occurs early in the feeding period. Implanting with a low dose initial implant or delaying implanting has been shown to improve quality grade as well. Many of these studies have been conducted with yearling cattle or with calves receiving a single delayed implant. The objective of this study was to determine if delaying the initial feedlot implant would influence feedlot and carcass characteristics in steer calves implanted twice during the finishing period.

Procedure

One hundred crossbred (5/8 Red Angus, 3/8 Continental) steer calves (454 lb) from the Gudmundsen Sandhills Laboratory were transported to the feedlot at the West Central Research and Extension Center, North Platte, NE, in late September. Cattle were dewormed and immunized against Clostridial diseases, Haemophilus

sominus, bovine rhinotracheitis, parainfluenza, and respiratory syncytial virus. Steers were acclimated together on a receiving ration for 14 days and then allotted to implant and antibiotic treatment by body weight. One-half the steers were implanted with Synovex S[®] after the acclimation period (day 0) and then divided into two pens and received identical diets without antibiotic for an additional 20 days. They were then fed either Rumensin[®]/Tylan[®] or Bovatec[®]/Terramycin[®] for the remainder of the feeding period. Equal numbers of animals from each implant treatment were represented in each pen. Thirty days after the acclimation period, the other half of the steers were implanted with Synovex S[®]. All calves were re-implanted on the same day (112) with a terminal implant (Synovex Choice[®]) and harvested on the same day (212).

The receiving diet consisted of 20% corn, 40% wet corn gluten feed, 35% ground alfalfa hay and 5% supplement. Steers were gradually (50 days) stepped up to the final finishing diet (Table 1) consisting of 48% corn, 40% wet corn gluten feed, 7% ground alfalfa hay and 5% supplement. Basal supplements are presented in Table 1, and also provided (gram/ton ration dry matter) either Rumensin[®] (28) and Tylan[®] (10) or Bovatec[®] (28) and Terramycin[®] (7.5).

Initial weights were the average of two consecutive early morning weights taken before feeding.

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Interim body weights were taken at the time the second group received their first implant (30 days), at re-implant (112 days), and near harvest (203 days). Final weights were calculated using hot carcass weight adjusted to a common dressing percentage (63). This adjusted final weight was also used to calculate ADG. Steers were harvested (May 10) at a commercial packing plant and carcass characteristics were determined following a 24-hour chill. Carcass measurements included hot carcass weight, marbling score, KPH fat, 12th rib fat thickness, and ribeye area.

Results

The effects of delaying initial implant on feedlot and carcass characteristics are presented in Table 2. Steers receiving a delayed initial implant were lighter ($P < 0.01$) at the time of their first implant, but had reached similar live weights at the time of terminal implant. Final body weight and carcass weights were not different ($P > 0.10$) between the two treatments. Carcass characteristics were similar between the two treatments with the exception of marbling score and percentage of animals grading Choice. Delaying implanting improved marbling score (Table 2) and increased the percentage grading choice (92 vs 68% for delayed and not delayed, respectively). The type of antibiotic regimen (Rumensin[®]/Tylan[®] vs

Table 1. Finishing diet and ingredient composition.

Item	% of Dry Matter
Corn	48
Wet corn gluten feed	40
Alfalfa Hay	7
Supplement	5
Supplement	
Corn	58.25
Limestone	29.60
Salt	5.60
Ammonium Chloride	4.65
Trace Mineral Premix	.93
Thiamine	.238
Vitamin Premix	.214

Table 2. Effect of implant strategy on feedlot and carcass characteristics of steer calves.

Item	Delayed	Not Delayed	SEM	P-value
Initial BW, lb	475	477	6.63	.76
30 day BW, lb	591	618	7.36	.01
Re-Implant BW, lb	914	930	10.7	.27
Final BW, lb	1266	1273	14.6	.73
ADG	3.73	3.75	.05	.73
HCWT	797	802	9.2	.73
Ribeye area, sq.in.	12.85	12.73	.18	.63
Fat thickness, in.	.48	.49	.02	.69
KPH ^a fat, %	2.84	2.84	.05	.96
Yield grade	3.18	3.26	.09	.49
Marbling score ^b	570	527	13.00	.02
Choice, %	92	68	.06	.004

^aKPH=kidney, pelvic and heart.

^b500=small 0

Bovatec[®]/Terramycin[®]) had no effect on any characteristics measured. There was also no implant x antibiotic interaction for any feedlot or carcass trait measured.

Delaying the administration of Synovex S[®] until 30 days on feed improved marbling score and percentage of steers grading Choice and did not compromise feedlot

(although feed intake was not determined) or carcass characteristics.

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