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Effect of Three Initial Implant Programs with a Common Terminal Revalor®- 200 on Feedlot Performance and Carcass Traits of Weaned Steers

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Summary with Implications

A commercial feedlot study utilizing 1,350 calf-fed steers (initial BW = 623 lb; ±23 lb) compared three initial implant strategies: Revalor®-IS (day 1), Revalor®-IS (day 1) and Revalor®-200 (day 67), or Revalor®-XS (day 1). Each initial implant strategy was followed by a terminal Revalor®-200 implant (day 133) to determine effects on performance and carcass traits. No differences in final body weight, intake, gain, or feed conversion were observed on either a live, or carcass adjusted basis. There were also no differences in hot carcass weight, USDA quality grade, or USDA yield grade. Results from this study suggest initial implant strategy has minimal impact on feedlot and carcass performance when following with a terminal Revalor®-200 implant.

Introduction

Steers have shown the ability to respond to higher dose single implant protocols with increased growth performance and leaner body composition when cattle are harvested on an equal day basis. Increasing trenbolone acetate (TBA) and estradiol (E) levels in re-implant protocols have resulted in mixed results. Regardless, industry use of steer protocols providing a Revalor®-IS initially, followed by 2 Revalor®-200 implants, approximately 65 days apart in steers fed for 200 to 220 days, has become increasingly common. Only two studies have evaluated aggressive protocols utilizing Revalor®-XS as an initial implant and re-implanted with Revalor®-200. A more intensive evaluation of implant protocols in calf-fed steers is needed. The objectives of this study were to determine the effect of three initial implant programs: Revalor®-IS (day 1), Revalor®-IS (day 1) and Revalor®-200 (day 67), or Revalor®-XS (day 1), all followed by a terminal Revalor®-200 (day 133) on feedlot performance and carcass traits of weaned calf-fed steers fed for 200 to 220 days.

Procedure

A commercial feedlot experiment was conducted at a commercial feedlot in central Nebraska (Hi-Gain Feedlot, Farnam, NE). Crossbred steer calves (n = 1,350; initial BW = 623 lb; ±23 lb) from ranches and auction barns in NE, IA, UT, SD, ID, and CA were utilized for this trial. This study was conducted as a randomized complete block design, with the blocking factor being source/arrival time of the steers. Steers were assigned to pens by sorting every two steers into one of three pens before processing. Pens were assigned randomly to one of three treatments within arrival block. Steers were administered one of three implant treatments; 1) Revalor®-IS (80 mg of TBA and 16 mg of E) on day 1; 2) Revalor®-IS on day 1 and Revalor®-200 (200 mg of TBA and 20 mg of E) on day 67; 3) Revalor®-XS (200 mg of TBA and 40 mg of E) on day 1. All treatments received a terminal implant, Revalor®-200, at 133 days on feed. At initial processing all steers received a Vista 3, Safeguard oral suspension of wormer (Safeguard) in conjunction with an Avermectin product, along with the assigned initial implant. Mean days on feed across all blocks was 215, with the second and third implants administered on average at day 67 and 133, respectively. A

Table 1. Performance of steers Implanted with either Revalor®-IS (Rev-IS), Revalor®-IS and Revalor®-200 (Rev-IS/200), or Revalor®-XS (Rev-XS) followed by a terminal Implant of Revalor®-200.

Variable	Rev-IS	Rev-IS/200	Rev-XS	SEM	P-value
Pens	6	6	6		
Steers	451	449	450		
Initial BW, lb	625	621	624	3.0	0.47
Live performance[1]					
Final BW, lb[2]	1460	1459	1463	6.0	0.91
DMI, lb/d	22.9	22.7	22.8	0.1	0.19
ADG, lb	3.89	3.91	3.92	0.03	0.95
G:F	0.170	0.172	0.172	0.002	0.55
F:G	5.88	5.81	5.84	-	0.55
Carcass adjusted performance					
Final BW, lb[3]	1457	1461	1462	7.9	0.60
ADG, lb	3.88	3.92	3.91	0.04	0.38
G:F	0.170	0.173	0.172	0.002	0.16
F:G	5.90	5.80	5.83		

[1]Finishing performance was calculated with dead and rejected animals removed from the analysis.
[2]Final BW is the average pen weight shrunk 4.0%. Subsequent ADG and F:G are calculated from 4.0% shrunk final BW.
[3]Calculated as HCW divided by the average dressing % of 64.25. Subsequent ADG and F:G re-calculated from carcass adjusted final BW.

Table 2. Carcass characteristics of steers Implanted with either Revalor®-IS (Rev-IS), Revalor®-IS and Revalor®-200 (Rev-IS/200), or Revalor®-XS (Rev-XS) followed by a terminal Implant of Revalor®-200.

Variable	Rev-IS	Rev-IS/200	Rev-XS	SEM	*P*-value
HCW, lb	936	939	940	5.10	0.59
Dressing %	64.17	64.34	64.24	3.10	0.93
Yield Grade[1,2]					
1	2.1	1.8	1.2	0.78	0.71
2	15.9	19.8	15.1	1.89	0.22
3	57.2	60.6	61.9	2.76	0.48
4	23.9	16.5	20.9	2.68	0.19
5	0.9	1.3	1.0	0.43	0.88
Quality Grade[1,2]					
Prime	2.0	0.5	0.0	0.44	0.21
Choice	67.2	68.8	68.7	2.21	0.85
Select	29.0	28.6	28.0	2.02	0.95
Standard	0.9	0.9	2.4	0.64	0.21
Commercial	0.9	1.2	0.9	0.71	0.95

[1]Yield grade and quality grade are called USDA values.
[2]All numbers are expressed as percentages.

Table 3. Interim performance of steers Implanted with either Revalor®-IS (Rev-IS), Revalor®-IS and Revalor®-200 (Rev-IS/200), or Revalor®-XS (Rev-XS) followed by a terminal Implant ofRevalor®-200.

Variable	Rev-IS	Rev-IS/200	Rev-XS	SEM	*P*-value
D 1–67					
Initial BW, lb	625	621	624	3.0	0.47
D 67 BW, lb	922	911	923	2.7	0.06
DMI, lb/d	21.9	21.6	21.9	0.06	0.06
ADG, lb	4.43	4.35	4.43	0.05	0.49
G:F	0.203	0.201	0.202	0.002	0.87
F:G	4.94	4.97	4.94	-	0.87
D 67–133					
D 133 BW, lb	1139[b]	1165[a]	1162[a]	1.6	<0.01
DMI, lb/d	22.4	22.4	22.7	0.24	0.62
ADG, lb	3.42[c]	4.01[a]	3.76[b]	0.05	<0.01
G:F	0.153[b]	0.179[a]	0.166[ab]	0.004	0.02
F:G	6.56	5.59	6.06	-	0.02
D 1–133					
D 133 BW, lb	1139[b]	1165[a]	1162[a]	1.6	<0.01
DMI, lb/d	22.0	21.8	22.0	0.26	0.76
ADG, lb	3.93[b]	4.18[a]	4.10[ab]	0.04	0.03
G:F	0.177[b]	0.191[a]	0.185[ab]	0.003	0.05
F:G	5.65[a]	5.26[b]	5.42[ab]	-	0.05
D 133–215					
D 215 BW, lb	1460	1459	1463	6.0	0.91
DMI, lb/d	24.5	24.2	24.5	0.26	0.78
ADG, lb	3.53	3.21	3.21	0.09	0.11
G:F	0.146	0.133	0.132	0.005	0.21
F:G	6.85	7.52	7.58	-	0.21

[a,b,c] Means within a row with different superscripts differ ($P \leq 0.05$).

step-up period consisting of three adaption diets was used to adapt cattle to the finishing ration. The finishing ration was identical across treatments and contained 58.2% steam flaked corn (range 74.6–26.0%), 17.5% WDG (range 25.0–9.0%), alfalfa hay 7.6% (range 32.0–0.0%), mixed hay 5.1% (range 7.0–4.0%), corn silage 4.7% (range 7.0–3.0%), steer liquid supplement 4.9% (range 5.2–4.1%), micro 0.04%, and 1.86% fat (range 2.7–0.0%), all on a DM basis. All ration changes that occurred during the feeding period were the same for all cattle on trial. Pen weights were collected on day 1 and performance was calculated from pen BW. Final live BW was determined at shipping using the average of the pen weight shrunk by 4.0% to adjust for gut fill. Carcass-adjusted performance was calculated using final BW, based on HCW divided by a common dressing percentage of 64.25 (overall trial average dressing percentage). Cattle were slaughtered at a commercial harvest facility on three dates. On day 1 of harvest HCW was recorded, after a 48-hour chill USDA quality and yield grades were recorded. Statistical analyses of both feedlot and carcass data were conducted using the GLIMMIX procedure of SAS (SAS Institute, Inc., Cary, N.C.). In addition, morbidity, mortality plus removals, and bullers were evaluated using PROC GLIMMIX of SAS. Alpha values ≤ 0.05 were considered significant.

Results

No differences were observed in any of the performance variables measured, including final BW, DMI, ADG, or F:G ($P > 0.19$; Table 1). No differences were observed for final BW, ADG, or F:G ($P > 0.16$) on a carcass-adjusted basis (Table 1). As expected, with a lack of difference in performance, there were no differences in HCW, dressing percentage, USDA yield grades 1–5, or in USDA quality grading ($P > 0.19$).

No differences were noted in interim performance from day 1–67 ($P > 0.05$) as expected due to implant payout (Table 3). A statistical difference in BW was observed on day 133. Cattle initially implanted with Revalor®-IS were lighter compared to the other two treatments ($P < 0.01$). The difference in BW was driven by the fact that cattle initially implanted with Revalor®-IS gained less ($P < 0.01$) from day 67 through

133 compared to the other two treatments. Consequently, F:G was poorer ($P \leq 0.02$) through that same time as well. Interestingly, cattle that received a Revalor®-200 on day 67 gained better than the other two treatments from day 67 through 133 ($P < 0.01$) and were more efficient ($P \leq 0.02$) than cattle that initially received a Revalor®-IS, but were similar in efficiency ($P > 0.05$) to cattle that initially received a Revalor®-XS. No differences were noted in any of the performance variables measured between days 133 and 215 ($P > 0.05$). Steers that initially received a Revalor®-IS had numerically greater ADG and lower F:G compared to the other treatments which likely resulted in no overall differences in performance from day 1–215.

Conclusion

In conclusion, steers implanted with Revalor®-IS, Revalor®-IS/200, or Revalor®-XS followed by a common terminal implant, Revalor®-200, had similar overall feedlot and carcass performance. Interim data suggest the cattle more aggressively implanted early gained faster through the first two-thirds of the trial, but by conclusion of the study had lost the gain and feed efficiency advantage. These data suggest the use of more aggressive initial implant strategies has minimal impact on both feedlot and carcass performance.

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