

Key Highlights

- Heifers administered REVALOR-XH had greater dry matter intake compared to reimplant heifers.
- Live growth performance (average daily gain and feed-to-gain ratio) and heifer outcome (mortality, removals or “out cattle”) are not influenced by a single coated implant or reimplant protocol in heifers.
- Dressing percentage, hot carcass weight and rib eye area were greater in reimplant heifers.
- Back fat and calculated yield grade were greater in REVALOR-XH heifers.
- Reimplanting heifers with REVALOR-IH/ REVALOR-200 did not depress marbling scores.
- Yield and quality grade distributions are influenced by a single coated implant at arrival compared to an initial and reimplant program in heifers.

The effect of Revalor[®]-XH compared to Revalor[®]-IH/200 in finishing heifers: A pooled analysis of six large-pen feedlot studies

MATERIALS AND METHODS

Large-pen feedlot studies ($n=6$) were conducted across the United States between 2015 and 2018 comparing Revalor[®]-XH to a Revalor[®]-IH and reimplant with Revalor[®]-200 protocol in heifers. Trials were conducted (Table 1) in Nebraska ($n=1$), Oklahoma ($n=1$), Oregon ($n=1$) and Texas ($n=3$). All heifers were vaccinated and treated for internal and external parasites according to each specific feed yard’s processing protocol. A total of 17,675 heifers were enrolled into 180 pens ($n=90$ pens/implant program), pen size ranged from 65 to 240 heifers/pen, and days on feed (DOF) ranged from 152 to 214 DOF. Heifers in the REVALOR-XH treatment group remained in their home pens from start to finish. Heifers that were reimplanted were removed from their pen on the day of reimplanting. Ractopamine hydrochloride was fed to all heifers for a minimum of 28 days prior to harvest. Heifers in the reimplant treatment group were not revaccinated at the time of reimplant.

Implants used in this analysis included:

- 1) REVALOR-IH administered on arrival followed by REVALOR-200 (IH/200).
- 2) REVALOR-XH administered on arrival (XH).

Finishing phase growth performance was calculated on deads and removals – included and excluded basis. In addition to feedlot phase, animal growth performance carcass traits were also captured.

Linear mixed models were used for all analyses. Fixed effects included implant treatment, serial slaughter time and the interaction. Random intercepts were used to account for blocks within trials. Model-adjusted treatment means for each implant group and corresponding standard errors of the means (SEM) are reported. Comparisons of the distributions of quality and yield grade data among treatment groups were analyzed in generalized linear mixed models for ordinal outcomes (cumulative logit, multinomial) with similar fixed effects as those described above. Random intercepts for trial and block, in addition to pen, were included since these data were analyzed on an individual outcome basis.

RESULTS

Heifer growth performance, mortality, removals and “out cattle” are presented in Table 2. No differences were detected ($P \geq 0.11$) for initial body weight (BW) (735 vs. 734); deads and removals excluded – final BW (1321 vs. 1322), average daily gain (ADG) (3.32 vs. 3.33) or feed-to-gain ratio (F:G) (6.27 vs. 6.30); deads and removals included – ADG (3.18 vs. 3.18) or F:G (6.57 vs. 6.64); mortality (0.83 vs. 0.94), removals (1.43 vs. 1.17) or “out cattle” (1.99 vs. 1.89) for REVALOR-IH/200 and REVALOR-XH, respectively. Daily dry matter intake was influenced by implant program; heifers administered the REVALOR-XH implant had greater ($P=0.02$) DMI (20.85 vs. 20.67) compared to heifers administered REVALOR-IH/200.

RESULTS CONTINUED

Carcass characteristics are presented in Table 3. Marbling scores did not differ ($P=0.74$; 503 vs. 505) for REVALOR-IH/200 and REVALOR-XH heifers, respectively. Heifers in REVALOR-IH/200 had greater ($P\leq 0.02$) dressing percentage (64.54 vs. 64.22), HCW (847 vs. 843) and rib eye area (14.24 vs. 13.88) as well as lesser ($P\leq 0.01$) back fat (0.70 vs 0.72) and USDA yield grade (2.82 vs. 2.97) compared to heifers administered REVALOR-XH. The distribution of USDA yield grade (YG) was impacted ($P=0.03$) by implant regimen: 6.61% vs. 4.26% for YG 1, 31.04% vs. 25.71% for YG 2, 43.24% vs. 45.80% for YG 3, 16.38% vs. 20.75% for YG 4 and 2.72% vs. 3.48% for YG 5, in heifers from REVALOR-IH/200 compared to REVALOR-XH. Distribution of USDA Quality Grade was also altered ($P=0.01$) by implant program: 5.41% vs. 7.02% for USDA Prime, 78.41% vs. 79.70% for USDA Choice, 14.47% vs. 11.98% for USDA Select and 1.71% vs. 1.30% for all other possible grades in heifers administered REVALOR-IH/200 compared to REVALOR-XH.

CONCLUSION

This pooled analysis indicates that feedlot growth performance (ADG and F:G) and heifer outcome (mortality, removal or “out cattle”) are not altered by a single coated implant or reimplant regimen. Heifers administered REVALOR-XH had greater dry matter intake (DMI) compared to reimplanted heifers. Carcass dressing percentage, hot carcass weight (HCW) and rib eye area (REA) are greater in reimplanted heifers, in addition to back fat and USDA yield grade being lower in reimplanted heifers, without detriment to marbling scores compared to heifers in REVALOR-XH. Lastly, USDA Yield Grade and Quality Grade distributions were influenced by implant program in finishing heifers.

Table 1. Description of large-pen feedlot studies included in the pooled analysis.^{1,2}

Location	Cattle Type	Treatments	Reimplant Date ³	Replicate Pens (Blocks)/ Treatment	Heifers/Pen	Initial BW, lbs.	Avg. DOF/ Treatment
Nebraska	Continental x British	IH/200 and XH	101	6 (6)	73	710	183
Oklahoma	Continental x British	IH/200, 200/200, XH and ONE-Feedlot	90	12 (12)	130	714	184
Oregon	Continental x British	IH/200 and XH	70	8 (8)	221-240	883	153
Texas	Continental x British	IH/200 and XH	71	10 (10)	125	698	164
Texas	Continental x British	IH/200 and XH; 172, 193 or 214 DOF	90	27 (9)	70	681	193
Texas	Continental x British and British x Bos Indicus	IH/200 and XH; 150, 171 or 192 DOF	90	27 (9)	65-70	743	173

¹Enrolled head=17,675, pens=180, blocks=54, studies=6; DOF range=145 to 222, mean=180 DOF.

²Only IH/200 and XH heifers were included in the pooled analysis.

³Heifers in XH (or ONE-Feedlot) were not removed from their pen at the time of reimplanting for heifers subjected to IH/200 (or 200/200).

Table 2. Model-adjusted mean finishing performance and health outcomes of heifers implanted with Revalor-IH followed by reimplant with Revalor-200 or a single Revalor-XH.

IMPLANT PROGRAM

Item	IH/200	XH	SEM	P-value
Initial BW, lbs.¹	735	734	9.1	0.29
DMI, lbs.¹	20.67	20.85	0.280	0.02
Deads and removals excluded				
Final BW, lbs. ¹	1321	1322	9.9	0.63
ADG, lbs. ¹	3.32	3.33	0.049	0.35
F:G ¹	6.27	6.30	0.045	0.30
Deads and removals included				
ADG, lbs. ¹	3.18	3.18	0.049	0.92
F:G ¹	6.57	6.64	0.067	0.11
Mortality¹	0.83	0.94	0.160	0.59
Removals²	1.43	1.17	0.220	0.32
“Out Cattle”²	1.99	1.89	0.270	0.72

¹ Enrolled head=17,675, pens=180, blocks=54, studies=6; DOF range=145 to 222, mean=180 DOF.

² Enrolled head=13,989, pens=164, blocks=46, studies=5; DOF range=150 to 222, mean=183 DOF.

Table 3. Model-adjusted mean carcass characteristics of heifers implanted with Revalor-IH followed by reimplant with Revalor-200 or a single Revalor-XH.

IMPLANT PROGRAM

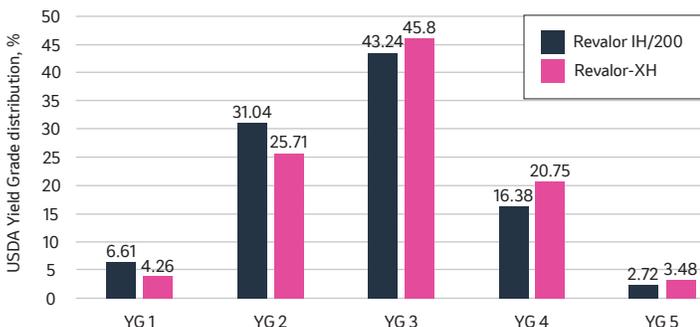
Item	IH/200	XH	SEM	P-value
Dressing, %^a	64.54	64.22	0.120	0.01
HCW, lbs., %^a	847	843	6.2	0.02
Rib eye area, in^{2,b}	14.24	13.88	0.130	0.01
Marbling^b	503	505	5.2	0.74
Back fat, in^b	0.70	0.72	0.010	0.01
USDA Yield Grade^c	2.82	2.97	0.040	0.01

^a Carcasses=17,167, pens=180, blocks=54, studies=6; DOF range=145 to 222, mean=180 DOF.

^b Carcasses=13,895, pens=126, blocks=45, studies=5; DOF range=145 to 192, mean=171 DOF.

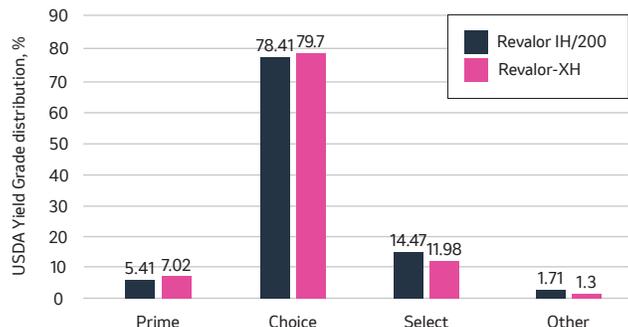
^c Carcasses=17,159, pens=180, blocks=54, studies=6; DOF range=145 to 222, mean=180 DOF.

Figure 1.



USDA Yield Grade distribution, % (P=0.03)
Carcasses=17,159, pens=180, blocks=54, studies=6;
DOF range=152 to 214, mean=180 DOF.

Figure 2.



USDA Quality Grade distribution, % (P=0.01) Carcasses=17,159, pens=180,
blocks=54, studies=6; DOF range=152 to 214, mean=180 DOF.

Revalor[®]-XH

(trenbolone acetate and estradiol)

REVALOR-XH IMPORTANT SAFETY INFORMATION:

No withdrawal period is required when used according to labeling. Do not use in calves to be processed for veal. A withdrawal period has not been established for this product in pre-ruminating calves. Do not use in lactating dairy cows or in animals intended for subsequent breeding. Use in these cattle may cause drug residues in milk and/or in calves born to these cows. Administer implant subcutaneously in the ear only. Any other location is in violation of Federal Law. Do not attempt salvage of implanted site for human or animal food. Not for use in humans. Keep this and all drugs out of the reach of children. For complete information, refer to product labels.

REVALOR-IH AND REVALOR-200 IMPORTANT SAFETY INFORMATION:

A withdrawal period has not been established for Ralgro, Revalor and Finaplix in pre-ruminating calves. Do not use in calves to be processed for veal.