

The effect of days on feed and trenbolone acetate + estradiol-17 β implantation on biometric measurements of Charolais \times Angus steers across serial harvest endpoints

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Materials and Methods

- A serial harvest study evaluated days on feed (DOF) and trenbolone acetate + estradiol-17 β administration on biometric measurements.
- Charolais \times Angus steers ($n = 80$; start of trial body weight (BW) (271 ± 99 kg)) were randomly allocated to implant treatment and harvest date.
- Steers were paired to minimize variation in genetic group, initial BW, frame score, and adjusted final BW. Within each pair, a steer was randomly allocated to one of two treatments (TRT); implanted with Revalor-XS (REV) on d 0 and d 190 or non-implanted control (CON).
- Eight steers (4 pairs) were randomly assigned to harvest dates at d 0, 42, 84, 126, 168, 210, 252, 294, 336, and 378 DOF.
- At each harvest date, all steers were measured for hip height, rump length, hip width, shoulder height, 2/3 body length, body depth, and body width.
- Balanced incomplete block design; 2 \times 10 factorial treatment structure.
- Biometric measurement variables were analyzed via the GLIMMIX procedure of SAS to test the fixed effects of DOF and TRT. A repeated measures design was used with DOF as the repeated measure by animal.

Introduction

- The growth curve of beef producing animals can be generally described as size-age curves.
- Biometric measurements have been used to compare or predict variables such as carcass characteristics, carcass composition, and body area and volume.
- Understanding skeletal growth in cattle has improved the beef industry's ability to sort cattle within pens to determine amount of days required before market readiness.
- This experiment was designed to evaluate the effect of days on feed (DOF) and trenbolone acetate (TBA) + estradiol-17 β (E₂) administration on biometric measurements of serially harvested steers.

Results

- No TRT \times DOF interaction was exhibited ($P \geq 0.30$) for any variable.
- Body width was 1.17 cm greater ($P < 0.01$) in REV steers.
- REV tended to have a 1.25 cm longer ($P = 0.06$) 2/3 body length than CON.
- REV body width was 1.17 cm wider ($P < 0.01$) than CON.
- Hip height increased ($P < 0.01$) 1 cm every 20 d.
- Shoulder height increased ($P < 0.01$) 1 cm every 16 d
- Rump length increased ($P < 0.01$) 1 cm every 33 d.
- Hip width increased ($P < 0.01$) 1 cm every 16 d.
- Two-thirds body length increased ($P < 0.01$) 1 cm every 9 d.
- Body depth increased ($P < 0.01$) 1 cm every 14 d.
- Body width increased ($P < 0.01$) 1 cm every 29 d.
- Hip height, rump length, hip width, shoulder height, two-thirds body length, body depth, and body width increased ($P < 0.01$) 1.9, 1.2, 2.2, 2.4, 4.1, 2.6, and 1.3 cm for each 42 d period, respectively.
- These data indicate biometric measurements were impacted by both growth enhancement technology and duration of finishing.

Table 1. Effects of Revalor XS implant administration (REV) and days on feed (DOF) on live animal biometric measurements of Angus \times Charolais steers (n=80)

Item	Treatment		Days on feed (DOF)										SEM	TRT	P-values		
	CON	REV	0	42	84	126	168	210	252	294	336	378			DOF	TRT X DOF	
n	40	40	80	72	64	56	48	40	32	24	16	8					
Hip height, cm	130.84	130.6	119.01 ^a	120.49 ^f	124.99 ^e	129.70 ^d	130.50 ^d	134.31 ^c	134.75 ^{bc}	136.42 ^{abc}	139.21 ^a	138.05 ^{ab}	0.39	0.72	< 0.01	0.99	
Rump Length, cm	34.58	34.62	28.56 ^e	32.04 ^d	31.98 ^d	31.31 ^d	33.76 ^c	33.40 ^c	37.60 ^b	37.60 ^b	39.02 ^{ab}	40.70 ^a	0.28	0.92	< 0.01	0.30	
Hip width, cm	66.81	68.09	54.47 ^d	61.03 ^c	56.67 ^d	56.55 ^d	61.10 ^c	86.31 ^a	75.23 ^b	73.32 ^b	72.98 ^b	76.84 ^b	0.59	0.13	< 0.01	0.34	
Shoulder Height, cm	123.10	122.3	109.61 ^a	112.09 ^f	115.58 ^e	124.81 ^b	122.18 ^c	125.81 ^b	119.40 ^d	132.51 ^a	131.46 ^a	133.57 ^a	0.36	0.11	< 0.01	0.50	
2/3 Body length, cm	103.53	104.8	80.96 ^h	93.33 ^g	98.10 ^f	100.87 ^e	104.46 ^d	105.87 ^{cd}	107.07 ^c	113.54 ^b	115.63 ^b	121.70 ^a	0.47	0.06	< 0.01	0.94	
Body depth, cm	75.07	75.35	59.67 ⁱ	61.67 ^h	66.04 ^g	69.56 ^f	72.94 ^e	82.73 ^c	91.50 ^a	78.49 ^d	83.88 ^{bc}	85.66 ^b	0.27	0.45	< 0.01	0.97	
Body width, cm	50.25	51.42	41.72 ^f	44.66 ^e	46.41 ^d	49.92 ^c	53.13 ^b	55.28 ^a	53.04 ^b	54.03 ^{ab}	55.05 ^{ab}	55.09 ^{ab}	0.28	< 0.01	< 0.01	0.83	

^{a, b, c, d, e, f, g, h} Least squares means within a row lacking a common superscript letter differ ($P < 0.05$)

