



# Effects of Synovex One Grass, Revalor-G, or Encore implants on performance of steers grazing for up to 200 days

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## ABSTRACT

Growth rates by cattle ( $n = 986$ ) grazing for 200 d and treated with Synovex One Grass (SOG; 150 mg of trenbolone acetate, 21 mg of estradiol benzoate), Revalor-G (REVG; 40 mg of trenbolone acetate, 8 mg of estradiol), or Encore (ENC; 43.9 mg of estradiol) were measured under field use conditions in a randomized complete block design. Blocks were defined by study start dates ( $n = 3$ ). Crossbred beef cattle, which included steers ( $n = 669$ ) and bulls castrated upon arrival ( $n = 317$ ), were stratified by sex and pretreatment BW within start date and assigned to treatments within strata ( $n = 328$  to 330 per treatment, initial BW =  $191 \pm 2.3$  kg). Implants were given on d 0 after BW was measured. Blocks were subdivided into pasture management groups with equal numbers from each treatment on each pasture, and animal was the experimental unit. Cattle grazed pastures supplemented with 26% CP concentrate and bermudagrass hay during periods of limited forage. Cattle BW were also measured on d 70 and 200; implant status (present or absent) was documented on d 70. Average BW of SOG cattle (391.2 kg) was greater ( $P < 0.05$ ) on d 200 than REVG (380.7 kg) or ENC (381.4 kg). Between d 0 and 200, ADG by SOG cattle was 1.00 kg/d, which was greater ( $P < 0.05$ ) than REVG (0.95 kg/d) or ENC (0.95 kg/d). Economics were assessed based on cattle purchase and sale prices, implant costs, and morbidity; cattle treated with SOG returned \$24.35 more than REVG and \$26.77 more than ENC ( $P < 0.05$ ). Over 200 d, grazing cattle implanted with SOG gained more than REVG or ENC, which increased returns.

**Key words:** cattle, stocker, implant, growth rate, average daily gain

## INTRODUCTION

Growth-promoting implants are widely considered among the most effective technologies available to beef producers to reduce cost of production because they increase rate of BW gain and improve the efficiency with which dietary nutrients are converted to body mass (Kuhl, 1997; Duckett and Andrae, 2001; Selk et al., 2006). There are many growth-promoting implant products approved for use in cattle, which typically contain at least an estrogenic or androgenic compound, but most contain both. Most implants approved for use in stocker cattle release growth-promoting active ingredients for periods of 80 to 100 d (Selk et al., 2006). This implies that cattle treated with such products do not benefit from the growth-promoting effects of implants beyond 120 d unless they are reimplanted (Selk et al., 2006). Revalor-G (REVG; Merck, Madison, NJ) is a combination product approved for use in pastured steers and heifers. The REVG product label does not specify duration of activity but rather indicates that the product contains 8 mg of estradiol and 40 mg of trenbolone acetate in a slow-release delivery system. There are, however, products designed and labeled to deliver anabolic agents for extended durations, thereby reducing labor costs and production losses associated with disruption of cattle performance to gather and reimplant animals in the middle of a grazing season. Estrogen-only products (Ferguson et al., 1988) are available for use in grazing steers, which are effective for 200 d (Compudose; Elanco, Indianapolis, IN) or 400 d [Encore (ENC); 43.9 mg of estradiol; Elanco]. Recently, Synovex One Grass (SOG; Zoetis, Parsippany, NJ), a combination product containing 21 mg of estradiol benzoate and 150 mg of trenbolone acetate per dose, was shown to be effective for growth promotion in pastured steers and heifers for up to 200 d (Cleale et al., 2015).

To date, little comparative data have been published that document growth performance of cattle implanted with products commonly administered to pastured cattle. The purpose of this study was to compare growth performance by steers implanted with SOG, REVG, or ENC over a 200-d grazing period.

The authors declare no conflict of interest.

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## MATERIALS AND METHODS

The study was conducted under the direction of a licensed veterinarian with beef cattle at a commercial stocker enterprise that was operated under routine management practices in accordance with the Animal Welfare Act (7 U.S.C. 54) and FASS (2010).

### Animal Acquisition and Processing

Beef cattle ( $n = 1086$ ) with British or Continental breeding or both (BW = 114 to 250 kg) were acquired in 12 lots between January 5, 2016, and January 28, 2016, and transported less than approximately 235 km to the study site, located in Copan, Oklahoma. After arrival and until d-0 processing, cattle were maintained in paddocks. At least 14 d were allowed for cattle to become acclimated to the study facility before treatment administration. Intact bulls ( $n = 317$ ) were banded at arrival processing, and samples were collected from all cattle to identify those persistently infected with bovine viral diarrhea; bovine viral diarrhea-positive animals were excluded from the study. All animals received Dectomax Injection (Zoetis) at a dose based on average purchase BW and were vaccinated with Titanium 5 (Elanco) and Cavalry 9 (Merck). Cattle were identified with duplicate ear tags that did not disclose experimental treatments. As animals were processed, weighed, and given experimental treatments on d 0, each steer also received Titanium 3 (Elanco), Vision 7 (Merck), and Valbazen (18 mL/animal, Zoetis). In addition, as animals were weighed on d 70, they received treatment with LongRange

dewormer (5 mL/animal; Merck) and a Tolfenpro Insecticidal ear tag (Bayer, Shawnee Mission, KS).

### Study Design and Animal Management

Animal ( $n = 986$  enrolled) was the experimental unit, and the study used a randomized complete block design. Each block consisted of approximately equal numbers of animals from each treatment that began and ended the study on the same date. The primary blocking criterion was calendar date on d 0, and animals were enrolled into the study on 3 different calendar dates (Table 1). Enrollment to block 1 on January 25 included 323 steers that averaged 193 kg ( $n = 110$  to SOG, 108 to REVG, and 105 to ENC). Enrollment to block 2 on February 1 included 327 steers that averaged 191 kg ( $n = 110$  to SOG, 110 to REVG, and 107 to ENC). Finally, enrollment to block 3 on February 8 included 336 steers that averaged 191 kg ( $n = 110$  to SOG, 110 to REVG, and 116 to ENC). Steers that completed the study grazed 200 d.

During processing on d 0, animals purchased as bulls that were banded at the time of arrival (at least 14 d before experimental treatment administration) were examined to confirm testes were not present. Animals within blocks were stratified based on individual d-0 BW and sex at arrival (steers or banded bulls) and then assigned randomly to treatments within strata. Animals within blocks were further subdivided into management cohorts consisting of approximately equal numbers of animals from each of the 3 treatments that remained together throughout the

**Table 1.** Summary of animal enrollment

Item	Treatment <sup>1</sup>		
	SOG	REVG	ENC
<b>Block 1</b>			
No. of cattle enrolled	110	108	105
No. of steers, banded bulls	85, 25	83, 25	86, 19
Weight d 0, kg	193.6	193.2	192.0
Treatment date	Jan. 25, 2016	Jan. 25, 2016	Jan. 25, 2016
Completion date	Aug. 12, 2016	Aug. 12, 2016	Aug. 12, 2016
<b>Block 2</b>			
No. of cattle enrolled	110	110	107
No. of steers, banded bulls	69, 41	67, 43	66, 41
Weight d 0, kg	190.9	189.9	192.1
Treatment date	Feb. 1, 2016	Feb. 1, 2016	Feb. 1, 2016
Completion date	Aug. 19, 2016	Aug. 19, 2016	Aug. 19, 2016
<b>Block 3</b>			
No. of cattle enrolled	110	110	116
No. of steers, banded bulls	70, 40	69, 41	74, 42
Weight d 0, kg	192.5	189.6	190.0
Treatment date	Feb. 8, 2016	Feb. 8, 2016	Feb. 8, 2016
Completion date	Aug. 26, 2016	Aug. 26, 2016	Aug. 26, 2016

<sup>1</sup>SOG = Synovex One Grass (Zoetis, Parsippany, NJ); REVG = Revalor-G (Merck, Madison, NJ); ENC = Encore (Elanco, Indianapolis, IN).

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