

Evaluation of Synovex One Grower Implantation on Pre-weaning Performance of Suckling Beef Steers

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Abstract

The objective of this study was to evaluate the effects of implanting beef steer calves with Synovex One Grower (Zoetis, Parsippany, NJ) on pre-weaning growth performance. Spring-born, Angus-sired steer calves ($n = 306$) from predominantly Angus-based cows were utilized over three years. Each year, in a completely randomized design, steers were assigned based on dam age and calving date to one of two treatments: 1) non-implanted control (CON) or 2) implanted with Synovex One Grower supplying 150 mg trenbolone acetate and 21 mg estradiol benzoate (IMP). Each year, steers were assigned to treatments in May or June (194 ± 51 lb of initial body weight [BW]; 49 ± 18 days of age) and grazed on native mixed grass pastures alongside their dams, with the trial ending in late July or August. Trial duration was 83, 89–92, and 69 days for years 1, 2, and 3, respectively. Data were analyzed using the MIXED procedure of SAS (SAS Institute Inc., Cary, NC) with significance declared at $P \leq 0.05$. The experimental unit was an individual steer, with 154 and 152 replicates for CON and IMP treatments, respectively. By design, neither cow age nor initial calf BW was different ($P \geq 0.62$) between treatments. Average daily gain (ADG) was higher ($P < 0.01$) for IMP compared to CON steers at 2.62 and 2.38 lb, respectively. This resulted in greater ($P < 0.01$) total BW gain for IMP relative to CON steers at 211 versus 191 lb, respectively. Concurrently, IMP steers had greater ($P < 0.01$) ending BW (400 lb) compared to CON steers (383 lb). Data suggest an extended-release trenbolone acetate/estradiol combination implant improves pre-weaning performance of suckling steers during the initial period of hormone release when administered at 50 days of age.

Introduction

Maximizing pre-weaning growth is critical for beef cow-calf producers who market calves at weaning. Calves with increased average daily gain (ADG) prior to weaning enter subsequent production phases at heavier weights, ultimately leading to greater final weights at harvest. One approach to enhancing pre-weaning growth is the use of anabolic implants, which have been shown to stimulate protein deposition and muscle growth and ultimately weight gain in conjunction with endogenous hormone production. Combination anabolic implants, such as Synovex One Grower (Zoetis,

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Parsippany, NJ), contain trenbolone acetate (TBA) and estradiol benzoate (EB), which are compounds that mimic natural anabolic hormones to promote tissue growth. While extensively studied in growing and finishing cattle, less research has been conducted with combination implants in suckling calves. Administration of implants to suckling calves often occurs at young ages when other management practices, such as castration and vaccination, are conducted, and this often coincides with periods of rapid early growth of the calf. Likewise, extended or sustained-release implants that provide a longer duration of hormone release may increase pre-weaning growth more than conventional implants, but little is known about what growth responses due to implanting may be seen during the initial period of hormone release. Therefore, the objective of this study was to evaluate the effects of implanting beef steer calves with Synovex One Grower on growth performance from pre-weaning to approximately 135 days of age when administered at approximately 50 days of age.

Experimental Procedures

This study was conducted over three years at the Kansas State University Agricultural Research Center in Hays, KS. A total of 306 spring-born, Angus-sired steer calves from predominantly Angus-based cows were utilized. A total of 95 steers were used in 2019, 121 steers in 2021, and 90 steers in 2023. In a completely randomized design, each year calves were assigned based on dam age (Table 1) and calving date to one of two treatments: non-implanted control (CON) or implanted with Synovex One Grower, containing 150 mg of TBA and 21 mg of EB (IMP). Implant administration occurred in May or June when calves were 49 ± 18 days of age and had an initial body weight (BW) of 194.0 ± 50.7 lb (Table 1). Following treatment allocation, calves remained with their dams and grazed native mixed-grass pastures for the duration of the trial. No other supplement was provided to cow-calf pairs during the summer grazing period other than free-choice salt and mineral. The length of the grazing period varied by year due to forage production influencing the timing of weaning and consisted of 83 days in year 1, 89–92 days in year 2, and 69 days in year 3. Calf BW was obtained by using single-day weights at the beginning and end of the trial period each year. Statistical analyses were conducted using the MIXED procedure of SAS (SAS Institute Inc., Cary, NC) with individual steer as the experimental unit (CON, $n = 154$; IMP, $n = 152$). The statistical model included the fixed effect of implant treatment with year as a random effect. Significance was declared at $P \leq 0.05$.

Results and Discussion

Implanting spring-born, Angus-sired steer calves with Synovex One Grower at approximately 50 days of age significantly improved pre-weaning growth performance compared to non-implanted controls (Table 1). Across three years, IMP steers had greater ($P < 0.01$) ADG (2.62 lb) than CON steers (2.38 lb). This enhanced rate of gain translated to increased ($P < 0.01$) total BW gain over the trial period, with IMP steers gaining an average of 211 lb compared to 191 lb for CON steers. Treatments were assigned in a completely randomized design, and there were no differences ($P \geq 0.62$) in initial calf BW or dam age between groups, supporting that the observed performance differences were likely due to the implant treatment. Furthermore, by the end of the grazing season, IMP steers reached a higher ($P < 0.01$) ending BW (400 lb) than CON steers (383 lb). These improvements were consistent across the three years, despite variation in trial durations (ranging from 69 to 92 days), suggesting a robust and repeatable response to the implant.

Implications

Administering Synovex One Grower implants to beef steer calves at approximately 50 days of age significantly improved ADG and weaning weight during the early period of hormone release, suggesting extended-release implants may offer a practical strategy to increase performance even with shorter time periods of implant administration that are less than the entire length of hormone release.

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Table 1. Effect of Synovex One Grower implantation on suckling calf performance

Item	Treatment		SEM ³	P-value
	CON ¹	IMP ²		
Cow age ⁴ , year	5.20	5.19	1.06	0.95
Initial calf age, day	46	47	11	0.46
Initial calf body weight (BW), lb	192	191	32	0.62
Ending calf BW, lb	383	400	25	≤ 0.01
Total calf BW gain, lb	191	211	17	≤ 0.01
Calf average daily gain, lb	2.38	2.62	0.10	≤ 0.01

¹CON = non-implanted control.

²IMP = implanted with Synovex One Grower.

³SEM = standard error of the mean.

⁴Average cow age at trial initiation across all years.