

Effect of Introduced Microbes and Re-Implant Treatment on Performance of Steers Grazing Mature Alfalfa and Maton Rye Pasture

M.D. Hudson, A.P. Woodruff, G. Highfill, and D.L. Lalman

Story in Brief

Thirty-seven cross-bred steers were used to evaluate the effects of direct-fed microbes on performance of stocker steers grazing mature alfalfa and Maton rye pasture. Steers were implanted with Ralgro® 30 d prior to the initiation of the trials. Trial one began on d-0 (September 23, 2005). Steers were randomly assigned to two treatments: (1) Steers receiving a single dose bolus application of Bova-Pro® (*Propionibacterium strain P5*); or (2) Steers not receiving a bolus. The grazing period was continued for Evaluation was conducted for 119 d. On d-59, steers from Trial 1 were used in a 2x2 factorial experiment (Trial 2) to evaluate the effects of a direct-fed microbial and/or re-implantation on steer performance. No statistically significant interactions were observed for treatment combinations. Treatment with a single-dose capsule of *Propionibacterium strain P5* had no effect on steer performance. Likewise, re-implantation did not significantly influence steer performance.

Keywords: Steers, Implant, Bova-Plus, Microbes, Performance

Introduction

The goal of any stocker enterprise is to utilize management practices and available products to maximize cattle weight gain. *Propionibacterium strain P5* is a naturally occurring rumen microbe that was initially discovered at Oklahoma State University in the early-1990s. Bova-Pro® is a patented product containing *Propionibacterium strain P5* and is designed to convert nitrates and nitrites to nitrogen gas and thereby reduce nitrate toxicity and abortion risk for cattle grazing high nitrate forages. Early trial work, which involved feeding the product as a top-dress additive in the feed bunk for rumen establishment, showed some tendencies for increased dry-lot feed intake and daily weight gain following establishment. Additionally, growth-promoting implants are a standard management tool in a majority of stocker cattle operations in Oklahoma. Duralease™ is a new implant on the market that is labeled for stocker weight steers and heifers. The purpose of this trial was to evaluate the efficacy of a direct-fed microbial product and re-implantation with Duralease™ implants for increasing weight gain of steers grazing high quality forages.

Materials and Methods

Cattle. Thirty-seven producer-owned and managed crossbred steers, mostly Angus and Angus x Brahman, were utilized in this trial conducted in central Blaine County. The steers were purchased in Northeast Oklahoma, delivered to the ranch and processed the next day (August 23, 2005) at a local veterinary clinic. Cattle were administered viral vaccines, fly-tags, injectable anthelmintic, antibiotic treatment, and Ralgro® implant. Steers grazed a bermudagrass pasture

with free-choice access to alfalfa hay prior to initiating the trial. To obtain initial weights, steers were held in drylot overnight with access to hay and water and weighed the following morning.

Pastures. Two grazing periods were utilized during this study. Period 1 consisted of grazing 35 acres of a mature stand of alfalfa. At turnout, the alfalfa pasture was clipped to measure forage quantity and quality. Average protein concentration was 27.2% (DM basis), and net energy for gain averaged .41 MCal/lb (DM basis) with 1775 lb of DM forage per acre. Sweetlix® Bloat Guard pressed blocks were provided in a covered free-choice mineral feeder for the duration of pd-1.

Grazing period 2 began on November 29, 2005 and utilized 35 acres of an adjacent Maton rye pasture with 1831 lb of DM forage available at turn-out. The rye was planted September 5, 2005 with 80 lb of 18-46-0 (N-P-K) fertilizer applied at planting.

Trial One. Steers were weighed and tagged (September 23, 2005; d=0), then allotted to one of two treatments: (1) Steers receiving a single dose application of a Bova-Pro® stocker capsule (*Propionibacterium strain P5*) using a standard bolus plunger gun; or (2) Steers not receiving bolus application. The Bova-Pro® effects were evaluated throughout both grazing periods (d-0 through d-119).

Trial Two. Steers from Trial 1 were randomly allocated on November 21, 2005 (d=59) to one of two treatments: (1) Steers to be re-implanted with Duralease™ (Merial Limited®), a programmed released suspension product containing 20 mg estradiol benzoate per 1mL dose; or (2) Steers not re-implanted. For re-implanted steers, the approved dose was given subcutaneously on the backside of the middle one third of the ear following the company recommended administration guidelines.

Final weights were taken on January 20, 2006 (d=119) after overnight removal from feed and water.

Statistical Analysis

Data were analyzed using the MIXED procedure of SAS. For Trial 1, the model included a term for bolus treatment. For Trial 2, the model included terms for bolus, implant, and bolus x implant interaction. Data presented in tables are least square means. Data presented in the text is the simple average of least square means.

Results and Discussion

Trial One. Steers initially weighed 605 ± 43 lb and gained 2.09 lb/hd per day from d-0 through d-119. Treatment with a direct-fed microbial bolus did not affect steer weight gain throughout the trial.

Table 1. Effect of treatment with Bova-Pro® bolus vs control on performance of stocker steers (Trial 1).

ITEM No. of Steers	CONTROL n=19	BOLUS n=18	SE	P value
Weight; d=0	611	599	10.3	.4800
Weight; d=59	740	731	13.0	.6063
Weight; d=119	857	851	15.7	.7715
ADG; d-0 to d-59	2.18	2.23	.11	.7680
ADG; d-59 to d-119	1.95	2.00	.09	.6935
ADG; d-0 to d-119	2.07	2.11	.08	.6830

Trial Two. There was no interaction between previous application of the bolus and reimplant treatments. Therefore the means were pooled by main effects and the least square means for the main effects are presented. Steers weighed 735 ± 54 lb and gained 1.98 lb/hd per day from d-59 through d-119. No differences in weight or gain were recorded between treatments.

Table 2. Effect of re-implanting vs control on performance of stocker steers (Trial 2).				
ITEM No. of Steers	CONTROL n=18	IMPLANT n=19	SE	P value
Weight; d=59	736	734	12.8	.9183
Weight; d=119	854	854	16.0	.9706
ADG; d-59 to d-119	1.95	2.01	.10	.6511

No significant interactions were observed for treatment with Bova-Plus® in conjunction with re-implantation. Performance of steers did not differ due to previous treatment with the Bova-Plus® bolus or due to the implant. Results are presented in Table 3.

Table 3. Effect of introduced microbes and re-implantation strategy on performance of stocker steers.						
	Treatment					
Bolus	-	-	+	+		
Implant	-	+	-	+	SE	P value
Weight; d=59	733	746	739	722	18.7	.4260

Weight; d=119	848	867	860	842	23.2	.4060
ADG; d-59 to d-119	1.89	2.01	2.01	2.00	.14	.6117

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Authors

Hudson, M.D. – Graduate Student

Highfill, G. – Area Extension Livestock Specialist

Lalman, D.L. – Associate Professor

Woodruff, A.P. - Extension Educator, Agriculture, Blaine County, OK