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Evaluation of springtime deworming strategies for beef cow/calf pairs

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EVALUATION OF SPRINGTIME DEWORMING STRATEGIES FOR BEEF COW/CALF PAIRS¹

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Summary

A field study was conducted at three different locations in south central Kansas to determine the effects of Dectomax[®] (DECTO) or Ivomec PO[®] (IVO) compared to no treatment (CONT) on the liveweight gain and reproductive performance of beef cow/calf pairs. Across all three locations, no differences occurred among treatments in cow and calf live weight gain, cow body condition, pregnancy rate, or age of fetus ($P>.05$). Low egg counts suggest that the parasite load was too low for a response to parasite control.

(Key Words: Spring Deworming, Cow/Calf Pairs.)

Introduction

Economic losses from internal parasites can be significant. Such losses usually are hidden, because minor changes in performance of infected animals are not detected easily. The degree of infestation will vary with age, degree of exposure, and environment and ultimately will determine the value of worming cattle under a given set of conditions. This study was conducted to determine the efficacy of springtime administration of Dectomax[®] or Ivomec PO[®] in beef cows and their calves compared to no treatment.

Experimental Procedures

Spring calving beef cow/calf pairs grazing native grass (164 pairs near Isabel, KS and 165 pairs near Geneseo, KS) or bermudagrass pasture (150 pairs near Cedar Vale, KS) were allocated randomly to one of three treatment groups based on cow age. The trial started at each location during May, 1997 and ended in October. All cows and calves had individual ear tags. On day 0, the cow/calf pairs allotted to DECTO were injected subcutaneously with 1 mL/110 lb body weight Dectomax[®] (200 Fg doramectin per kg body wt); those allotted to IVO were treated topically with 1 mL/22 lbs body weight Ivomec PO[®] (500 Fg ivermectin per kg body wt) down the midline of the back. The CONT group received no anthelmintic treatment. Treatment groups were commingled after treatment on Day 0. Individual fecal samples were collected from 20 randomly selected pairs (cow and calf) from each treatment group on Day 0. Fecal samples were collected again from the same calves on days 56 and 150. All fecal samples were examined quantitatively for parasite eggs by a parasitologist.

Individual weights and body condition scores were recorded for all cows at the start and end of the trial. Calves were weighed individually at all three locations on days 0,

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56, and 112. On day 150, the cows were pregnancy-checked (rectal palpitation), and the estimated ages of the fetuses were recorded.

The cow/calf pair was the experimental unit for statistical analysis. Although commingling treated and control cow/calf pairs adds power to the statistical analysis, it penalizes the treated group and rewards the control group by controlling parasites in two-thirds of the herd. A repeated measures, mixed general linear model, which included pasture as block, was used to analyze cow body weight, cow body condition score, calf ADG, and calf nematode egg counts. A general linear mixed model, which included pasture as a block, was used to analyze fetal age in days and cow nematode egg counts. All nematode counts (eggs per gram) were transformed to the natural log before analysis, then they were back-transformed to geometric means for presentation. Fisher's Exact test was used to test for an association

between pregnancy status at the end of the study and treatment.

Results and Discussion

Treating of cow/calf pairs harboring natural gastrointestinal nematode infections and grazing either native or bermudagrass pastures in Kansas with a single dose of DECTO subcutaneously or IVO topically did not influence ($P>.05$) weight gain or change body condition score in the cows, percentage pregnant, or age of the fetus (Table 1). Moreover, no significant differences occurred among treatments in ADG of the calves (Table 2). However, DECTO- and IVO-treated calves exhibited lower counts ($P<.05$) of trichostrongylid-type eggs and all genera of nematode eggs at day 56 compared to the CONT calves (Table 3). However, those differences had disappeared by day 150. We conclude that the parasite loads were so low that their control did not influence performance.

Table 1. Cow Weight and Body Condition Score Changes by Treatment

Location	Cow Weight		BCS ¹		Fetal
Treatment	Day 0	Day 150	Day 0	Day 150	Age (Days)
Combined herds					
CONT ²	1055	1185	5.2	5.4	127
DECTO	1051	1176	5.2	5.3	133
IVO	1059	1179	5.2	5.3	128
Barber					
CONT	998	1098	5.0	5.4	164
DECTO	991	1097	5.1	5.4	173
IVO	965	1111	5.0	5.3	160
Cowley					
CONT	971	1141	4.9	5.5	122
DECTO	975	1134	5.0	5.5	127
IVO	1018	1125	5.0	5.4	126
Ellsworth					
CONT	1187	1335	5.3	5.6	96
DECTO	1168	1317	5.2	5.5	101
IVO	1182	1328	5.3	5.6	98

¹Body Condition Score; 1 = extremely emaciated; 9 = extremely obese.

²CONT= Nonmedicated control; DECTO = Dectomax[®]; IVO= Ivomec PO[®].

Table 2. Calf Gains (lbs/day) during Successive Weigh Periods

Location Treatment	Day of Study			
	0 to 56	56 to 112	112 to 150	0 to 150 (overall)
Combined herds				
CONT ¹	2.81	2.31	1.91	2.41
DECTO	2.79	2.20	1.87	2.36
IVO	2.73	2.27	1.86	2.36
Barber Co.				
CONT	2.34	1.96	1.89	2.09
DECTO	2.45	1.88	1.78	2.09
IVO	2.36	2.02	1.83	2.12
Cowley Co.				
CONT	2.97	1.96	1.80	2.33
DECTO	2.92	1.88	1.85	2.29
IVO	2.84	1.92	1.65	2.23
Ellsworth Co.				
CONT	3.05	2.89	2.50	2.87
DECTO	3.00	2.78	2.50	2.81
IVO	2.97	2.80	2.57	2.82

¹CONT = Nonmedicated control; DECTO = Dectomax[®]; IVO = Ivomec PO[®].

Table 3. Combined-Treatment Geometric Means of Nematode Eggs per Gram of Feces from Cows and Calves

Nematode Species	Cow Pretreatment			Calf Day 0			Calf Day 56			Calf Day 150		
	CONT	DECTO	IVO	CONT	DECTO	IVO	CONT	DECTO	IVO	CONT	DECTO	IVO
Trichostrongylid	4.1	5.7	3.3	1.5	1.0	0.9	3.3 ^a	1.4 ^b	1.8 ^b	4.7	4.9	6.2
Total all genera	4.4	5.8	3.3	1.8	1.4	1.0	4.7 ^a	2.2 ^b	2.7 ^b	5.7	3.0	7.5

^{a,b} Values in rows not sharing a common superscript are different ($P < .05$).