

THE EFFECTS OF IVERMECTIN, FENBENDAZOLE OR LEVAMISOLE PHOSPHATE ON PERFORMANCE AND HEALTH OF NEWLY ARRIVED STOCKER CATTLE

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Story in Brief

One hundred seventy-six newly received steer and bull calves and yearlings averaging 506 pounds were divided into four treatments as follows: 1) control (not dewormed), 2) ivermectin, 3) fenbendazole, and 4) levamisole phosphate. Daily gain of cattle dewormed with fenbendazole was increased by 68.9% compared to controls during the first 28 days of a 110 day trial (1.79 vs 1.06 lb/hd/day). Deworming with ivermectin increased gains by 22.6% over controls during the same 28 day period. Daily gains were increased by 15.7%, 11.0% and 5.5% above controls with ivermectin, fenbendazole and levamisole phosphate respectively over the entire 110 day trial.

(Key Words: Fenbendazole, Ivermectin, Levamisole Phosphate, Newly Received Cattle, Anthelmintics)

Introduction

The effects of anthelmintics on the performance of newly received stocker cattle have been variable (Davis and Caley, 1979). An anthelmintic is of no benefit if the cattle have minimal parasite burden or if resistance is present. The most pathogenic and economically important internal parasite of cattle is considered to be the abomasal nematode, *Ostertagia ostertagi*. Traditional anthelmintics have shown limited effectiveness against pre-type II and type II ostertagiasis (Williams et al., 1984).

Ivermectin has shown over 99% efficacy against inhibited larvae of *Ostertagia ostertagi* (Williams et al. 1981) and against all types of gastro-intestinal nematodes (Benz, 1983). It has been reported to improve weight gains of feeder calves by 11 to 21% (Holste, 1983; Ciordia et al., 1984). The objective of this research was to study the effect of three different anthelmintics on the performance and health of newly arrived stocker cattle.

Materials and Methods

Two truck loads of cattle were purchased by an order buyer from auction barns in south central Oklahoma and shipped to Pawhuska, Oklahoma on March 20 (98 head) and March 27, 1985 (78 head). Newly received cattle were weighed individually off the truck, ear tagged, and treated with Lysoff[®]. Following weighing and tagging, cattle were placed in pens of 20 to 25 animals each and randomly assigned by pen to one of the

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following treatments: control, ivermectin^b (injected at 91 µg/lb), fenbendazole^c (2.3 mg/lb), or injectable levamisole phosphate (2 ml/100 lb). Water and native bluestem grass hay were provided free choice until the following morning when the cattle were processed as follows:

1. Body temperature and time were recorded.
2. Cattle were vaccinated with IBR-PI₃ (MLV) IM, Leptospira pomona bacterin and Clostridia chauvoei, septicum, novyi, and sordellii bacterin.
3. Cattle being dewormed were treated with their respective anthelmintic.
4. Cattle with odd-numbered ear tags were treated with a microbial culture as part of another study superimposed on this experiment.
5. Cattle were started on antibiotic treatment if clinical signs of illness were detected or if body temperature exceeded 104°F.
6. Sick cattle were placed in a hospital pen and a hospital card was initiated for each calf.

As soon as cattle were placed in their pens, ad libitum access to bluestem grass hay was allowed and a pelleted feed supplement (Table 1) was offered at a rate of 2 lb/hd/day for the first 21 days and 1 lb/hd/day from days 22-28.

After processing, cattle were checked twice daily for signs of illness and treated as necessary as described elsewhere in this publication (Hicks et al., 1986c). On day 28 of the trial cattle were held overnight without feed or water, weighed the following morning and, when necessary, cattle were castrated and horns were tipped. The cattle were then placed on native grass pasture. All cattle were weighed off trial on July 12, 1985. Thus, the first load was on trial 107 days and the second load was on trial 113 days. However, for pooled analysis of the data the length of trial was considered to be the same for both loads.

Table 1. Composition of feed supplement.

Ingredient	IFN ^a	% As Fed
Soybean Meal	5-20-637	88.9
Salt	6-04-152	3.0
Vitamid A - 30,000 IU/Gram		.22
Premix		.18
Cottonseed Meal	5-01-621	5.0
Dicalcium Phosphate	6-01-080	2.75

^aInternational Feed Number.

^bTo provide 50 mg decoquinat/1b.

^bIvomec®, MSD Agvet, Rahway, NJ 07065.

^cPanacur®, Hoechst-Roussel Agri-Vet Company, Somerville, NJ 08876.

^dTramisol®, Cyanamid Agricultural De Puerto Rico, Inc., Manati, Puerto Rico 00701.

Results and Discussion

Effects of anthelmintics on daily weight gain, sick days and morbidity are shown in Table 2. Daily gain was significantly greater ($P < .01$) for those cattle dewormed with fenbendazole as compared to the other treatment groups during the first 28 days of the trial. However, during the time cattle were on pasture those head dewormed with fenbendazole tended to gain less than the other treatment groups while those cattle treated with ivermectin tended to gain at the fastest rate. Over the entire period, daily gains were 1.47, 1.41, 1.34 and 1.27 lb/head for ivermectin, fenbendazole, levamisole phosphate and control treatments, respectively. No significant difference was observed in the incidence of sickness which was quite low in this experiment.

In conclusion, deworming with ivermectin or fenbendazole increased weight gains by approximately 22.0 and 15.4 pounds, respectively, over the entire period. At a value of \$60 per hundred, the added gain for those steers treated with ivermectin would be worth \$13.20 per head and \$9.24 per head for those treated with fenbendazole. The cost of the ivermectin and fenbendazole is approximately 50 cents per hundred (\$2.50 for 500 lb steer) and 25 cents per hundred (\$1.25 for 500 lb steer), respectively. Thus, deworming with ivermectin would result in a net increase in value of \$10.70 per head and deworming with fenbendazole would result in a net increase in value of \$7.99 per head.

Table 2. Effect of anthelmintics on daily gains, sick days and morbidity.

	Control	Ivermectin	Fenbendazole	Levamisole
Number of head	43	44	45	44
Arrival weight, lb	505	505	517	494
Daily gain, lb				
Days 1-28	1.06 ^a	1.30 ^a	1.79 ^b	1.05 ^a
Days 29 on	1.35 ^c	1.55 ^d	1.30 ^c	1.41 ^{cd}
Entire period ^f	1.27 ^c	1.47 ^d	1.41 ^{cd}	1.34 ^{cd}
Sick days ^g	.28	.54	.18	.50
Morbidity, % ^g	4.2	12.9	3.6	9.3

^{a, b} Means with different superscripts differ ($P < .01$).

^{c, d} Means with different superscripts differ ($P < .10$).

^f 107 days for load #1 and 113 days for load #2.

^g During first 28 days.

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