Evaluation of a Slow Release Worming Bolus for Calves

By

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In the spring of 1983 the Dickinson Experiment Station was approached by Pfizer Company Central Research Group to assist in evaluating a slow release worming bolus which they are planning to market. The compound being used in the slow release formulation is morantel tartarate, currently being sold under the trade name Rumatel®.

To evaluate the slow release anthelmentic bolus of this type it was determined that the following measurements would be needed:

1. Calf weight gains.
2. Fecal egg counts.
3. Actual nematode counts from sacrificed calves.
4. Actual nematode counts from sacrificed tracer calves introduced into experimental pastures three weeks before weaning.
5. Plasma pepsinogen levels.

To test the bolus, thirty cow/calf pairs with calves averaging 262 lbs. were randomly allotted to receive the Paratect® bolus or serve as controls. Straightbred Hereford cows were used that had Hereford, Angus X Hereford and Simmental X Hereford calves at side.

Before the trial began three calves from each treatment were selected to be sacrificed at weaning and their intestinal contents recovered so that actual nematode counts could be determined.

In addition, three dairy tracer calves were purchased for each treatment. The calves were wormed with Tramisol® and fecal sampled before being placed in the experimental pastures, to insure that no worm burden existed. Once determined to be worm free, they were placed in the trial pastures three weeks before the grazing aspect was completed on September 26th. These dairy bred calves were held in drylot three weeks after the grazing period was completed to allow worm development to advance sufficiently making identification easier.

During each 28 day weigh period, each cow and calf was fecal and blood sampled. Plasma pepsinogen levels in blood were analyzed by a private laboratory under contract with Pfizer Company. Fecal samples were analyzed by Dr. Myron Andrews, DVM, and laboratory technician, Mary Hansen of the Veterinary Diagnostic Laboratory at N.D.S.U.

Fecal egg counts by weigh period are shown in Figures 1 & 2, & production data is shown in Table 1.

Actual counts of worms recovered from sacrificed beef and dairy tracer calves are shown in Table 2.

Summary:

There were no significant differences in weight gains of calves, nematode egg counts, plasma pepsinogen levels, or actual nematode count at slaughter of three calves from each group. Three tracer calves allowed to graze in each pasture also showed no significant differences in worm burden at slaughter. Calf gains for the 91 day grazing period were 227 lbs. in both treatments.

Worm egg shedding was monitored throughout the study. At the beginning, cows in the control and treated groups were shedding 20.0 and 17.7 eggs per gram of feces (epg) respectively. By the end of the grazing period, due to the animal's natural resistance, cows in both groups were shedding approximately 4 epg. The calves, however, which have almost no resistance when young, increased egg shedding throughout the course of the grazing period. Eggs per gram shed by the calves ranged from 6.3 to 27.4 epg for the control and 3.0 to 25.1 epg for the treated calves when they were weaned.

Actual worm counts made on three sacrificed beef calves were 1,211 in the unmedicated control group and 2,793 in the calves carrying the slow release Paratect® bolus. Vacated boluses were recovered from each of the sacrificed calves, analyzed by a private laboratory, and were determined to have functioned properly.

Based on the results of this study no intestinal worm control was attained with the slow release Paratect® system.

Table 1. Weights and Gains for Cows and Calves in the Slow Release Worming Bolus Trial

	Control	Paratect®
No. Head	15	15
No. Days Grazing	91	91
Cows:		
Initial wt., lbs.	1127	1117
Final wt., lbs.	1247	1201
Gain, lbs.	120	84
ADG, lbs.	1.32	.92
Calves:		
Initial wt., lbs.	262	263
Final wt., lbs.	489	490
Gain, lbs.	227	227
ADG, lbs.	2.49	2.49

Table 2. Nematode Counts Taken From Intestinal Contents of Sacrificed Calves

	Control	Paratect®
Beef Calves	1211	2793
Dairy Tracer Calves	2795	5212

Figure 1: Summary of Fecal Egg Counts Obtained at Each Weight Period

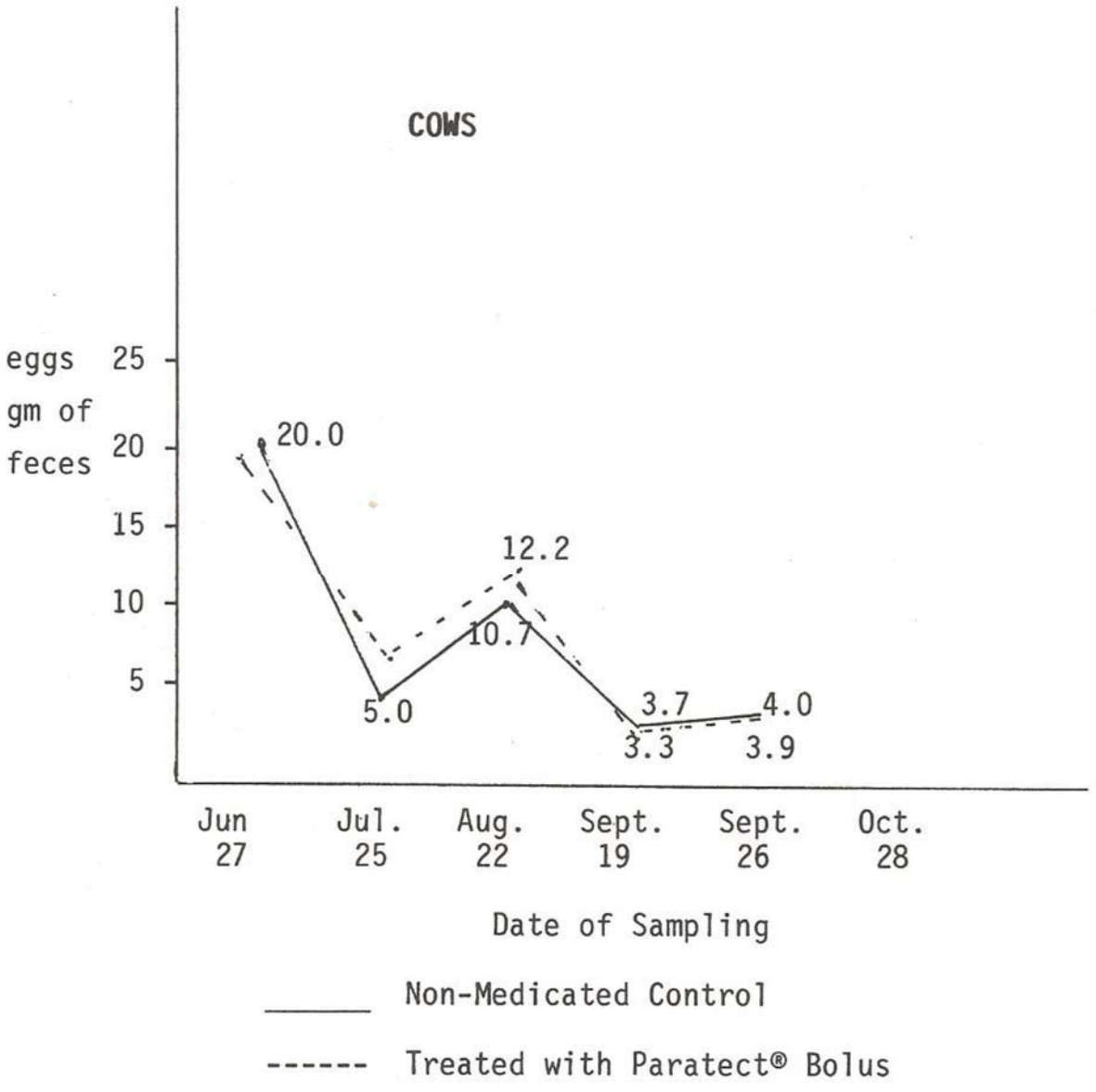

Figure 2: Summary of Fecal Egg Counts Obtained at Each Weight Period