

An Epidemiologic Method to Determine Losses Associated with Subclinical Gastrointestinal Nematodes in Yearling Cattle

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Introduction

In many northern regions of the United States, gastrointestinal nematode infections are largely subclinical, with relatively few cases of clinical disease. At subclinical levels the effects of nematodes are less apparent but lead to decreased rates of production and decreased immunity to various infectious diseases. Subclinical burdens may make it difficult for producers to recognize the loss, and the need to control these parasites. A convenient method to measure subclinical losses under actual herd production conditions is needed to enhance producers' ability to evaluate the cost-benefit of nematode control programs. The objective of this project was to evaluate an epidemiologic-based methodology, which measures losses due to subclinical gastrointestinal nematode infections in yearling cattle on a single pasture.

Materials and Methods

Prior to spring turn-out, sentinel animals, consisting of 20% of a pasture group, were selected. Sentinel animals were weighed and individually identified with an ear tag. Half of the 20% (10% of the total pasture group) received one Ivomec SR Bolus® (experimental group) and the other half was designated as untreated controls for the study. Animals were assigned to the experimental and control groups through systematic allocation during initial weight data collection. Both experimental treatment and control groups were pastured with the rest of the pasture group, and re-weighed at the end of the grazing season. Average daily gain was determined by subtracting the end weight from the

start weight and dividing by the number of days the animals were on pasture. Difference in weight gain was attributed to gastrointestinal nematode burdens, as all other environmental factors were identical except for the anthelmintic application. Fecal samples were obtained at study end, and egg counts were performed to estimate nematode burden. Five pasture groups, consisting of either steers or spayed heifers, were utilized during the 2000 grazing season. Pasture groups were located at separate sites throughout South Dakota, and stocking densities as well as overall pasture condition varied with site.

Results and Conclusions

After controlling for trial site, regression analysis indicated that treated animals had a 0.14 lb. (0.31 Kg) average daily gain (ADG) advantage over control animals ($p=0.0001$). Analysis of fecal samples collected from control animals revealed average burdens ranging from 5.55 to 28.45 eggs per gram (EPG), and is consistent with sub-clinical levels of infection in this area.

The methodology utilized to evaluate the effects of gastrointestinal nematodes on yearling cattle appears to be a useful tool to effectively measure losses associated with internal nematodes. The approach allows producers to determine losses to gastrointestinal nematodes within a single pasture group without extensive labor or costs. The methodology does dictate that large pasture groups are utilized. Aggregation of parasite burdens, and small sample size of sentinel animals within the pasture group, may over- or underestimate the effects of nematodiasis.