ROUNDWORM PARASITES OF NORTH DAKOTA CATTLE

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Roundworms (nematodes) can be an important limitation on profits for the livestock industry. Dr. John B. Herrick of Iowa State University (1) writing on worm parasites of cattle in the United States reported that parasitism is probably one of the greatest causes of hidden losses that confronts the cattle industry. He estimated that maintaining these worms could cost from a few cents a day to 20 to 50 cents a day per cow. These figures were given several years ago, and inflation could have increased the economic losses, even though the actual losses have probably stayed quite stable (2).

Estimates have indicated that less than 30 percent of all beef cattle are dewormed on a scheduled basis (3). The schedule of worming is important in providing the best control of the worms at the least cost. Correct medication schedules would provide the worm kill at the times when it would give the best effect on the host animal and do the most to prevent its reinfection or infection of young calves.

In order to devise the best schedule for medicating animals it is necessary to know something about the biology of the parasite infecting these animals. A survey was conducted, with the cooperation of 10 ranchers from different parts of North Dakota, to determine the number of roundworm eggs passed in the feces of adult beef cows. The location of each ranch from which cattle were sampled is shown in figure 1. While the number of eggs passed by a cow does not necessarily indicate the number of worms in the cow, it does give a good indication of the pasture contamination that is taking place from the activities of the cattle sampled.

Materials and Methods

Fecal samples were collected from 10 adult cows on each of 10 ranches. Collections were usually made from two or three ranches every two weeks, so each ranch was sampled approximately every two months. The cattle were followed in the pasture or corral, and when one was seen to defecate, a sample of the newly dropped feces was collected in a small plastic bag. The samples were held in styrofoam containers with ice until they were returned to the laboratory.

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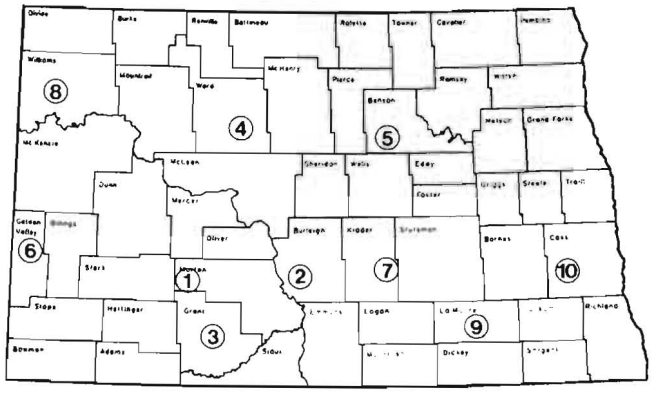

Figure 1. Locations of Cooperating Ranches

At the laboratory, samples of the fecal material were put into centrifuge tubes and a water sedimentation followed by a zinc sulfate flotation were done. The eggs were floated onto a 22 mm. square coverslip, which was then put on a microscope slide and a count of the nematode eggs was performed. This method does not recover all of the nematode eggs for counting, so the counts are at least 10 percent under the actual numbers.

Results

The egg counts recorded for the 10 cows from each of the ranches were averaged and are shown on figure 2. Each point on the graph indicates the mean of all samples taken on the month prior to and the month following the date shown. There was an approximately three-fold increase in fecal egg numbers during the April-May period as compared to the lowest midwinter counts. The highest mean shown is 33.3 eggs per gram of feces and the lowest, recorded during the December-January period, is 8.7 eggs per gram.

Discussion

In North Dakota there are many ranchers that depend on a single anthelmintic medication in the fall to control roundworm parasites. This medication is not given to reduce the contamination from the eggs in the feces as much as to eliminate the stress of worms on the cattle during the winter period. Since the low egg count found

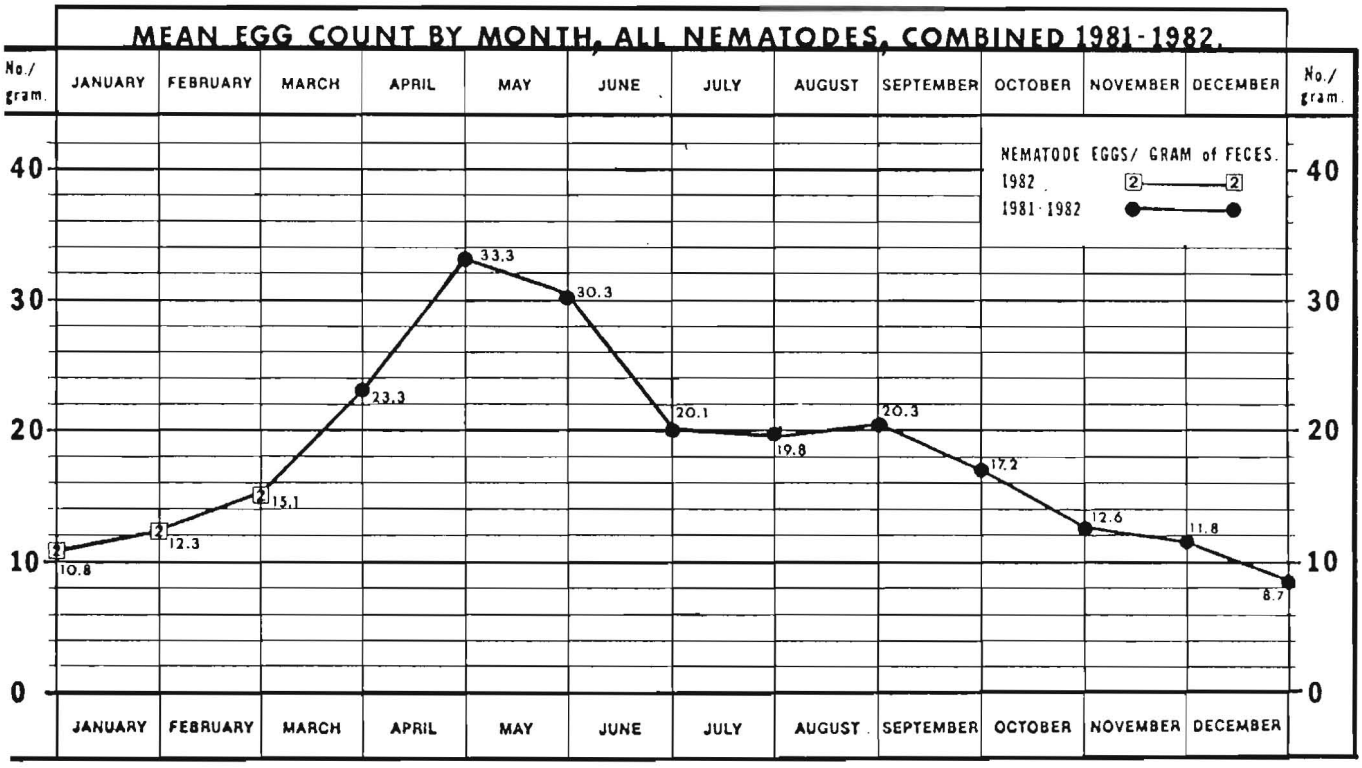

Figure 2.

in the winter does not necessarily prove a low number of worms in the gut of the cow, this fall treatment might well be justified.

None of the presently available anthelmintics will kill the arrested larvae residing in the gastric glands of the stomach or in the lining of the gut. These arrested, or hypobiotic, larvae are stimulated to leave their protected positions in the spring and develop into active adults in time to produce eggs shortly after the calving season. The eggs are then deposited on the pastures at the correct time to infect the young calves at their most susceptible age. Since the available anthelmintics are not able to kill the arrested larvae, fall medication will not prevent the spring rise in roundworm egg production. It would, therefore, be beneficial to medicate the adult animals in the early spring to kill the newly developed adult worms and prevent the rapid increase in pasture contamination. This would allow the calves to develop only a low level of nematode infection to stimulate their resistance without undue stress. The spring medication would be given sometime between the latter part of March and the time when the cattle go on the summer pastures.

References

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