Parasitism Is Increasing

By R. F. Shumard[1]

A constant struggle between animals and their parasites continues despite the intervention of man on the side of the animals. In spite of man's efforts, worms, protozoa, insects, ticks and mites continue to take their toll in the lives of animals and, in a more insidious manner, reduce the efficiency and profit of livestock raisers.

These internal and external parasites deprive the nation's economy of more than $800,000,000 each year. All of us are affected by these persistent invertebrates. We pay more for beef and lamb because of condemnation of flukey and/or tapeworm livers. Sausage in natural intestinal casings is more expensive because of the destructive work of nodular worms. Shoes and other leather goods take a larger percentage of our income because of the bot fly larvae that destroy portions of the hide. These are but a very few of the ways in which parasitism affects the consumer. Each worm, each parasitic protozoan and each parasitic arthropod exerts its influence where it hurts the most—on the pocket book.

In spite of the constant war on these pests, all indications are that parasitism of livestock is increasing in North Dakota and elsewhere. Why? We have good drugs, fair management, preventative means! True. But, we also have better transportation, more animals per unit of land and an intensive nutritional program designed to get the animals to market sooner. All of these things are good in themselves and benefit our economy. With the benefits, however, we must expect some drawbacks.

With our excellent transportation system we can move animals easily from place to place. When we transport these animals we also transport their parasites. As a consequence, we are finding parasites today that did not exist in North Dakota 10 years ago.

Due to our technological improvements we can raise more animals per unit of land. We also raise more parasites per animal in this way by placing them in direct contact with a concentration of parasites that sometimes overwhelms the animals.

When we feed animals superior rations we naturally expect better animals. Usually we get them, but we also get superior parasites. Parasites are subject to nutritional differences in the same general manner as their hosts. Of course, a well fed animal will be able to withstand more parasites, but more parasites mean more and more parasites until the superior nutrition can no longer compete. For example, a female stomach worm that occurs in cattle and sheep produces between 5,000 and 10,000 eggs per day on an adequate ration for the cow or sheep. If we add supplements of the right minerals to the diet of the cow or sheep this female stomach worm may increase her egg production to between 15,000 and 25,000 and occasionally to 40,000 eggs per day. Each one of

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these eggs is a potential stomach worm that will suck the life blood from its host.

We do not advocate that the livestock raiser stop feeding these supplements but rather we do recommend that he do something about the parasites. Each parasite problem requires a slight modification from a general control program. Often these slight modifications make the difference between an adequate control program and a haphazard one.

Parasites are peculiar animals. They not only are particular as to which animal they choose for a host but also are sensitive to which drug they will allow to weaken or kill them. As a result we have many drugs on the market, some of which are worthless, others that are good and still others can be classified as superior. **None of these is 100 per cent effective.**

Among the more widely used drugs are various sulfas and nitrofurans for coccidiosis; sodium flouride and cadmium compounds for large roundworms of hogs; hexachloroethane for liver flukes; and many others that consist of combinations of the above or other compounds, in themselves poisonous. Of all the drugs on the market, phenothiazine is the most efficient for controlling and killing roundworms in cattle and sheep. It kills more worms than any other anthelmintic, **but not all of them!** It is not very effective against bankrupt and thread-necked worms and these two species can overwinter on the pastures even in a severe climate such as we have in North Dakota. This creates a serious problem, especially since these two worms seriously affect their hosts. The bankrupt worm causes a severe diarrhea with a resultant loss of weight and feed utilization. Large numbers of the thread-necked worms produce a wasting-away of the flesh of the host. Result, in both cases, is economic loss.

A Partial Solution

We are seriously handicapped due to our lack of knowledge concerning the physiological relationships between the parasites and their hosts. Our knowledge of the pharmacology of the various drugs that are effective against parasites is quite limited. These are problems that can be overcome with adequate time and research funds. If we could place the eight hundred million dollars lost due to parasites each year into research on parasites we could, in a few years, considerably reduce this loss.

With the tools we have on hand today there is much we can do to alleviate the situation. Each livestock raiser should follow a control program which, as far as sheep and cattle are concerned, consists of drenching with appropriate chemicals at least twice a year and then continuous year-round feeding of phenothiazine in salt or grain. He should seek the advice of his veterinarian. He, in turn, will seek advice from other sources, such as the state diagnostic laboratory, in difficult cases.

With the cooperation of all concerned, the increasing problem of parasitism can be met with some degree of success at present and with far more success in the near future.