

# WORMS OF SHEEP

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## INTRODUCTION:

It is often not realised that under natural conditions many living organisms have within them other living forms which do not exert any markedly bad effect upon their "host," as the larger organism is called. In other words, host and parasite are living in harmony. It is only when the balance of nature which has evolved over great stretches of time becomes upset by man's desire to increase production of certain types of animals that there may be a situation in which the parasite multiplies at the expense of the host animal. It is precisely this that has occurred with our common grazing animals under the intensive stocking which improved pastures and the use of special feed crops have permitted. In other words, the more intensive animal production has become through heavy stocking of specialised breeds on improved pastures the more frequent and serious has become parasitic disease, until now it is one of the major causes of loss in the animal industry. It is well to remember, moreover, that this loss is often continuous and unnoticed because, apart from death, there may be a serious reduction in growth and development, with a general lowering of production and increased susceptibility to other diseases.

If, then, parasitism is a natural condition, complete eradication is not likely to prove a practical end. What has to be aimed at is the restoration of equilibrium between an animal and its natural parasites. This can rarely be done by the use of drugs alone; of equal importance is the use of management methods which aim at reducing the amount of reinfestation and maintaining the natural resistance of the sheep.

## LIFE CYCLE OF THE COMMON SHEEP WORMS:

The life history of a typical worm parasite of the sheep is as follows: The adult males and females live in the stomach and intestine. The female lays eggs in such enormous numbers that heavily infested sheep may pass in their droppings as many as one to two million eggs per day. Under favourable conditions of warmth and moisture minute larvae hatch from these eggs in about 24 hours. After passing through two non-infective stages on the ground, the larvae reach the third or infective stage in about seven days. Sheep become infected by the larvae being swallowed with food. This process is helped by the tendency of the third stage infective larvae to migrate upwards towards the light during the day. They do this by climbing clover and grass leaves whenever there is sufficient moisture to cover them. In the gut of the sheep the larvae grow into adult worms, the females of which reach sexual maturity and commence egg production about three weeks after infection occurred.

## PARASITIC, OR WORM DISEASE:

This is mainly a disease of young sheep, which occurs most commonly just before and after weaning. Nevertheless it may develop in sheep of any age whenever there is a lowering of natural resistance or when they are exposed to a very high rate of infestation.

There are in all about eighteen different species of worm parasites which can affect sheep but some are much more common and important than others. In New Zealand we find that only three of them are of first-rate importance and these will be briefly described. It is important to remember, however, that wherever parasitic

disease is common, there is likely to be large numbers of several species of worms present in sheep but with one of the three types predominating:

### 1. The Large Stomach Worm (*Haemonchus contortus*).

This worm occurs in the fourth stomach. It is about an inch long and the curious red and white spiral markings of the female have given it the name of "Barber's Pole" worm. By active blood sucking it causes a serious anaemia which is recognisable by a paleness of the skin and membranes of the mouth and eyes and a tendency to a dropsical swelling under the jaw. It does not induce scouring and about a thousand worms are necessary to develop severe symptoms. Fortunately, the distribution of this worm is restricted to areas of high summer rainfall. Thus, in Canterbury, it is only found in small areas near the foothills.

### 2. The Medium Stomach Worm (*Ostertagia* spp).

These are fine brownish worms about half an inch in length, and are most numerous around the opening of the fourth stomach into the intestine. It is necessary to have numbers of 10,000 or more before sheep are likely to die.

### 3. The Small Intestinal Worm (*Trichostrongylus* spp).

These worms are both the smallest and the most dangerous ones which infest sheep in this country. They are mainly found in the first 20ft. of the small intestine although one species will live in the fourth stomach. They are only about an eighth to a quarter of an inch long and even large numbers may not be seen by an untrained observer unless the lining of the intestine is scraped and placed in water in a glass dish, which should then be held over a dark background. Their presence in numbers of 20,000 and over causes much irritation of the lining of the intestine and so sheep develop a persistent scour. This means that the absorption of food is interfered with and the sheep will lose condition, sometimes very rapidly, and show a desire to drink much water.

### GENERAL SYMPTOMS OF WORM INFESTATION:

The symptoms vary according to

the type of worm which is most numerous but they usually commence with a general unthriftiness. Loss of condition soon occurs; sometimes there is scouring, coughing, a general dullness and lack of appetite. The wool becomes harsh in appearance and there may be a desire to drink much water. If such an animal is examined after death it is found to be thin and wasted but no other abnormalities are likely to be seen apart from the presence of the worms in the gut. It is desirable, before definitely attributing the animal's death to parasitic disease, to arrive at a rough estimate of the number of worms present. This can be done by placing the contents of the stomach and intestines into separate jars and making the contents up to a known volume. After thorough mixing, a small fraction, say 1/200th, is taken out and the worms in it counted. This number is then multiplied by 200 to give the total worm count.

### TREATMENT:

There are two aspects of the treatment of worms in sheep which are equally important:

1. The use of drugs.
2. Management of sheep.

1. DRUGS. Although the large stomach worm can be effectively treated by a number of drugs, of which plain bluestone solution is one, the other two dangerous worms are much more resistant. Today there is available a drug called **phenothiazine** which is effective in removing the great majority of the worms in sheep.

**Phenothiazine:** This material is a fine, greenish-yellow powder which does not dissolve in water. It is marketed mixed with small quantities of material which help to wet it and to keep it in suspension in water. It is possible that certain new mixtures may obviate stirring. Phenothiazine is dearer than the drugs previously used, but it is so much more efficient, especially against the dangerous small intestinal worm, that it has practically supplanted the older mixtures like bluestone and nicotine as the standard worm drench.

**Dose Rates:** Full instructions are given on the containers in which the drug is sold, but it is important to give full dose rates.

Lambs: before weaning 12½ to 15

gms. (up to  $\frac{1}{2}$ oz) of the powder.

Lambs: **after weaning** 25 to 30 gms. (two-thirds to one oz.).

Ewes: 1oz.

It is seldom necessary to drench ewes before lambing, and it is wise not to do it within a fortnight of lambing. In addition to keeping the drench stirred, it is advisable occasionally to wash the drenching gun in water to remove any phenothiazine which may be collecting in the barrel.

It is important to remember that phenothiazine causes a red or brown stain in wool, so care must be taken not to spread it round the sheep's mouth during drenching, nor to keep sheep in yards for long after they have been drenched.

#### **Bluestone and Nicotine Sulphate.**

Where the "barber's pole" worm is the main one involved, or if phenothiazine cannot be obtained, the farmer may wish to use this mixture. A 2% solution is made by dissolving 1 lb. of bluestone in 5 gallons of water and adding 16 fl. oz. of 40% commercial nicotine sulphate ("Black-leaf 40").

#### **Dose:**

Lambs **before weaning**  $\frac{1}{2}$ oz.

Lambs **after weaning**  $\frac{1}{2}$  to 1oz.

Hoggets 1oz.

Adults  $1\frac{1}{2}$  to 2oz.

This solution must be made in enamel, glass, wooden or earthenware vessels. With lambs in very weak condition the dose rate should be reduced to the next lowest age group.

**Drenching.** When administering a drench, the sheep should be held securely in the standing position with the head almost parallel to the ground, and any tendency to throw the head back should be checked since this increases greatly the chances of the fluid entering the windpipe. The sheep should be handled carefully, the drench administered slowly, making certain that the animal gets the full dose. When drenching guns are used the nozzle should be directed carefully towards the back of the mouth and the plunger depressed slowly, otherwise a proportion of the drug will be squirted directly into the windpipe. After careful administration, there is no coughing. Contrary to an old belief, it is not necessary to fast the animals before treatment.

Recent work over the past 8 years in Canterbury has shown how necessary it is to drench lambs before weaning in a year when the late spring is both **wet and warm.**

It is also necessary to repeat drenching at three-weekly intervals in the occasional bad years. But above all, it is necessary to remember that drenching alone cannot control worms.

#### **2. MANAGEMENT:**

There must be kept in mind certain facts connected with the life cycle of the parasite. These facts are:

1. Enormous numbers of eggs pass in the droppings of infested sheep. This brings about a rapid contamination when pastures are heavily stocked.
2. The ability of the embryonated eggs and infective larvae to withstand unfavourable conditions so that some of them may remain dormant for periods of over a year.
3. On the other hand, the early stage eggs and first and second stage larvae are readily destroyed, particularly by the drying effect of wind and sunlight.
4. That development from egg to infective larvae may take only a week under favourable conditions and that greater numbers will migrate up the leaves of clovers and grass when the weather is damp and warm.
5. That three weeks is the period from the sheep eating infective larvae until eggs from the adult worm appear in the droppings.
6. That when the resistance of the sheep is kept high by good feeding large numbers of infective larvae fail to develop within the sheep.

This means that a farmer may do much to prevent trouble occurring from worm infestation by carrying out certain simple management practices.

- (a) Control grazing so that the pasture is neither overgrown and moist nor too short.
- (b) Practise rotational grazing with intervals no longer than five to seven days in one paddock.
- (c) Use cattle to remove rough coarse growth and many of the worms infective for sheep from pastures.
- (d) Drain and lime damp, low-lying areas.
- (e) Wean lambs on to clean young pastures or forage crops.
- (f) When feeding off such crops

as rape and turnips in breaks in wet seasons, do not allow sheep back on to the old breaks.

- (g) In severe outbreaks, draft off the tail end of the mob and feed them a complete dry feed ration in bare yards or in the woolshed.
- (h) Avoid overstocking.
- (i) Dose lambs at weaning and

before shifting them to new pastures.

- (j) To maintain natural resistance of sheep, it is necessary to supply a good nutritious ration at all times. This may mean providing dry feed such as good quality hay, which, in its turn, means teaching sheep to eat such feed at an early age.

Copies of this Bulletin may be obtained from the Secretary, Canterbury Chamber of Commerce, P.O. Box 187, Christchurch.