



## CONTROL OF CERTAIN PARASITIC WORMS IN SHEEP

### The Prevention and Control of Nodular Disease and Parasites of the Stomach and Intestines of Sheep by Phenothiazine Compound Tablet

**Phenothiazine\*** is a powerful vermicide or worm killer. Its usefulness in destroying worm parasites in the stomach and intestines of sheep has been determined in controlled experiments and extensive practical trials conducted by Canadian research workers who have combined this drug with certain other chemicals to produce a new compound phenothiazine tablet. With correct usage, at the right time and according to the instructions given in this circular, these tablets provide an efficient and satisfactory treatment for the control of nodular disease (or "pimply gut") and round worm infestations causing unthriftiness and poor health in sheep, and especially in young lambs.

#### Why the Treatment is Effective in Canada

Until now, treatment for internal parasites in sheep has taken the form of drenching or giving capsules during the summer months. Such treatments have been effective in preventing and curing stomach worm disease caused by the twisted-wire worm, but they have not acted as truly preventive measures. They have had no effect upon the nodular worm of Eastern Canada and have not been entirely satisfactory in the control of the worms which cause the autumn diarrhoea or scouring in all parts of the Dominion. Sheep farmers in Canada must control the following kinds of worms if losses from disease are to be prevented:

#### (a) *Nodular Disease*

This is caused by young worms picked up with the grass from contaminated pastures. The worms enter the walls of the sheep's intestine, where nodules or knots are formed. When present in great numbers these cause serious interference with health and may ruin many of the flocks of Eastern Canada.

The eggs and young worms on the contaminated pasture lands are destroyed by the long winter frost and weather conditions; but in the animal host, that is, in the intestines of the sheep, the nodular worms develop to maturity during

\*This word is pronounced *feen-o-thi-a-zeen*, with the accent on *thi*.



the winter months and begin laying the eggs which contaminate the pastures each spring. To prevent this recurrence and thereby protect the lambs from developing nodular disease, it is necessary to destroy the egg-laying worm in the adult sheep *before the animals reach the pasture in the spring*. Phenothiazine is the only drug which is known at present to be capable of effective use in destroying all or most of these worms.

### **(b) Stomach Worm Disease**

This occurs in mid-summer, chiefly in lambs that become infected with 1,000 or more twisted-wire worms. The young worms are picked up from the grass in the same way as are the nodular worms. Most, but probably not all, of the eggs and worms on the pasture are destroyed by the winter freezing. The winter or spring treatment for nodular worms will remove the adult stomach worms, but on farms where large flocks of sheep are kept, it may be necessary to drench the lambs at the beginning of July. The copper sulphate and nicotine sulphate drench, tablets of phenothiazine, or other effective treatments may be used for this purpose.

### **(c) Black Scours**

This trouble occurs in its most pronounced form among large flocks where the acreage of pasture is limited and when pastures become dry and are not nutritious. It is caused directly by many thousands of almost invisible worms in the intestine. Like the nodular and stomach worms these tiny parasites are picked up from the grass. Some of the eggs and young worms are able to survive through the winter months and consequently the pasture may be partially infected; hence on badly infected farms, the spring treatment with phenothiazine tablets is not entirely effective in preventing this disease.

As this parasite is important in many parts of the Dominion, it is necessary, in order to secure quicker and more effective control of black scours, to treat the lambs of all flocks which have been subject to autumn diarrhoea, in addition to treating the breeding animals in the spring. When treatment is needed in September the dose is the same as recommended in this circular.

### **(d) Other Worms**

The tablets here described are not effective against lungworms, tapeworms, and liver flukes. Fortunately, lungworms appear to cause disease only when other more serious troubles exist, and the treatment here recommended, together with good husbandry, makes sheep resistant to this infection. Tapeworms are commonly blamed for many ills, but research has shown that such ills are actually caused by other parasites, particularly stomach worms and "black scour" worms. The copper sulphate and nicotine sulphate drench, however, removes many tapeworms.

Liver flukes occur only in very small areas on the west coast and in Quebec and are of little importance to sheep in Canada. In these small areas special treatments can be recommended.

## **A New Efficient and Protective Treatment**

Phenothiazine tables are a most effective winter treatment for the control of stomach and intestinal worms in sheep. They may be given any time between the first of February and one month before lambing, or from 5 days after lambing to 24 hours before turning to pasture.

### **Instructions for Dosing**

Certain definite rules and procedures should be followed when giving this treatment.

Phenothiazine Tablets are available from the Canadian Co-operative Wool Growers, Limited, at Toronto, Ont., Weston, Ont., Lennorville, Que., and Regina, Sask. They are also obtainable through the affiliated Wool Growers' Associations at Kamloops, B.C.; Lethbridge, Calgary, Lacombe, Edmonton, Hanna and Vermilion, Alta.; Maple Creek, Sask. A carton of 100 Tablets - \$4.75 postpaid; or 50 Tablets \$2.50 postpaid. They are also obtainable through qualified veterinarians throughout Canada, and, in the Maritimes, through the Canadian Live Stock Co-operative, Moncton, N.B., and the Canadian Live Stock Marketing Board, Prince Edward Island.





### ***Winter or Spring Treatments***

1. Treat all adult animals including the ram.
2. The number of tablets to be given depends upon the weight of the sheep, as follows:
  - (a) Up to 100 lb. in weight, 3 compound tables ( $12\frac{1}{2}$  grams each).
  - (b) Over 100 lb. in weight, 4 compound tables ( $12\frac{1}{2}$  grams each).
3. Do not reduce the number of tablets recommended for Eastern Canada or any districts where nodular worm is prevalent.

### ***Summer and Autumn Treatments***

4. Flocks subject to diarrhoea or scouring in the autumn should be treated in September or at the first sign of diarrhoea in young animals.
  - (a) Grown animals, 3 compound tables ( $12\frac{1}{2}$  grams each).
  - (b) Lambs, 2 compound tables ( $12\frac{1}{2}$  grams each).
5. If phenothiazine is preferred to other drugs for stomach worms in summer, give 1 or 2 tablets.

### ***How to Administer the Treatment***

The treatment will be safely and efficiently given if a veterinarian is employed. Where the services of a veterinarian are not available, the following instructions should be closely followed.

1. Pen the sheep quietly and securely for treatment.
2. Sheep do not need to be fasted before or after dosing.
3. If treatment is given just prior to turning the flock to summer pasture, the flock should be held for at least 24 hours to give the drug a chance to act, after which there is no danger of contaminating the summer pasture.
4. The sheep should be held between the legs of an assistant in such a way that the neck, not the shoulders, is between the knees. Avoid slippery floors, and place the hind quarters in a corner or against a wall. The main object is to prevent the animal from sitting down, from moving the body from side to side, or from swinging its head sideways.
5. To hold the mouth open, use a mouth spreader with a spread of about  $2\frac{3}{8}$  inches to  $2\frac{1}{2}$  inches. Endeavour to administer the tablet when the animal is not struggling violently.
6. The person giving the tablet opens the animal's mouth and inserts the mouth spreader so that the tongue is held forward underneath the lower bar of the spreader. Holding the tablet between the thumb and the first two fingers, the tablet is then brought well down to the root of the tongue by the fingers, when it is released and pushed over the "hump" of the tongue by the centre finger. To assist swallowing, the spreader is quickly taken out of the mouth and the assistant releases the pressure from the sides of the head and neck so that the animal can lower its head. The operation is repeated carefully for each tablet. Important—4 tables can be given to a sheep by an experienced doser in 30 seconds.
7. Some persons have developed a method which involves the use of a piece of smooth rubber hose into which the tablets fit. A wooden plunger is made to fit the hose so that it can be used to eject the tablet after the hose has been placed with the opening near the back of the animal's tongue. When this or a similar "balling-gun" is used the mouthspreader may not be necessary. The best method is the one which individuals find to be safe and easy for them to perform.

NOTE.—Careless or inexperienced dosing may result in the accidental introduction of a tablet into the larynx; in such a case, the sheep should be given a drench of water and should be shaken with its head down. Always keep handy a drenching bottle filled with water.



## No Danger from Over-Dosing

Phenothiazine is not a poisonous drug. There is little or no danger of over-dosing, as sheep are tolerant to much larger doses than are here recommended. The blood of the sheep has not been found to be adversely affected by phenothiazine; in fact the cells and haemoglobin often show an appreciable increase after treatment. This beneficial effect is probably due to the quick expulsion of blood-sucking parasites that were removing blood from the sheep's body.

Although phenothiazine by itself is inclined to cause constipation, this tendency has been corrected in the compound tablets by the inclusion of a corrective ingredient in sufficient amounts to give the tablets a slightly laxative effect.

Pregnant ewes and those nursing young lambs have not shown any harmful effects from the treatment, either in the case of ewes or of lambs. As a precautionary measure, however, it is recommended that pregnant ewes should not be treated with the tablets any closer than one month before the lambing period. It is also recommended that treatment be deferred for at least 4 or 5 days after lambing.

## Discoloration of Wool

The urine of treated animals contains large amounts of a red stain for 4 days after dosing. In the case of ewes that are not shorn, if precautions are not taken a part of the fleece may be permanently stained. The flock should be kept in a well-bedded pen or yard. Avoid bare floors or yards with a heavy clay or otherwise impervious surface. If it can be arranged to have the flock shorn and then treated 24 hours before being turned to summer pasture, danger of wool stains will be avoided.

Experiences in 1941 have indicated that there may be increased danger of staining wool in the autumn treatments. When grass is sparse and when the animals are inclined to lie down on bare surfaces of clay, etc., in small areas, it may be safer to enclose them in a well-bedded yard or pen for three days after treatment.

NOTE.—The young lambs are likely to become stained with urine in various degrees, depending upon how they nurse. Stains on lambs are not serious, as they will grow out and will not be noticeable by midsummer.

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