Proceedings of U.S. Sheep Research Programs

American Sheep Industry Association Convention

January 21-24, 2009
San Diego, Calif.
Finally! An Effective Replacement for Ectrin® WDL for Sheep Ked Control

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Background
The sheep ked, *Melophagus ovinus*, is probably the most serious insect pest affecting sheep in the United States. This blood feeding insect pest causes: reduced weight gains; reduced production of fleece; reduction in quality of fleece; defective pelts; and back loss.

Of particular concern is the damage to pelts of market lambs. Feeding by the sheep ked is responsible for a condition in the pelt known as “cockle.” The cockle defect is a nodule or deposition of dense fibrous material in the hide resulting from an allergic reaction to the salivary secretions of the sheep ked. This blemish cannot be softened; the nodules will not accept a dye leading to an unevenly dyed pelt; and the hide cannot be sueded to mask the defect. The result is an inferior leather product, unacceptable to the garment industry, which results in significant loss of income to the producer.

In 1983, Dr. Jack Lloyd, in cooperation with Fermenta Animal Health, demonstrated that the insecticide, Ectrin® WDL eliminated the sheep ked from flocks in Wyoming. Although treated flocks remained ked free, most sheep producers treated again in the spring following shearing because the treatment was so inexpensive. With the cooperation of the Wyoming Dept. of Agriculture, a Wyoming state label was secured for treatment of sheep with Ectrin® WDL (= water dispersible liquid). The following year neighboring Rocky Mountain States applied for state labels, and a year afterward, Fermenta Animal Health developed a national label.

Unfortunately, Ectrin® WDL is no longer available because the active ingredient, fenvalerate, is no longer licensed in the United States. Other commercial insecticide formulations have not been as efficacious as Ectrin® WDL, and flocks have become heavily infested once more.

In 2006, Dr. John Riner, who was with Fermenta Animal Health when Ectrin® WDL was developed for sheep ked control, expressed his belief that Ectrin® WDL was efficacious because it was a water base formulation, and that the active ingredient fenvalerate, was no more effective against sheep ked than other commercially available pyrethroid insecticides. Dr. Riner, who is now with KMG Company, subsequently provided us with a water base formulation of the pyrethroid insecticide permethrin, Permethrin® WS (= water soluble).

In addition to the Permethrin® WS, the PYthon® ear tag, which was efficacious in earlier studies with biting gnats and mosquitoes, was evaluated. Although Lloyd and co-workers have evaluated numerous cattle insecticide ear tags for sheep ked control, none had provided the desired degree of efficacy.
**Purpose Statement**

The objective of the study was to determine whether Permectrin® WS and PYthon® ear tags eliminated sheep ked from treated sheep. Sheep were examined by whole body count prior to treatment, held in isolation, and examined again 6 weeks following treatment. The six week period represents approximately two life cycles of the sheep ked.

**Summary of findings**

Our standard method of evaluating control of sheep ked was employed in the study. Two groups of ked-infested sheep were located in Wyoming and Montana. The sheep were assigned to four pens of 7 animals in Wyoming and 6 animals in Montana. The four pens received (1) one PYthon® ear tag each, (2) Permectrin® WS as a pour-on (a single line down the backline), (3) Permectrin® WS as a low volume (10 cc/animal) spray applied to the underside of the animal (according to the Ectrin® WDL label), and (4) no treatment (control).

The PYthon® ear tag and Permectrin® WS low volume spray eliminated sheep keds from treated sheep at both locations. The results with the pour-on were variable, we believe because there was run-off of chemical with this mode of application. The same problem had occurred earlier with Ectrin® WDL. We believe that the insecticide could be applied to the back as a fine spray to prevent runoff. Complete coverage of the body is unnecessary as the active ingredient is very lipophilic and moves through the fleece and over the skin.

**Conclusions**

Both the PYthon® ear tag and Permectrin® WS low volume spray effectively controlled sheep ked, and again sheep producers will be able to control the sheep ked in their flocks.

**Applications**

The PYthon® ear tag is commercially available and approved for biting gnat control on sheep in both Wyoming and Montana. Sheep ked will easily be added to the list of targeted pests on the label. Other states, if they desire, should be able to easily develop a state label. Permectrin® WS is currently labeled for sheep ked control in the United States, although it is not currently being marketed. Further cooperation with KMG should bring this product to market, and make it available to sheep producers.