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G93-1180 Horn Fly Control on Cattle

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This NebGuide identifies ways to control horn flies on cattle.

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Economics

The horn fly is a blood-feeder that feeds 20 to 30 times per day. A population of several thousand horn flies may be present on one animal. When large numbers of these flies are on cattle, the cattle bunch and expend considerable effort fighting the flies. They will often stand in water or seek shade trying to get relief from the flies. When they do this, they fail to graze normally.

Studies in the United States and Canada show that during the grazing season yearling cattle free from horn flies gain from 15 to 50 pounds more than heavily infested animals. Nebraska studies and others show a 10- to 15-pound advantage in calf weaning weights where cows have had good horn fly control. Milk production of dairy cattle pastured during the day may be decreased as much as 20 percent by horn flies. However, horn flies have the most impact on pasture and range cattle.

Description

The horn fly is about half the size of the stable fly or house fly. It is about the same color and resembles the stable fly, in that it has piercing, sucking mouthparts.

Horn flies stay on cattle most of the time, crawling and feeding among the hairs on the back, sides or belly. The eggs are very small and white or brown. The larvae are small, typical fly maggots. The pupae are small brown seed-like cases.

Life History

In Nebraska, horn flies overwinter as pupae in or beneath cattle droppings. Adults emerge in late March, April or May and begin their life cycle. If cattle are not present in pastures when horn flies emerge, they

will move to feedlots or to dairy cattle in search of a blood meal. They may even infest horses, but they do not establish a breeding population in these cases. As soon as cattle are available in pastures, the horn flies will move to them. The female deposits as many as 400 to 500 eggs in fresh cattle droppings during her lifetime. The larvae complete development in the manure and then may move below the droppings into the soil to pupate. The complete life cycle, egg to adult, can be completed in 10 to 20 days during hot weather. This rapid life cycle and the number of eggs explains the rapid build-up of fly numbers in the early summer. Horn fly numbers generally reach a peak in early summer and then decline during hot, dry weather because the manure dries before many of the flies complete their larval development. A second peak usually occurs in late August and September as temperatures cool and moisture increases.

Control

Chemical control for horn flies include insecticide-impregnated ear tags, self-treatment dust bags and oilers, animal sprays, pour-ons or spot-ons and feed additives. For a listing of specific insecticides recommended for horn fly control, refer to *EC 92-1550, Nebraska Management Guide for Arthropod Pests of Livestock and Horses*.

Ear tags contain insecticide in the matrix of the tag. As the tag moves, the insecticide "blooms" to the surface of the tag where it comes in contact with the hair of the cattle.

The first tags contained Rabon dust which provided control for only seven to eight weeks, and the tag was too heavy causing necrosis at the attachment site in the ear. The Rabon tags were replaced with pyrethroid insecticides. These tags were lighter and the products lasted for several months making them highly effective (99.9 percent control). However, within two years, horn fly populations started to develop resistance to the pyrethroids and, within another two years, the resistance spread from Florida to Canada. In retrospect, resistance probably could have been anticipated because the tags were used on most of the beef cattle in the U.S.

The pyrethroids were highly effective and had long residual. During its use a small percentage of the horn fly population were resistant to pyrethroid insecticides. These resistant flies could mate only with other resistant flies because all susceptible flies were killed by the insecticide. This caused resistance to spread from Florida to Canada within three years.

The next action in the ear tag saga was the development of phosphate insecticide ear tags. Insecticides that had never been used on livestock were selected. This procedure reduced the chance of resistance already being present in the horn fly populations. While pyrethroids had not been used on livestock, horn flies had cross resistance between pyrethroids and the previously, widely used chlorinated hydrocarbons such as DDT and BHC.

The phosphate insecticides are less toxic, do not have as long a residual, do not migrate over the hair coat as much as the pyrethroids and, consequently, are less effective. These factors, combined with good management practices, should delay or inhibit the development of resistance.

Our studies indicate that horn fly numbers of under 200 per cow do not reduce calf weaning weights. Canadian studies indicate the same thing for yearling steers. The phosphate insecticide ear tags generally keep horn fly populations below 200, at least until late in the season.

Horn fly insecticide resistance management practices include:

1. Not tagging cattle until horn flies are present.

2. Adding a supplement treatment method in mid-August (dust bags, oilers, sprays or pour-ons).
3. Not treating animals in a weight gain mode (replacement heifers).
4. Removing the tags in the fall after a frost.
5. Rotating the insecticides in the tags yearly.

In addition to phosphate insecticides, new "third generation pyrethroids" have been developed. These tags can be rotated with phosphate tags. However, if they are used more than two successive years, horn flies will develop resistance to them.

Place dust bags and oilers where cattle are forced to use them to obtain feed or water, or in loafing areas where they spend considerable time. Since bulls and older cows tend to dominate self-treatment devices, provide enough oilers and dust bags to treat all of the cattle.

Although sprays, pour-ons and spot-ons will control flies for short periods, the stress to cattle in using these methods probably offsets the benefits of the fly control. To keep the horn fly population below the economic threshold would require treatment at least every three weeks. However, the following control methods can be used in mid-August to supplement ear tags. If systemic insecticides are used, they will provide grub control and reduce lice numbers as well.

Small sprayers and dusters powered electrically from a vehicle battery are available. If the cattle are not wild and are treated often enough, these can provide good horn fly control.

Feed additives are insecticides that pass through the animal's digestive system and destroy developing fly maggots in the manure. While feed additives generally destroy 80 to 90 percent of the developing fly larvae, there may not be a corresponding reduction of flies on the animal. Newly emerged flies migrate to the closest cattle. An untreated herd may provide enough flies to keep fly populations above the economic threshold for both treated and untreated cattle.

Boluses that contain insecticides also are available. These are retained in the cow's reticulum and slowly erode, releasing insecticide into the digestive system. They do provide a constant insecticide release which the feed additives may not if some animals don't eat the feed or mineral containing the insecticide. Fly migration also may render these ineffective.

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