

The Horn Fly

David J. Boxler, Extension Educator – Livestock Entomology

Control and background of the horn fly are discussed here.

The horn fly, *Haematobia irritans* (L.), is considered one of the most important blood-sucking pests of pastured cattle, and can have a significant economic impact on animal performance.

The horn fly (*Figure 1*) is about 3/16-inch long, and is about half the size of a stable or house fly. The adults are dark grey in color, with two dark stripes on the thorax and a few spots on the top of the abdomen. At rest, the wings are held partially open, forming a v-shape. Horn flies remain on cattle most of the time. Both male and female flies feed on cattle by penetrating the animal's skin with a piercing, sucking mouthpart, ingesting a small amount of blood. During hot days, horn flies are usually found on the belly region of cattle out of direct sunlight (*Figure 2*).

A mated female can lay as many as 400-500 eggs in fresh cattle manure during her lifetime. Eggs hatch within one day, with the larvae feeding until maturity (3-5 days) in the manure, before they migrate below the manure pat into the soil to pupate. The complete egg to adult life cycle can be completed in 10 to 20 days depending on weather conditions. Upon emergence, adult flies seek a host and begin feeding. If no host is found, newly emerged horn flies can travel several miles searching for a host. In some cases, horses can serve as a host as well as feedlot or dairy cattle as the flies search for a blood meal. The rapid life cycle of the horn fly explains the quick buildup of fly numbers in early summer. In Nebraska, horn fly numbers generally peak in early summer and often decline during later hot and dry conditions due to the drying of the manure pat before many of the fly larvae complete their development. A second population peak is often observed in late August or early September as weather conditions moderate. Starting in late August, a portion of the population goes into diapause, a period of suspended development, the overwintering phase of the fly's life cycle. In Nebraska, horn flies overwinter as pupae in or beneath cattle manure pats. Adults will emerge in April or May and begin their life cycle.



Figure 1. Adult horn flies.

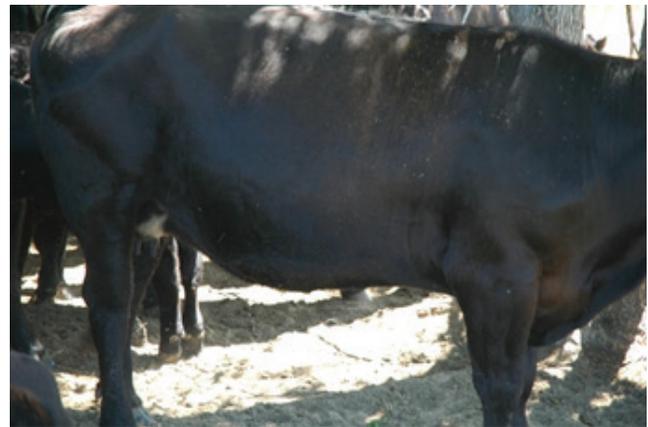


Figure 2. Horn flies resting on the belly of a cow.

Economic Impact

Economic losses associated with horn flies are estimated at more than \$800 million annually in the United States. A population of several thousand horn flies is not uncommon. High fly populations can cause considerable animal irritation, blood loss, reduced grazing efficiency, reduced weight gains and a decline in milk production. Horn flies are inclined to infest larger animals (bulls, cows, steers, heifers) initially, but will infest calves late in the summer or when fly populations on cows increase significantly. Cattle with 200 (the economic

injury level) or more horn flies on them will often bunch together, stand in water or within cedar trees to get relief from flies. In situations where fly irritation is high, cattle will expend considerable energy fighting flies which reduces weight gain. Numerous studies have been conducted in the U.S. and Canada during the last forty years assessing the economic effects of horn fly infestations on cows and calf weaning weights. Nebraska studies demonstrated calf weaning weights were 10 to 20 pounds higher when horn flies were controlled on cows. Other studies utilizing stocker cattle and replacement heifers demonstrated that treated animals had an 18% weight gain advantage over untreated animals. In addition, horn flies have also been implicated in the spread of summer mastitis.

Horn Fly Management

Dust bags, back rubbers (oilers), insecticidal ear tags, sprays, pour-ons and oral larvicides (feed-throughs) can be effective treatment options for horn flies on pastured cattle. When designing a horn fly control program, several factors need to be considered such as; efficacy, cost convenience and herd health management practices.

Dust Bags — Dust bags contain insecticide dust that filters through the bottom of the bag when cattle contact the bag. Forced-use dust bags can be a very effective and an economical method of reducing horn fly numbers. This fly control technique requires fencing around a water tank or a mineral feeder and suspending dust bags at the entrance/exit gate. Dust bags can be used in a free-choice situation by placing bags in loafing areas. Dust bags placed in a forced-use situation will usually reduce horn fly numbers by 80-90 percent through the season if properly maintained. Dust bags in a free-choice design will provide 25-50 percent less control than a forced-use dust bag design.

Back Rubbers — Back rubbers are used in much the same way as dust bags. A small amount of oil or insecticide is applied to the animal as it rubs under the device. When charging a back rubber, always use a quality grade mineral oil or fuel oil (not motor oil) to mix with the insecticide to avoid irritation. Back rubbers and oilers are most effective when used in a forced-use design.

Insecticide Ear Tags — Insecticide ear tags contain one or more insecticides inserted in the plastic matrix of the tag. As the tag moves, the insecticide slowly releases small amounts of insecticide over a period of time which moves through the hair of the animal.

Insecticide ear tags were first marketed in the early 1980s, and were very effective against horn flies, providing season-long control. Unfortunately, within several years, horn fly populations across the U.S. began to develop resistance to these insecticide products.

Currently, insecticide-impregnated ear tags utilize four chemical classes: synthetic pyrethroid, organophosphate, macrocyclic lactone, and mixtures of synthetic pyrethroid and organophosphate insecticides. Several ear tags also contain piperonyl butoxide, a synergist, which increases insecticide toxicity.

If insecticide ear tags will be utilized, several practices should be used:

1. Apply tags during the last week of May, the first week in June, or when horn fly numbers are nearing the economic injury level (EIL) of 200 flies /animal.
2. Tag all adult animals in herd with recommended label rate.
3. Rotate insecticide classes. Do not use the same insecticide class year after year. Insecticide ear tag class rotation plan: Year 1 = Synthetic pyrethroid, Year 2 = Organophosphate, Year 3 = Macrocyclic lactone, Year 4 = Synthetic pyrethroid & Organophosphate.
4. Remove all insecticide ear tags when they are no longer providing effective fly control, or in the fall after a frost.

Pour-ons — Pour-on insecticides are all ready-to-use formulations (RTU) applied along the back line of cattle at a dose based on body weight. As a rule, they provide several weeks of fly reduction, so they must be re-applied throughout the fly season.

Animal Sprays — Sprays can be an effective method in controlling horn fly populations. High pressure sprays can be used to treat cattle thoroughly, but it is important to provide complete coverage of each animal. One drawback to sprays is the increased handling and corralling of cattle. To maintain horn fly numbers below the economic injury level (EIL) re-treatment will be required at least every two-three weeks. The increased handling and stress of the cattle may offset the benefits of this treatment method.

Animal sprays can also be delivered using a mist blower sprayer or a low pressure sprayer mounted on an All Terrain Vehicle (ATV). Using these delivery systems, the applicator drives to where the cattle are located in the pasture and makes the application. Application is made usually by either encircling the herd or by driving through the herd (*Figure 3*). Mist blower or low pressure spray applications typically reduce animal stress.



Figure 3. Applying a horn fly control product with a mist blower sprayer.

Oral larvicides (feed additives) and boluses—Oral larvicides (feed additives) are insecticides which are incorporated into mineral blocks, tubs, or loose mineral. The insecticide is passed through the animal's digestive system into the manure where it prevents horn fly larvae from developing into adults. To be effective, cattle must consume a label specified amount on a daily basis. Adult horn fly numbers may be unaffected if cattle are not consuming the required label rate. Fly numbers on treated cattle may remain above the economic injury level if sufficient numbers of flies migrate from nearby untreated herds.

For a complete list of Nebraska horn fly control recommendations, please refer to Extension Circular EC1550, Nebraska Management Guide for Insect Pests of Livestock and Horses.

This publication has been peer reviewed.

Disclaimer

Reference to commercial products or trade names is made with the understanding that no discrimination is intended of those not mentioned and no endorsement by University of Nebraska–Lincoln Extension is implied for those mentioned.

UNL Extension publications are available online at <http://extension.unl.edu/publications>.

**Index: Insects and Pests
Livestock**

Issued February 2015

Extension is a Division of the Institute of Agriculture and Natural Resources at the University of Nebraska–Lincoln cooperating with the Counties and the United States Department of Agriculture.

University of Nebraska–Lincoln Extension educational programs abide with the nondiscrimination policies of the University of Nebraska–Lincoln and the United States Department of Agriculture.

© 2015, The Board of Regents of the University of Nebraska on behalf of the University of Nebraska–Lincoln Extension. All rights reserved.