

The Horn Fly

A small fly with a big impact!

By BILL CLYMER

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The horn fly (*Haematobia irritans*) is one of the most important and economically damaging pests of range cattle in the United States, as well as many other livestock producing countries. In Australia, the horn fly is known as the “Buffalo Fly” and is a major problem for their livestock producers.

The horn fly is a **blood feeder**
and spends almost its entire **adult life**
on the **host**.

The cost of controlling the horn fly plus the damage it causes add up to more than \$800 million dollars annually to the producer, according to industry estimates.

This pest, which affects range livestock during the warmer months of the year, can affect weight gains and milk production. Heavy horn fly populations may reduce calf gains by a quarter of a pound per day.

Most researchers consider populations of 150 to 200 horn flies per adult animal an economic infestation.

A return of \$15-plus per calf

is often generated when heavy populations are effectively controlled on the cow.

Insecticide ear tags first came to the market place approximately 25 years ago and many producers thought their horn fly problems were over. Unfortunately, the flies developed resistance to many of the products used in the tags and control often became erratic.

Due to resistance issues, it is very important for the producer to use an integrated pest management program for control of this important blood-sucking fly.

How they live

The horn fly is a blood feeder and spends almost its entire adult life on the host.

Horn flies belong to the same family (Diptera) as do the house fly, stable fly, and mosquito and are normally found on livestock in a pasture situation.

They are about half the size of a house fly and the larval (immature) stage requires an undisturbed fecal pat for development.

Both the male and female take a blood meal up to 40 times per day, with cattle as the pre-

ferred host, although they are also often found on horses, sheep, goats and other animals.

The only time they leave the host is to fly down to a new manure pat and lay eggs or fly up "in a cloud" when disturbed. The flies are normally found on the back of the host, but move around to the sides and belly during the hotter or cooler parts of the day. It is not uncommon to have several thousand horn flies on the bulls and several hundred on the cows.

In the southern states, there are generally two peaks of fly numbers (spring and fall) while in the northern states and at higher elevations only one peak may occur.

Manure is only attractive to the female fly for five to 10 minutes after defecation, with the eggs hatching in one to two days.

After the small larvae feed on the feces for three to five days, the larvae migrate to the edge of the manure pat and start the process of changing from larvae to an adult (pupation).

The adults emerge in another week and start the process all over again. Under ideal conditions, the life cycle from egg to egg laying adult might be 10 to 14 days. During the cooler seasons, the flies may live for several weeks with the entire life cycle slowed down considerably.

Overcome horn fly resistance

Resistance to insecticides may occur when an insect is exposed to a sub-lethal dose of an insecticide, such as what happens when an ear tag is left on the animal too long.

These tags may kill susceptible flies with the resistant flies not being affected. The next generation is then primarily resistant flies.

Sound rotational programs of the pesticides used are very important if resistance is a factor. It is important to determine the actual chemical that is in the prod-

uct used. Just changing the brand or the color may not mean that the active ingredient is different.

Another method used to combat the resistance issue is to treat with a newer class of chemical such as the macrocyclic lactones. They are generally effective in reducing the pyrethroid resistant gene pool.

There are several other chemicals including second and third generation pyrethroids that are also still effective. Please consult with your local veterinarian to determine the correct product and frequency of application.

Integrated control plan

An integrated pest management program approach to fly control is important. The more types of control that can be used, the more effective the program will be.

Using natural predators and parasites, using products that will effectively kill resistant flies and properly managing ear tags or self-treatment devices (such as dust bags and back rubbers) will help keep resistance down and economically draining fly populations under control.

Research has shown that the cost of treatment is not economically justified until adult animals have an average of 200 flies per animal. It is important to delay treatment until this economic threshold has been reached. The more insecticide applications that are made, the faster resistance becomes an issue.

There are numerous natural predators and parasites such as parasitic wasps, mites, nematodes, dung inhabiting beetles, etc., that help decrease horn fly larval populations.

In Australia, and in many parts of the United States, the dung beetle is responsible for a marked reduction of horn flies with producers depending on dung beetles for horn fly control. In areas with high dung beetle populations,

they bury the manure before the horn fly larvae can develop. It is important to use products such as Cydectin® that are not damaging to any of the life stages of the dung beetles.

Producers are urged to determine if the pesticides used are detrimental to the beneficial insects prior to their use. If they are, they should be used during periods of low dung beetle activity.

Over the last few years, scientists have been able to determine that certain animals within certain breeds may be more resistant to horn flies than others in the herd. This is an inherited trait and producers may soon be able to add fly resistance to their breeding program.

The horn fly, due to its reluctance to leave the host, can be very effectively controlled in the adult stage by direct treatment of cattle with a number of approved insecticides. Spraying, dipping, dusting and pour-on treatments as well as self-treatment devices such as dust bags and back rubbers are frequently used for control. These methods are effective but generally do not provide control for more than two to five weeks, depending on the products used and the level of fly resistance to specific compounds.

In areas where resistance has not developed to insecticides, ear tags may still provide several weeks control, however a rotational program with other different active ingredients is still recommended. Producers are urged to consult their local agricultural agents or veterinarians for additional information on horn fly control. ■

Editor's note: Dr. Bill Clymer is a parasitologist with Fort Dodge Animal Health and is based in Amarillo. He is a frequent contributor to articles on livestock parasites and beneficial insects.