

# IOWA BEEF CENTER

## FLY CONTROL IN RUMINANTS



**F**lies can negatively impact livestock performance in both grazing and confinement settings. Flies reduce growth performance, reduce milk production, and disrupt grazing behavior. In addition to affecting performance, flies are vectors for disease and can transmit several health issues to a cattle operation.

### Fly Identification

Several species of flies can infest a herd of grazing livestock. In order to implement the best fly control strategies, it is important to identify the most prevalent species.

### Horn Fly

Horn flies are one of the most economically harmful external parasites for grazing animals. These flies reduce weaning weights by 12 percent and decrease growth rates of stocker cattle by as much as 16 percent. While they look similar to the stable fly, horn flies are only half that size. Horn flies are blood feeders and spend most of their life on the host, targeting the back and shoulders of grazing animals. Females only leave the host to lay eggs in fresh manure pats and can lay 100-200 eggs in their short 10-14 day lifetime.



**Cow with horn flies**

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**Cow with face flies**

### Face Fly

As the name suggests, face flies congregate on the face of grazing livestock, mainly around the eyes, mouth, and nose. Face flies are similar in size to house flies and are twice the size of horn flies. Unlike horn flies, face flies are not blood feeders. Females feed on excretions from the eyes and nostrils, discharges from wounds, and fecal fluids. While face flies do not impact production parameters to the extent of biting flies, they disturb livestock grazing behavior and are the most prominent transmitter of pink eye. Additionally, they can damage the cornea and create potential entry points for other bacteria. While face flies do not impact livestock growth directly, pink eye infections facilitated by these pests can decrease weaning weights of young grazing stock due to decreased milk consumption.

### Stable Fly

Stable flies are another species of biting flies and are slightly smaller than house flies. Stable flies are generally associated with cattle in feedlots and dairies, but can also affect grazing cattle. Stable flies tend to congregate on the lower legs and belly of animals and are most prominent in shaded areas. They spend a small amount of time on livestock and instead tend to congregate around their breeding grounds, which typically consist of organic waste such as spoiled feed, compost piles, and wet straw or hay. As a blood feeding fly that moves from host to host, they can transmit diseases such as anaplasmosis and bovine leukosis.

### Horse Fly

Horse flies are another economically harmful biting fly. Although less numerous, horse flies can cause severe blood loss, alter grazing behavior, and create grazing inefficiencies. Most seriously, horse flies can transmit several diseases, including anaplasmosis and bovine leukosis.

### Bot Fly

Several species of bot flies are specific to certain species of grazing animals, including cattle, horses, and sheep. Bot flies do not bite or feed on the host; instead they deposit larvae on the body of the grazing animal that enter the host through the skin, mouth, or nose, and cause a number of problems, including respiratory issues, ulcerations and digestion inefficiencies, reduced weight gain, hide damage, and, in extreme cases, death.

### Biting Midges and Mosquitoes

Although gnats and mosquitoes are not considered major external parasites of cattle, they can transmit viral diseases such as blue tongue and epizootic hemorrhagic disease (EHD). Generally, they thrive in semiaquatic habitats. Gnats and mosquitoes spend the day in the shade and are most active at dusk.

### Pasture Control

#### Mechanical Control

Eradicating flies in grazing livestock is unrealistic, but several control methods can naturally reduce fly populations in pastures. Horn flies and face flies require intact fecal pats to deposit their eggs, so occasionally harrowing pastures and disrupting these breeding grounds can interrupt larval development and reduce adult fly populations. Disrupting fecal pats with intensive grazing can also reduce populations.

Dung beetles and other insect species can also assist in breaking up fecal pats. Certain fly species prefer to breed in organic piles such as spoiled feed and dirty, used bedding, so on-farm sanitation can reduce fly populations. Reducing feed waste and managing compost can also help manage flies.

### Fly Trap

A walk-through fly trap, also known as the Bruce walk-through trap, may be another non-chemical control method. This tunnel-like device brushes horn flies off livestock as they walk through. Flies are drawn into the double-walled sides where they are trapped and eventually die of starvation.

These traps, when used daily by livestock, remove 50-70 percent of horn fly populations. This trap is not effective on face flies or stable flies. Placement is key for walk-through traps; to be fully effective, livestock must walk through them on a daily basis. Locating walk-through traps in gates or near water is recommended.

Stable fly traps can be placed at multiple locations around livestock areas. Although more appropriate for barn and stable areas, they can be deployed in pasture areas and may be suitable for smaller operations. Stable fly traps attract flies with contrast from light and shadows and trap flies in a water reservoir. These traps need to be cleaned out and the water replenished regularly.

## Chemical Control

While pasture control can help manage fly populations, a well-rounded fly control program combines pasture and chemical control. Insecticide products are regulated by the Environmental Protection Agency (EPA) and extra label usage is not permitted. Consult a veterinarian for the best insecticide control product and program for your herd. As with any health protocol, read and follow label instructions.

## Sprays and Pour-Ons

Sprays and pour-ons are an effective method for controlling a large number of prevalent fly species in grazing livestock. This method requires treatment every 7-21 days throughout the fly season to maintain its effectiveness. If a pour-on controls both internal and external parasites, beware of resistance. Control of biting midges and mosquitos can be obtained by using an insecticide in a fogger or mister at dusk along vegetative areas.

## Back Rubbers and Dust Bags

Back rubbers and dust bags can be an effective and economical way to help control fly burdens on pastured livestock. However, for these methods to be effective, cattle must use them every day. Proper placement, such as in front of a food or water source, ensures daily use by livestock.

## Feed Additives

Feed additives, or oral larvicides, control larval development in manure and is usually available in a mineral mix. While this can be an effective fly control method, it requires more management compared with other methods to ensure a steady intake. If other cattle are nearby, fly migration may negate the effects of this product. Feed additives are only effective in fly species that use manure as a breeding medium.



**Back rubber in pasture**

## Tags

Fly tags that are impregnated with either a pyrethroid, organophosphate, or macrocyclic lactone can provide protection throughout fly season. Applying fly tags at the right time is key to successfully controlling flies. Current research suggests economic losses do not occur until numbers reach over 200 horn flies per animal. Therefore, it is recommended that tags should not be applied until this threshold is met. Most currently available fly tags offer protection for 12-15 weeks, but are most effective during the first 45-60 days following application. If fly tags are applied too early in the grazing season, they may not offer protection during peak fly season. Fly tags expose flies to low levels of insecticide over time. Therefore, they are most suited for flies that spend extensive amounts of time on cattle, such as horn flies. Horn flies are found predominantly on mature animals and control can be obtained by tagging adults or yearling animals. If attempting to control face flies to prevent pink eye in calves, they should be tagged in both ears. It is also recommended to alternate between pyrethroid tags, organophosphate tags, and macrocyclic lactone tags on a yearly basis, as well as remove tags at the end of the season to help manage resistance.

To assist with resistance management of insecticides, the Insecticide Resistance Action Committee (IRAC) has developed a classification system dividing commonly used pesticides based on their mode of action (MoA). This classification system provides a guide for selecting pesticides for use in an effective resistance management strategy and can be used as a reference for proper yearly



**Calves with fly tags**

rotation of products. The MoA system consists of a list of 30 classifications, including one for pesticides with an unknown MoA. Common pesticides used in cattle are included in this list, which can be accessed online: <http://www.irac-online.org/modes-of-action>.

## Fly Control in Feedlots

### Biological Control

Several fly control techniques for grazing livestock can easily be applied to livestock in feedlots. As in grazing settings, reduction of fly populations is the goal of an effective fly management program. In confined settings, such as feedlot and under-roof cow-calf facilities, sanitation is key. Effectively managing fly populations starts by removing fly breeding habitats. In a feed yard, typical breeding grounds generally consist of shaded, moist environments. These environments include anywhere spilled and spoiled feed and wet manure accumulate, typically in feed storage areas, around feeding aprons, beneath feed bunks, and under fences. Keeping feed storage and mixing areas clean, cleaning up spilled feed in and around the bunks, removing standing water, and managing manure can reduce fly populations. Other problem areas include manure storage areas and compost piles. Consider keeping these areas away from livestock to reduce fly numbers.

### Chemical Control

While the same chemical control strategies previously discussed also apply to feedlot livestock, the same issues also apply. Because feedlots are confined compared with grazing livestock, premise sprays may be more effective. Spraying windbreaks, adjacent vegetation and buildings, and other problem areas can help reduce fly burdens within the feedlot. Added bait stations in problem areas can also help reduce house fly burdens.

## Parasitic Wasps

While perhaps less common than other strategies, parasitic wasps can control fly numbers. Parasitic wasps reduce adult fly populations by inserting eggs into fly pupae and disrupting fly development. Introduce the right parasite species and manage the release rate for optimal results. Finding a reputable supplier and releasing wasps periodically throughout fly season can achieve the best outcomes.

## Summary

Flies decrease cattle productivity and can negatively impact a producer's bottom line. Sanitation and manure management in conjunction with chemical control can help control fly populations in pasture and confined settings. Several methods are available to control flies on livestock operations. As with any herd health program, fly control programs should be used under the direction of a veterinarian. For more information, contact an Iowa State University Extension and Outreach beef specialist (<https://www.extension.iastate.edu/ag/beef>).

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