

## Horn Fly & Stable Fly: Two Common Biting Flies on Cattle

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MANY INSECT SPECIES are pests of cattle. Most of the more widely recognized species are flies, which are generally classified into one of two groups, the biters and the non-biters. This summary focuses on two of the biting flies.



Figure 1. Horn flies residing on back of cow.

The horn fly and stable fly are the most common biting flies of beef cattle. Adults can be identified and separated from other insects and each other by basic physical, or morphological, features. Adults for both species are small ( $< \frac{1}{4}$  inch) and have wings that are longer than their abdomens. Adults typically are brown to black with gray stripes present on their back. Horn fly adults can be distinguished from stable flies by their slender appearance versus the much bulkier stable fly. However, the best method for distinguishing these two species is by their location on cattle. Horn flies aggregate on the backs and sides of the animal (Figure 1), while stable flies tend to be found on the legs of the animal (Figure 2).



Figure 2. Stable flies feeding on cow leg.

### **HORN FLY**

The horn fly, *Haematobia irritans irritans*, is a blood-feeder and is considered to have the greatest economic impact on cattle (Figures 1&3).

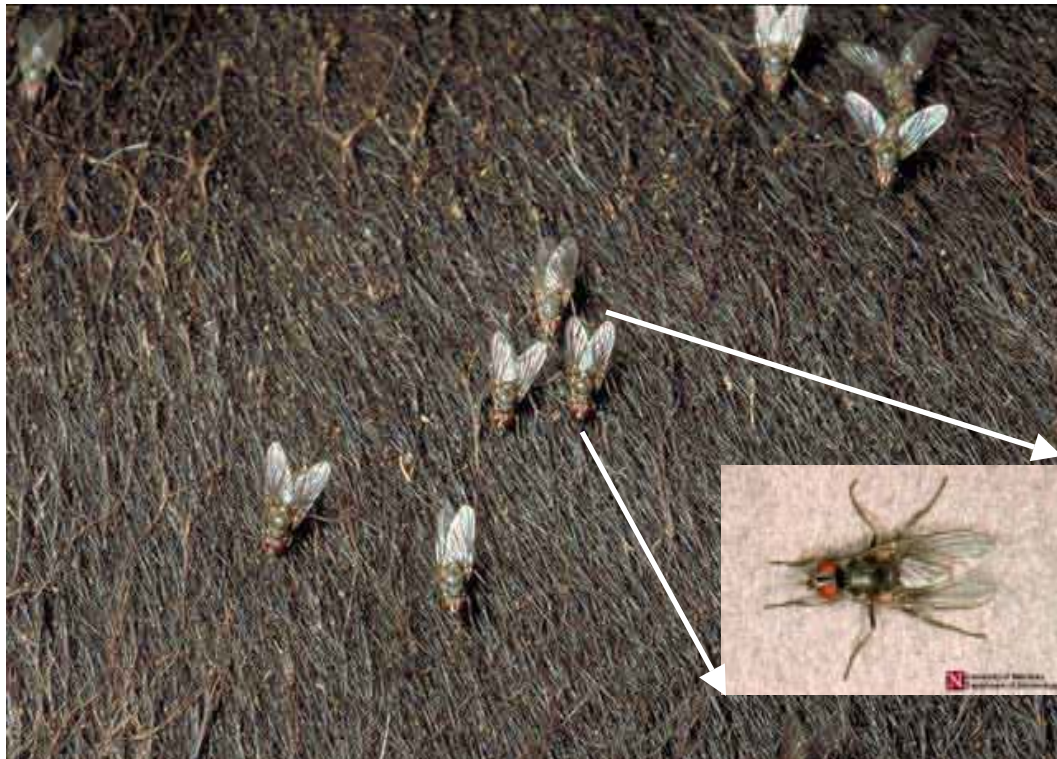


Figure 3. Adult horn flies on back of cow.

They affect the health of the animal and consequently its productivity. These flies are smaller than the house fly, *Musca domestica* and unlike the house fly they have piercing/sucking mouthparts. Both sexes live their adult lives (approximately one week) on the back and sides (depending on temperature) of a cow (Figure 1) where they will use their mouthparts to lacerate the animal's skin and feed on spilt blood. They lay their eggs in fresh cow pats with immature development to the adult stage taking approximately two weeks.

There are several methods for controlling or suppressing horn fly populations. However, treatments should not be administered unless the fly population has reached 100 flies/cow on average. Assessing a horn fly population can be accomplished by counting, with or without binoculars, the number of flies present on the backs, sides, and shoulders of 15 cows in a herd. A mean fly number of 100/cow or higher indicates it is time for treatment. If treatments are not initiated the fly population may increase to the economic injury level, which is the point at which productivity (i.e. weight gain) of the cow begins to decrease. For the horn fly this level is estimated at 200 flies/cow.

There are five rules that should be followed when using insecticides. First, do not use an insecticide until the fly population is at 100 flies/cow or higher. Second, if using ear tags, place one tag in each ear. Third, replace the tags after their life. Leaving ear tags in for longer than recommended can select for resistance at which point the insecticide will no longer be effective. Four, rotate chemicals from various classes to reduce the development of resistance. Five, and most importantly, follow the directions listed on the insecticide label!

Here are a few examples of insecticides and application procedures often encountered. Insecticidal ear tags containing a synthetic pyrethroid (permethrin, fenvalerate, flucythrinate, or cypermethrin), a combination of pyrethroid and organophosphate (cypermethrin and diazinon), an organophosphate (tetrachlorvinphos or diazinon), or ear tag tape (permethrin); ready-to-use pour-on (1% cyfluthrin, epinomectin, 1% and 5% permethrin); whole-body spray (0.5% carbaryl or 0.0125% permethrin); dust bag (1% coumaphos); backrubbers containing 2% malathion.

### STABLE FLY

The stable fly, *Stomoxys calcitrans*, is also a blood-feeding insect that attacks cattle (Figures 4).

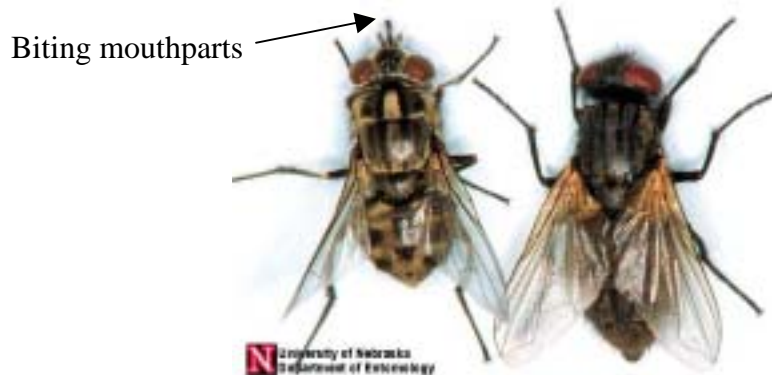


Figure 4. Stable fly (left) versus house fly (right)

They look like a house fly but also have piercing-sucking mouthparts like the horn fly. Both sexes, like the horn fly, survive by feeding on blood. However, unlike the horn fly, they do not reside on the animal but are present only during feed. Adults lay their eggs in urine and feces soaked feed or hay. The immature stage requires approximately 3 to 4 weeks to develop to the adult stage depending on weather conditions.

Stable flies commonly aggregate on the legs of the animals. If populations get too high the animals will “bunch up” and not feed. Currently, the economic injury level is 4

flies/cow on average. Fly populations can be monitored in a similar fashion to that described for the horn fly.

As with the horn fly, many insecticides are available for suppressing stable fly populations. Primarily, insecticides used to suppress stable flies are directly applied to the lower legs of the animals. Various pyrethroids are available as pour-ons (liquid form mixed and poured on back of cow), sprays (sprayed directly on cow), and rubbing mixtures (self-application devices) for reducing stable flies.

Stable flies are more readily controlled through cultural methodologies. Most stable fly populations can be suppressed by removing the fly-breeding sites. As mentioned before, stable flies develop in wasted cow feed or hay that has been mixed with urine and feces (Figure 5). Sites of interest include pasture areas where round hay bales have been placed for animal consumption and sites around barns and feedlots where feed may accumulate and become wet with water, urine, and feces. Properly removing or destroying these sites can help suppress stable fly populations. Producers should attempt to gather this material and spread it in an open area such as a pasture to allow it to properly dry, which will deny the adult flies egg-laying sites.



Example of stable fly breeding sites  
(urine & feces laden hay in a pasture)

Figure 5. Breeding site of stable fly.

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Images used in Figures 1-4 [smaller image in Figure 3] were taken by Jack Campbell or Jim Kalisch Department of Entomology, University of Nebraska  
(<http://entomology.unl.edu/images/muscidflies/index.htm>)