Low-Toxic Fly Management for Horses

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During warmer months, house and stable flies are common pests around equine facilities. House flies are primarily a nuisance, although they are potential disease vectors. On the other hand, stable flies cause a painful bite, especially on the sides of the neck, lower legs and underbelly of animals—places where the animal cannot defend itself very well (Figure 1). In the absence of an animal, stable flies also bite people, especially on bare lower legs (Figure 2).

House flies and stable flies breed in moist, decaying organic matter mixed with animal manure. Common places include spoiled animal feed or soiled straw bedding. High numbers of stable flies cause animals to become weakened from blood loss, nervous and irritable.

Photo by Vicki Jedlicka, University of Nebraska–Lincoln Extension in Lancaster County

Figure 1. Stable flies cause a painful bite, especially on the sides of the neck, lower legs and underbelly of animals.

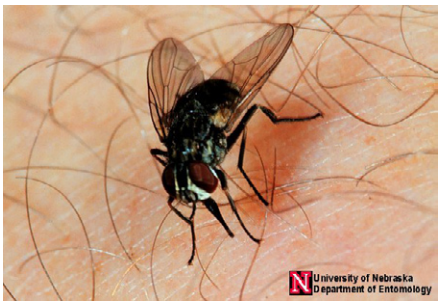

Figure 2. In the absence of an animal, stable flies also bite people, especially on bare lower legs.

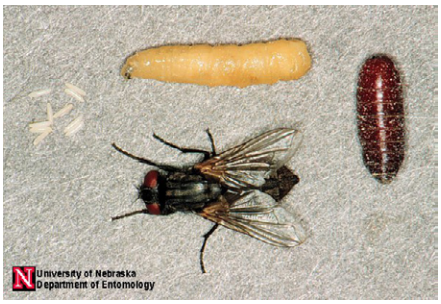

Figure 3. The life cycle of a fly consists of egg (left), larva (top), pupa (right) and adult (bottom)

Sanitation is Important

To reduce fly breeding sites, there is no substitution for sanitation. Maintain sanitary conditions in and around your equine facility including:

- Removal of manure from stalls, barns, corrals, exercise areas and turnout areas.
- Cleaning up leftover or spilled feed, grain and hay on a daily basis.
- Keeping manure storage areas dry. As soon as possible, spread manure on pastures so it can be exposed to sunlight and dry out.
- Making sure stall areas and barn have proper drainage to eliminate wet and moist areas where flies breed.

Larval Control with Insect Growth Regulators

There are a number of insecticidal products that control adult flies, including premise sprays, bait stations and on-animal insecticides. These provide only temporary relief and must be reapplied frequently.

However, there are some newer products that control larval flies at the source, in the manure. The active ingredients of these products are known as *insect growth regulators* (IGRs) which interfere with growth and development of fly maggots.

How do IGR products work?

The life cycle of a fly consists of egg, larva (maggot), pupa and adult (Figure 3). The adult female fly lays eggs in manure or other suitable organic matter. The eggs hatch into tiny maggots, which feed on the manure. These maggots molt several times to larger stages. When maggots reach maturity, they pupate, later emerging as adults.

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There are two active ingredients found in IGR products registered for fly larval control on horses: diflubenzuron and cyromazine. Diflubenzuron and cyromazine are called *chitin synthesis inhibitors* because they interfere with the formation of chitin, the primary component of the insect cuticle (the skin). Insects exposed to these IGRs will not molt properly so most of the maggots will die when they molt and flies will not emerge from the manure. These products control the flies while in the manure and are more efficient than relying on fly sprays.

Diflubenzuron. Diflubenzuron is found in the feed-through products SimpliFly™ and Equitrol® II, manufactured by Farnam. These products are identical. SimpliFly and Equitrol II are top dressed on grain or mixed with the ration to provide 6.8 mg per 100 pounds of body weight. For a 1,000-pound horse, the dosage is 1 ounce Equitrol II or SimpliFly per day.

Cyromazine. The product containing cyromazine and registered in Nebraska for horses is Solitude IGR™. It is an alfalfa-based pellet, manufactured by Pfizer Animal Health. Dosage of Solitude is not based on body weight, but each horse should be fed 1/2 ounce Solitude per day.

Safety and Effectiveness. Because molting is a process only arthropods do, warm-blooded animals, including birds and mammals will not be affected by IGRs. Studies have shown these products are safe for horses, other mammals (including humans), beneficial insects and non-target organisms. For best results, start feeding these additives before the beginning of the fly season, continue through the summer and into the fall until cold weather reduces fly activity.

If you decide to use an IGR larval control product mid-season, you may need to use products that control adult flies (such as on-animal insecticides, premise sprays and bait stations) until the IGR product gets the population under control. Then use these additional products only as needed.

Where to Find These Products? These products are often sold where equine feed and supplies are sold or through veterinarians. In the Lincoln area, these products can be found during fly season at Fort Western and Tractor Supply Company (both locations). These products can also be purchased from internet vendors.

Problems with Control. Sometimes flies will not be controlled as well as one would like. This can occur when:

1. Sanitation is not good. Flies breed in organic matter other than manure. Spoiled feed or hay, wet bedding, grass clippings, poorly managed compost and other organic matter will breed flies. These IGR feed-through products only control flies breeding in manure.

2. For some reason, horses do not get the recommended daily IGR dose. If you do not have the ability to control dosing, control may not be achieved.

3. Other livestock or pet waste is producing flies.

4. Flies from surrounding areas travel to your equine facility. If your neighbor has livestock/horses and is not controlling his fly population, even the best fly management will be compromised. Studies have shown flies can travel considerable distances, but most house and stable flies will only travel a mile or two.

5. Resistance by flies to these IGR products is possible, especially if you use the same product year after year. If the product you have chosen seems to lose its effectiveness over time, you may need to use a different product or approach.

What About Using Parasites for Fly Control?

What about using parasites for fly control? Another non-toxic approach is to use parasitic wasps which lay eggs in immature flies, usually the pupa. The wasp larva quickly hatches, feeds on the pupa and kills it before it emerges. For acceptable control, you must release wasps at the beginning of the fly season and continue releasing more wasps, weekly or monthly, throughout the summer. The number of wasps needed is based on the amount of waste (i.e., number of horses) you have.

Does it make sense to use parasitic wasps in conjunction with feed-through products? No. If you kill the larvae with a feed-through product, the wasp larvae won't have anything to feed on.

How effective are parasites? Under natural conditions in Nebraska, wasps parasitize fly pupae at a rate of 1–4 percent early in the season, gradually increasing to 20–30 percent by the end of the fly breeding season in the fall.

However, research studies were conducted with parasitoids to increase the natural level of fly control in Nebraska feedlots and dairies. Results showed wasp releases did not achieve reductions in fly populations, even when four times the recommended numbers of wasps were released.

Note: Products named are for the convenience of the reader and not an endorsement. Be sure to read, understand and follow all label directions. Never use products not labeled specifically for use on horses.