UF UNIVERSITY of FLORIDA
IFAS Extension

ENY267

Stable Fly (Dog Fly) Control[1]

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Introduction

The stable fly (Figure 1) is a blood-sucking filth fly of considerable importance to people, pets, livestock, and the tourist industry in Florida. Filth flies, including stable flies, exploit habitats and food sources created by human activities, such as farming. "Stable fly" is just one of the many common names used to refer to this pest. Stable flies are also known as "dog flies" because the fly often bites and irritates dogs. Other names are "lawn mower fly," because the larvae are often found in the cut grass on the undersides of lawn mowers, and the "biting house fly." Stable flies primarily attack animals for a blood meal, but in the absence of an animal host, they will bite people.

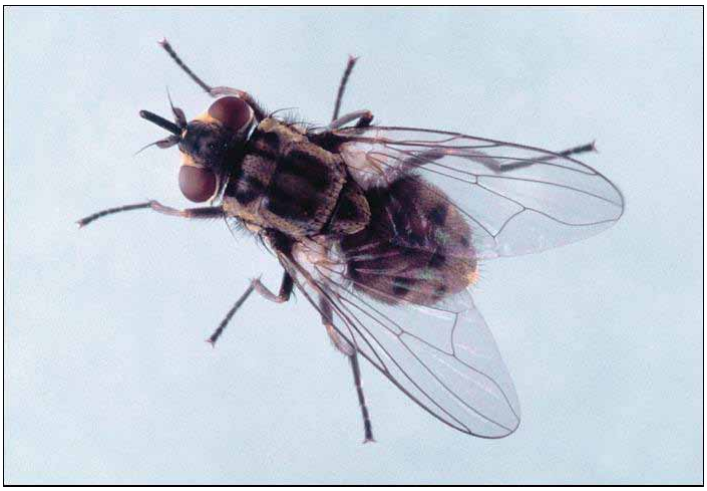

Figure 1. Stable fly.
Credits: J. F. Butler, University of Florida

In its normal environment the stable fly is not considered a pest to humans. However, certain regions of the United States have considerable problems with large numbers of stable flies attacking people. The coastal part of New Jersey, the shores of Lake Superior and Lake Michigan, some Tennessee Valley Authority lakes, and most importantly due to the significance of the tourism industry in these areas, west Florida and along the Gulf coast to Louisiana, are areas that historically have severe stable fly problems. Although west Florida has the most severe stable fly problems, the flies are numerous throughout the state.

Biology

Stable flies breed in soggy hay, grasses or feed; piles of moist, fermenting weed or grass cuttings; spilled green chop; peanut litter; seaweed deposits along beaches; soiled straw bedding; and sometimes in hay ring feeding sites when the temperatures warm in the spring. The female, when depositing eggs, will often crawl into loose material. Each female fly may lay 500–600 eggs in four separate batches. Eggs are small, white, and sausage-shaped. Eggs hatch in 2–5 days into larvae, which feed and mature in 14–26 days. Larvae are typical maggots and transform to small, reddish-brown, capsule-like pupae from which the adult flies emerge. The average life cycle is 28 days, ranging from 22–58 days depending on the weather conditions. In Florida, during years with wet summers, the stable fly breeds throughout the year, although peak populations occur from October through January.

1. This document is ENY-267, one of a series of the Entomology and Nematology Department, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida. First published: December 1997. Revised: August 2012. Please visit the EDIS website at http://edis.ifas.ufl.edu/.

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The stable fly adult is similar to the house fly in size and color. Adult stable flies are typically 5–7 mm in length and unlike the house fly, which has an unpatterned abdomen, stable fly abdomens have seven circular spots. Stable flies also have long, bayonet-like mouthparts for sucking blood. Unlike many other blood feeding fly species, both male and female stable flies feed on blood. Stable flies feed mainly on the legs of cattle and horses.

Stable flies are competent fliers and have been shown to disperse far from their breeding sites to feed. Recent studies in Florida have shown that the majority of stable flies collected at equine facilities were travelling between 0.8 and 1.5 km from cattle farms, following a blood meal, to breed in equine farms. One study even recorded stable flies travelling distances of up to 70 miles from their breeding sites. They are inactive at night, resting on fences, buildings, trees, and bushes.

Scope of the Problem in Florida

Stable flies attack people, pets, and agricultural animals throughout Florida. Stable fly bites are extremely painful to both people and animals. When hungry, stable flies are quite persistent and will continue to pursue a blood meal even after being swatted several times. Although the bite is painful, there is little irritation after the bite, and few people exhibit allergic reactions.

The tourist industry is severely affected by large numbers of stable flies especially in west Florida, from Wakulla County to Escambia County. Because stable flies are active during the daylight hours, the flies have a big impact on Florida's beach tourism. When stable flies are numerous, tourists leave and are unlikely to return if their vacation was spoiled.

Stable flies congregate on beaches because they are sensitive to the wind. When a northerly wind blows toward the beach from inland, the flies are carried to the beach and take shelter from the wind on the leeward side of the dunes. Some individuals even fly to boats and are taken off shore, where they continue to bite. The flies normally do not concentrate in residential areas, but they may bite an occasional human and often bite dogs as they pass through the dunes on the way to the beach. Stable flies are usually on the beach during the morning hours, when the wind is from the north. Frequently, during the middle of the day, the thermal currents on land pull the winds in from the Gulf and the flies suddenly leave. They may then move inland 10–15 miles from the Gulf of Mexico.

The animal industries of Florida are severely affected by the stable fly. Because the fly takes blood meals, animals are weakened from blood loss and continual irritation. Animals such as swine, cattle, and horses show reduced weight gains. As a result of stable fly annoyance, animals stamp nervously, switch, become irritable and have been known to stand in water, with only their necks and heads exposed, to escape the biting flies during heavy outbreaks. Stable flies also are known to transmit the pathogens that cause diseases such as anthrax, equine infectious anemia (EIA), and anaplasmosis to animals. In addition, bite wounds can be sites for secondary infection.

Because these pests leave an animal immediately after feeding, they may go unnoticed unless heavy outbreaks occur. Monitoring is important for early detection of a potential outbreak situation and is usually done by counting flies on lower legs of cattle and horses. Counts should be done on all four legs of at least 15 animals. Greater than 10 flies per animal is considered economically damaging. High numbers of stable flies on animals suggests a productive local breeding site. However, it is important to note that the absence of a local breeding site does not necessarily mean that the animals are not being bothered by stable flies. Because stable flies will disperse from breeding sites and travel great distances to obtain a blood meal, breeding sites may be over 1 kilometer away. Consequently, a stable fly breeding site on your property may have an influence on the people and animals for miles around. A study of equine facilities in Florida found that only 24.3% of the flies captured on horse farms had fed on horses; 64.6% had travelled up to 1.5 km from cattle farms to reach the horse farms, with 9.5% of these having fed on humans.

While one stable fly does not cause significant damage, 50–100 of these blood-sucking pests occurring together with 500 horn flies can cause a substantial daily loss of blood. This common livestock pest situation can result in a loss of 10–20% in milk production and up to 40 pounds of beef gain eliminated per animal each year—an economic loss of millions of dollars per year to Florida cattlemen. Recent estimates give a total impact to the U.S. cattle industry of $2.211 billion per year, with $360 million for dairy, $358 million for calf-cattle herds, $1.268 billion for pastured cattle and $226 million for cattle on feed.

Control at Breeding Sites

The most practical and economical method for reducing stable fly populations is the elimination or appropriate management of breeding sources. It is important to remember that flies cannot develop in dry materials.

Furthermore, due to the dispersal capability of stable flies, breeding sites on your property may be causing problems for other animals that may be miles away or in residential areas where the flies feed on humans and pets. Management of potential breeding sites should be completed for the health and safety of your animals, your neighbors' animals, and the local community. Most of the following methods also will reduce the presence of other localized fly problems through improved sanitation and hygiene.

Stable flies breed in the following types of material:

1. Green chop or silage - Stable fly maggots thrive in decaying plant material, such as old silage in and around feed troughs and trench silos. Silage probably has a greater potential for producing stable flies than almost any other material found on today's farms. More than 3,000 stable fly maggots per cubic foot of silage have been found in mid-January on some west Florida farms, and five times that number in late summer.

2. Crop residues - Unwanted crop residues, such as peanut vines discarded in piles during harvest, are frequently important sources of fly breeding. To avoid creating a breeding site, this material should be spread thinly for quick drying.

3. Hay and grain - Hay allowed to accumulate where animals are fed in fields decays rapidly when exposed to the elements and may produce flies in tremendous numbers. To prevent this source of fly breeding, feed cattle at a different place in the field each time so that accumulations of old hay do not occur. Likewise, spilled grain around feed troughs or storage bins may provide the stable fly with a moist, favorable breeding medium and should be cleaned up immediately.

4. Animal manures - When handled properly, manure need not breed stable flies at all. lt should not be allowed to accumulate for more than a week before it is spread thinly on fields, where quick drying eliminates stable fly breeding.

5. Stables - The popularity of pleasure horses creates a staggering number of fly breeding sources. However, proper care and management of waste feed and manure can greatly reduce or eliminate fly populations in these areas. Stalls should be cleaned of droppings daily and the manure spread thinly (not more than 1–2 inches deep). The choice of bedding is very important. Hay or straw absorbs urine and decomposes rapidly, and unless it is changed every few days, it will produce thousands of flies. A far better material is wood shavings, which, when cleaned of manure daily and changed approximately every two weeks, will not normally breed flies.

6. Other sources - Any pile of moist, decaying organic matter should be considered a potential source of stable flies that could cause serious harm to livestock.

See the Livestock Pest Management Guides for specific control mechanisms for beef, dairy, horses etc. http://edis.ifas.ufl.edu/topic_in_pet_and_livestock_pests

Improving Control

Great progress has been made in control of stable flies in recent years, but a number of actions must be taken if the present level of control is to be improved significantly. These are:

1. The public and those responsible for stable fly control must be made aware of the extent of the problem and must realize that it cannot be controlled by small-scale, isolated efforts.

2. There must be realistic funding for trained personnel and equipment to combat the pest. Because of its long flight range, the stable fly is not a problem just at the county level; it is a state-wide issue. Therefore, even if the breeding of this pest is controlled in a county, there still might be a stable fly problem in that area if the fly is not controlled in other neighboring counties.

3. Man-made sources of flies in agricultural and industrial areas and on private premises must be eliminated or greatly reduced. In most instances this can be accomplished by proper handling and disposal of animal and plant wastes.

4. Each coastal county must operate an effective stable fly surveillance and control program on beaches seven days a week in late summer and fall.

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