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Stable Fly Control on Cattle

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Control of stable flies in feedlots and dairy operations is covered here.

Description

The stable fly is about the size of a house fly but is dark gray and has dark irregular spots on its abdomen. The proboscis (mouthpart) protrudes bayonet-like in front of the head. The larvae are typical whitish fly maggots. The pupae are chestnut brown and about 1/4 inch long.

Life History

The complete life cycle of the fly from egg to adult can take 14-24 days in Nebraska during hot weather. The overwintering part of the stable fly life cycle may not be completely known. Some do overwinter below the frost line as slowly developing larvae. As temperatures rise, the larvae move toward the soil surface and pupate, and these pupae give rise to at least some of the adults of the first generation of the season. There is some speculation that part of the first generation migrates from the south each spring. Stable flies are capable of moving considerable distances, but no documentation shows that a migration occurs.

The female fly deposits eggs in spoiled or fermenting organic matter mixed with animal manure moisture and dirt. The most common breeding sites are in feedlots or dairy lots, usually around feedbunks, along the edges of feeding aprons, under fences and along stacks of hay, alfalfa and straw. Grass clippings and poorly managed compost piles also may be stable fly breeding areas.

The most common breeding areas outside of the lots are the drainage areas leading to holding ponds. The drainage channels should have a slope of at least 3 inches. This slope allows rapid drainage and prevents wet areas within the drainage channel from becoming a fly breeding area. The ponds themselves, if properly designed and maintained, do not provide a fly breeding area. Slopes should be steep, not filled with solids and must be kept clean of weeds. If fly breeding is occurring at the edge of the drainage channels and irrigation water is available, the channel can be flooded to drown the flies.

Each female fly lives about 10 to 30 days and lays 100 to 400 eggs during her lifetime. In warmer areas the stable fly may breed all year.

Economic Importance

Stable flies are the most important insect pests on feeder and dairy cattle during the summer in Nebraska. They feed by piercing the skin and sucking blood. Stable flies stay on the animal long enough to obtain a blood meal, then seek shade on a fence, barn wall, feed bunk or vegetation to digest it. In recent years stable flies also have become pests of range and pasture cattle. The source of these flies is generally unknown but stable flies are capable of migrating a considerable distance, 10 miles or more.

Kansas State University research indicates that feeding big round hay bales in bale tubs creates wasted feed outside the tub, which when wet is an ideal stable fly breeding area. The same is true for feeding the big bales on the ground by just unrolling them.

The bite of the fly is painful and cattle attempt to dislodge flies by foot stamping, tail switching and by throwing their heads down toward their front legs. When flies are abundant, cattle bunch (each animal trying to get to the center of the group) or seek water to stand in to avoid the fly harassment. Heavy fly populations during hot days may cause cattle to go off feed and add to the danger when the weather safety index is critical. Weight gain depressions of 0.48 pounds per day and milk production decreases of 30 percent to 40 percent have been recorded. Research on grazing yearlings have shown losses of 0.2 kilograms (0.44 pounds) per day in weight gain.

University of Nebraska–Lincoln research indicates that stable fly population levels of five flies per front leg (counted on the outside of one leg and inside of the other) is the economic injury threshold. This is the point at which weight gains are depressed due to the changes in cattle behavior.

Control

Sanitation

Sanitation is the first step in a stable fly control program. In a feedlot or dairy operation, manure should be removed or mounded and packed. Clean around feedbunks and feed aprons, under fences and gates, around water systems and at the edges of the mounds. Clean sick pens and feed storage areas regularly. Even small breeding areas support very high numbers of flies. Without sanitation, chemical control may be unsuccessful. Control of stable flies on range cattle can be achieved only by spraying cattle, which isn't practical. Clean-up of wasted feed at winter feeding sites help reduce the number of stable flies, but may not provide enough control to prevent weight gain losses from fly attacks.

Several methods can reduce stable fly numbers on confined cattle with insecticides. The method of choice depends to some extent on the type of livestock operation.

Residual Sprays

Stable flies rest on shady surfaces such as fences, feed-bunks, buildings and vegetation surrounding cattle lots after the temperature reaches 80°F. These surfaces can be treated with residual sprays. Flies rest on the treated surfaces and absorb the insecticide. Residual insecticides should be effective for 10 days unless washed off by rain or broken down by high temperatures or bright sunlight. Six applications during the fly season should be adequate. The residual spray method is best adapted to dairies or smaller feedlots where fly resting areas are not extensive. Apply residual sprays to the point of runoff, but do not allow puddles to form and do not contaminate feed or water. See EC1550, *Nebraska Management Guide for Arthropod Pests of Livestock and Horses*, for specific insecticide information.

Area Sprays

Area sprays are applications of short residual knockdown insecticides. They are applied in areas where flies are concentrated because they kill only the flies they contact. The sprays are used as low concentrate fine mists. Area sprays are most efficient when fly activity is low and they are aggregated. These times are early morning, late evenings or during the hottest part of the day when flies rest in shady areas. This method is probably best implemented where pens and resting areas are too extensive to use residual sprays. Area sprays may need to be applied two or three times a week.

The residual and area spray methods can be combined. An area spray can be used to knock down existing adult populations. After about a week (the time needed for newly emerging females to begin depositing eggs), a residual treatment can be applied. These methods can be alternated as needed throughout the fly season.

Foggers and hydraulic sprayers should deliver a fine mist that air currents move across the cattle lots. The insecticides and rates are the same as for mist blowers. Winds above five miles per hour move them too rapidly for effectiveness.

Aircraft can also be used. Fixed-wing aircraft should spray with at least 5 gallons of water plus the insecticide to be effective. Helicopters provide excellent fly knockdown with area sprays but are quite expensive to operate. Cattle tend to “spook” from aircraft that pass directly over them unless a few passes have been made off to the side of the lots to adapt them to the activity.

Animal or wet sprays

Sprays applied directly to cattle for control of stable flies generally need to be applied at four- to seven-day intervals (some products have longer treatment intervals) because vegetation that is wet due to rain or dew washes the insecticide off the legs of pasture cattle. This may be the only feasible method where cattle come to lots to water and then return to pasture. Stable flies breed around the lots, attack the cattle and then follow them back to the pastures. Sometimes pens that have served as winter feeding facilities will provide fly breeding areas. When flies

emerge they move to cattle in nearby pastures to feed and then back to the lots to deposit eggs. In either situation, lot cleanup may be the best control. If wet sprays are to be used, spray the legs, flanks and underlines of the cattle (about 1/2 to 1 gallon of diluted spray per mature animal — less for calves).

If automatic treadle sprayers are used for daily applications, rates must be reduced according to label directions. Dust bags, ear tags, oilers or feed additives generally are not satisfactory for stable fly control.

Larvicides

Applying insecticides to breeding areas generally is not recommended. The acidity of the material in the breeding area rapidly breaks down insecticides. There is a danger of animal or crop contamination, plus fly insecticide resistance tends to increase and sanitation — the primary method of fly control — tends to be ignored.

Feed additives are sold for control of stable flies. Feed additives are insecticides which are incorporated into cattle feeds. The insecticide passes through the digestive system of the animal, which makes it available in the manure to control flies. This method does reduce house fly populations to some extent, particularly in the drier high plains feedlot areas as they breed in fresh manure. However, stable flies breed in manure after the insecticide is no longer effective as do many house flies. Thus, feed additives are ineffective for stable fly control in Nebraska and do not provide adequate control of house flies, except perhaps in the Panhandle counties during dry years.

Biological Control

For the past several years, commercial insectaries have been selling pteromalid wasps for control of flies. These small wasps deposit an egg(s) within the pupal case of flies. The wasp larva feeds on the developing fly inside of the pupal case that usually resulting in the death of the fly. Under natural conditions in Nebraska, the wasps are parasitizing flies at a rate of 1 percent to 4 percent early in the season. This rate gradually increases to 20 percent to 30 percent by the end of the fly breeding season in the fall.

The biological control approach is to rear these parasites in commercial laboratories and deliver them weekly to feedlots and dairies. The concept of this system is that increasing the number of parasites will result in a corresponding increase in the degree of parasitism. Unfortunately, research conducted by the Agricultural Research Service Livestock Insect Laboratory at the University of Nebraska–Lincoln, and at North Platte has failed to achieve reductions of either stable flies or house flies. This is true despite wasp releases four times the recommended rates. The research will continue but so far these parasites have been ineffective at controlling house flies or stable flies.

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