On Farm Fly Control

By Steve Foster, ANR Agent
OSU Extension, Darke County

Flies are not just a nuisance; they're a major cause of disease and economic hardship around the world.

All told, they are known to be involved in the transmission of more than 65 diseases to humans alone, including typhoid fever, dysentery, cholera, leprosy and tuberculosis.

They are also responsible for significant reductions in the production of farmed meat and dairy products. It's estimated that flies are responsible for global livestock and poultry production losses measured in the billions of dollars.

Modern methods of livestock and poultry farming often provide an ideal breeding environment for flies, making control a major challenge.

Fly Biology

All flies pass through four life stages: egg, larva (maggot), pupa, and adult. During its life cycle, which is about 30 days, a house fly female can lay up to 1000 eggs. These eggs are deposited on moist manure or any type of moist rotten or decaying organic matter. The eggs hatch in 10-12 hours and the maggots move into the wet manure. Fly maggots mature in 4-5 days under warm moist conditions. Pupation occurs in the drier parts of manure with the adult flies emerging in 3-5 days.

Under ideal conditions a house fly can complete its life cycle in 9-14 days. The life cycle can be much longer in cooler temperatures.

Although capable of movement up to several miles, house flies normally move no more than one half to three quarters of a mile from their breeding sites.

Sanitation

Flies around dairy buildings develop in moist manure or other wet decaying organic matter. No insecticide can be expected to control flies under poor sanitary conditions.

A thorough sanitation program is a must to hold down fly populations in and around livestock buildings.

(a) Remove all manure from livestock pens as frequently as possible. Calf and bull pens with animals in them require special attention. It is best to clean these pens once a week. Using sawdust instead of other materials for animal bedding reduces fly development. A clean livestock barn has fewer fly problems.

(b) Spread the manure thinly outdoors in order that fly eggs and larvae will be killed by drying, or stack this waste and cover with a black, plastic tarp.

(c) Eliminate silage seepage areas, wet litter, manure stacks, old wet hay or straw bales and other organic matter accumulations that may attract flies anywhere on the farm. Wet feed remaining at the ends of mangers will breed flies.

(d) Provide proper drainage in barnyards. Use clean gravel and other fill to eliminate low spots in livestock yards. Proper grading and tiling can reduce wet barnyards. Keep water troughs and hydrants leak-free.

IPM

To be successful in controlling flies it is important that producers implement a control program that best fits their particular operation. Reliance on a single practice or pesticide product is not the best approach to achieving effective and economical pest control.

A better approach is to combine routine sanitation with a variety of pesticide strategies such as baits, residual sprays, space sprays, and larvicides whenever flies are a problem.

Do not wait for heavy fly populations to build up. It is much easier and less expensive to prevent fly populations from increasing at the beginning

0f the season than to attempt to control them after they have reached unacceptable density levels. As fly populations begin to increase, take time and treat as needed.

Residual Sprays

The next line of defense is residual sprays applied to the outside and inside of buildings. Other practices such as the application of larvicides, space sprays, and baits should be considered supplementary to sanitation and residual sprays.

Residual sprays are applied to walls, ceilings, partitions, stanchions, posts, and other fly resting places. These sprays are much more effective in stanchion barns than in loose-housing, open barns where landing and resting surfaces are minimal.

Also, barn surfaces vary in the amount of spray that should be applied to them. Smooth surfaces require less spray than rough, porous surfaces.

Thoroughly wet the surface to the point of runoff at low pressures of 80-100 pounds per square inch. Avoid contaminating feed, drinking water, milk, milking utensils, and milk rooms.

The importance of ***following directions exactly according to the label*** cannot be stressed enough when using any pesticide.

Long-Term Residual Treatments

(a) Fenvalerate [10%]. This product is labeled for use only in swine or horse buildings as a premise spray. Mix 1 quart product in 10 gal water and apply at the rate of 1 gal of spray per 750 sq ft. Remove animals before spraying. Keep animals out of treated buildings for at least 4 hours. ***Do not*** allow feed or drinking water to become contaminated.

(b) Permethrin [25%]. ***This product is not labeled for use in milk rooms.*** Mix 6.67 oz product in 10 gal water and apply at the rate of 1 gal of spray per 1,000 sq ft. ***Do not*** make direct applications to animals, feed, or drinking water.

(c) Permethrin [10%]. Mix 1 qt product in 25 gal water and apply at the rate of 1 gal of spray per 750 sq ft. Can be used in barns, dairies, feedlots, stables, and poultry houses.

(d) P ermethrin. Refer to label for directions regarding these and other permethrin products.

(e) Tetrachlorvinphos [50%]. Follow directions according to label. Remove calves and lactating animals before spraying. Keep them out of treated buildings for at least 4 hours. ***Do not*** allow feed or drinking water to become contaminated. Can be used in dairy barns, poultry houses, swine buildings, and other animal buildings.

(f) Tetrachlorvinphos [23%] and dichlorvos [5.3%]. Mix 1 gal product in 25 gal. water (or 1 gal product in 12.5 gal water for extreme infestations) and apply at the rate of 1 gal of spray per 500-1,000 sq ft of walls, ceilings, or other areas where flies rest or congregate. Remove animals before spraying. Keep animals out of treated buildings for at least 4 hours. ***Do not*** allow feed or drinking water to become contaminated. Can be used in dairy barns, poultry houses, swine buildings, livestock sheds, and other animal buildings.

Medium-Term Residual Treatments

(a) Deltamethrin [0.02%]. Controls stable flies, horn and face flies, house flies, deer flies, mosquitoes, and gnats in livestock and horse facilities. Apply thoroughly to surfaces until wet. Apply as needed, but not more than once per week. Do not spray animals or humans. Do not contaminate feed or drinking water. ***Do not use in milk room or milking parlor.***

Short-Term Residual Treatments

(a) Dichlorvos [43.2%]. Make up a 0.5% solution by mixing 1 gal product in 100 gal water and apply diluted spray as an overall premise application. Particular attention should be given to areas where flies congregate. Animals may be present during treatment. ***Do not*** allow feed, water or foodstuffs, milk or milking utensils to become contaminated. Apply to cattle feedlots, stockyards, holding pens, and corrals.

(b) Naled [58%]. Follow directions according to label.

(c) Pyrethrins [0.1%] and piperonyl butoxide [1.0%]. Follow directions according to label. Apply as a space spray for quick knockdown and kill of house flies, stable flies, and horn flies in barns, milk rooms, and dairies.

(d) Pyrethrins [0.5%] and piperonyl butoxide [4.0%]. Controls stable flies and other flies, mosquitoes, fleas, and wasps in livestock, dairy, hog, and poultry facilities. Close all windows and doors and apply at a rate of 2 to 3 seconds/1,000
cubic feet of area. Do not remain in treated area. Thoroughly vent treated area after 15 minutes.

Bait Treatments
Although fresh baits will help control flies, results may be poor if fly breeding is excessive. It is suggested that baits be applied following the removal of all floor litter and manure. For best control, use baits liberally and repeat as needed. It may be necessary to increase amounts when flies are breeding heavily, but check label for proper use directions for any bait product. Baits are most effective when used in conjunction with other control measures. Do not use bait in areas where animals can slip and fall or where children may come in contact with the bait.

(a) Methomyl [1%]. No mixing required. Bait can be used only around the outside of feed lots, broiler houses, livestock barns, and on walkways in caged layer houses. Scatter bait (do not put in piles) at rate of approximately 0.25 lb per 500 sq ft of fly feeding area, keeping 1- to 2-inch intervals between particles. ***Do not*** allow food-producing animals to have access to treated areas. ***Do not*** allow contamination of feed or drinking water.

(b) Methomyl [1%] and (Z)-9-Tricosene [0.025%]. See label for use directions.

Space Treatments
Space sprays or aerosols can be effective for rapid knockdown and kill of adult flies. It is important to reduce air movement as much as possible. Follow directions according to label.

(a) Pyrethrins [0.1%] and piperonyl butoxide [1.0%]. Before spraying, close doors and windows. Apply as a fog or fine mist, directing spray toward ceiling and upper corners until area is filled with mist. Use about 0.5 oz solution per 1,000 cu ft. Allow mist to settle on animals. Leave room closed for 5 minutes after treatment, remembering to ventilate area before reoccupying. Repeat as needed. Wash teats of dairy animals before milking. Avoid breathing fumes by wearing mask or respirator of a type recommended by the U.S. Bureau of Mines.

(b) Dichlorvos [23.4%]. Apply by fogging or misting at rate of 1 quart of 0.5% solution per 8,000 cu ft. Reduce air movement as much as possible before applying. ***Do not*** use in areas where animals have received a direct application within 8 hours. ***Do not*** allow feed, water, milk, or milking utensils to become contaminated.

(c) Dichlorvos resin strips. Suspend from ceiling as directed on label. Use 1 strip per 1,000 cu ft. These strips work best in closed rooms. ***Do not*** place over water or feed. Keep strips away from animals and children.

(d) Spinosad [2.46%]. Dilutable spray for control of stable and house flies on animal premises, including in and around poultry, beef, dairy, horse, swine, and sheep premises. ***Do not*** apply product in milking parlor or milk room. Mix 20 oz product per 5 gal water and apply at a rate of 1 gal solution per 500-1,000 sq ft. ***Do not*** use in overhead sprinkler system. Refer to label for more directions.

Larvicides
Oral Treatments
The use of oral larvicides such as cyromazine, tetrachlorvinphos, and diflubenzuron [9.7%], is not legal in all states. These feed additives and boluses often are not the answer to fly control unless used very extensively. All manure must be treated within an area in order to effectively reduce the fly population. In many cases the area must be very large because flies rapidly move from one herd to the next over large geographic regions.

Oral larvicides work by preventing the development of flies in manure. They are not effective against existing adult flies, and should be used in conjunction with a regular manure sanitation practice. Supplemental fly control often is needed where flies breed in manure from untreated animals or other organic sources.

(a) Diflubenzuron [9.7%]. This product is a controlled-release bolus for beef and dairy cattle

that aids in the suppression of house and stable flies. Administer 1/2 bolus to cattle weighing 300-550 lb, and 1 bolus to cattle weighing 550-1,100 lb or more. ***Do not*** administer to cattle weighing less than 300 lbs. NEVER administer more than 1 bolus to any animal.
(b) Tetrachlorvinphos [97.3%]. Follow directions according to label. For beef cattle and lactating dairy cattle, feed at the rate of 70 mg product/100 lb of body weight. Start feeding in early spring before flies begin to appear, and continue throughthe summer and fall until cold weather restricts fly activity.

Manure Treatments
(a) Tetrachlorvinphos [23%] and dichlorvos [5.3%]. Mix 1 gal product in 25 gal water and apply at the rate of 1 gal of spray per 100 sq ft of droppings. Repeat at 7- to 10-day intervals until droppings begin to cone up, then treat only "hot spots" (small areas found to have large numbers of maggots). Can be used in poultry and livestock facilities. ***Do not*** spray animals directly. ***Do not*** contaminate feed or drinking water.

(b) Tetrachlorvinphos [50%]. Apply at the rate of 1 gal of 1% solution per 100 sq ft of poultry droppings, manure piles, etc. Repeat every 7-10 days until control is achieved. ***Do not*** spray animals directly. ***Do not*** contaminate feed or drinking water.

Mineral Mixtures and Feed Additives
(a) S-methoprene [10.5% and other formulations]. The AI in Altosid Cattle Custom Blending Premix is an insect growth regulator (IGR) that interrupts the development of the horn fly (and possibly other species of filth-breeding flies) in the manure of treated cattle. Begin use in the spring before horn flies appear on cattle and continue feeding until cold weather restricts horn fly activity. Product is safe for beef and dairy cattle, including breeding cattle, lactating cattle, and calves. Product can be fed up to slaughter and to lactating dairy cows without withholding milk. Refer to label for details on proper feed to weight blending ratios.

Perimeter Area Treatments
(a) Citric Acid and crystalized propanetricarboxylic acid [100%].
Apply 1/8 cup per sq ft of treatment area. Treatment area should have a moderately salted appearance after application. Apply every 7 days during fly season. See label for specific area applications.

References:

Livestock Area Fly Control
Eric R. Day, Extension Entomologist, Virginia Tech

Livestock and Livestock Building Pest Management - Bulletin 473
The Ohio State University Extension
William F. Lyon, Extension Entomologist

CONTROLLING FLIES ON DAIRY FARMS
Ralph E. Williams, Extension Entomologist