Controlling Flies In and Around Poultry Houses

As urbanization and rural non-farm residence increase, poultry producers face increasing pressures to reduce fly populations. It is possible for fly populations (manure-breeding flies) to cause a public health nuisance, resulting in poor community relations and threats of litigation. A dedicated effort is necessary to achieve an acceptable level of fly control. Several kinds of flies can be found in and around poultry layer houses. Probably the most common flies are the house fly and the little house fly. About 95 percent of infestations involve the house fly. Both of these flies can move up to 20 miles from the site of development, but normally no more than a mile or two from the initial source. House flies, Musca domestica L., about 1 1/2 inch long, breed in moist, decaying plant material, including refuse, spilled grains, spilled feed, and in all kinds of manure. For this reason, house flies are more likely to be a problem around poultry houses where sanitation is poor. These flies prefer sunlight and are very active, crawling over filth, people, and food products. This fly is the most important species because it can carry and spread human and poultry diseases and cause flyspecking problems of the eggs. For example, house flies are the intermediate host for the common tapeworm in chickens, and they carry millions of bacteria. The little house fly, Fannia canicularis (L), about 3 /16 inch long, is somewhat smaller than the house fly. This fly prefers a less-moist medium than the house fly for breeding and reproduction. The little house fly will choose poultry manure over most other media. This fly also prefers shade and cooler temperatures and is often seen circling aimlessly beneath hanging objects in the poultry house, egg room, and feed room. It is less likely to crawl about on people and food. However, it does cause people living near poultry establishments to complain about fly problems. The little house fly may hover in large numbers in nearby garages, breeze ways, and homes because it prefers shade. The black garbage fly, Ophyra aenescens (Wiedemann), is slightly smaller than the house fly and shiny bronze-black in color. The wings are held straight back. This fly tends to stay on the food source at night rather than resting on the ceiling or on outdoor vegetation, as does the house fly. The female fly doesn't seem to fly great distances, but has been found about 5 miles from its breeding area. Although black garbage fly larvae have been known to exterminate house fly populations, they should not be considered entirely beneficial because these flies can build large populations on the farm and disperse as adults to nearby communities. All stages are found throughout the year under suit-able conditions, and they show rather good tolerance to cold weather. The life cycle is similar to that of the house fly. Blow flies, sometimes known as green or blue bottle flies, are slightly larger than house flies and sometimes live in poultry houses. They prefer to breed and reproduce in decaying animal and bird carcasses, dog manure, broken eggs, and wet garbage.

Fly Biology

All flies develop through four life stages: egg, larva, pupa, and adult. Adult flies lay small, white, oval eggs on the breeding medium, and creamy white larvae (maggots) develop in this moist (wet) material. Mature maggots crawl out of this material and move to a drier place for the pupal stage. The brown, seed-like pupae finally yield adult flies. Development from egg to adult fly may take just 7 to 10 days under ideal conditions.
Adult house flies live about 3 to 4 weeks, and females lay two to 20 batches of 75 to 200 eggs at 3- to 4-day intervals. At this rate, a pair of flies beginning operation in April, if all offspring were to live, would result in $1,010,000,000,000,000,000,000$ (191 quintillion, 10 quadrillion) flies by August. Allowing 1/8 cubic inch to a fly, this number would cover the earth 47 feet deep. Of course, this does not happen because beneficial predators and parasites keep the populations under control. Flies can be present in poultry houses year-round if there are warm temperatures.

**Cultural Control**

Manure management is the most effective way to control flies. As many as 1,000 house flies can complete development in 1 pound of breeding material. Fresh poultry manure contains 75 percent to 80 percent moisture, which makes it ideal for fly breeding. You can practically eliminate fly breeding in this material by reducing the moisture content to 30 percent or less. Drying manure is preferred because the product occupies less space and usually has less odour.

**Dry Manure Management**

In-house storage of manure requires drying it to a 30-percent moisture level and maintaining this level where sufficient storage space is available. Any practice that limits moisture in the droppings or aids in rapid drying is important for fly control.

**Water Management**

Managing the water content of manure is important in controlling flies. Following these steps can help minimize water content:

- Prevent leaks in water troughs or cups. Regulating water flow to an on/off cycle may help eliminate moisture problems.
- Adequate house ventilation is important at all times to help keep air moving over the manure.
- If the water table in your area is high, or if there is a danger of water running into the house from the outside, adjust the floor-grade relationship so that the house floor is higher than the outside surrounding ground. Have surface water run away from the building. Drain and fill all low areas around the houses.
- Prevent excessively high house temperatures, which encourage the chickens to drink abnormal amounts of water.
- Practice good husbandry by restricting excess water consumption, but not to the point of reducing egg lay.

**Sanitation**

Sanitation is the most important aid in successful fly control. Often, certain conditions in and around the poultry operation will encourage fly outbreaks. These must be eliminated. Follow these steps to improve sanitation:
• Quickly remove and dispose of dead birds and broken eggs. Dispose of them far from the poultry premises by burning in an incinerator or other approved management method.
• Clean up and dispose of feed spills and manure spills, especially if wet, immediately.
• Fix all water leaks from drinker lines and bell drinkers immediately.
• Clean out weed-choked water drainage ditches.
• Install proper gutters and downspouts on poultry houses to carry rain water far from buildings. Provide proper drainage in poultry yards.
• Minimize the migration of flies from other fly-infested animal operations close to the poultry house.

**Biological Control**

Entomologists encourage the use of biological control in poultry houses. Whenever you use beneficial insects, you must be very careful with insecticides. The macrochelid mite, Macrochelis muscaedomesticae, is reddish brown and less than 1/16 inch long. It feeds on house fly eggs and first-instar larvae. These mites, found on the outside layer of manure, can consume up to 20 house fly eggs per day. Another mite is the uropodid mite, Fuscuropoda vegetans, which feeds only on first-instar house fly larvae deeper in the manure. A hister beetle, Carcinops pumilio, is black and about 1/8 inch long and feeds on house fly eggs and first-instar larvae. This effective beetle predator, common in both broiler and layer houses, can consume 13 to 24 house fly eggs per day. Both adult and immature hister beetles live in the surface layers of manure. When using biological control methods, remember to manage the habitat for biological control by keeping the manure dry. Be sure to encourage the native strains of beneficials already present in the dry manure to populate. Remove manure only during the fly-free time of the year and eliminate insecticide sprays in manure pits.

**Mechanical Control**

Many types and styles of fly traps appear on the market each year. These traps are usually electrical, employing a black light with an electrically charged grid to kill the insects. Some traps are baited with a fly attractant material. Traps do appear to be helpful in tight, enclosed areas such as egg rooms—where there is a breeding fly population, if good sanitation practices are followed. However, in areas of heavy fly populations, traps are not effective in reducing fly numbers to satisfactory levels. Use traps in the middle of the night away from doors and windows. One should judge a trap by the population of flies remaining in the area and not by the number of flies caught in the trap. Most entomologists feel that fly traps used alone are not effective in controlling flies, especially in and around livestock and poultry operations. Use a fan to blow air through a screened doorway from the egg room or other work area into the main poultry house. Flies will not move against the wind into the egg room or other work area. There are commercial electric-powered air curtain fans. Use sticky fly strips where appropriate.

**Surveillance**
It is important to monitor fly populations to make control decisions. Visual observations alone can be misleading. One needs to know the fly's behavior patterns and history. Documentation is very helpful in legal defense if needed. Moving tape count. This is the best surveillance method, taking about five minutes each day walking on a 1,000-foot walk to catch 25 to 75 flies. Walking down and back in each house is cheap and easy. Use the same walk pattern, the same time of day, when carrying the sticky fly tape.