Ohio State University Extension Fact Sheet

Entomology

1991 Kenny Road, Columbus, Ohio 43210-1000

Vinegar Flies

HYG-2109-97

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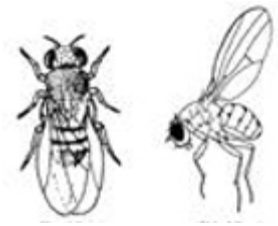
Common Name	Scientific Name
Vinegar, Pomace or Small Fruit Flies	*Drosophila* spp.

Vinegar flies may become a nuisance in homes, restaurants, fruit markets, canneries, etc., especially when associated with decaying or rotting fruit and vegetables. Indoors, flies may be seen hovering around overripe fruit and vegetables, baked goods containing yeast, garbage cans and beverages such as fruit juices, cider, soft drinks, beer, wine and vinegar. Sometimes a rotten banana, potato, tomato, onion, melon, squash, pineapple or apple, dirty garbage receptacle, unclean sour mop or dishcloth, empty tomato catsup bottle, or drain water in refrigerators or iceboxes can yield a heavy population of these flies. Outdoors, they become numerous during summer and autumn where fruit and vegetables are harvested and then suddenly disappear when cold weather arrives. Some species are attracted to human and animal excrement, also feeding on fruits and uncooked foods, serving as a disease carrier.



Vinegar flies
Top and Side View

Identification

Adult vinegar flies are about 1/8 to 1/5 inch long, dull brownish-yellow to brownish-black with red eyes in some species. The head and thorax are tan-colored, while the abdomen is black and gray underneath. The wings have two "breaks" in the leading edge near the body. The third antennal segment is oval or long with the outer bristle (arista) nearly always feathered. Eggs are pearly white with two to four threadlike tubes seen under magnification. Larvae are

about 1/10 to 1/5 inch long, cream-colored, legless, eyeless and tapered to a point at the head end. Larvae have an extended stalk-like breathing tube at the tail end of the body. Pupae are about 1/8 inch long, brown and seedlike, with two hornlike stalks at one end.

Life Cycle and Habits

Female flies lay about 500 eggs (up to 2,000 eggs) singly near the surface of moist, fermenting food material such as overripe fruit, rotten vegetables, dirty garbage containers, slime in drains and waste materials. Eggs hatch in 24 to 30 hours into tiny larvae that feed near the surface of fermenting food masses. Larvae feed principally on the yeast in the fermenting fluids from five to six days and crawl to drier portions of the food or even out of it to pupate. The larva transforms into the pupa in the last larval skin or puparium. Newly emerged flies are attracted to light, become sexually active in about two days, mate more than once and are strong fliers, traveling up to 6-1/2 miles in 24 hours. The life cycle may be completed in 8 to 15 days depending on the temperature.

Adults are attracted to yeast growth that cause fermentation and populations may build up on boxes of cracked tomatoes in the field or on pallets at receiving stations of canneries. This fly has been widely used by geneticists in studies of the laws of heredity since it is very prolific, easy to rear and has a short life cycle. Experiments with radiation-induced mutations in these flies led to the successful discovery of the sterile-male technique for insect control, especially the screwworm and certain other fruit flies. Eggs laid by females become nonviable after mating with radiation-treated males. Some species of fruit or vinegar flies have been responsible for human intestinal myiasis (a form of diarrhea) common among workers in grape vineyards.

Control Measures

Vinegar flies do not bite humans but are a nuisance by their presence. It is best to concentrate on eliminating the larval feeding sites and breeding sites.

Eradication

In Ohio, these flies are often quite abundant outdoors in late August, September and October when fruits and vegetables become ripe and mature. Homeowners bring garden produce indoors unknowingly along with various life stages of these flies.

Sanitation is critical in the successful control of these flies. Sometimes simply eliminating an overripe banana, jars of fermenting home canned foods, cider, fruit juices, empty catsup containers or dirty garbage cans will control these pests. All exposed fruits and vegetables not consumed immediately should be refrigerated before fermentation begins. Check garbage-laden drain water, clean the gelatinous material in drain pipes and install (16 mesh) screens since these flies can pass through ordinary house fly screening.

Successful control involves eliminating all possible breeding sites. Sites can be found by placing masking tape or clear plastic taped over garbage disposals and drain openings overnight to detect fly emergence.

Use good night-light discipline, especially over doors and windows when adults are present. Use special yellow light not attractive to insects. Mercury-vapor lamps at entrances should be replaced with sodium-vapor lamps. Flies are attracted to light and moisture.

Where vinegar or other nuisance flies are a potential threat to food processing plants, forcing a strong current of air, aimed at an angle toward the exterior of the plant over vehicle doorways, has proven to be a valuable prevention tool.

Trapping

One commercial, nontoxic, pesticide-free vinegar fly trap is known as "Bio-Logic Natural Catch Plus Fruit Fly Trap." This convenient ready-to-use vinegar or fruit fly trap reduces fly populations 70 to 80 percent or more. Traps are

placed three to four feet apart on countertops or in display cases of onions, bananas, tomatoes, salad bars or wherever flies are a problem. These simple, safe, low maintenance traps remain effective, approximately 30 days. The attractant is a pre-measured food-grade vinegar.

A Mason jar with black paint or paper to cover the mouth or top third makes a good trap. Coat the inside of the jar with a sticky liquid such as diluted honey or vegetable oil. Invert the jar over a bait such as crushed bananas. Rest the jar upside down on two blocks of wood to allow flies space enough to feed on the bait. After leaving the bait, they fly upwards to the light portion of the jar, rest on the sides and are killed or get stuck.

Insecticides

Household pressurized aerosol sprays of pyrethrins will give good kill of flies, but will do nothing to eliminate larval (immature) populations. Repeat spray applications will be needed to kill additional, newly-emerging adults from immature stages at the feeding and breeding site until sites are found and eliminated. For fruit flies in food processing plants, cyfluthrin (Tempo) is labelled. Before using any insecticide, always read the label and follow directions and safety precautions.
