

# Control of Flies

in farm and ranch buildings

I. Barry Tarshis and Morton Smith

Dibrom—in sprays or in sugar baits—gave successful fly control at a stock farm in Whittier, a cattle ranch in La Puente, a dairy in Artesia, and a poultry ranch in Moorpark.

The spray used at Whittier and La Puente was an emulsion of 1½ ounces of Dibrom 8 E concentrate to 2½ gallons of water, containing one-half pound of granulated sugar as an attractant. After livestock was removed from the barns, spray was applied thoroughly, inside and out. An agitating tank hydraulic pump, with low-pressure fogging nozzle, gave a spray just less than runoff. Particular care was taken under the eaves and around window and door frames. The same spray was applied to all fences around the corrals; to all ground surfaces littered with animal feed, manure, or other organic matter; to manure piles, trash and garbage containers; and to all trees and shrubbery near the barns or corrals. When all areas were sprayed weekly, fly control far surpassed that achieved by previous treatments with standard insecticides, and none of the animals near the areas being sprayed was affected.

Addition of a small amount of sugar—

two pounds to 30 gallons of spray—was sufficient to attract and, apparently, to hasten the knockdown of flies. The sugar and insecticide were mixed with a few gallons of water before they were added to the rest of the water in the sprayer tank.

Experimental work in the dairy at Artesia was undertaken in April and May, 1960. In spite of temperatures between 46° F and 80° F and humidities from 26% to 100%, more than 1,500,000 flies were killed during the four weeks of testing.

To avoid spraying around lactating animals, dry sugar bait was prepared with one teaspoonful of Dibrom 8 E concentrate and one pound of granulated sugar, thoroughly shaken together in a quart jar. Bait trays of galvanized sheet metal—11" × 17" × ½" deep—were placed outside the milking barn, directly on the ground and at 4" above ground. Masonite bait trays of the same size were affixed to the louvered windows inside the barn, approximately 7' away from the milking area, six on each side of the barn. Each tray was baited with one tablespoonful of sugar-Dibrom mixture.

The trays were first examined 24 hours

after being baited. Trays—elevated or not—outside the barn and in corrals were filled to overflowing with dead and near-dead flies. Each tray contained more than 8,000 flies, and heaps of flies were found on the ground around the tray, but the overflow was not measured. A tray placed under a molasses barrel at one end of a corral was completely filled with flies after 2½ hours.

Bait that had not been eaten by flies was caked and stuck quite securely to the trays. In some trays additional bait was needed after seven days, but some trays retained their bait as long as 28 days, and the insecticide was still effective.

Only a few flies were found in the baited trays inside the barn, because much of the bait was washed out of the trays whenever a string of cattle was washed before milking, and because most of the flies in the barn fed on the dry feed supplied the cattle.

To obtain records for areas of dense fly populations, wooden trays were baited with five tablespoonfuls each of dry sugar-Dibrom and placed in or near corrals. Chicken wire was used to keep cows

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Spraying exterior of a poultry house with Dibrom for fly control.



## FLIES

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away from the bait. After 48 hours, approximately 20,000 flies were taken in each of two 10' x 12" x 4" trays near the molasses barrels and more than 35,000 flies were taken in a 3' square and 4" deep tray near a calf corral. Additional heaps of dead flies were found on the ground near the baited trays.

Wet sugar-Dibrom bait was prepared with one pound of granulated sugar and one teaspoonful of Dibrom 8 E, thoroughly mixed with one cup of water. The syrup was just thick enough to be painted easily onto various surfaces with a 4" paint brush. Several of the large wooden trays were painted with the wet bait. Forty-eight hours later more than 25,000 flies were found in each of the 10' long trays and more than 65,000 flies in each of the 3' square trays.

The reason greater numbers of flies were taken with wet bait than with dry bait may be the greater surface areas treated with the wet bait. The flies cleaned up the wet bait much more rapidly than the dry. Flies were knocked down very rapidly by either type of bait.

Unused dry or wet sugar-Dibrom bait can be stored in tightly lidded jars for a number of weeks without loss of the active material.

Fences, concrete walks, brick walls, sides of buildings, and other areas were treated with wet sugar-Dibrom bait with fairly good results, but the painted trays gave the best results.

A weaker compound was tested at the same Artesia dairy during the latter part of June, 1960. Several wooden trays were baited as before, except that Dibrom 4 E

**More than 1,500,000 house flies were taken during a 30-day period from collection trays baited with dry and wet sugar-Dibrom at a dairy in Artesia.**



**Method for recovering fly larvae from chicken droppings.**

was substituted for Dibrom 8 E, either wet or dry. More than 250,000 flies were taken during an 18-hour period, with temperatures from 60° F to 90° F and humidities from 20% to 84%.

Experiments with Dibrom 4 E were undertaken at the Moorpark poultry ranch during the latter part of 1960. Work was conducted in one of the smaller buildings, where the troublesome lesser house fly was more abundant than the common house fly. The building was well shaded and there was very little movement by the house flies. The habit of the lesser house fly in daylight is to hover above the ground without alighting and to move little during its resting period.

Dry and wet sugar-Dibrom 4 E bait trays placed in the poultry building, attracted but a few house flies and almost none of the lesser house flies.

Because bait trays were ineffective for control of adult flies of both species in the poultry building, a space spray was used, after a preliminary test on six laying hens, selected at random and isolated in a large pen at one end of the building. Spray material was directed above and onto the hens, as might accidentally happen if the spray was used routinely in the poultry building. None of them suffered any ill effects from the insecticide.

The spray used at the poultry ranch contained 24 ounces of Dibrom 4 E in 30 gallons of water plus two pounds of granulated sugar. Chickens were necessarily present in the buildings during treatment. Insecticide was sprayed into the air, onto walls and ceiling above the hens, and on the droppings under the cages.

None of the flies that came in contact with the spray were ever observed reviving after knockdown by the insecticide. Large numbers of dead flies were found on the ground after spraying, and neither lesser house flies nor common house flies were found alive in the building after spraying. Fly populations started building up again after 10 days, but weekly sprayings of buildings and grounds kept the large populations of both species of flies under control.

A stronger spray, containing four ounces of Dibrom 4 E concentrate to 2½ gallons of sugared water, was applied to the chicken droppings. At various times, before and after spraying, composite half-gallon samples of droppings were warmed by high wattage light bulbs. Fly larvae in the samples dropped through the hardware cloth bottoms of the containers and were collected and counted.

On the tenth day after spraying, when

# Grape Leafhoppers

resistant to insecticides

F. L. Jensen, E. M. Stafford, H. Kido, C. D. Lynn

The grape leafhopper in San Joaquin Valley vineyards has developed resistance to DDT, to malathion, and to Sevin. Resistance problems are most severe in the Orange Cove area, and extend beyond Orosi and Dinuba in Tulare County and beyond Reedley in Fresno County.

The standard value for satisfactory control in field tests is at least 98% reduction of grape leafhoppers in the nymphal stage. Neither Trithion nor Sevin gave satisfactory control at Orange Cove in 1959. Control of adult leafhoppers was less satisfactory than control of nymphs. In laboratory tests with field-collected adult leafhoppers, it took about seven times as great a concentration of Sevin to kill adult leafhoppers from Orange Cove as to kill a comparable percentage of those from Sanger.

Nymphs collected in the spring of 1961 from Orange Cove and others from a Kings County vineyard, where little or no insecticide had been applied for several years, were maintained separately on caged vines in the greenhouse at Davis. The second broods of adults produced were used in laboratory tests. From 20 to 60 insects from each source were treated with five different concentrations of Sevin. At each concentration tested, the leafhoppers from Orange Cove showed the lower percentage of kill 24 hours after treatment. The various treatments killed 1.9% to 32.7% of the insects from Orange Cove and 15.8% to 73.8% of those from Kings County. These results give a strong indication that resistance may account for the poor control in the field at Orange Cove.

The table gives details of those 1960 treatments in the Orange Cove area that gave 98% or greater reduction of grape leafhopper nymphs within 5-14 days after application.

A Sevin-Trithion-DDT spray, applied on May 14, gave 100% reduction of nymphs and a Sevin-Trithion spray gave more than 99.9% reduction. At the concentrations used, Trithion alone was better than Sevin alone. Delnav and Diazinon emulsifiable concentrates and Diazinon wettable powder gave less than 98% control. In dust form, neither Trithion nor Sevin-Trithion was satisfactory, but Sevin-Trithion-DDT dust gave 99.7% control.

Of the sprays applied on May 16-17, ethion, Thiodan, dimethoate—1 pint in

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the reduction of larvae was greatest, the numbers of lesser house fly larvae recovered ranged from 7% to 21% of the numbers recovered from unsprayed droppings. Larvae of the common house fly were found in the unsprayed droppings, but they were less numerous than larvae

of the lesser house fly. No live house fly larvae were found in the sprayed droppings.

A drainage ditch from the watering troughs of the poultry buildings, used for drinking purposes by the flies, was heavily infested with mosquito larvae and

pupae. This ditch was sprayed with Dibrom 4 E at the same concentration as was used in the chicken buildings. Adult mosquitoes and flies flying above the water or resting in clumps of tumbleweed were knocked down in seconds after spraying, and none revived. The water surface of the ditch was covered with dead flies, and the water in the ditch was completely free from mosquito larvae and pupae 18 hours after the water surface was sprayed. In addition, thousands of dead rat-tail maggots were found on the surface of the water.

Federal registration permits using Dibrom 4 E as a space spray and as a wet or dry sugar bait for control of house flies, lesser house flies, mosquitoes, gnats, and fruit flies in and around dairy and livestock barns, pig pens, poultry houses, cider mills, wineries and other processing plants.

*I. Barry Tarshis is Assistant Professor of Entomology, University of California, Los Angeles.*

*Morton Smith is Laboratory Technician in Entomology, University of California, Los Angeles.*

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**Dead house flies in sugar-Dibrom baited trays placed opposite a molasses barrel at one end of a corral. Upper trays—wet bait; lower trays—dry bait. Chicken wire on fence is to prevent cattle from reaching bait.**

