

house flies was first evaluated in both sexes by the method of Fye and LaBrecque (1971). In this method, male sterility is determined by allowing the treated males, after they have mated with treated females, to mate again with untreated virgin females. Since by that time the males may be several weeks old, the assessment of the effectiveness of the compound in males is not entirely reliable. Therefore a solution of camptothecin in methyl sulfoxide-acetone (1:1) was injected into newly emerged male house flies, and their fertility was evaluated by the method of Chang and Bořkovec (1964).

RESULTS AND DISCUSSION.—When both sexes were fed fly food or sugar diets containing various concentrations of the drug, mortality ranged from 30% (0.005% concn) to 95% (1% concn), but surviving females produced no eggs or only a few that did not hatch. At 0.001 and 0.0005% concn of the compound fed to both sexes, there was no toxicity, and the females laid no eggs. Even at 0.00025% concn, the fecundity of the females was reduced, and only 28% of the eggs developed into pupae. For evaluation of male sterilizing effects of camptothecin, treated males were crossed with untreated females. At 0.1% concn, the fecundity of the females was normal but the eggs did not hatch; at 0.001% concn, the hatch was reduced by ca. 50%.

The extent of injection experiments was limited by the inadequate solubility of camptothecin. At doses of 0.5 and 1 μ g/fly, male sterility was 37 and 34%, respectively; at 2.5 μ g/fly, when some of the compound remained undissolved, sterility increased to 54%, but the females laid only a few eggs.

Apparently, camptothecin is one of the most effective female chemosterilants in the house fly, similar in potency to the antimetabolite methotrexate (LaBrecque et al. 1960) except that the latter has no effect on males. Whether camptothecin is active also in other species of insects has not been determined due to the scarcity of its natural

source and to the complexity of its laboratory synthesis (Stork and Schultz 1971, Volkman et al. 1971). However, the compound deserves further testing when it becomes more readily available.

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Reusable, Autoclavable Silicone Rubber Dish for Insect Dissection¹

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During a disease-diagnosis study which involved a large number of gypsy moth larvae, *Porthetria dispar* (L.),² it became necessary to develop a dissecting dish that, while possessing the positive attributes of conventional wax and paraffin dishes, also could be sterilized and reused. A dish that met most of these requirements was prepared by combining an RTV³ silicone encapsulant, Dow Corning #3110, with a type S catalyst (Dow Corning Corp., Midland, Mich.).⁴ This encapsulant has a white low-viscosity base that is mixed 10 parts base to 1 part catalyst. The mixture was poured into 100×15 mm petri dishes to a depth of 8 mm and placed under vacuum (635 mm Hg) at 24°C for 30 min to remove air bubbles. After removal to atmospheric pressure, the silicone cured in 5-12 h at 24°C.

Because this silicone remains rubbery from -65° to 250°C, the dish (Fig. 1) can be used for pathological studies, autoclaved (121°C, 15 lb/in.² 15 min), and reused many times.

Silicone has additional advantages. Dissecting pins are

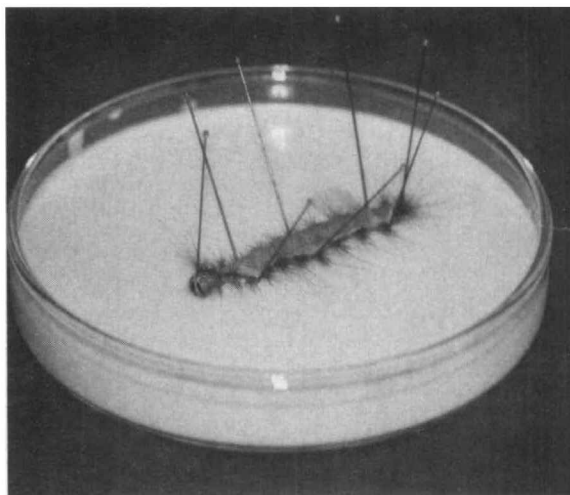


FIG. 1.—Gypsy moth larva prepared for dissection on autoclavable silicone rubber.

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² Lepidoptera: Lymantriidae.

³ Room temperature vulcanizing.

⁴ Mention of a brand name is given only for information and should not be considered as an endorsement by the USDA of the U.S. For. Serv.

held more firmly than in wax or paraffin, and the silicone reseals when cut with a sharp instrument or when pins are removed. The material can be molded permanently into any convenient size or shape and may be written on with pen or pencil. Its neutral, nonreflective surface provides an excellent photographic background, and it may be dyed in process to any desired color. Because the silicone does not react with physiological saline and with common tissue fixatives, such as 10% formalin, its surface is left unaltered

and clear of particulate matter that could interfere with dissection procedures.

The material has the possibly undesirable characteristic of staining when flooded with dye-containing fluids. Also, once hardened, it cannot be softened for the immobilization of specimens, and its resilience makes the dissection of brittle specimens somewhat difficult.

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Insect Growth Regulators: Large Plot Field Tests Against the Stable Fly¹ in Cattle Feedlots^{2,3}

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Two insect growth regulators (IGR) with juvenile hormone activity inhibited the eclosion of adult stable flies, *Stomoxys calcitrans* (L.), when applied to the surface of fly breeding media in Nebraska feedlots and to deposits of marine grasses along the Florida shoreline (Wright et al. 1973). The stable fly is recognized as being economically damaging to both man and livestock; currently, control is with sprays of insecticide directed towards the adults at feedlots or the larvae in marine grasses (Campbell and Hermanussen 1971). These measures provide only temporary relief from the stable fly.

The qualitative mode of action of the IGR is against the pupal stage and inhibits the eclosion of stable flies (Wright 1970, Wright and Spates 1971). We report here results of the IGR Stauffer R-20458 against the stable fly in large plot tests in natural breeding conditions.

MATERIALS AND METHODS.—Stauffer R-20458: (E)-6,7-epoxy-1-p-ethylphenoxy)-3,7-dimethyl-2-octene was supplied by Stauffer Chemical Co., Mountain View, Calif., and was tested as an emulsifiable concentrate (4-E) with 44.1% trans isomer as determined by Bowman et al. (1973).

A surface area of 40 m² with abundant stable fly larvae in a cattle feedlot in Keith County, Neb., was treated in July 1972 with a 1% concentrate (AI) of R-20458 using a John Bean sprayer (30 gal cap., 40 lb/in.² nozzle pressures). The material was applied at ca. 1 liter/m² surface area. All life stages of the stable fly were present within the breeding media that was composed of moist dirt, feed, and manure. Metal sleeves (1m²) were inserted around treated and non-treated areas, and screened cones (77 cm high) were placed atop these sleeves for entrapment of the emerging adults (Fig. 1). Percentage reduction in population achieved by the treatment was based on the numbers of adults that emerged in 30 days from untreated check plots when compared to treated plots in the same area. Adults were collected daily from all traps.

Soil samples were collected in triplicate from the treated area on days 1, 7, 14, 21, and 28 posttreatment for chemical analysis to determine the environmental persistence of R-20458.

Earlier results in small plot tests suggested that crust formation over the breeding media prevented penetration of IGR (Wright et al. 1973) so a 2nd test at a different Nebraska feedlot was begun in late August. The breeding area had a 10–20 cm hard, dried crust, and the stable fly



FIG. 1.—Adult emergence traps placed over treated and untreated breeding areas for the stable fly for the evaluation of surface application of the IGR R-20458.

was breeding immediately below this area. The surface area was treated at the same rate as in the 1st test (1 liter of 1% conc/m²), and similar fly traps were used for evaluation of the treatment.

RESULTS AND DISCUSSION.—The data (Table 1) indicate that the IGR Stauffer R-20458 effected at least 83% reductions in adult emergence of the stable fly with the reductions in the treated area ranging from 74–95.6%. The material was not effective against the house flies that were also in the treated media. Results from these large plot tests were in agreement with those obtained in earlier small plot tests at the 1% treatment level (Wright et al. 1973) in that similar treatments inhibited 64–91% of the eclosion of adults.

The persistence of R-20458 over the period of 28 days was determined to be as follows:

Time after application (days)	± ppm (range) ^a
1	138 (41–204)
7	96 (40–139)
14	64 (49–94)
21	47 (1–142)
28	103 (78–130)

^a Dry basis. Lower limit of detection 0.5ppm.

¹ Diptera: Muscidae.

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³ This paper reflects the results of research only. Mention of a proprietary product does not constitute endorsement or recommendation by the USDA.

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