

FLIT MLO PREFERRED FOR MOSQUITO CONTROL IN RESIDENTIAL AREAS

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Flit MLO has effectively and economically controlled mosquito production for a 14-day period when applied at the rate of 2 to 3 gallons per acre to breeding sources associated with urban community drainage facilities in Orange County. Because of its proven effectiveness on an operational basis over 32 sq. miles of urban area, the use of Flit MLO will be extended to the entire 320 sq. miles of urban community area within the District for the forthcoming 1970 season. The use of Flit MLO is preferred over conventional pesticides for the following reasons.

1. The use of FLIT MLO eliminates the hazard to the general public as well as to fish and wildlife.
2. The use of FLIT MLO eliminates the hazard to District employees.
3. The use of FLIT MLO reduces the spray-route man-hours and vehicle mileage up to 50 percent by increasing to 14 days the 7-day spray cycle required for emulsions or granular type larvicides.

Flit MLO was first used during the 1968 season in a 10-square mile urban area in northern Orange County. From an operational standpoint, we found the results satisfactory.

Flit MLO was tested again in northern Orange County during the 1969 season. Testing was done in a 32-square mile area or 1/10 of the total urban area in the District. Regular treatment cycles were begun on June 1, 1969, and ended on October 19, 1969. A time lapse of 14 days was maintained in all areas for the full summer season. The six incorporated cities encompassed within this test area have a total population of 120,000 and are located on rolling foothills at an average

elevation of 350 ft. The average mean temperature for the test area was 72° F. with maximums in the nineties and minimums in the fifties during the summer season.

The number and major types of community drainage facilities within the 32 sq. mile test area which are chronic mosquito breeding sources are as follows:

Curb inlets	—790 sites
Street gutters	—25 sites totaling 30,- 280 ft.
Roadside ditches	—53 sites totaling 59,- 600 ft.
Off street drains	—10 sites totaling 14,- 400 ft.

Flit MLO was applied to all breeding sites located on public rights-of-way from an International Harvester Scout equipped with a 50-gallon pressure tank maintaining 40 psi at the nozzle. An application rate of from 2 to 3 gallons of Flit MLO per acre to street gutters and roadside ditches was obtained by using a Spraying Systems Adjustable Cone Jet nozzle No. 5500-X3 set at its minimum discharge rate of 0.05 gpm and by driving at a speed of 5 mph. The nozzle was adjusted to its maximum setting of 0.20 gpm to produce a jet stream pattern for "slugging" the curb inlets to underground storm sewers as well as for reaching occasional sources located 10 to 15 ft. from the vehicle. For off-street application, Flit MLO was applied by a 2-gallon hand spray can using the same pressure and nozzle.

Of the four separate community drainage routes within the test area, three were treated eight times and one was treated nine times for a total of 33 treatments

TABLE I.—Evaluation of Flit MLO for Mosquito Control in Residential Areas.

Source Location	Pre-Treatment Inspection Sept. 2, 1969			24 hr. Post-Treatment Inspection Sept. 3, 1969			13-day Post-Treatment Insp. Sept. 15, 1969		
	Map and Section ¹	Source Description	No. per dip		Larva	Pupa	Larvae (by Instar)	Pupae	Species Present
(by Instar)			Pupae						
1	4-26	Roadside ditch	0	2	source	dry	4 (All)	1	<i>Culex quinq.</i>
2	4-35	Paved gutter	9 (2,3,4)	1	0*	0	0	0	<i>Culex quinq.</i>
3	4-25	Roadside ditch	4 (All)	1	0	0**	0	0	<i>Culex quinq.</i>
4	1W-6	Offstreet drain	4 (2,3,4)	1	0	0	10 (All)	0	<i>C. quinq., C. pens., Culiseta incidens</i>
5	1W-6	Natural drain	4 (3,4)	1	0	0	30 (All)	0	<i>Culex quinq.</i>
6	1W-4	Natural drain	16 (3,4)	4	0	0	19 (2,3,4)	1	<i>Culex quinq.</i>
7	1W-9	Natural drain	20 (3,4)	10	0	0	20 (All)	0	<i>Culex quinq., Culex pens.</i>

¹ Sprayed under routine operational conditions at an average rate of 2 gals. per acre. The mean temperature for this period was 72° F. with a maximum of 92° F. and a minimum of 56° F.

** Several dead larvae present.

** Several dead pupae present.

during the full season. A total of 364 gallons of Flit MLO were used. The No. 5500-X3 Spraying Systems Cone Jet nozzle was found most satisfactory for this operation because the minimum spray setting produced a droplet size large enough to prevent drifting and swirling and the jet setting provided distance when needed.

During the 1969 season, random checks were made throughout the area. It was determined through these checks that by the 12th-13th day there was breeding in most areas but breeding was 90 percent larvae and 10 percent pupae. This would indicate that 14 days between treatment was not too long a period. Random checking after treatment with a time lapse of 24-48 hours showed 90-100 percent kill. There was no noticeable increase in emergence of adult mosquitoes and no increase in numbers of service requests from this test area.

A precise evaluation of the efficiency of Flit MLO during one spray cycle was made by the District Vector Ecologist, Gilbert L. Challet, for the period of September 2, 1969 through September 17, 1969. The sequence consisted of pre-spray qualitative and quantitative sampling, actual spraying, 24-hour post-spray sampling and a 13-day post-spray sampling. Table 1 presents the effectiveness of Flit MLO in the control of the three

species of mosquitoes found in seven typical breeding sources within the test areas. The conclusions of this evaluation were (1) that Flit MLO kills both larvae and pupae when applied at the rate of from 2 to 3 gallons per acre and (2) that Flit MLO provides control for a period of up to 14 days in Orange County.

The use of Flit MLO is economical because the dosage rate in gallons per acre is the same as required for diesel oil fortified with a suitable pesticide. The elimination of the pesticide for the control of mosquito breeding in community drainage facilities accessible to the general public is the objective of the Orange County Mosquito Abatement District. The quantity of Flit MLO required to maintain satisfactory mosquito control for a 14-day period within the 32 sq. mile test area averaged 1.4 gallons per square mile. The spray operator's time averaged 1.1 hours per square mile.

The use of Flit MLO at the rate of 2 to 3 gallons per acre on a 14 day treatment cycle throughout our 320 sq. miles of urban area has been adopted for the 1970 season because its use eliminates any hazard to the general public and to the District spray operator as well as to fish and wildlife.

The use of Flit MLO will expand up to 50 percent the urban area which each spray operator can service.

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