EVALUATION OF DURSBAN AS A LARVICIDE IN SEPTIC DITCHES

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In Brazoria County and along the Gulf Coast with its high water table and rainfall, there is an open sewage and stagnant water problem that produces *Culex fatigans* in large numbers continuously throughout the year. These situations develop outside incorporated municipalities and in small towns with inadequate sewage systems. There is an apparent lack of regard for public health by individuals in this area because people often build fine homes and simply run the sewer lines to the nearest roadside ditch, without the use of an intermediate tank for allowing the sewage to settle.

After several years of field analysis testing of the insecticide Dursban, it has become apparent that Dursban had good potential for larval control in open septic ditches and stagnant water (Ludwig and McNeill, 1966). The ability of the compound to adsorb onto organic matter was seen in test plots in the marshes in Brazoria County. Binding was also observed by Agricultural Products Research personnel of Dow Chemical when assays of

TABLE 1.—Number of days of 100% control after Dursban treatments.

Plot no.	Sq. ft. surface	Days 100% control
Granules—.5 lb./acre *		
5	810	98
11	1350	42
31	315	98
32	360	49
	Average	72
E. C.—.5 lb./acre *		
4	350	140
14	360	56
20	100	140
25	243	98
	Average	108
Granules—1 lb./acre *		
6	1647	98
12	360	133
21	1455	196
30	1606	49
	Average	119
E. C.—1 lb./acre *		
3	300	112
13	200	140
17	216	49
23	450	56
	Average	89
Granules—2 lbs./acre *		
7	900	133
16	720	70
22	1477	105
29	2892	105
	Average	103
E. C.—2 lbs./acre *		
2	450	259
10	675	140
19	84	63
24	405	98
	Average	140
Granules—4 lbs./acre *		
8	600	210
15	280	140
27	450	322
28	600	140
	Average	203
E. C.—4 lbs./acre *		
1	400	182
9	324	98
18	150	182
26	75	315
	Average	194

* Dosage on actual pounds active ingredient per acre.

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Dursban in dipping vats were conducted. The insecticide binds to the organic matter in the sewer ditches and does not leach out even if there is repeated flushing action.

Thirty-two open sewer ditches in and around Angleton, Texas with a long history of *Culex fatigans* breeding, were selected for the evaluation studies. These ditches had been sprayed weekly with #2 diesel oil and a spreading agent for at least 5 years in an attempt to control mosquito larvae.

Four application rates were used and with two different formulations (granules and emulsifible concentrate) making a total of eight evaluations each with four replications. The ditches were treated at the various levels on the basis of square-foot area of open water. All ditches had larvae at time of treatment and duration of 100 percent kill effect was noted by weekly observations after application. The results are listed in Table 1.

To further establish that Dursban was adsorbed on the organic matter in the ditches, a surface layer of organic matter was taken from a ditch in which control was still effective. Care was taken not to collect material over ¼ inch deep from the bottom of the ditch. At the same time water standing in the ditch was collected. Organic matter and water were taken from another ditch that had been treated with Dursban but in which mosquito larvae had developed. Two sets of three trays, each 9" x 13", were set for each location; one containing distilled water, one containing water from the ditch and one containing organic matter covering the bottom of the tray and filled with distilled water. Four egg rafts of *Culex fatigans* were placed in each of the six trays. The larvae in the four trays containing the distilled water and water from the ditches were fed ground dog food and the two containing organic matter were not fed. All egg rafts hatched and the larvae developed to the adult stage, with the exception of the tray containing organic matter from the ditch where control had persisted. The first instar larvae in this tray died soon after hatching, apparently at the time when they began feeding on the organic matter in the bottom of the tray. A repetition of this test yielded the same results.

References

LUDWIG, P. D., and MCNEILL, J. C., IV. 1966. Results of laboratory and field tests with Dursban insecticide for mosquito control. Mosq. News 26: 344–350.

Additional "Papers and Proceedings of the 24th Annual Meeting" will appear in the September number of *Mosquito News*.