

LABORATORY TESTS OF CONTACT INSECTICIDES AGAINST
THE ADULT OF THE SPINY COTTON BOLL WORM
(*Earias insulana* Boisd.)*

By

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The first experiment in cotton growing in Israel was seriously hampered by attacks of cotton pests. Of these pests, by far the most troublesome is the spiny boll worm, *Earias insulana* Boisd. which, uncontrolled, may cause loss of up to 80% of the crop.

As attempts to control *E. insulana* with DDT or BHC were unsuccessful, it was imperative that other measures be found. During 1953 and 1954, therefore, a number of contact insecticides in varying concentrations were tested against the adult in laboratory trials, and the results are reported in this paper.

SERIES I (1953)

Cotton plants or branches of *Hibiscus mutabilis* which had been grown outdoors, were sprayed with the test insecticides. After various periods of weathering, twigs from the sprayed plants were brought to the laboratory and each twig was put, stem end down, in a small jar of water. The small jars were then gathered in a gallon jar; each contained twigs from a single treatment. Food was supplied by means of a piece of cotton soaked with sugar syrup, placed on a leaf. One gallon jar contained unsprayed controls.

Series I consisted of two trials. In the first trial, the following insecticides were tested: DDT 50% W.P. at the rate of 1% and Toxaphene 40% W.P., at 2%. Those tested in the second trial were: DDT 50% W.P., at 1%; Dieldrin 25% W.P., at 0.25%; and Toxaphene 40% W.P., at 2%.

In the first trial, plants were tested after 1, 2, and 5 days of weathering; in the second trial, 3 days' weathering was given. The moths were introduced after the various weathering periods and were allowed to remain in the jar throughout the observations. Readings were made after 24 and 48 hours of exposure. The results of the first trial are presented in Table 1; those of the second are given in Table 2.

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TABLE 1.
COMPARATIVE EFFECTIVENESS AGAINST *E. insulana* OF VARIOUS INSECTICIDES
AFTER DIFFERENT WEATHERING PERIODS

Insecticide	1 Day's weathering			2 Days' weathering			5 Days' weathering											
	24 hr			48 hr			24 hr			48 hr								
	L	D	KD	L	D	KD	L	D	KD	L	D	KD	L	D	KD			
Controls	10	0	0	8	2	0	8	2	0	8	2	0	7	1	0	6	2	0
DDT: 50% W.P. at 1%	2	2	6	2	6	2	9	0	1	5	2	2	7	0	1	7	0	1
Toxaphene: 40% W.P. at 2%	0	6	2	0	10	0	7	2	1	2	6	2	8	0	0	7	1	0

TABLE 2.
COMPARATIVE EFFECTIVENESS AGAINST *E. insulana* OF VARIOUS
INSECTICIDES, AFTER 3 DAYS' WEATHERING

Insecticide	After 24 hrs' exposure			After 48 hrs' exposure		
	L	D	KD	L	D	KD
Control	10	0	0	10	0	0
DDT: 50% W.P. at 1%	8	2	0	7	3	0
Dieldrin: 25% W.P. at 0.25%	4	4	2	0	10	0
Toxaphene: 40% W.P. at 2%	20	12	8	7	31	2

It appears from the results of both trials that DDT is ineffective. Endrin, in emulsion form, is satisfactory after weathering of up to 2 days, but it loses effectiveness with longer weathering and is no longer potent after 5 days. Toxaphene and Dieldrin were effective after weathering of up to 3 days only.

SERIES II (1954)

From the methods used in the first series of trials, it was impossible to know whether the insecticides acted as contact poisons or as stomach poisons since the food supply was contaminated by contact with the sprayed leaf.

In the second series of trials, made to test additional insecticides (see Fig. 1 for formulations), a different method was used: after the branches of cotton and hibiscus plants had been sprayed and weathered for various periods, a single sprayed leaf was rolled against the inner wall of a test-tube. Five moths were introduced into the tube and allowed to remain in contact with the leaf for 1 hr, and then were transferred to a clean test-tube and fed with sugar syrup. Mortality was recorded 24 and 48 hours after removal from the sprayed leaf. Data are presented in Fig. 1.

As Fig. 1 shows, only Endrin, Lindane, Parathion and Malathion were effective as contact poisons. Of the four, Lindane proved to have the least

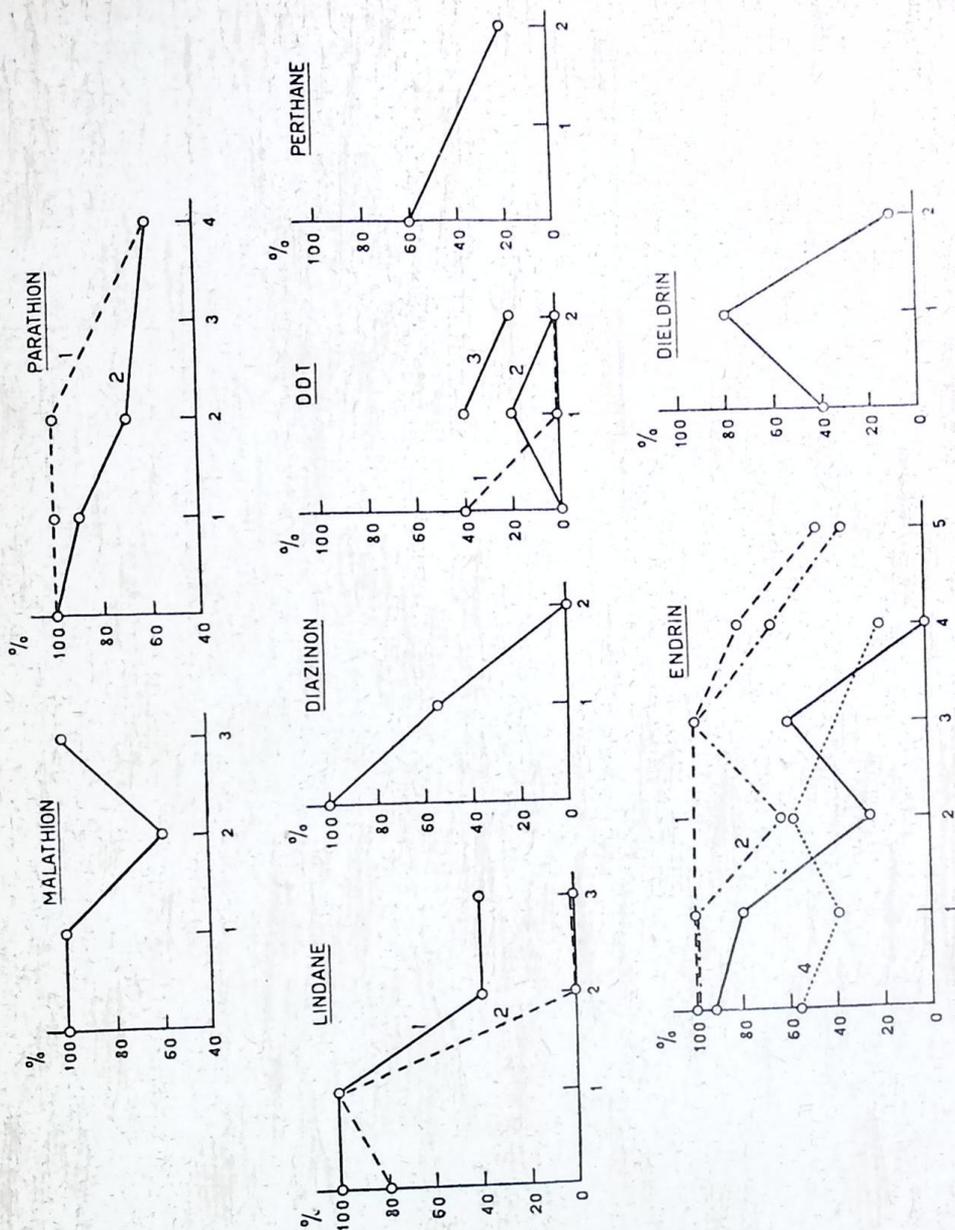


Fig. 1. Comparative effectiveness against *E. insulana* of various insecticides after different weathering periods.

MALATHION 25% W.P. 0.25%. PARATHION 46.5% Emulsion: 1) 0.3%; 2) 0.2%.
 LINDANE 50% W.P.: 1) 0.25%; 2) 0.12%. DIAZINON 40% W.P. 0.25%.
 DDT 50% W.P.: 1) 1%; 2) 0.5%; 3) Methoxychlor 50%, W.P. 0.5%.
 PERTHANE 50% W.P. 1%. ENDRIN 19.5% Emulsion 1) 1%; 2) 0.5%; 3) 0.33%;
 4) 10% W.P. 1%. DIELDRIN 25% W.P. 0.5%.

persistent residual effect, while Endrin was the most persistent, its effect lasting for 5 days. This insecticide was most effective at concentrations of 0.5% and 1.0%, while at 0.33% it was unsatisfactory. At the same concentration-level, the emulsion was superior to the wettable powder.

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