RELATIVE SUSCEPTIBILITY OF *PSOROPHORA CONFINNIS* (LYNCH-ARRIBALZAGA) LARVAE IN THE RICE PRODUCING AREA OF SOUTHERN LOUISIANA TO SELECTED INSECTICIDES[1]

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Studies conducted in 1965 revealed that populations of *Psorophora confinnis* (Lynch-Arribalzaga) ranging from 2 to 6 million larvae per acre were produced from rice fields in the southern rice-producing area of Louisana. These massive populations were observed during the months of May and June and corresponded to the flooding of the rice fields.

Since no dosage-mortality regression lines for different insecticides were available on *P. confinnis* it was deemed desirable to obtain this information for future reference.

MATERIALS AND METHODS. Test mosquitoes used in the insecticide toxicity tests were collected at six locations in the rice producing area of Southwest Louisiana: Louisiana State University Rice Experiment Station, Crowley; North Central Acadia Parish; West Central Lafayette Parish; Northwest Vermillion Parish; South Central Evangeline Parish; and East Central Jefferson Davis Parish.

Adult female *P. confinnis* were collected and transported to the laboratory at Louisiana State University in Baton Rouge where they were fed on an adult male chicken. The fed mosquitoes were retained individually in 2.5 x 10.0 cm. glass shell vials containing 2 cm. of cellucotton saturated with water from the area where the females were collected. Each female was provided one pre-soaked raisin for a source of carbohydrate and held in a rearing room which was maintained at 27± 3° C. and a 14-hour photoperiod provided by a 100 watt incandescent light bulb.

The cellucotton on which the eggs had been deposited was placed in a 30 ml. plastic cup. The cup was sealed with a cardboard top and stored at 27±3 ° C. until larvae were needed for testing.

Eggs were stimulated to hatch by flooding with a suspension prepared by placing loose oat straw in a gallon jar containing 5 g. of brewer's yeast and the jar filled to capacity with distilled water. After 24 hours the solution was ready for use.

The plastic cups containing eggs were filled with the hatching suspension and after 24 hours the larvae were transferred to 7 x 40 x 20 cm. enamel pans filled with distilled water. A maximum of 600 larvae were placed in each pan. A compressor with a ⅙ hp. motor operating at 1,725 r.p.m. was used to aerate the water. Rubber tubing 5 mm. in diameter with an adjustable shut-off valve extended from the compressor to the pans. The valve was adjusted so that air was pumped into a corner of each pan at the rate of 15 bubbles/min.

Commercially available rabbit feed in the form of pellets was ground with a mortar and pestle and 2–4 g. were added to each pan per day to provide food for the larvae. The larvae were held in the pans until late third and early fourth instars at which time they were randomly removed for testing.

In addition to the F_1 generation larvae that were used for testing purposes, second and third instar larvae were also collected with an aquatic insect net from rain puddles and intermittently flowing ditches and placed in lots of 200–350 in 1 qt. polyethelene bags. The bags were filled with equal amounts of water and air and sealed. An ice chest containing water

[1] A portion of a thesis presented by the senior author in partial fulfillment of the requirements of the degree of Master of Science.

cooled to 5–10° C. was used to transport the larvae to the laboratory. The larvae were placed in enamel pans, aerated, and fed as previously described. They were held at 27±3° C. for 24 hours prior to testing to eliminate those injured by collection and transportation techniques.

The mortality of *P. confinnis* to the test insecticides was determined by the procedure described by the World Health Organization (1963). The WHO test kit composed of preformulated DDT, lindane, dieldrin, malathion, diazinon and fenthion was used. In addition, emulsifiable concentrates of the following insecticides were used: Dursban® (*O,O*-diethyl *O*-(3,5,6-trichloro-2-pyridyl) phosphorothioate), Abate® (*O,O,O',O'*-tetramethyl *O,O'*-thiodi-*p*-phenylene phosphorothioate), Dasanit® (*O,O*-diethyl *O*- *p*-(methylsulfinyl) phenyl phosphorothioate), Furadan® (2,2-dihydro-2,2-dimethyl-7-benzofuranyl methylcarbamate), EL-400 (*O*-(4 Bromo-2,5-dichlorophenyl) *O,O*-dimethyl phosphorothioate), and naled. Desired concentrations were obtained by serial dilutions of the emulsifiable concentrates with distilled water.

RESULTS AND DISCUSSION. Table 1 lists the LC_{50}'s, LC_{90}'s and slopes of the dosage-mortality regression lines (ld-p) for the insecticides used in the base-line study. Fenthion, Dasanit, Furdan, and lindane

TABLE 1.—Relative susceptibility of *Psorophora confinnis* larvae to selected insecticides.

Insecticide	p.p.m. LC_{50}	p.p.m. LC_{90}	Slope of Line
Abate	.0014	.0113	1.42
fenthion	.0025	.0045	*
Dursban	.0027	.0234	1.37
EL-400	.0093	.0531	1.70
diazinon	.0095	.0207	3.76
Dasanit	.011	.074	*
malathion	.0257	.0482	4.69
Furadan	.035	.056	*
naled	.0365	.1373	2.23
dieldrin	.0534	.3632	1.54
DDT	.1222	1.0252	1.38
lindane	.16	.36	*

* Eye fitted curves.

mortality lines for *P. confinnis* larvae were plotted on log-probit paper and the resulting dosage-mortality regression lines were eye-fitted. Sufficient data were not collected to use a computer program (Daum and Killcreas, 1966) for the latter four compounds as was done on the other insecticides.

Literature Cited

DAUM, R. J., and KILLCREAS, W. 1966. Two computer programs for probit analysis. Bull. Entomol. Soc. Amer. 12(4):365–369.

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