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Table 1.—Mean number of cottonwood twig borer attacks for clonal selections from natural stands along the Trinity, Brazos, and Red Rivers in Texas.[a]

Trinity River		Brazos River		Red River	
Clone	Mean attacks	Clone	Mean attacks	Clone	Mean attacks
S4C1	11.0	S7C1	16.3	S13C1	15.0
S4C2	12.8	S7C2	12.7	S13C2	12.5
S4C5	15.2	S7C3	11.7	S13C3	11.8
S4C8	12.7	S7C4	10.5	S13C11	13.0
S4C9	14.3	S7C8	12.5	S13C12	10.5
S4C11	14.5	S7C12	14.0	S13C13	12.3
S4C15	12.0	S7C15	15.0	S13C14	11.5
S4C17	12.2	S7C16	15.0	S13C15	13.2
S4C18	13.7	S7C20	10.5	S13C20	15.0
S4C21	13.5	S7C21	11.0	S13C21	8.7
		S7C23	14.3		
Total means	13.5		13.2		12.4

[a] NS at the 0.05 level.

cottonwood twig borer. It does not outgrow native cottonwood, however, and would not be economical in production.

The diameter of the leaders appeared to have no relationship to the intensity of cottonwood twig borer attack. A simple linear correlation of leader diameter and the number of attacks for 3 Brazos River plantations showed very low "r" values (Norwood soil at Mumford 0.31; Miller soil at Mumford 0.11, and Norwood soil on University farm 0.11). Only the "r" value for the plantation on the Norwood clay loam soil at Mumford was significant (0.05 level). However, the value was low (0.31), and accounted for only ca. 10% of the variability among the clones. We (Woessner and Payne 1971) found a similar lack of correlation when we compared the intensity of cottonwood twig borer attack to volume production of the same native cottonwood clones. The results reported here and those reported earlier (Woessner and Payne 1971) suggest that host-tree vigor (as indicated by size) is not a primary factor regulating the intensity of cottonwood twig borer attack.

The absence of resistance to cottonwood twig borer attack in clonal selections from the natural stands investigated, coupled with the low level of attack on the NE-316 hybrid, suggests that hybridization of cottonwood may provide an answer to host-plant resistance in cottonwood. Further investigations must be carried out to determine the nature of the NE-316 resistance. A search of the genus *Populus* should be made to find other species resistant to attack by the cottonwood twig borer. The individuals most likely to form a desirable hybrid when crossed with the best native cottonwood selections should be selected from within a resistant species. Through such efforts a hybrid may be developed that is both resistant and economically productive.

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Effects of Diazinon, Dieldrin, and Supracide on Seedlings of Tomato, Eggplant, and Cabbage[1]

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Injury caused by various soil-inhabiting insect pests to the vegetable seedlings sometimes causes a total failure of the crop. Insecticidal treatments, though offering sufficient promise in controlling the pests, often show severe phytotoxicity on the delicate young seedlings. Selection of chemicals that are innocuous to plants is, therefore, desirable.

Chapman and Allen (1948) reported chlorosis and reduction in size of tomato seedlings following application of DDT sprays at concentrations between 0.512 and 1.5%. At a concentration of 0.008%, however, DDT stimulated growth of the plants. Dennis and Edward (1964) observed that higher dosages of aldrin and DDT stimulated growth of cucumber and carrot. The insecticides caused phytotoxicity to bean, tomato, and cabbage. They noted that plant growth and yield of tomato were decreased at all dosages of DDT. Hagley (1965) showed that aldrin and DDT at 14 lb/acre inhibited the root development and reduced the size of several vegetable seedlings. All the insecticides he used caused severe marginal and interveinal chlorosis. DDT and toxaphene showed greatest phytotoxic effects on the tomato.

The present investigation was undertaken to determine effects of 3 selected insecticides, dieldrin, diazinon, and Supracide® (*O,O*-dimethyl phosphorodithioate *S*-ester with 4-(mercaptomethyl)-2-methoxy-Δ^2-1,3,4-thiodiazolin-5-one), on the root and foliage development of tomato, eggplant, and cabbage at their early stage.

MATERIALS AND METHODS.—Twenty-day-old seedlings were planted individually in 8-in.-diam earthen pots in November. Prior to transplantation the weights of different seedlings were recorded to study the increase in weight at the end of the experiment, i.e., 35 days after transplantation. Similarly, soon after transplantation, the initial heights showed the growth of the seedlings subjected to different treatments. Solutions from the insecticides EC were applied in 4 small holes 2 in. deep around

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9141

Table 1.—Growth response of the seedlings to the insecticides.[a]

Treatment	Toxicant mg/seedling	Tomato	Egg-plant	Cabbage
(a) Avg increase in height (in.) in 35 days				
Dieldrin	20	3.02 bc	0.64 b	0.54 ab
	200	1.55 c	.58 b	.50 b
Diazinon	20	4.80 a	.75 b	.96 ab
	200	4.11 ab	1.46 a	1.30 a
Supracide	20	4.86 a	.78 b	.55 ab
	200	2.55 bc	.67 b	.69 ab
Control	0	4.22 ab	.56 b	.69 ab
(b) Avg increase in plant weight (mg) in 35 days				
Dieldrin	20	5.13 d	1.47 bc	3.95 d
	200	1.43 f	.54 d	1.65 f
Diazinon	20	7.77 ab	1.51 bc	7.24 a
	200	5.97 c	3.69 a	5.60 bc
Supracide	20	8.15 a	1.83 b	5.74 b
	200	2.27 e	1.05 cd	3.14 e
Control	0	7.13 b	1.71 b	5.17 c
(c) Avg shoot weight (g)				
Dieldrin	20	5.86 c	1.58 bc	4.48 c
	200	2.78 e	.97 c	2.46 d
Diazinon	20	8.04 b	1.65 b	7.02 a
	200	6.34 c	3.30 a	5.92 b
Supracide	20	8.70 a	1.86 b	5.80 b
	200	3.58 d	1.44 bc	3.90 c
Control	0	6.26 c	1.40 bc	1.80 e
(d) Avg root weight (g)				
Dieldrin	20	1.24 a	.64 bc	.56 bc
	200	.62 b	.36 c	.28 c
Diazinon	20	1.70 a	.65 c	1.35 a
	200	1.60 a	1.18 ab	.75 bc
Supracide	20	1.50 a	.76 bc	.76 bc
	200	.66 b	.40 c	.33 bc
Control	0	1.84 a	1.40 a	.88 b

[a] Means followed by the same letter are not significantly different at the 5% level by Duncan's multiple range test.

the base of the stem at rates of 20 and 200 mg/seedling. The dosages approximated 0.84 and 8.4 lb/acre, respectively. Three applications were made at interval of 10 days, beginning with 2 days after transplantation. Care was taken to avoid direct contact of the toxicants with the seedlings. Each plant was given 100 ml water daily. Plant height was recorded at 10-day intervals, and observation was made on the phytotoxicity and other abnormal symptoms. At the end of the experiment the plants were removed from the pots, soil was removed by washing with water, and the weights of the whole plant, root, and shoot were recorded to assess the effects of the insecticides on different parts of the plant. The experiment was laid out in a completely randomized design with 5 replications. Five plants constituted a replication.

RESULTS AND DISCUSSION.—Results summarized in Table 1 indicate that Supracide exhibited no significant effect on plant growth except in tomato. The insecticide, however, at 200 mg/plant reduced the weight of eggplant and cabbage and produced characteristic marginal necrosis in the leaves of cabbage and tomato. Diazinon at 200 mg/plant showed a pronounced growth-stimulating effect in eggplant and slightly in cabbage. Dieldrin at the higher dosage inhibited growth of tomato, the leaves of which showed chlorosis and characteristic curly appearance. It also significantly reduced the weight of all the seedlings. Diazinon at 20 mg/plant inccreased significantly the weight of cabbage, mostly because of thickening of the leaves and stem. At 200 mg/plant, this insecticide caused reduction in the weight of tomato plants, but the height and weight of the eggplants markedly increased.

Dieldrin and Supracide at the higher dosage caused poor root and shoot development in tomato, while diazinon and Supracide at the lower dosage showed a higher shoot development in this plant. Apparently except in eggplant the root development of the seedlings was not much affected by the insecticides.

CONCLUSION.—Since the 200-mg rate is quite exorbitan for practical purpose, conclusion is drawn from th 20-mg rate. The results observed with the latter dosag indicate that none of the 3 insecticides tested caused an phytotoxicity or abnormal symptoms. Growth of th seedlings was not much affected. The chemicals, how ever, significantly increased the weight of the shoot i cabbage.

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Habitats and Distribution of the Pavement Ant[1] in New Jersey[2]

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The pavement ant, *Tetramorium caespitum* (L.), commonly invades houses and is an economically important pest. The pavement ant usually is considered an introduced species in the United States, where its range includes most of the eastern half of the country from the Atlantic seaboard to the Mississippi Valley and certain areas of the West (Creighton 1950). No comprehensive study of its habitats has been made in this country, and its present distribution in New Jersey is unknown. ported herein are results of a study of the habitats distribution of the pavement ant in New Jersey. have reported the bionomics of this species elsewh (Bruder and Gupta 1972).

MATERIALS AND METHODS.—Preliminary studies were gun in the spring of 1968 in Monmouth County, N to determine various habitats. Test sites included be residential, woodland, and farm or rural areas. randomly selected locations within each major a 20–40 microscope slides, each containing a drop of h as an attractant, were placed at 1.8- to 3-m inter marked with 30-cm florist stakes, and left for a period. The slides were then placed, along with

[1] Hymenoptera: Formicidae.

[2] Part of a thesis submitted by the 1st author in partial fulfillment of the M.S. degree, Rutgers University. Paper of the Journal Series, Agricultural Experiment Station, Rutgers University, New Brunswick, N. J. 08903. Received for publication July 25, 1971.