

## *Diaprepes abbreviatus*: Control on Citrus Foliage with Carbaryl<sup>1,2,3</sup>

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### ABSTRACT

Two tests with carbaryl were made in Puerto Rico in 1972 and 1973 for control of adult *Diaprepes abbreviatus* (L.) on citrus foliage. Carbaryl at 1 lb AI or more/acre

plus pinolene or in the Sevin®-4-oil formulation gave at least 92% control for 22 days after treatment.

The so-called sugarcane rootstalk borer weevil, *Diaprepes abbreviatus* (L.), has a broad host range in the West Indies that includes many fruit, vegetables, and ornamentals (Martorell 1945, Wolcott 1948). The adults, which can cause severe damage by feeding, particularly on the tender growing tips and leaves of various crop plants, are not easy to control. Bullock (1971) found that of 24 pesticides tested, only carbaryl and Bay 45432 (*O,O*-dimethyl phosphorothioate S-ester with 2-mercapto-*N*-methylacetamide) provided satisfactory control for 14 days; the other materials failed to control for more than 7 days. Subsequently Wong et al. (1975) reported that a formulation of carbaryl and oil was active for at least 22 days, though carbaryl alone was effective less than 1 wk. Other rates of the carbaryl-oil formulation and carbaryl plus a sticker-spreader-extender were tested against the adult *D. abbreviatus*, and the results are reported here.

**MATERIALS AND METHODS.**—The study was made from November 1972 to August 1973 in a block of orange trees at the Fortuna Agricultural Substation of the University of Puerto Rico near Ponce, P.R. In each of the 2 tests, treatments were applied to single-

tree plots (5 replicates). Treatments were full coverage sprays applied with a quart-size aerosol unit. At 7, 21, and 26 days for Test 1 and 7, 14, 21, and 27 days for Test 2 after treatment, 10 field-collected weevils were caged on terminals bearing tender young foliage on each of the treated and untreated check trees (the weevils prefer to feed on the newly developed flush). The cages were made of nylon netting and were described by Wong et al. (1975). Mortality of the weevils was determined at 1 and 3 days after exposure.

**RESULTS AND DISCUSSION.**—Table 1 gives results of Test 1. Plainly the higher rates of Sevin®-4-oil had longer residual activity than the lower rates. At 1 lb or more/acre, it caused at least 96% mortality at 24 days after treatment; the lower rates (0.25 and 0.5 lb/acre) caused only 54 and 74% mortality, respectively. The addition of Florida Citrus (FC) 412-66 oil, a type of spray oil specified by Simanton and Trammel (1966) for use on citrus, did not extend the residual activity of Sevin-4-oil. Oil sprays alone were ineffective.

Carbaryl plus pinolene produced the same quick knockdown and residual activity as the higher rates of the Sevin-4-oil formulation.

In Test 2, higher rates of carbaryl in the mixture with pinolene performed better than lower rates. The lowest rate of carbaryl plus pinolene (0.25 lb + 4 fl oz/acre) and carbaryl alone (2 lb AI/acre) were in-

<sup>1</sup>Coleoptera: Curculionidae.

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Table 1.—Control of *Diaprepes abbreviatus* with carbaryl and oil at Ponce, P.R., Nov.–Dec. 1972.

Material	Dose (AI) to 65 trees/acre	% mortality at indicated dose posttreatment (days)					
		8	10	22	24	27	29
Sevin®-4-oil <sup>a</sup>	0.25 lb <sup>b</sup>	88	100	48	54	4	8
Sevin-4-oil	0.5 lb <sup>b</sup>	94	100	68	74	24	40
Sevin-4-oil	1 lb <sup>b</sup>	100		96	100	42	74
Sevin-4-oil	1.5 lb <sup>b</sup>	98	100	96	96	58	80
Sevin-4-oil	2 lb	100		100		76	88
Sevin-4-oil	2 lb + 585 fl oz FC 412 oil	100		100		66	92
FC 412-66 oil	650 fl oz	2	14				
FC 412-66 oil	130 fl oz	2	12				
Carbaryl + pinolene	2 lb + 4 fl oz + 2 gal water	100		100		72	88
Check (water)		0	10	8	18	2	8

<sup>a</sup> A commercial formulation of 4 lb carbaryl in 1 gal of oil (Union Carbide Corp.).

<sup>b</sup> FC 412-66 oil is added to each rate of Sevin-4-oil to bring the volume to 130 fl oz/acre.

effective within 10 days after application (86 and 84% mortality, respectively). Carbaryl plus pinolene at 0.5 lb + 4 fl oz/acre was effective at least 17 days after application. The higher rates of carbaryl plus pinolene (1, 2, and 4 lb + 4 fl oz/acre) and Sevin-4-oil (2 lb AI/acre) caused at least 92% mortality when exposed to 21-day-old residues for 3 days. None of the materials had residual activity after 24 days. These data also showed that 3 rates of pinolene (2, 4, and 8 fl oz) added to carbaryl provided similar control.

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Data were collected to systemic insecticides on g differences were detected 17 and 23 days, respecti bloom, granular soil treat disulfoton showed signific

Various insecticides a of aphids, thrips, and r ings. Our previous apl gested that gladiolus t insecticides might result growth has been shown cide applications (Chapr Lilly 1952, Wressel and reduction has occurred and Arant 1954).

METHODS AND MATER field experiment was co in 1972. The area was plots, each of which was in. or more diam.) of Pears.' Row spacing wa tween ranges. Ten treat lar and foliar spray in replicated 6 times in a design.

Treatments were: dir demeton-methyl 2 lb/ga. carbofuran 10% G, pir 75% S, disulfoton 15% 10% G, and untreated applied at 1 lb AI/acre.

Two granular and 3 f made. The 1st granula evenly into the trenches dress applications were r of the plant bases on J soil by hoe. Foliar spray July 6, 23, and Aug. 20.

All corms were dipped cide prior to planting. izing or herbicide treatme

Plant emergence and F July 2 and 7, respectivel lengths, and bud numbe August and early Septem was passing its floral pea urements were made to t

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