Notes

DURATION OF EFFECTIVENESS OF THE COPPER SPRAY "COPRANTOL" FOR THE CONTROL OF BROWN ROT OF GRAPEFRUIT CAUSED BY *PHYTOPHTHORA CITROPHTHORA*

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A single spray of 0.7% Coprantol applied to grapefruit trees at the rate of 240 l/1000m² retained its effectiveness throughout the rainy season and decreased the number of brown rot spots induced by inoculation with spores of *Phytophthora citrophthora* from 8–50 to 0–2.5 per fruit.

Fruit in the lower part of citrus trees is often infected with brown rot by splashes of soil water containing spores of *Phytophthora citrophthora* (R. E. Sm. & E. H. Sm.) Leonian. Rotting fruit drops prematurely and the losses up to 1 m from the ground may reach as much as 80 percent (4). Copper sprays have long been known to be effective against brown rot infection (1,3) and they are still recommended for commercial use (2). Experiments conducted in Israel with various copper compounds available on the local market (4) pointed to Coprantol as approaching Bordeaux mixture in fungicidal action and superior to it as regards ease of preparation and application. The aim of the present work was to determine the duration of effectiveness of Coprantol under the conditions prevailing during the rainy season in Israel and to ascertain whether a single spray could protect the fruit throughout the picking period.

A large part of a commercial grove (A) was sprayed on Nov. 22, 1966, with 0.7% Coprantol (50% copper, produced by CIBA, Switzerland), equivalent to 87% copperoxide chloride, at the rate of 240 liters per dunam (1000 m²), using a mechanized boom spray. The treatment was repeated on Nov. 27, 1966, in another grove (B). Subsequent observations indicated that the spray achieved a measure of control comparable to that procurable by 1% Bordeaux mixture, and no damage attributable to the treatment was discerned.

Four trees were marked at random in the sprayed part and four in the unsprayed part of each grove to provide fruit samples throughout the duration of the experiment. A pooled sample of 20 fruits, composed of random five-fruit samples from each of the marked trees in the sprayed part of each grove, was taken at two to three-week intervals, seven times in the course of the harvest season, and an equivalent sample was picked for each assay from the unsprayed part. All the sample fruits were inoculated by atomizing them with an aqueous suspension of spores of *Phytophthora citrophthora*. Sporangia were obtained by the method of Schiffmann-Nadel and Cohen (6). The inoculated fruits were kept in a humid chamber at 17°C and disease spots were counted when the maximum number of spots had appeared.

The results given in Table 1 show that the single Coprantol spray remained effective throughout the season. As against the consistently high rate of infection recorded for the controls throughout the season, the average number of rot spots developed on Coprantol-treated fruit after inoculation was very small throughout the season, ranging from 0 to 2.5 *vs.* 8 to 50 in the unsprayed controls. It should be noted that the 1966/67 season was exceptionally rainy (752 mm at grove A and 794 mm at grove B), with heavy downpours of short duration: conditions conducive to washing off of the spray material.

Preliminary experiments conducted during the preceding season of 1965/66 on both grapefruits and oranges yielded similar results (5). It may therefore be concluded that a 0.7% Coprantol spray applied in November is likely to provide adequate control against brown rot infection of citrus fruit throughout any normal harvest season.

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TABLE 1

THE EFFECT OF 0.7% COPRANTOL SPRAY ON GRAPEFRUIT SUBSEQUENTLY INOCULATED WITH *PHYTOPHTHORA CITROPHTHORA*

(Each value represents the mean of 20 fruits)

Date of assay	11.XII.66	22.XII.66	4.I.67	24.I.67	15.II.67	1.III.67	*Average for the season*
	Number of brown rot spots per fruit						
Fruit from Grove A							
Sprayed	0.4	0	0.3	0	0.3	0.4	0.3
Unsprayed	23.8	16.7	14.8	8.0	28.6	21.1	18.9
Fruit from Grove B							
Sprayed	0.7	1.0	1.4	0.3	0.2	2.5	1.0
Unsprayed	10.4	32.2	21.4	12.5	17.7	50.0	22.3

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