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OXAMYL RESIDUES ON EGGPLANT[1]

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Abstract. **Colorado potato beetle is a pest of eggplant in Florida. Tests were run to determine the effectiveness of oxamyl in controlling the pest with plans to obtain registration. Eggplant was sprayed with oxamyl for the control of Colorado potato beetle. Samples of eggplant were taken at 7 and 14 days following application for residue analysis. The whole fruit was analyzed using gas chromatography with a N-P detector.**

This report deals with the residue of oxamyl on eggplant.

Oxamyl (methyl N′,N′-dimethyl-N-[(methyl carbamoyl) oxy]-1-thiooxamimidate) has been shown to be effective in the control of the Colorado potato beetle. This research was conducted to obtain insecticide residue levels in support of a petition for registration.

Materials and Methods

The insecticide was applied as two soil applications on May 21 and June 18, 1979 followed by two foliar applications on June 29 and July 5, 1979. Two different rates were used, the recommended rate 2 lb (X) of ai/acre for two soil applications (broadcast) and 1 lb. ai/acre for two foliar applications (spray), and a higher rate (2X) of 4 lb. ai/acre for two soil applications and 2 lb. ai/acre for two foliar applications. Plots were of 1/4 acre with 4 replicates of each treatment. Row spacings were 4′/row and plant spacings were 18″/plant. Samples were taken 7 and 14 days following treatment. Fruit was hand picked and frozen whole. For residue analysis (1, 2, 3) the fruit was partially thawed, cut into chunks and, macerated until well mixed in a Hobart food chopper. Twenty-five g samples were extracted three times with 100 ml portions of ethyl acetate for 5 minutes using a Polytron® ultrasonic blender (Brinkmann Instruments). The extracts were combined, 20 ml water were added and ethyl acetate was evaporated off. The remaining aqueous mixture was adjusted to 30 ml with portions of hexane. This was followed by an addition of 3 ml NaOH to raise the pH to greater than 12. The alkaline mixture was boiled for 25 minutes. The reaction mixture was cooled to room temperature, 14 g NaCl was added and partitioned four times with 50 ml portions of ethyl acetate which were combined, dried by passing through a 20 ml bed of anhydrous sodium sulfate and concentrated to 1 ml for analysis by gas chromatography. The instrument used was a Hewlett Packard Model 5840A gas chromatograph equipped with a nitrogen—phosphorus detector, Model 18847A. A glass column 183 cm X 4 mm id packed with 10% DC-200 on 80/100 mesh gas chrom Q was used with an oven temperature of 175°C. Other instrumental parameters were: Injection temperature 175°C, detector temperature 300°C; Helium carrier gas flow 30 ml/min; air and hydrogen detector gas flows of 50 and 3 ml/min, respectively.

Results and Discussion

Recoveries of the insecticide from fortified control samples averaged from 72-103%. Fig. 1 is a chromatogram from a control sample fortified with 0.05 ppm oxamyl. Residues found in eggplant samples are shown in Table 1 and represent amounts of the chemical that would be present after treatment with the recommended applications rate (X) and twice the recommended rate (2X). None of the plants showed any injury as a result of spray treatment. The in-

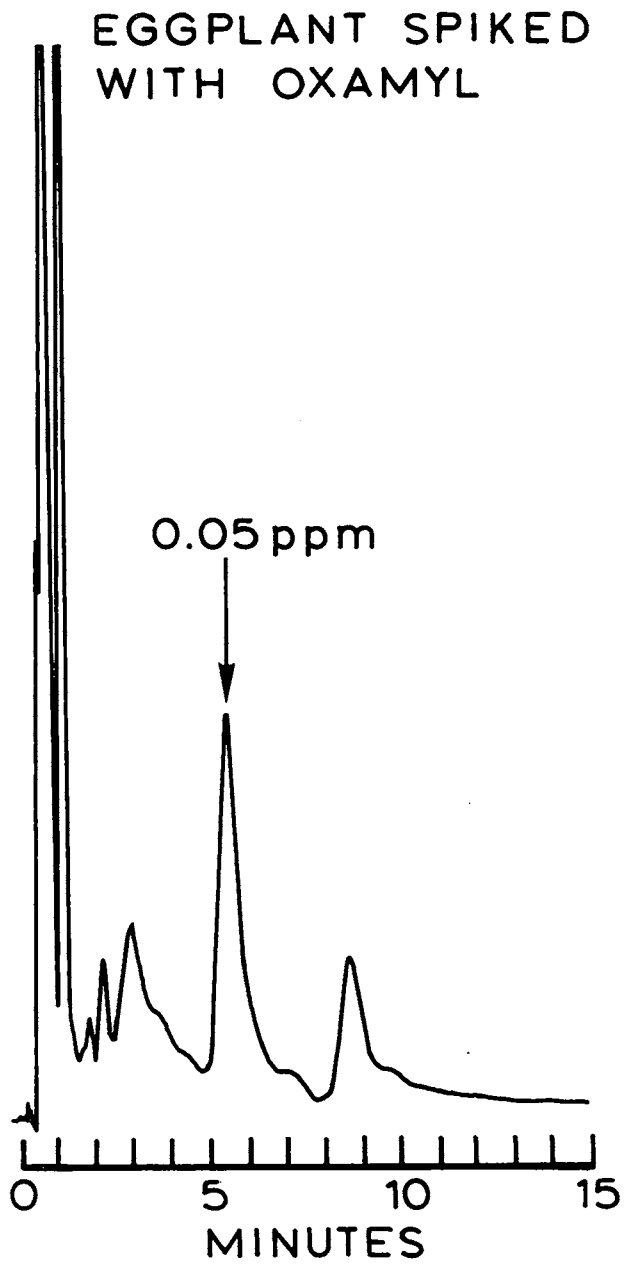

Fig. 1. Eggplant control sample fortified with 0.05 ppm oxamyl.

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Table 1. Residues of Oxamyl in ppm at 7 and 14 days following treatment.

	7 days	14 days
Oxamyl rate (X)	0.08, 0.05	0.05, 0.06
	0.04	0.11
	0.04	0.18, 0.20
	—	0.04
Oxamyl rate (2X)	0.07	0.14
	0.10, 0.12	0.18
	0.11	0.13
	0.13, 0.16	0.16
Control	0.003	

secticide appeared to be effective in the control of the pest but the pest population was too low to make meaningful counts and further trials are necessary. The residue levels found are low and if adequate control is achieved at these rates of application oxamyl is a useful insecticide for use on eggplant.

Literature Cited

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A NEW RACE OF HELMINTHOSPORIUM TURCICUM AND REACTION OF SWEET CORN HYBRIDS TO THE PATHOGEN[1]

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Abstract. **In April 1979, typical northern corn leaf blight (NCLB) lesions caused by** Helminthosporium turcicum **were observed on the previously resistant sweet corn hybrids 'Guardian' and 'Florida Staysweet'. Both hybrids contain the** Ht1 **resistant gene. In greenhouse tests, isolates of** H. turcicum **recovered from 'Guardian' and 'Florida Staysweet' produced typical NCLB lesions on corn hybrids and lines with and without the** Ht1 **gene. Lines containing the** Ht2 **resistant gene were resistant to the isolates tested. This indicates that a new race (race 2) of the fungus now exists in Florida. In field tests (spring 1980) corn breeding lines containing the** HtN **gene were resistant to NCLB whereas lines containing the** Ht1 **and** Ht2 **gene were susceptible. The susceptibility of** Ht2 **lines suggests the existence of a third race of the pathogen. All sweet corn hybrids evaluated in field trials were susceptible to NCLB. However, 'Wintergreen' was the most resistant and 'Bellringer' was the most susceptible of the hybrids tested. Bellegold and Bonanza were similar to Bellringer in susceptibility. 'Guardian', 'Harris 207', 'Silverqueen', 'Florida Staysweet' and 'Iobelle' were alike in their reaction to NCLB and were moderately resistant.**

Florida is the leading state in the production of sweet corn for fresh market sales. In the 1978-79 season 54,500 acres (22,072 hectares) of sweet corn, valued at 51.4 million dollars, were harvested in the state (4). To produce this crop, 20.4% of the growing expenses, or 2 million dollars, were spent on pest control (2). As a result of the warm humid conditions that prevail in Florida, fungal diseases of sweet corn are a significant problem requiring numerous and costly fungicide applications to achieve control. Presently, northern corn leaf blight (NCLB) caused by *Helminthosporium turcicum,* is a serious disease of corn in Florida. During the late winter and spring seasons frequent fungicide applications are necessary to achieve control of the disease. In recent years sweet corn hybrids carrying the single dominant *Ht* gene for NCLB resistance have been released. Two of these hybrids 'Florida Staysweet' and 'Guardian' carry the *Ht*1 resistance gene and are commonly planted in Florida. At first these hybrids appeared to be resistant to NCLB and only the resistant-type chlorotic lesions developed in response to infection by *H. turcicum.* However, in April 1979, observations in variety trials and grower fields revealed that susceptible-type NCLB lesions were developing on 'Florida Staysweet' and 'Guardian' planted in several locations and involving different seed lots. Furthermore, disease severity on these two previously resistant hybrids was similar to that observed on hybrids lacking the resistance gene. The development of NCLB on previously resistant hybrids suggested that a new race of *H. turcicum* had developed, and was capable of overcoming the resistance conferred by the *Ht*1 gene.

The occurrence of a second race of *H. turcicum* in Florida is reported herein. Also the response of selected sweet corn hybrids to NCLB in Belle Glade, and the reaction to the natural *H. turcicum* population of corn lines carrying different resistance genes was evaluated.

Materials and Methods

Several single spore isolates of *H. turcicum* were recovered from susceptible-type NCLB lesions developing on 'Guardian' and 'Florida Staysweet'. The isolates were maintained on potato-dextrose agar slants at 20°C. To induce sporulation, for inoculation studies, newly transferred cultures were incubated in darkness for 7 to 10 days and then under light for an additional 7 to 10 days at 25°C. Spores were washed from the slants and a water suspension of approximately 2,000 spores per ml was prepared for greenhouse inoculation studies. The spore suspension was atomized onto the leaves and into the whorl of test plants in the 5- to 6-leaf stage growing in muck soil in 5″ (12.7 cm) diameter pots. Control plants were treated with tap water only. Each hybrid and line tested was inoculated in triplicate and the experiment was conducted three times. Inoculated plants and controls were covered with plastic bags and maintained at 20°C for 24 hours. The plants were moved to a greenhouse with a temperature range of 24-29°C and the bags removed.

For the *H. turcicum* race determination studies in the greenhouse, the hybrids 'Iobelle' (no *Ht* genes) 'Guardian' (*Ht*1) and 'Florida Staysweet' (*Ht*1) and the corn lines (provided by A. L. Hooker) Oh 43, Oh 43 *Ht*1, RB 37

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