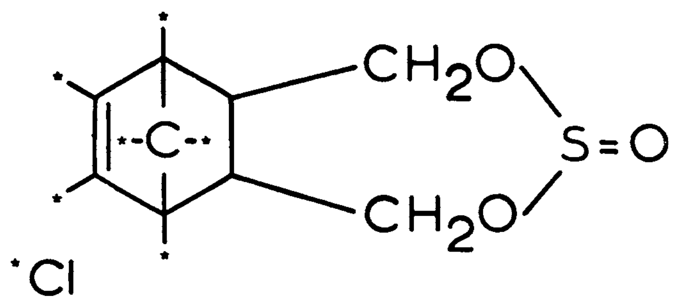
a carrier flow of 60 ml/min. Injection port and detector temperatures were 215 and 300°C, respectively. Recoveries of endosulfan from fortified sweet potato averaged 80%.



ENDOSULFAN

Fig. 1. Technical Endosulfan.

Results and Discussion

Technical Endosulfan is a mixture of isomers having a structure shown in Fig. 1. Two of the isomers generally used in quantitation are known as Endosulfan I and II. The chromatographic conditions used in this analysis separate the isomers and each can be quantitated individually having retention times of eight and eleven minutes, respectively.

Residue of Endosulfan I and II averaged less than 0.01 ppm. With such low levels of residue present at harvest and performance data indicating a significant reduction of weevils, Endosulfan appears to have promise as an insecticide in sweet potato.

Literature Cited

1. Chopra, N. M. and A. M. Mahfouz. 1977. Metabolism of Endosulfan I, Endosulfan II, and Endosulfan Sulfate in Tobacco Leaf. *J. Agric. Food Chem.* 25:32-36.

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THE EFFECT OF RATES OF CDEC ON THE EXTRACTABLE RESIDUE IN LETTUCE AND RADISHES[1]

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Additional keywords. Vegadex.

Abstract. **CDEC (2-chloroallyl diethyldithio-carbamate) was applied to lettuce at the rate of 5 lb/A ai at seeding for preemergence control of weeds. In addition, CDEC rates of 0, 2, 4 and 8 lb/A ai was sprayed overall on 8 day old lettuce plants on one set and on 22 day old plants on another set. In radishes CDEC rates of 0, 2, 4 and 8 lb/A ai were applied as preemergence only. Weed control was good and in direct relation to the rates of CDEC used. Residues were extracted in 65% acetonitrile/water and analyzed by electron capture gas liquid chromatography. CDEC residues averaged less than 0.01 ppm in both groups of lettuce plants. In radishes CDEC ranged from 0.01-0.04 ppm. This work was performed to support a registration for use of CDEC in these crops.**

CDEC (2-chloroallyl diethyldithio-carbamate) has been shown to control a number of weed species infesting commercial vegetable growing areas. There are no herbicides currently registered for use on radishes and an herbicide treatment several weeks after planting and immediately after thinning (blocking) to kill pre-emergent weeds is desirable in lettuce production. This research was performed in an effort to provide performance and residue data to support a petition for registration of CDEC on lettuce and radish.

[1]Florida Agricultural Experiment Stations Journal Series No. 2254.

Materials and Methods

Crisphead lettuce cv. Minetto was seeded March 27, 1978 in organic soil in Belle Glade. CDEC was applied at rates of 0, 2, 4 and 8 lb/acre as a 4 lb/gal EC with a low volume herbicide sprayer at 48 gal/acre at 30 psi for weed control. Experimental design was split plot, each 50′ x 12′, with 4 replications where each plot was sprayed at seeding and then again at either 8 or 22 days after seeding. There were nearly 4 inches of rainfall during the growing period. CDEC was applied once to radishes after seeding at rates of 0, 2, and 4 lbs/acre as a 4 lb/gal EC at 18 gal/acre at 20 psi for weed control. Plot size was 50′ x 17′ with 9″ row spacing and plant spacing of about an inch. Treatments were replicated 4 times and rainfall totaled 4 inches during the growing period of 29 days. Radishes were secured from marketable roots after washing and lettuce heads were cut along the stem axis and 1/8 of each of 10 heads were taken at random from marketable heads without washing. Both crops were frozen until residue analysis.

A 25 g portion of each chopped crop was extracted with 200 ml 65% acetonitrile in water using a Polytron ultrasonic blender for one minute. The extract was filtered and the residue washed twice with 75 ml of 65% acetonitrile solution. The extract and the washings were combined and shaken vigorously with a mixture of 150 ml hexane, 10 ml saturated sodium chloride and 600 ml water. The layers were allowed to separate and the aqueous layer was vigorously shaken two more times with 100 ml hexane. The hexane layers were combined, dried with anhydrous sodium sulfate, concentrated to 100 ml and 1 μl aliquots were analyzed for CDEC by GLC.

Gas chromatography was performed on a Hewlett Packard 5840A gas chromatograph equipped with a nickel[63] electron capture detector and using a 1.83 meter x 4 mm I.D. glass column packed with 4% SE-30 + 6% OV-210 on 80/100 mesh gas chrom Q operated at 210°C with a carrier flow of 50 ml/min. The temperatures of the injection port and detector were 215 and 300°C, respectively. The method was modified from that in the Pesticide Analytical Manual (1).

Results and Discussion

Lettuce

Performance—Since 5 lb/A CDEC was applied as preemergence at seeding time, the number of weeds were very few at the first postemergence CDEC application and few at the second. Weed counts made 45 days after seeding were not significantly different, due to rates, because very small weeds were present (less than one weed/ft²) but the size of the weeds in no CDEC (postemergence) plots were several times larger than the 2, 4 and 8 lb/A rates. Size of weeds decreased with CDEC concentration. The second application of CDEC was not as effective as the first postemergence application for suppressing weeds. Weeds present were: goosegrass (*Eluesine indica*), purslane (*Portulaca oleracea*), and pigweed (*Amaranthus sp.*).

Phytotoxicity—The plants were observed before the postemergence application of CDEC as well as several times after. CDEC toxicity was noticeable several days after application. The effect of time, rate and their interaction on plant damage were highly significant (Table 1, 45 days from seeding). As the rates increased, the damage also increased. The damage was greater for the second postemergence application than for the first. The degree of damage was moderate and in all cases reversible. At harvest no lettuce plants showed CDEC damage; however, some of the damaged plants in the highest rates for the second application of CDEC did not produce marketable heads. This was reflected in lower % of plants harvested and yields.

Yields and quality—Since the plant stand was nearly the same for the plots and sub-plots, yield differences can be attributed to the effect of the postemergence applications of the herbicide. The first postemergence application appeared not to affect the number of heads harvested or the weight of marketable heads for the rates used. The second postemergence application reduced yields, although not significantly, due to rates. There was a strong tendency for greater yield reduction at higher rates. Quality of the produce was inferior regardless of treatment, due to early harvest because of the rapid advance of the hot season, and the rain. Heads were saleable, but out of grade.

Table 1. Number of lettuce plants damaged by CDEC 45 days from seeding.

lbs/acre	Applications	
	Seeding + 8 Days	Seeding + 22 Days
0	1.5	1.5
2	2	8
4	2	12
8	2	19

Residue—CDEC residues in all samples, treated or untreated, averaged less than 0.01 ppm.

Radish

Performance—Significantly greater numbers of weeds were present in the check plots, indicating the value of CDEC in suppressing weed germination. There was no significant difference between the 2 pound rate and the 4 pound rate in weed population, but there was a marked difference in size of the weeds. Most of the weeds in the 2 pound rate were at least twice as tall as those in the 4 pound rate. This has a practical value since the larger the weeds are, the more interference occurs with mechanical harvesting. Also, the weeds were taller in the check as compared with the 2-pound rate.

Phytotoxicity—There were no visible symptoms of toxicity due to CDEC rates, except for a light temporary delay in growth early in the growing period with the 4 pound rate.

Yields and Quality—No significant differences were found either on weight or number of marketable radish roots or in quality of the roots due to rates of CDEC.

Residue—CDEC residues in all samples, treated or untreated, averaged less than 0.03 ppm and no significant differences existed among treatments.

Literature Cited

1. Pesticide Analytical Manual Vol. I Sec. 212-13, 211-14d, Food and Drug Administration.

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PRICE-ACREAGE RELATIONSHIPS FOR FLORIDA SWEET CORN[1]

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Abstract. **Multiple regression was used to estimate price-acreage relationships for Florida sweet corn during the fall, winter, and spring seasons. Price-acreage flexibilities (percentage change in price associated with one percentage change in harvested acreage) were computed from the estimated equations. Results show flexibilities of 0.19, 0.15, and 0.52 for the fall, winter, and spring seasons, respectively. Therefore, a one percent decrease in harvested acreage, will increase price by 0.19, 0.15, and 0.52 percent. Results were then related to seasonal production and cost data to estimate maximum acreage that can be harvested and expect a break-even price or better. The figures were between 12 and 14 thousand acres in the fall, between 11 and 12 thousand acres in the winter, and around 29 thousand acres in the spring.**

[1]Florida Agricultural Experiment Station Journal Series No. 2092. The author thanks Arden Collette, Tom Spreen, Gerald Kidder, Vic Guzman, and Don Brooke for their comments and suggestions.