A Discussion of the Results

The plants sprayed with the copper-streptomycin-oil mixture had more foliage and significantly less bacterial spot than any other treatment, however, the yield of marketable fruit was no greater than with the copper-streptomycin mixture. The plants sprayed with the copper-oil mixture had approximately the same amount of bacterial spot as those sprayed with copper alone. The total yield of the plants sprayed with the copper-oil mixture was significantly less than those sprayed with copper alone. The high oil concentration used in the first 9 applications probably caused this reduction in total yield because the plants were definitely stunted. When the oil was reduced to 0.5 gallon per 100 gallons, the plants recovered, but apparently the phytotoxicity sustained earlier was reflected in reduced yield. These data indicate that streptomycin effectively controls bacterial spot. They also show that the addition of oil, at the rate of approximately 0.5 gallon per 100 gallons, to copper and streptomycin sprays offers a potential improvement for bacterial spot control of pepper.

Summary

The results from two field trials on pepper for the control of bacterial spot, Xanthomonas vesicatoria (Doidge) Dows are reported. A large scale field trial was in progress when the center of Hurricane Donna passed within 5 miles. There was significantly less bacterial spot and defoliation in those plots sprayed with a mixture of streptomycin sulfate (200 ppm) and Tribasic copper sulfate (4.0 lb per 100 gallons) or with a mixture of streptomycin sulfate (200 ppm) and Nabac K-6 (1.0 qt.) than in any other treatment.

A spring field trial under less severe weather conditions showed that pepper sprayed with a mixture of Tribasic copper sulfate (4.0 lb), streptomycin sulfate (200 ppm) and an emulsified oil (Sunspray Oil) (2.0 qt.) was significantly better than the untreated in both bacterial spot control and yield of extra fancy fruit. Tribasic copper sulfate (4.0 lbs), Tribasic copper sulfate (4.0 lbs) plus Sunspray Oil, (2.0 qt.), and Nabac—25 (0.75 lb) reduced foliar infections, but there were no increases in yield. The addition of an emulsible oil, at the approximate rate of 0.5 gallon per 100 gallons, to copper and streptomycin sprays offers a potential improvement for bacterial spot control of pepper.

LITERATURE CITED


A RELATIONSHIP OF CHEMICAL WEED CONTROL TO CORN STEM WEEVIL CONTROL ON SWEET CORN

Emmett D. Harris, Jr. and J. R. Orsenigo

The first record of the corn stem weevil, Hyperodes humilis (Gyll.), as a crop pest was in February 1959 when it was observed attacking sweet corn in the Everglades. Damage, life stages and their durations, and a control method were reported (Harris 1960a, 1960b). Emulsions containing two pounds of DDT per 100 gallons applied at 4-day intervals began to seedling emergence and continued for about seven applications with nozzles aimed at the lower stem and adjacent soil were recommended. Cultivation during this period would disturb the DDT residue on the soil surface and might decrease the effectiveness of the control program. Without cultivation, weeds might interfere with the proper distribution of insecticides, and certain weed hosts, such as nutsedge (Cyperus rotundus L.) and goosegrass (Eleusine indica (L.) Gaertn.), might serve as sources of corn stem weevil infestation. The purpose of this study was to compare the effect of pre-emergence
chemical weed control and mechanical weed control (cultivation) on the efficacy of DDT sprays begun at seedling emergence and applied at 4-, 8-, or 12-day intervals.

Florigold 106 sweet corn was planted on March 14, 1961. One of two main plots in each of six randomized complete blocks received an herbicide spray of 2.5 quarts each of Randox (CDAA) and Vegedex (CDEC) in 40 gallons of water per acre on March 15. Since weed growth was slow the mechanically weeded plots were cultivated only once, April 3, during the corn stem weevil control program. Nutsedge and goosegrass were the most prevalent weeds. After the final corn stem weevil spray, all plots received the same cultivation.

Each of the four sub-plots in every main plot was four rows wide and 25 feet long. Sub-plots were sprayed with DDT at 4-, 8-, or 12-day intervals, or left unsprayed. Seedlings emerged on March 19, and the first application of each DDT treatment was made on March 20. Sprays that were to be applied on April 1 were delayed until April 2 by rain. The remaining sprays were applied one day later than originally planned. The final sprays (seventh for 4-day, fourth for 8-day and third for 12-day intervals) were applied on April 14.

Sprays contained one gallon of 25 percent DDT emulsifiable concentrate per 100 gallons. Two Spraying Systems D2-25 nozzles were used over each row on the first two spray dates to apply 50 gallons per acre at a pump pressure of 100 p.s.i. and a speed of approximately 1.8 m.p.h. On the remaining five spray dates, an additional nozzle aimed downward at a 45 degree angle on each side of the row directed spray under the foliage canopy to the lower stem and adjacent soil.

On April 18, four days after the final application of each DDT treatment, 10 plants from each row were examined for corn stem weevil eggs or mines.

Pre-emergence chemical weed control plots contained a highly significantly lower percentage of infested plants than cultivated plots (Fig. 1). There were highly significantly fewer
infested plants from 4-day than from 12-day interval DDT sprays. The superiority of the 4-day interval to both the 12-day and 8-day interval was reflected in a significant quadratic regression.

Percent corn stem weevil control by DDT treatments was much higher with pre-emergence chemical weed control than with mechanical (Fig. 2) as based on the untreated check within each weed control method.

The U. S. Fancy ears from the two middle rows of each plot were counted on May 31, 1961, and converted to crates per acre on the basis of 60 ears per crate (Fig. 3). Differences between the two weed control methods and among the DDT intervals were not significant. However, DDT-treated plots significantly out-yielded untreated plots.

Discussion. Differences in corn stem weevil infestation between the two weed control methods probably resulted largely from a preference of ovipositing adults for the mechanically weeded plots. Had the mechanically weeded plots been absent, oviposition and subsequent infestation may have been greater in chemically weeded plots. Among all plots that received no DDT treatment, 65 percent of the plants were infested. In untreated plots of adjacent experiments in which all plots received chemical weed control and no cultivation during the corn stem weevil control program, about the same percentage (68) of the plants were infested. More weeds before cultivation, looser soil after cultivation, or some less obvious characteristic may have made the mechanically weeded plots more attractive to the corn stem weevil. Available information indicates that neither Randox or Vegedex are insecticidally active.

The effect of pre-emergence chemical weed control on the efficacy of DDT applications as indicated by percent control was great and probably was affected little by any preference of the insect for the adjacent mechanical weed control plots.

Pre-emergence chemical weed control seems to be an important adjunct to the insecticide program for corn stem weevil control. Additional studies will be made to confirm the effect of pre-emergence chemical weed control and to study its nature.

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