MANAGEMENT OF VERTICILLIUM WILT IN STRAWBERRY NURSERIES

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In 1995, a three-year rotation trial was initiated to examine the influence of chemical fumigants and cover crops on soil populations of *Verticillium dahliae* and the incidence of Verticillium wilt in a high elevation strawberry nursery. Six treatments were tested; each of which had three replications, for a total of 18 plots. In one of these treatments, plots were kept fallow, while the other five treatments all had fall crops of rye in 1995 and 1996. Of the five treatments planted to rye, one treatment included spring plantings of mustard (canola), in 1996 and 1997, following incorporation of the fall rye crop. The mustard crops were cut and incorporated in the summer, and tarped for approximately one month. Three of the treatments with two successive years in rye were followed by a chemical fumigation in August of 1997: either methyl bromide:chloropicrin (2:1) @ 350 pounds/acre, chloropicrin alone @ 250 pounds/acre, or C-35 (35% chloropicrin and 65% telone) @ 400 pounds/acre. The last of the six treatments had two years in rye and no fumigation.

In April of 1998, all plots were planted to two strawberry cultivars, Camarosa and Selva. The three fumigation treatments appeared to be equally effective in reducing soil populations of V. dahliae, which were undetectable (< 1 microsclerotium/gram of soil) in all the fumigated plots. However, in previous experiments where the fumigants were applied in the spring rather than the fall, methyl bromide:chloropicrin was clearly more effective than the other fumigants. Of the non-fumigated treatments, fallow had the lowest levels of V. dahliae (11 microsclerotia/gram), whereas the rye only and the rye/mustard treatments both had an average of 20 microsclerotia/gram. No disease was detected in any of the fumigated plots. For Camarosa, 52, 56, and 76% of the plants had symptoms of Verticillium wilt in the rye, fallow, and rye/mustard treatments, respectively. For Selva, in both the rye and rye/mustard treatments, 87% of the plants were symptomatic, whereas 73% of the plants in fallowed plots had disease symptoms.

In terms of runner plant production for Camarosa and Selva, methyl bromide:chloropicrin was the best treatment. C-35 and chloropicrin alone were similar, with C-35 treated Selva plots producing more runner plants than those receiving chloropicrin alone. The reverse was true for Camarosa. In the fall of 1998, plants representative of all six treatments, for both cultivars, were established in experimental plots to evaluate fruit production during 1999.