

INFLUENCE OF CULTURAL PRACTICES ON PEST MANAGEMENT IN PEPPERMINT

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Two spotted spider mite is the most widely distributed pest of peppermint. In Oregon, it is a major pest east of the Cascade Mountains and in southwestern Oregon, where hot, dry weather is conducive to mite outbreaks. Spider mites are also becoming increasingly important in western Oregon.

Low densities of spider mites were present on peppermint foliage in most arid areas of the state that were sampled in May.

We have developed a sampling program for two spotted spider mite in peppermint to aid pest management decisions for control of mites. Ten to fourteen sample sites (3 meters square) are selected for every 30 acres of mint. At each site 45 leaves (15 top, 15 middle, 15 bottom) are examined for the presence of five or more mites. When the average number of mites/leaf reaches five, growers are advised to treat with an acaricide. This sampling program has been used for the past two years in the Oregon State University Extension Pest Management Program and has greatly improved the decision-making processes for mite control.

Effects of Fall Plowing on Spider Mites

Spider mite populations in unplowed fields reached treatable densities nearly one month earlier than in plowed fields. Delayed infestations in fall plowed fields were probably due to reduction of the populations of overwintering females in the soil. Plowing can inflict mortality on mites in the soil through abrasion, burial and exposure to climatic influences. This reduced population would require a longer period of time to increase to treatable levels on the peppermint crop the following season. Plowing represents about half the expense of an acaricide treatment; thus it may be considered a cost-effective mite deterrent, particularly in central Oregon.

Effects of Fall Flaming on Spider Mites

Fall flaming significantly reduced the spider mite density in the soil. Mean densities were 6.9 and 1.2 mites/soil sample, before and after flaming, respectively. The action of flaming on post-harvest populations of spider mites is two-fold. First, it eliminates a large number of mites which could potentially produce an overwintering generation. Second, it disengages the residual mite population from its food supply. A large overwintering mite population provides a greater source of mites to initiate an outbreak in the spring, leading to earlier and more frequent acaricide treatments.

Impact of Tillage on Mint Root Borer

Research was conducted in 1981 to evaluate the control of mint root borer by various tillage practices. Four tillage treatments with untilled control plots were studied. Tillage treatments consisted of plots which were 1) single disced, 2) double disced, 3) plowed then double disced and, 4) plowed then double disced and harrowed.

Discing reduced the number of emerging adults by 7 to 22%. Plowing followed by discing reduced emergence of adults by 46 to 54%.

The effect of the four tillage treatments on the control of weeds was also determined in the same test plots. The percentage of groundsel in each 15 x 15 foot plot (25 plots/treatment) was estimated on June 7. The discing treatment reduced groundsel by ca. 29% and plowing followed by discing reduced groundsel by ca. 82%.

The effects of tillage on the spread of verticillium wilt and on soil properties are also being evaluated.