Integrated pest management of greenhouse vegetables in the mid-country wet zone

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Management of insect pests and diseases is one of the major challenges faced by greenhouse growers. Application of synthetic pesticides in greenhouses, the default practice, leads to many problems such as high levels of residues in harvest and increasing production cost. Hence this study was undertaken to assess a package of alternative pest control strategies as an integrated pest control (IPM) on tomato and bell pepper under greenhouse conditions in comparison with conventional (synthetic) pest control strategies.

Conventional pest control treatment (synthetic pesticides) (T1) and alternative pest control treatment (Integrate Pest Management; IPM) (T2) were practiced in two greenhouses. In the T1, two synthetic fungicides and two synthetic insecticides were used in two week intervals alternatively while chemicals for snails and slugs were applied at vegetative growth. In the T2. neem and garlic extractions and a soap solution were applied in a succession in weekly intervals. In addition, salt was applied during the vegetative growth phase to control snails and slugs.

Insect populations were monitored throughout the growing season, through regular sampling and using counts on sticky traps. White flies, aphids, thrips, leaf-miners and mites were found in both greenhouses. Aphid population was higher on crops with synthetic pesticide application than the other. White fly population on tomato and thrip population on bell pepper were higher under IPM. Other insect pest populations were not significantly different between the treatments. Sudden and drastic drops of the pest populations were observed in response to synthetic insecticides while relatively low growth of pest populations were observed under IPM. Finally it can be concluded that the alternative strategy (IPM) is more effective only on certain greenhouse pest species when compared with the conventional methods. Further improvement of the alternative procedure by integrating with selective application of synthetic pesticides is required to achieve the overall suppression of insect pest populations in greenhouses.

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