

DISEASE INCIDENCES, ABUNDANCE OF INSECT VECTORS AND BENEFICIAL INSECTS OF CHILLI AND TOMATO GROWN UNDER TWO CROP MANAGEMENT PRACTICES

R.A.I.U.D. Samarakoon, D.M. De Costa* and G.D.N. Menike

Department of Agricultural Biology, Faculty of Agriculture, University of Peradeniya, Sri Lanka

**devikacos@yahoo.com*

Diseases and insect pests are among the major constraints of vegetable cultivation. Use of synthetic pesticides as the sole method of control of pests and diseases could lead into environmental and health hazards. Hence, safer alternatives have to be introduced. The present study was conducted to determine the effects of integrated pest management (IPM) practices on disease incidence, abundance of insect vectors and beneficial insects in field-grown tomato and chilli. Tomato cv. “Thilina” and chilli cv. “MI green” were grown at the Meewathura experimental field, Faculty of Agriculture, Peradeniya. The crops were managed under two management systems, namely existing crop management system with the use of pesticides for crop protection (non-IPM) according to recommendations of the Department of Agriculture, Sri Lanka and an integrated pest management (IPM) package with less reliance on pesticides developed by the present study. The IPM package consisted of use of compounds generally regarded as safe (GRAS), a biopesticide and cultural practices with minimum use of pesticides (e.g. as spot applications when critically needed). In the non-IPM system, seed and foliar applications of fungicides and insecticides were used seven times over the cropping season in comparison to the IPM system). Disease incidence and abundance of insects (virus vectors and beneficial insects) were recorded over the cropping season of the two crops. Silicon and chlorophyll a, b and total chlorophyll contents in plant tissues were quantified spectrophotometrically to determine the effects of management practices on chemical composition of plant tissues. Findings of the present study revealed that the incidences of fungal (Late blight, Septoria leaf spot), bacterial (bacterial canker, bacterial specks) and viral (Tomato Curly Top virus) diseases are significantly higher ($p < 0.05$) in the IPM system than in the non-IPM system. Abundance of insect vectors and beneficial insects were not significantly different between the two management practices, however leaf-miner damage in tomato was lower in the IPM system. Silicon content of plant tissues was not significantly different between the two management practices. Chlorophyll a content of tomato and chlorophyll b content of tomato and chilli did not differ significantly between the two management practices. Findings revealed that IPM system used in the present study was equally capable as the non-IPM system in managing the insect vector populations. Even though the IPM system was not effective in reducing the fungal, bacterial and viral diseases recorded in the study, it was effective to reduce damages of some pests (e.g. leaf-miner). However, IPM practices were not effective in increasing the silicon and chlorophyll contents in plant tissues.

Financial assistance given by the HETC-QIG-Window 3 project of the Ministry of Higher Education, Sri Lanka is acknowledged.