

VARIATION OF CHITINASE AND β -1,3-GLUCANASE ACTIVITIES IN TOMATO AND CHILLI TISSUES GROWN UNDER DIFFERENT CROP MANAGEMENT PRACTICES AND AGROECOLOGICAL REGIONS

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Yield of chilli and tomato are severely affected by plant pathogens and the synthetic pesticides are the major means of control of diseases by farmers. Considering the harmful impacts on human health and environment by pesticides, development of alternative measures has become an essential need. Systemically-acquired resistance (SAR) is a novel approach in managing plant diseases. Host plants induce SAR through synthesis of defense enzymes as a response to the exposure to biotic and abiotic factors. The present study was conducted to determine the effects of integrated pest management (IPM) practices and location of cultivation on the activity of defense enzymes, namely β -1,3-glucanase and chitinase which are known to increase due to SAR in plant tissues. Tomato cv. "Thilina" and chilli cv. "MI green" were grown at five different locations under two crop management systems *viz.* existing management system (only depending on application of pesticides) and an IPM practice with less reliance on pesticides as developed by the present study. Activity of chitinase and β -1,3-glucanase were quantified spectrophotometrically in field grown chilli and tomato tissues. Mean day temperature during cropping season of both chilli and tomato was also recorded. Present study revealed that there was no significant ($p=0.05$) difference between the two crop management systems in terms of the activity of the two defense enzymes indicating the equal efficiency of the IPM practice on induction of host plant resistance as the existing crop management practice. The activity of defense enzymes in both crops significantly varied ($p<0.05$) among locations. Significantly positive relationship was observed between mean day temperature and β -1,3-glucanase activity in tomato tissues under both crop management systems. Effect of management system on the activities of β -1,3-glucanase and chitinase in chilli tissues was significantly influenced by the location, whereas no significant interaction effect of management system x location of cultivation was observed for defense enzymes activities in tomato tissues.

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