Weerana Sompeewong 2007: Pathogenicity and Effect of Entomopathogenic Fungi on Natural Enemies of Tomato Insect Pests. Master of Science (Entomology) Major Field: Entomology, Department of Entomology. Thesis Advisor: Associate Professor Tipvadee Attathom, Ph.D. 76 pages.

Tomato cultivated in protected condition or in greenhouse has recently received great attention due to the increasing demand of fresh tomato with no chemical insecticide residues. Damage caused by some tiny insects is however, unavoidable even in well-protected greenhouse. Entomopathogenic fungi receive good recognition as effective biocontrol agents for greenhouse insects. This study aimed to determine pathogenicity and adverse effects of entomopathogenic fungi towards important natural enemies of tomato insect pests which may exist in the field and play an important role in biological control of insect. Bioassays indicated that the fungi, *Metarhizium anisopliae* and *Hypocrella hypocreoidae* were non-pathogenic to green lacewing, *Mallada basalis*; the fungi *Beauveria bassiana* and *Paecilomyces fumosoroseus* were non-pathogenic to anthocorid bug, *Wollastoniella rotunda* and mirid bug, *Macrolophus caliginosus*. *P. fumosoroseus* caused no adverse effects on progeny of the fungal-treated *M. basalis*. No significant differences either in mortality or longevity between the progeny of the fungal-treated green lacewing and the control. The combined use of entomopathogenic fungi and predators of tomato insect pests could provide even more efficient control strategy. Effects of *P. fumosoroseus* on the whitefly parasitoid, *Encarsia formosa* were investigated based on percent of mycosis, mummification and adult parasitoid emergence after fungal spray and parasitoid exposure. Percent mycosis of whitefly host was detected only when the insects were exposed to fungal spray immediately after parasitization and approximately 40-90% mortality were obtained. After the parasitoid had been developed to larval and pupal stage, no incident of mycosis was deteced. Fungal treatments at immediately, 5 and 9 days after parasitoid exposure resulted in 35.84, 67.50 and 94.17% whitefly mummification and 43.31, 90.74 and 95.63% adult parasitoid emergence, respectively. The entomopathogenic fungi and the parasitoid can be used together as effective biological control agents providing that fungal application are timed to allow late-instar development of the parasitoid. This study provides informative data necessary for the integration of entomopathogenic fungi with insect natural enemies for successful control and sustainable management of insect pests, especially the greenhouse insects.

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