EVALUATION OF SAFE AND EFFECTIVE METHODS TO CONTROL THE TOMATO LEAFMINER *Tuta absoluta* (Meyrick) (Lepidoptera: Gelechiidae)

By

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B.Sc. Agric. Sci. (Plant Protection), Fac. Agric., Banha Univ., 2009

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APPROVAL SHEET

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Title of Thesis: Evaluation of Safe and Effective Methods to Control the Tomato Leaf miner *Tuta absoluta* (Meyrick) (Lepidoptera : Gelechiidae).
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ABSTRACT

This study was conducted to study the evaluation of safe and effective methods to control the tomato leaf miner *Tuta absoluta*. Monitoring of the pest status and their progress under different Egyptian conditions. Collection were conducted in six Egyptian Governorates (Giza - Fayoum - Aswan - Al Behera - Al Kaliobia – Ismailia) from February 2011 to the end of November 2012 with rate of infestation ranged between 5% - 70% The preferred host of *T. absoluta* is tomato, it can also attack the eggplant. During survey studies, three predators were recorded associated with *T. absoluta* (*Nesidiocoris tenuis*, *Macrolophus caligonsus* and *Chrysoperla carnea*). Also two parasitoids were recorded associated with *T. absoluta*: the egg parasitoid *Trichogramma euprocitidis* and the eulophid parasitoid *Necremnus artynes* in three governrates (Fayoum, Giza, Qaluobia).

Biological studies were conducted on *T. euprocitidis*, *T. achaeae* and *Ch. carnea* using *Tuta absoluta* eggs, and on *Macrolophus caliginosus* using *Ephestia keuhniella* eggs. Assessment of *T. achaeae* for the control of *T. absoluta* in tomato greenhouses, three release doses (25, 50 and 75 parasitoids/m²) were tested during two year experiment 2011/12 and 2012/13 at Berkash(Giza). The results show that *T. achaea*e was significantly efficient, especially at a higher dose, in keeping down *T. absoluta* mines during both experimentation years. Finally, the efficiency of different biological methods for controlling *T. absoluta* on tomato in greenhouse in Egypt, using *T. achaeae* (50 adults/m²), Dipel DF *B. thuringiensis* (2g/L) and *M. caliginosus* (1/2 adult/m²), beside a combination of the three above bioagents (on half dose for each), obtained results showed that all treatments presented a highly significant efficacy in reducing *T. absoluta* mines, especially the combination of the three bioagents (1.08 mines/Plant).

Keywords: Biological control; The tomato leaf miner, *Tuta absoluta*; parasitoid, *Trichogramma achaeae*; predator**,** *Macrolophus caliginosus*; *Bacillus thuringiensis*; greenhouse; Egypt.

DEDICATION

With deepest love, I would like to dedicate this work to my late father who gave me encouragement, cooperation and a river of continuous help. Thanks for what you gave me.

I also dedicate this work to my mother for her patience, guidance, support and caring attitude, as well as to my brothers for all the hearty support they offered me during this period of my post graduate studies.

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