PARASITOIDS OF *Tuta absoluta* (MEYRICK, 1917) (LEPIDOPTERA: GELECHIIDAE) COLLECTED ON TOMATO PLANTS IN LAVRAS, STATE OF MINAS GERAIS, BRAZIL

MARCHIORI, C. H.,[1] SILVA, C. G.[2] and LOBO, A. P.[2]

[1]Instituto Luterano de Ensino Superior de Itumbiara, ILES-ULBRA, Av. Beira Rio, 1001, C.P. 23-T, CEP 75500-000, Itumbiara, Goiás, Brazil

[2]Alunos de Mestrado em Entomologia da Universidade Federal de Lavras, UFLA, C.P. 37, CEP 37200-000, Lavras, Minas Gerais, Brazil

Correspondence to: Carlos Henrique Marchiori, Instituto Luterano de Ensino Superior de Itumbiara, ILES-ULBRA, Av. Beira Rio, 1001, CEP 75500-000, Itumbiara, Goiás, Brazil, e-mail: pesquisa.itb@ulbra.br

Received February 21, 2003 – Accepted April 30, 2003 – Distributed August 31, 2004

ABSTRACT

The objective of this paper was to report on the occurrence of parasitoids of *Tuta absoluta* Meyrick (Lepidoptera: Gelechiidae) on tomato plants, under greenhouse conditions, in Lavras County (21°14'43"S; 44°59'59"W), State of Minas Gerais, Brazil, from August 2001 to February 2002. Three groups of parasitoids were collected: 21 specimens of *Bracon* sp. (Braconidae), one specimen of *Earinus* sp. (Braconidae), and 13 specimens of *Conura* sp. (Chalcididae). The rate of parasitism for the three species was 4.2%, 0.2%, and 2.6%, respectively. This is the first reported occurrence of *Earinus* sp. parasitizing *Tuta absoluta* in Brazil.

Key words: leaf miner, tomato, Hymenoptera, parasitoids, biocontrol.

RESUMO

Parasitóides de *Tuta absoluta* (Meyrick, 1917) (Lepidoptera: Gelechiidae) coletados em plantas de tomate em Lavras, Estado de Minas Gerais, Brasil

Este trabalho teve por objetivo relatar a ocorrência de parasitóides de *Tuta absoluta* Meyrick (Lepidoptera: Gelechiidae) em plantas de tomate, em condições de casa-de-vegetação, em Lavras (21°14'43"S; 44°59'59"W), Minas Gerais, no período de agosto de 2001 a fevereiro de 2002. Três grupos de parasitóides foram coletados: 21 espécimes de *Bracon* sp. (Braconidae), um espécime de *Earinus* sp. (Braconidae) e 13 espécimes de *Conura* sp. (Chalcididae). A taxa de parasitismo para as três espécies foi de 4,2%, 0,2% e 2,6%, respectivamente. Este estudo relata, pela primeira vez no Brasil, a ocorrência de *Earinus* sp. parasitando *Tuta absoluta*.

Palavras-chave: traça-do-tomateiro, tomate, Hymenoptera, parasitóides, controle biológico.

The tomato (*Lycopersicon esculentum* Mill), one of the main vegetable crops grown in Brazil, has significant social-economic importance involving large areas and considerable labor use (Michereff Filho & Vilela, 2000). Tomato cropping area expansion has favored the development of several pests, which considerably affect crop yield. Among these pests, the tomato leaf miner *Tuta absoluta* (Meyrick) (Lepidoptera: Gelechiidae) stands out (Gonçalves-Gervásio *et al.*, 1999). *Tuta absoluta* presents high destructive potential and may attack plant parts in all developmental stages (Souza & Reis, 1992; Michereff Filho & Vilela, 2000).

Due to the negative aspects of insecticide use, many researchers have been considering alternative ways to control this pest and, since 1991, significant progress has been made in controlling

this pest biologically (Michereff Filho & Vilela, 2000). The objective of this study was to investigate the parasitoids of *Tuta absoluta* on the tomato crop in Lavras County, State of Minas Gerais, Brazil.

The study was carried out using an area of 20 m^2 in a greenhouse belonging to the Departmento de Agricultura da Universidade Federal de Lavras, in Lavras County (21°14'43"S; 44°59'59"W), State of Minas Gerais. From August 2001 to February 2002, parasitoids were obtained from *T. absoluta* pupae collected on 35 out of a total of 120 tomato plants, cv. Santa Clara.

Tomato seedlings were planted in PVC pots with 20-liter capacity and maintained in the greenhouse at 27ºC and 60 ± RH. When plants reached 40 days, the leaves containing pupae were cut with scissors and transferred to the Biological Control Laboratory. Pupae were then retrieved with the aid of tweezers, counted, and individualized in glass flasks until emergence of Lepidoptera or parasitoid adults. These were identified under stereomicroscope and then preserved in 70% ethanol.

The Hymenoptera (Braconidae) were identified by Dra. Angélica Maria Penteado-Días, from the Universidade Federal de São Carlos, State of São Paulo, and the Lepidoptera by Professor Msc. Aílton Pinheiro Lobo, of the Universidade Federal de Lavras, State of Minas Gerais. Parasitoid (Braconidae) specimens were deposited in the collection of in the Departamento of Ecologia e Biologia Evolutiva (DCBU) and lepidopteran specimens were deposited in the Departmento de Entomologia of the Universidade Federal de Lavras.

During the study, from 500 *T. absoluta* pupae obtained, emerged 21 specimens of *Bracon* sp. (Hymenoptera: Braconidae), one specimen of *Earinus* sp. (Hymenoptera: Braconidae), and 13 specimens of *Conura* sp. (Hymenoptera: Chalcididae). Percent parasitism for *Bracon* sp., *Earinus* sp., and *Conura* sp. was 4.2%, 0.2%, and 2.6%, respectively, totaling 7.0%. Percent parasitism for *Bracon* sp. was probably due to its greater efficiency in searching for the host or to the influence of seasonal variation (personal observation). Tomato plant infestation inside the greenhouse occurred because the windows allowed both pests and parasitoids insects to enter.

The natural occurrence of the genera *Bracon*, *Earinus*, and *Conura* inside the greenhouse suggests a close interaction among these species and their tomato leaf miner host. The nature of this relationship, however, has to be further studied in order to better evaluate the impact of these parasitoids on the insect pest population. Since these parasitoids are natural enemies of insect pests, the feasibility of their use as biological control agents in the tomato crop should be investigated. Furthermore, in Brazil, the Semi-Arid Tropic Research Center has already achieved meaningful progress in controlling the tomato leaf miner with the use of *Trichogramma pretiosum* (Hymenoptera: Trichogrammatidae) as a biological control agent (França, 1993). In the light of that fact, the study we suggest offers encouraging possibilities.

This is the first report of *Earinus* sp. parasitizing *T. absoluta* in Brazil.

REFERENCES

FRANÇA, F. H., 1993, Por quanto tempo conseguiremos conviver com a traça-do-tomateiro? *Hort. Bras., 111*: 176-178.

GONÇALVES-GERVÁSIO, R. C. R. G., CIOCIOLA, A. I, SANTA CECÍLIA, L. V. C. & MALUF, W. R., 1999, Aspectos biológicos de *Tuta absoluta* (Meyrick, 1917) (Lepidoptera: Gelechiidae) em dois genótipos de tomateiro contrastantes quanto ao teor de 2-tridecanona nos folíolos. *Ciênc. Agrotec.*, *23*: 247-251.

MICHEREFF FILHO, M. & VILELA, E. F., 2000, Traça-do-tomateiro, *Tuta absoluta* (Lepidoptera: Gelechiidae), pp. 81-84. *In*: E. F. Vilela, R. A. Zucchi & F. Cantor (eds.), *Pragas introduzidas*. Holos Editora, São Paulo, 173p.

SOUZA, J. C. & REIS, P. R., 1992, *Traça-do-tomateiro: histórico, reconhecimento, biologia, prejuízos e controle*. Epamig, Lavras, 20p.