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Occurrence of *Lysiphlebus testaceipes* parasitizing *Aphis gossypii* in watermelon in the State of Rio Grande do Norte, Brazil

Ocorrência de *Lysiphlebus testaceipes* parasitando *Aphis gossypii* em melancia, no Estado do Rio Grande do Norte, Brasil

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- NOTE -

ABSTRACT

This is the first report of the parasitoid *Lysiphlebus testaceipes* (Cresson) as a biological control agent of the aphid *Aphis gossypii* Glover in watermelon crop in Vale do Açu, RN. It was observed that near the harvest, almost all collected aphids were mummified, and after analyzing the emerged parasitoids, the parasitoid *L. testaceipes* was identified. Therefore, in the future, this species may be included in *A. gossypii* integrated management programs.

Key words: aphid, biological control, *Citrullus lanatus*, insects pest.

RESUMO

Este é o primeiro relato do parasitoide *Lysiphlebus testaceipes* (Cresson) como agente de controle biológico do pulgão *Aphis gossypii* Glover na cultura da melancia, na região do Vale do Açu, Rio Grande do Norte (RN). Observou-se que próximo da colheita quase todos os pulgões coletados encontravam-se mumificados e, na análise dos parasitoides emergidos, constatou-se o parasitismo por *L. testaceipes*. Essa espécie, portanto, poderá ser incluída em um programa de manejo integrado de *A. gossypii* futuramente.

Palavras-chave: afídeo, controle biológico, *Citrullus lanatus*, inseto-praga.

Watermelon, *Citrullus lanatus*, is one of the most important cultivated cucurbits in the world. In Brazil, the largest producers are the states of Rio Grande do Sul, São Paulo, Bahia, Rio Grande do Norte and

Tocantins, which contribute about 60% of the national production (AGRIANUAL, 2007). The region of Vale do Açu is the main production area of watermelon in Rio Grande do Norte, but faces some limitations due to phytosanitary problems, which negatively influence its production. Among the factors that have contributed to it is the attack of insect pests such as aphids.

According to BUENO (2005), aphids are serious pests in various crops, both in field and greenhouse. The specie *Aphis gossypii* Glover, 1877 (Hemiptera: Aphididae) is found on all continents (PEÑA-MARTINEZ, 1992), attacking various crops such as cotton, melon, watermelon, pepper, cucumber, potato, cashew, tomato and ornamental plants (FERNANDES et al., 2001). However, there are natural enemies of insect pests, such as the solitary endoparasitoid *Lysiphlebus testaceipes* (Cresson, 1880) (Hymenoptera: Braconidae, Aphidiinae) (RODRIGUES & BUENO, 2001; CARNEVALE et al., 2003), which also can use other species of aphids as hosts (STARÝ et al., 1993).

In the Brazilian literature there are no surveys of aphid parasitoids in the Central West, North and Northeast regions. However, STARÝ et al. (2007) evaluates the relationship parasitoid-aphid-plant in Brazil and provide a useful data bank for subsequent studies on aphid parasitoids ecology and aphid

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management. They have recorded the occurrence of *L. testaceipes* parasitizing *A. gossypii* in the states of Minas Gerais, Parana and São Paulo in various cultures, and in the cotton cultivation in two states in the Northeast (Bahia and Pernambuco).

Due to the scarcity of information in this respect, the objectives of this study were to identify the aphid species that attacks the watermelon crop in the Vale do Açu, RN, and identify the parasitoid species responsible for natural biological control in this region, since there are no records in the literature on this issue.

The study was conducted from November to December 2009, performing weekly samplings of aphid infested watermelon leaves in plantings located at the Instituto Federal de Educação, Ciência e Tecnologia of Rio Grande do Norte (IFRN) / Ipanguaçu Campus, RN (36°51'22" S, 5°30'45" W, 20m altitude). Weekly, 100 leaves were randomly collected and taken to the IFRN Biotechnology Laboratory, where they were placed in an acrylic cage (50 x 50 x 50cm), the sides covered with voile fabric. The cage was kept at ambient temperature and photoperiod (in average 25,5 degrees and 12 hours photophase), observing the daily emergence of parasitoids, which were sent to Dr Luís Cláudio Paterno Silveira, Department of Entomology, Universidade Federal de Lavras (UFLA), MG together with aphid samples for identification. The material was deposited in the Entomological Collection of this Department, and also in the of IFRN Biotechnology Laboratory and in Applied Biological Control Laboratory, Universidade Federal Rural do Semi-Árido (UFERSA) in Mossoró, RN.

A single species of aphid, *A. gossypii* was found. The observations showed a preference of the aphid for the underside of the watermelon leaves, but nymphs and adults were found on the upper side of the leaves. The presence of winged and wingless individuals at different stages was noticed, in a high population, since all the leaves were being attacked by the aphid. According to FERNANDES et al. (2001), the winged forms appear more often in high infestation densities, when the competition for food is high.

Near harvest, however, 90% of the collected aphids were parasitized (mummified) by the species identified as *L. testaceipes*, the only parasitoid found, and which is regarded as a promising biological control agent for several species of aphids (RODRIGUES et al., 2003). According to RODRIGUES & BUENO (2001), *A. gossypii* was suitable for the development of *L. testaceipes* with a parasitism rate of 56% and 83% of emergence. CARNEVALE et al. (2003) found a parasitism of 44%, considered satisfactory, and emergence of 93%.

In the Northeast, SOUZA et al. (2003) and FERNANDES et al. (2000), in Bahia and Pernambuco, respectively, reported the occurrence of *L. testaceipes* parasitoid in cotton, parasitizing *A. gossypii*, but not studied the parasitism rate and percentage of emergence in this association.

The present study demonstrated that there is potential for using the parasitoid *L. testaceipes* as a biological control strategy in IPM of *A. gossypii*, but further study would be needed for confirmation in different seasons and a longer sampling period.

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