

Natural enemies of *Leptoglossus zonatus* (Dallas, 1852) (Hemiptera: Coreidae) on maize in Itumbiara, Goiás

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Summary

The occurrence of different parasitoids in eggs of *Leptoglossus zonatus* on maize, recorded in Itumbiara County, State of Goiás, Central Brazil (18°25'S; 49°13'W), is reported in this paper. Variable numbers of specimens of four different species of parasitoids were obtained from naturally infested eggs of the insect pest: 1) five specimens of *Anastatus* sp. (Hymenoptera: Eupelmidae); 2) two specimens of *Brasema* sp. (Hymenoptera: Eupelmidae); 3) 51 specimens of *Gryon gallardoi* (Brèthes) (Hymenoptera: Scelionidae); and 4) six specimens of *Trissolcus* sp. (Hymenoptera: Scelionidae). *G. gallardoi* was the species most frequently found (79.6%) among the specimens collected. The rate of parasitism of the parasitoids *Anastatus* sp., *Brasema* sp., *Gryon gallardoi* and *Trissolcus* sp. was 4.4%, 1.8%, 45.1% and 5.3%, respectively.

Key words: parasitoids, natural enemy, biocontrol, crop pest.

Resumo

A ocorrência de diferentes parasitóides em ovos de *Leptoglossus zonatus*, na cultura de milho é registrada para Itumbiara, Goiás (18°25'S; 49°13'W). Números variáveis de espécimens de quatro espécies do parasitóide foram obtidos de ovos infestados naturalmente do inseto praga, coletados em campo: 1) cinco espécimens de *Anastatus* sp. (Hymenoptera: Eupelmidae); 2) dois espécimens de *Brasema* sp. (Hymenoptera: Eupelmidae); 3) 51 espécimens de *Gryon gallardoi* (Brèthes) (Hymenoptera: Scelionidae); e 4) seis espécimens de *Trissolcus* sp. (Hymenoptera: Scelionidae). *G. gallardoi* foi a espécie mais freqüente (79.6%) entre os espécimens coletados. A taxa de parasitismo das espécies *Anastatus* sp., *Brasema* sp., *Gryon gallardoi* e *Trissolcus* sp. foi de 4.4%, 1.8%, 45.1% e 5.3%, respectivamente.

Unitermos: parasitóides, inimigo natural, controle biológico, praga agrícola.

Among the Coreidae known to cause economic damage to crop plants, much attention has been directed to the species *Leptoglossus zonatus* (Dallas, 1852) (Hemiptera: Coreidae) that is abundant on maize and is considered a serious insect pest (Souza and Amaral Filho, 1999b).

Leptoglossus zonatus, known in Brazil as maize bug, also feeds on several other species (14 families of fructiferous, forage and ornamental plants) showing characteristics of polyphagia and adaptation to different feeding resources (Souza and Amaral Filho, 1999a). The insect sucks on grains and fruits inducing wilt and decay, thus reducing yield. It is more serious, however, in relation to the maize crop where losses may reach 15%. This hemipteran has been already found in Mexico as well as in Central and South America and occurs mainly from December to April (Zucchi et

al., 1993), probably influenced by the weather and available food. According to Souza and Amaral Filho (1999a), little or nothing is known about its natural enemies. No methods of population control have so far been proposed for this insect. The present study aimed to identify parasitoids that naturally occur on eggs of *L. zonatus* and to report the occurrence of the parasitoid *Anastatus* sp. in this host.

The experiment was performed at the Agronomy School Farm (Site 1) and at the Santa Maria Farm (Site 2) from) from December 2001 to February 2002. Both farms are located in Itumbiara County, State of Goiás, Central Brazil (18°25'S; 49°13'W). Hemiptera egg collections were carried out on a 44x20m maize plot, at Site 1. At Site 2, an area of one hectare was divided into 44x20m plots for each of the seven samplings. Fifty ears of maize were randomly collected weekly on each site, a total of 700 ears. At Site 1, two ears were infested with eggs on January 15, 2002 (20 eggs with 5 parasitoids and 21 eggs with 8 parasitoids). Concerning Site 2, three ears were infested with eggs on February 5, 2002 (20 eggs with 12 parasitoids, 23 eggs with 18 parasitoids and 29 eggs with 21 parasitoids). These ears were collected on different plots. The ears were individualized in plastic bags and taken to the laboratory of the Instituto Luterano de Ensino Superior for collection of the naturally infested host eggs. All ears were individually checked for the presence of Hemiptera egg masses. These egg masses were then transferred, together with a small piece of maize foliar sheath, to glass flasks that were maintained in the laboratory, under room temperature, until the emergence of parasitoids and/or nymphs of the host insect. The rate of parasitism was computed using the following formula: $R = (\text{parasitized eggs} / \text{total number of eggs}) \times 100$.

A total of 113 eggs of *L. zonatus* were collected from January to February 2002, from which 40 nymphs (35.4%) of the host species and 64 parasitoids (56.6%), from five different species,

emerged (Table 1). Nine of the eggs (8.0%) did not produce either nymphs or parasitoids. The prevalence of parasitism recorded was 56.6%. At Sites 1 and 2, 41 and 72 eggs of *L. zonatus* were, respectively, obtained (Table 2).

Although the planted area at Site 2 was smaller than at the Site 1, a higher number of eggs was found in the samples collected at Site 2. This possibly took place because of higher environmental pressure.

Among the parasitoids collected, *G. gallardoi* was the most frequent species representing 79.6% of the specimens, probably influenced by the seasonal variation. *Gryon gallardoi* is also a parasitoid of eggs of other hemipterans belonging to the Coreidae family that, in Brazil, attack rice, potato, tobacco, tomato and papaya (Loiacono, 1980).

TABLE 1: Number of parasitoids obtained from 113 naturally-infesting eggs of *Leptoglossus zonatus* collected on maize ears from December 2001 to February 2002, in two different locations [Agronomy School Farm (Site 1) and at Santa Maria Farm (Site 2)] in Itumbiara County, State of Goiás, Central Brazil (18°25'S; 49°13'W).

Species of parasitoids	Number of specimens (Site 1)	Percentage	Number of specimens (Site 2)	Percentage
Eupelmidae:				
<i>Anastatus</i> sp.	00	00.0	05	9.8
<i>Brasema</i> sp.	02	15.4	00	0.0
Scelionidae:				
<i>Gryon gallardoi</i>	11	84.6	40	78.4
<i>Trissolcus</i> sp.	00	00.0	06	11.8
Total	13	100.0	51	100.0

The parasitic rate of the parasitoids *Anastatus* sp., *Brasema* sp., *Gryon gallardoi* and *Trissolcus* sp. was 4.4%, 1.8%, 45.1% and 5.3%, respectively. Souza and Amaral Filho (1999a) in the State of São Paulo, Brazil, and Mitchell and Mitchell (1986) in the State of Texas, USA, found, respectively, parasitic rates of 64.0% and 70.4% for *Gryon* sp. on eggs of *L. zonatus*. Jones (1993) also reported parasitism of the genera *Gryon*, *Neolreleya* (Hymenoptera: Eurytomidae), *Ooencyrtus* (Hymenoptera: Encyrtidae) and *Anastatus* (Hymenoptera: Eupelmidae) on eggs of *L. zonatus*.

TABLE 2: Number of eggs and parasitoids obtained by ears from 113 naturally-infesting eggs of *Leptoglossus zonatus* collected on maize ears from December 2001 to February 2002, in two different locations [Agronomy School Farm (Site 1) and at Santa Maria Farm (Site 2)] in Itumbiara County, State of Goiás, Central Brazil (18°25'S; 49°13'W).

Site/total of eggs	Number of ears	Eggs	Parasitoids
Site 1 - 41 eggs	ear one	20	2 <i>Brasema</i> sp. 3 <i>Gryon gallardoi</i>
	ear two	21	8 <i>Gryon gallardoi</i>
Site 2 - 72 eggs	ear one	20	05 <i>Anastatus</i> sp. 06 <i>Trissolcus</i> sp. 01 <i>Gryon gallardoi</i>
	ear two	23	18 <i>Gryon gallardoi</i>
	ear three	29	21 <i>Gryon gallardoi</i>

This data is important because it contributes to the knowledge of the natural enemies of *L. zonatus* in the Itumbiara region, GO, Brazil.

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