

## Parasitoids of dipterans and hemipterans collected in to cultivate on maize in Brazil

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### Abstract

This paper has the objective of relating the occurrence of parasitoids to cultivate on maize in Itumbiara, Goiás during the crop 2001. Four groups of parasitoids were collected: two *Brasema* sp. (Hymenoptera: Eupelmidae), two of *Conura* sp. (Hymenoptera: Chalcididae), eleven *Gryon gallardoi* (Bréthes, 1913) (Hymenoptera: Scelionidae) and nine of *Pteromalidae* sp. (Hymenoptera: Pteromalidae). The most important obtained parasitoids were found in *Leptoglossus zonatus* (Dallas, 1852) (Hemiptera: Coreidae) with *Brasema* sp. and *G. gallardoi*, prevailing the parasitism of 26,8% and 4,8%, respectively. Hymenoptera is one of the largest orders of insects. The lesser known Hymenoptera are parasitoids that develop in immature stages of other arthropods. They are considered important in the biological control of insect pests.

**Keywords:** Hymenoptera; Hemiptera; Diptera; Biological control

### 1. Introduction

Chalcididae behave like parasitoids. Most attack Lepidoptera, Diptera, Hymenoptera and Coleoptera pupae they are predominantly solitary endoparasitoids [1].

Scelionidae are solitary endoparasitoids, idibionts of insect and spider eggs. They parasitize eggs of Orthoptera, Heteroptera, Embioptera, Hemiptera, Isoptera and Araneae [2].

The family Eupelmidae presents itself as parasitoid of Araneae eggs and immature stages of Orthoptera, Blattaria, Mantodea, Hemiptera, Homoptera, Neuroptera, Coleoptera, Diptera, Lepidoptera and Hymenoptera. Species from this family have been used in biological control programs [3, 4].

Pteromalidae have species with solitary and gregarious habits, ecto and endoparasitoids, idibionts and coinobionts, primary parasitoids, hyperparasitoids and even predators of Lepidoptera, Coleoptera, Diptera and Hymenoptera [5].

*Leptoglossus zonatus* (Dallas, 1852) (Hemiptera: Coreidae) is found in corn, sorghum, common bean, soybean, tomato, and citrus. It sucks up the grains and fruits, causing them to wilt and rot, reducing their production. According to these authors, *L. zonatus* is more important for corn because they cause damages that reach 15% (Figure 1) [6].

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**Figure 1** *Leptoglossus zonatus* (Dallas, 1852) (Hemiptera: Coreide); (Source: <https://www.ipmimages.org/browse/detail.cfm?imgnum=5203057>)

The objective of this work is to report the occurrence of parasitoids in corn crop in Itumbiara, Goiás, during the 2001 harvest.

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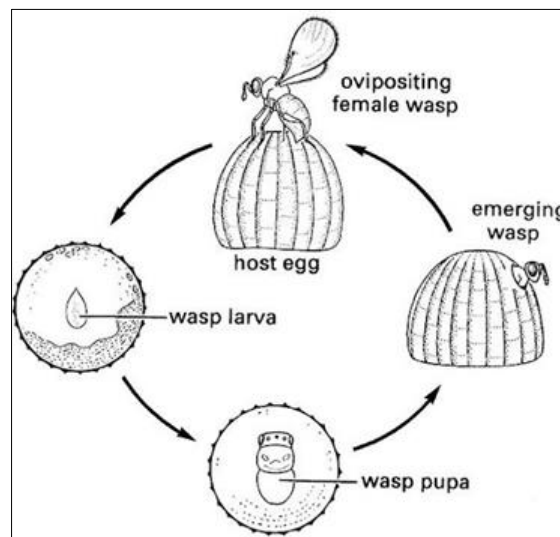
## 2. Material and methods

The presence of Hemiptera egg mass and Diptera immature stages was verified in the corn spikes (100) during the corn harvest. The obtained mass of eggs and larvae of dipterans were placed in a glass flask and kept until the appearance of the parasitoids. The experiment was carried out on the farm of the Agronomy Course of the Lutheran Institute from January to February 2001.

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## 3. Results and discussion

A total of 41 eggs of *L. zonatus* were collected from which emerged 11 specimens of *Gryon gallardoii* 1913 (Hymenoptera: Scelionidae) (Figures 2 and 3) and 2 specimens of *Brasema* sp. (Hymenoptera: Eupelmidae).



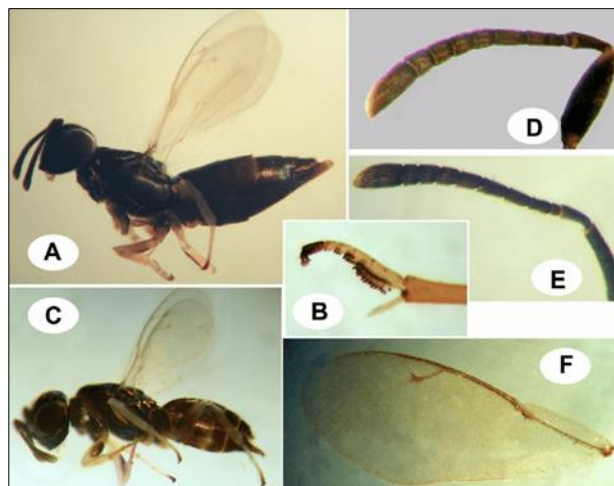
**Figure 2** Life cycle of an egg parasitoid; (Source: <http://www.entomologa.ru/outline/263.htm>)

The total percentage of parasitism observed was 31.7%. The percentage of parasitism of *G. gallardoii* and *Brasema* sp. was 26.8% and 4.8%, respectively.



**Figure 3** *Gryon gallardoii* 1913 (Hymenoptera: Scelionidae); (Source: <https://species.wikimedia.org/wiki/Gryon>)

*Brasema* sp. behaves as an ectoparasitoid of coleopteran larvae and other hosts within plant tissues. *Gryon gallardoii* is a parasitoid of Hemiptera eggs of the Coreidae family (Figure 4) [7].



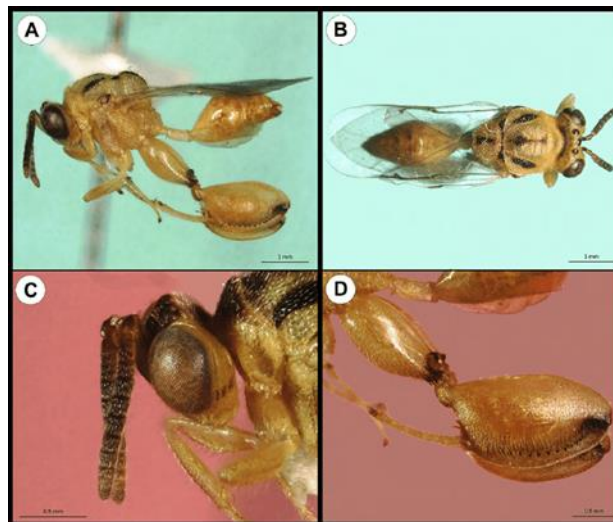
**Figure 4** *Brasema* A-Female in lateral view, B-Mid tarsus in female, C-Male in lateral view, D-Female antennae, E-Male antenna, F-Fore wing in female; (Source: <https://www.researchgate.net/figure/>)

Six pupae of *Allograpta* sp. (Diptera: Syrphidae). From one pupa, 9 gregarious individuals of the Pteromalidae sp. (Hymenoptera: Pteromalidae) and two solitary specimens of *Conura* sp. (Figure 5) (Hymenoptera: Chalcididae).

The total percentage of parasitism observed in puparia of *Allograpta* sp. was 18.3%. The percentage of Pteromalidae sp. and *Conura* sp. in puparia of this host was 15.0% and 33.3% (Figure 6).



**Figure 5** *Allogarapta* sp. (Diptera: Syrphidae); (Source: bc52fce64112eec8cb22b2f8b59b4b64e2a0c55/3-Figure1-1.png<https://d3i71xaburhd42.cloudfront.net/bbc52fce64112eec8cb22b2f8b59b4b64e2a0c55/3-Figure1-1.png>)



**Figure 6** Specimens of *Conura morley* collected in Campo Grande, MS, Brazil. A. Habitus, lateral view. B. Habitus, dorsal view. C. Head, lateral view. D. Hind leg, posterior view; (Source: [https://www.researchgate.net/figure/Specimens-of-Conura-morley-collected-in-Campo-Grande-MS-Brazil-A-Habitus-lateral\\_fig1\\_309269834](https://www.researchgate.net/figure/Specimens-of-Conura-morley-collected-in-Campo-Grande-MS-Brazil-A-Habitus-lateral_fig1_309269834))

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#### 4. Conclusion

Hymenoptera is one of the largest orders of insects. The lesser known Hymenoptera are parasitoids that develop in immature stages of other arthropods. They are considered important in the biological control of insect pests.

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