

Review of "Parasitoids of insects of economic and sanitary importance collected in Brazil"

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Diptera is one of the largest orders of insects, comprising abundant number of species as well as of individuals. Besides, these dipterous are of great medical and veterinarian importance since they may produce myiasis and may be vectors of microorganisms pathogenic to men and animals (Greenberg, 1971).

Muscoids dipterous have been found to carry diseases causing organisms such as: bacteria, protozoa and helminthes (D'Almeida, 1992, Greenberg, 1971). Sarcophagidae are ovoviparous insects or, rarely, viviparous (Lopes and Leite, 1989). There have been recognized 600 species of Sarcophagidae from Neotropical region (Shewell, 1981). On the other hand, this dipterous takes relevant importance in public health, for being the vehicle of pathogenic micro-organism to human beings (Greenberg, 1971).

Fly control using insecticides usually selects resistant populations, being just a palliative. Mendes and Linhares (1993) believed that research on new methods concerning fly control is needed. Natural regulators, such as parasitoids, are agents responsible for reduction of fly populations (McAlpine, 1981).

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 caterpillars of the genus *Lonomia* (Lepidoptera: Saturniidae), which were collected in this experiment, are important causative agents of skin problems in humans, especially for individuals who work in rural areas. These insects can be found associated with economically important crops, which often feed and/or perform your posture (Souza and Reis, 1992). 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 and Reis, 1992; Michereff Filho).

The insects of the order Hymenoptera form a diverse group of approximately 200,000 species. Thanks to these insects, great savings in pest control programs have been achieved. They are mostly parasitoid organisms and, in the Neotropical region, they have been little studied and are poorly known. Hymenoptera parasitoids are the most important biological control agents and they are responsible for the majority of the economic and environmental benefits produced by biological control programs. They may provide support for biological and conservation studies. Their action on hosts increases with growth in their population and decreases with reductions in populations. The two interlinked populations fluctuate in relation to each other in such a way as to impede both abrupt increases and the extinction of the host population (Gauld and Bolton, 1988; La Salle and Gauld, 1991; Scatolini and Penteado-Dias, 1997).

Interest in biological controls has grown in various countries, as a response to the adverse effects of chemical pesticides on the environment and on biodiversity. Moreover, it has grown as a function of new international trends in agricultural production involving the utilization of alternative means that are less aggressive to the environment and which favor conservation and the sustainable use of biodiversity (Scatolini and Penteado-Dias, 1997; Marchiori and Dias, 2002).

Since parasitoids occupy a superior trophic level, they act as determining factors on the population densities of their hosts due to the diversity of their physiological and behavioral adaptations (Gauld and Bolton, 1988) (Figure 1).

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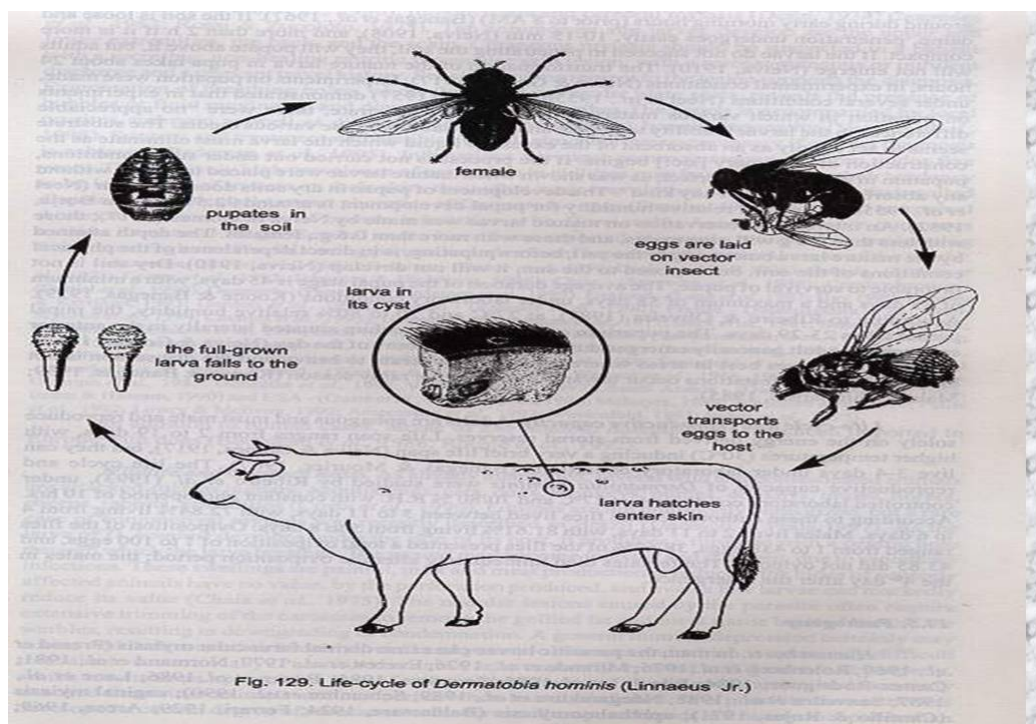
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Caption



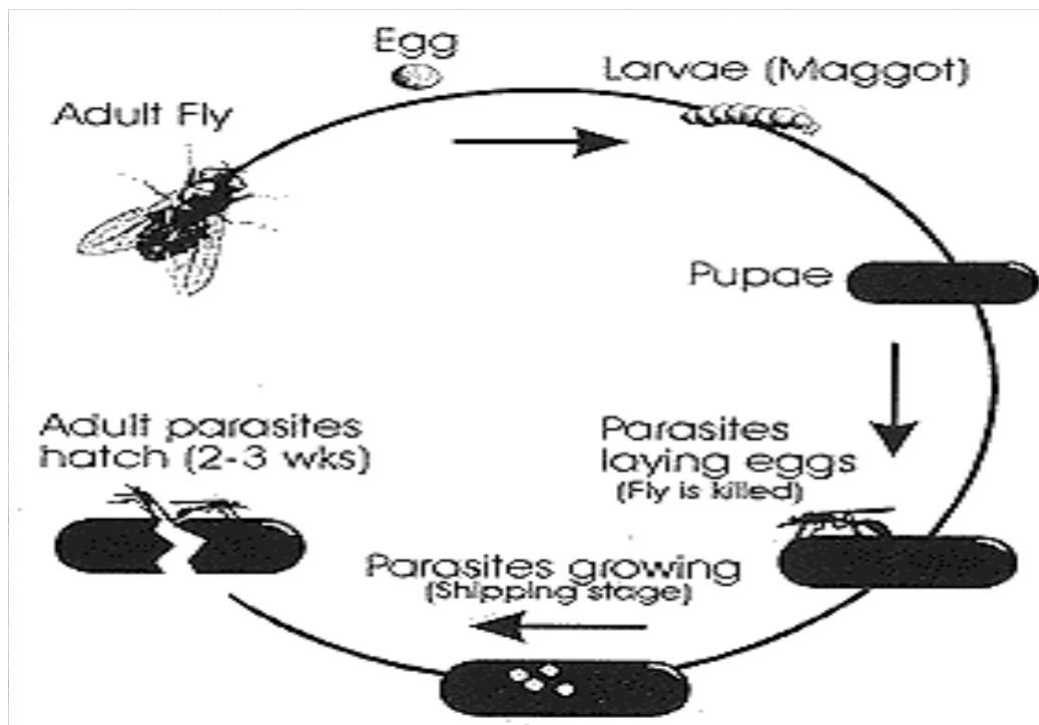
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Anastrepha fraterculus (Wiedemann) (Tephritidae)—mosca da fruta

Caption



Ceratitis capitata (Wiedemann) (Tephritidae)

Caption



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Larvas de *Zaprionus indianus*

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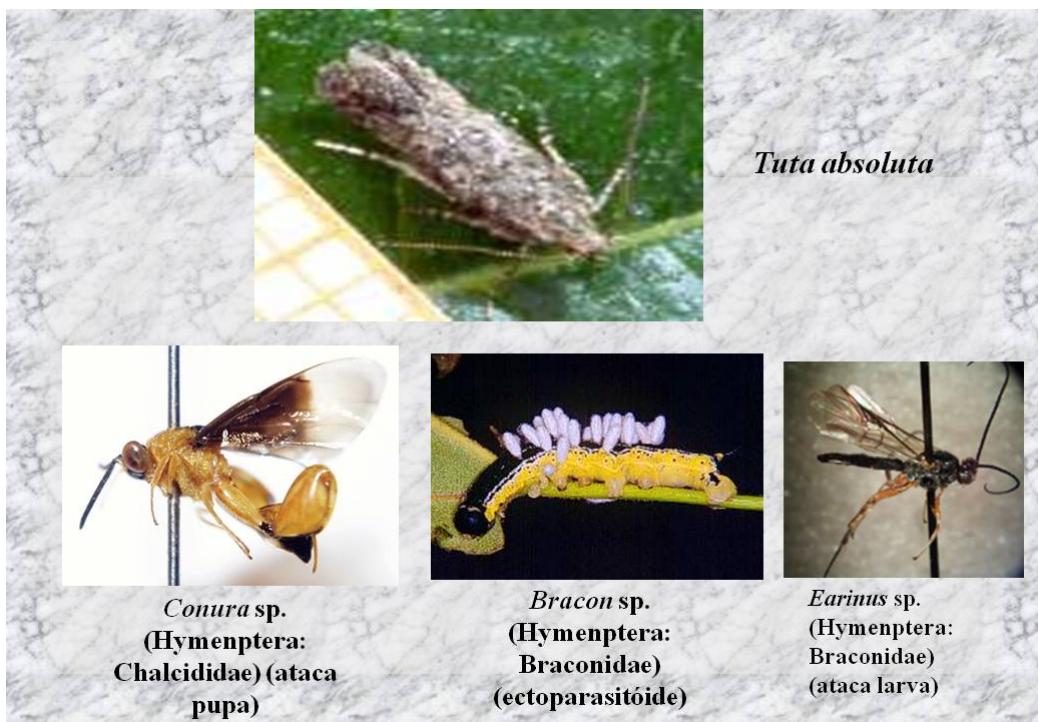
Pachycrepoideus vindemmiae

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Tuta absoluta (Meyrick) (Lepidoptera: Gelechiidae)

Caption



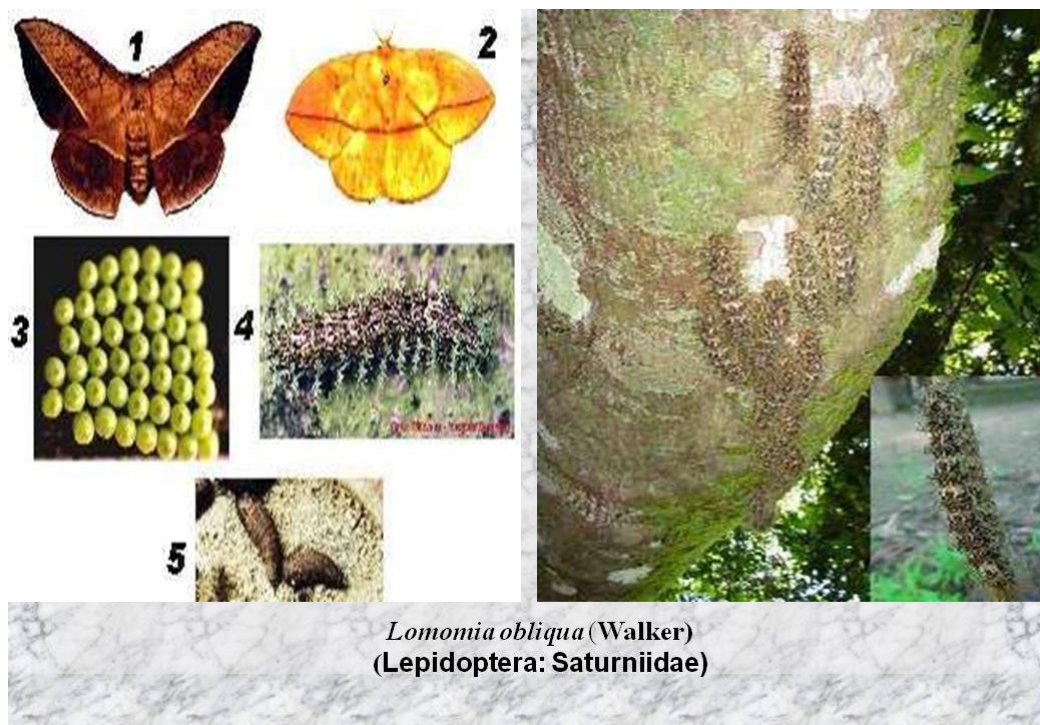
Tuta absoluta

Conura sp.
(Hymenoptera:
Chalcididae) (ataca
pupa)

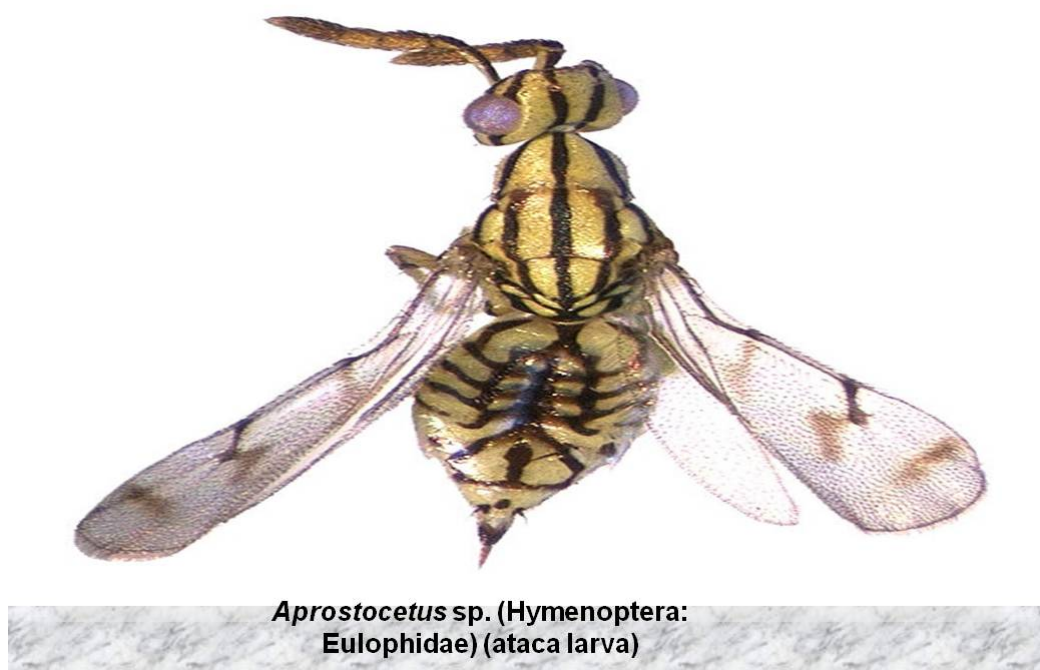
Bracon sp.
(Hymenoptera:
Braconidae)
(ectoparasitóide)

Earinus sp.
(Hymenoptera:
Braconidae)
(ataca larva)

Caption



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