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Euplectrus furnius parasitizing *Spodoptera frugiperda* in maize in Brazil

Euplectrus furnius parasitando *Spodoptera frugiperda* em milho no Brasil

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- NOTE -

ABSTRACT

Brazil is among the world's biggest maize producers and fall armyworm, *Spodoptera frugiperda* (Smith) (Lepidoptera: Noctuidae), is the main insect pest on this crop in the country. Despite the importance of its natural enemies, there still is a lack of information about parasitoids species that attack this insect-pest, such as larval parasitoids. This research reports *Euplectrus furnius* Walker (Hymenoptera: Eulophidae) parasitizing *S. frugiperda* larvae on maize crop in Brazil.

Key words: Larval parasitoid, fall armyworm, *Zea mays* L.

RESUMO

O Brasil está entre os maiores produtores de milho do mundo e a lagarta-do-cartucho, *Spodoptera frugiperda* (Smith) (Lepidoptera: Noctuidae) é o principal inseto-praga nessa cultura no país. Apesar da importância de seus inimigos naturais, ainda existe uma falta de informação sobre as espécies de parasitoides que atacam esse inseto-praga, tais como os parasitoides larvais. Este trabalho relata *Euplectrus furnius* Walker (Hymenoptera: Eulophidae) parasitando larvas de *S. frugiperda* em milho no Brasil.

Palavras-chave: Parasitoide larval, Lagarta-do-cartucho, *Zea mays* L.

Brazil is the world's third biggest producer of maize (FAO, 2011) and fall armyworm, *Spodoptera frugiperda* (Smith) (Lepidoptera: Noctuidae) is its main insect pest (FIGUEIREDO et al., 2006). Regardless the number of natural enemies associated to this pest in maize and other different field crops (MOLINA-

OCHOA et al., 2003), there still is necessity of known more about natural enemies of fall armyworm due to their important role. In the recent years, efforts have been made to know these parasitoids and some results are presented here about it.

From January 22nd to February 22nd of 2011, during summer in Brazil, fourteen evaluations in maize plants (from V1 to V10 stages) were made in a maize crop of 0.12 ha area, 30F53 hybrid, located at an experimental area of "Universidade Federal de Santa Maria" (29°43'S, 53°43'W, 95 MASL), in the State of Rio Grande do Sul, in the municipality of Santa Maria, Brazil. On each evaluation 80 plants were checked looking for *S. frugiperda* larvae which have been collected. A total of 1120 plants were evaluated and 1322 *S. frugiperda* larvae collected. Afterwards, larvae were placed in 100 ml plastic cups with artificial diet (BURTON & PERKINS, 1972) and individually kept under controlled environmental conditions (temperature 25±1°C, relative humidity 60±10% and photophase 12 hours) until *S. frugiperda* adults or parasitoids emerged. Then parasitoids were kept in 70% alcohol and identified. Identification was provided by Dr. Marcelo Teixeira Tavares and Vouchers are deposited at Entomological Collection of "Universidade Federal do Espírito Santo".

Four larvae were found parasitized by *Euplectrus furnius* Walker (Hymenoptera: Eulophidae), two of them collected on February 5th and

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other two on February 8th. First, second and third instar fall armyworm larvae were parasitized and parasitism rate was 0.3%. The number of parasitoids per larva ranged from one (first instar larvae) to eight (third instar larvae). From each two second instar larvae, five parasitoids emerged, totaling 19 obtained parasitoids.

Parasitoids of genus *Euplectrus* are widely distributed in the world and known as gregarious ectoparasitoids that frequently develop on many different hosts, including species of Lepidoptera (PUTTLER et al., 1980; COUDRON & PUTTLER, 1988; JONES & SANDS, 1999; MURÚA et al., 2004). None of the parasitized larvae reached pupae stage (later parasitoids emerged from third instar at most) and neither adapted ovipositor were verified on females, which indicates that *E. furnius* is possibly a koinobiont (CIRELLI & PENTEADO-DIAS, 2003).

Euplectrus furnius was previously described parasitizing *S. frugiperda* in Puerto Rico, in rice crops, causing 3.6% mortality of second and third instar larvae collected (PANTOJA & FUX, 1992). In South America it was mentioned in Argentina, where five *Euplectrus* species have been documented so far (VIRLA et al., 1999, MURÚA et al., 2004). In Brazil it was first cited by DE SANTIS & FIDALGO (1994), but no host, location nor crop were mentioned and only *Euplectrus plathypenae* Howard (COSTA LIMA, 1962) and *Euplectrus ronnai* (Brethes) (DE SANTIS, 1980) are recorded parasitizing *S. frugiperda* on maize. This is the first report of *E. furnius* parasitizing *S. frugiperda* larvae on maize in Brazil.

Despite small parasitism rate (0.3%), 19 adults were obtained from four parasitized larvae. It was observed that the larger the larvae, greater was the number of parasitoids per host obtained. In Brazil 46 different *S. frugiperda* larval parasitoids are known, 45 compiled by MOLINA-OCCHOA et al. (2003) and more recently another described by FIGUEIREDO et al. (2006), but most of Hymenoptera larval parasitoid species are not gregarious.

Euplectrus spp. oviposition might reach more than 10 eggs per host (COUDRON & PUTTLER, 1988) and some species are considered valuable for biological control due to its reproductive potential (JONES & SANDS, 1999). Four species were already released worldwide on classical biological control programs, all performed against species of Lepidoptera, which one came from South America, *Euplectrus puttleri* Gordh which was introduced in EUA, in 1975, against *Anticarsia gemmatilis* (Hübner) (Lepidoptera: *Noctuidae*), from Colômbia (PUTTLER et al., 1980; MUNIAPPAN et al., 2004).

This record suggests that further studies such as field evaluations in other maize producer regions and laboratory rearing techniques might reveal *E. furnius* potential for using on integrated pest management strategies for *S. frugiperda* on maize crops in Brazil, especially based on its reproductive potential as larval parasitoid.

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