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RECORD OF *Digonogastra* sp. (HYMENOPTERA: BRACONIDAE) PARASITIZING *Diatraea flavipennella* (LEPIDOPTERA: CRAMBIDAE) IN ALAGOAS, BRAZIL[1]

ELLEN CARINE NEVES VALENTE[2], SÔNIA MARIA FORTI BROGLIO[2], NIVIA DA SILVA DIAS-PINI[3]*, ANDRÉ SUÊLDO TAVARES DE LIMA[4], LÍGIA BROGLIO MICHELETTI[2]

ABSTRACT - The aim of this study is to document the heretofore unrecorded natural occurrence of the larval parasitoid *Digonogastra* sp. on *Diatraea flavipennella* Box, 1931 (Lepidoptera: Crambidae) in sugarcane fields. The collections were made in the Usina Santa Clotilde area, in Rio Largo municipality, Alagoas State, Brazil. This is the first record of *Digonogastra* sp. parasitizing caterpillar of *D. flavipennella* in Brazil. The parasitism rate was found to be 14.06%. The occurrence of this parasitoid indicates potential for natural regulation of that pest in sugarcane crop.

Keywords: Idiobiont. Occurrence. Parasitoid. Sugarcane.

REGISTRO DE *Digonogastra* sp. (HYMENOPTERA: BRACONIDAE) PARASITANDO *Diatraea flavipennella* (LEPIDOPTERA: CRAMBIDAE) EM ALAGOAS, BRASIL

RESUMO - O objetivo deste estudo foi registrar a ocorrência natural do parasitoide larval *Digonogastra* sp. em *Diatraea flavipennella* Box, 1931 (Lepidoptera: Crambidae) em cana-de-açúcar. As coletas foram realizadas na Usina Santa Clotilde (9º25'S, 35º49'W, 127m de altitude), no município de Rio Largo, Estado de Alagoas, Brasil. Este é o primeiro registro do gênero *Digonogastra* parasitando lagartas de *D. flavipennella* no Brasil. A taxa de parasitismo verificada foi de 14,06%. A ocorrência deste parasitoide indica um potencial de regulação natural da referida praga em cana-de-açúcar.

Palavras-chave: Idiobionte. Ocorrência. Parasitoide. Cana-de-açúcar.

*Corresponding author
[1]Received for publication in 11/10/2016; accepted in 07/05/2017.
[2]Center of Agricultural Science, Universidade Federal de Alagoas, Maceió, AL, Brazil; ellencvalente@yahoo.com.br, soniamfbroglio@gmail.com, ligia_micheletti@hotmail.com.
[3]Embrapa Agroindústria Tropical , Fortaleza, CE, Brazil; nivia.dias@embrapa.br.
[4]Department of Agroecology, Instituto Federal de Educação, Ciência e Tecnologia de Alagoas, Maragogi, AL, Brazil; andresueldo@ig.com.br.

INTRODUCTION

Digonogastra Viereck, 1912 (Hymenoptera: Braconidae: Braconinae) is an idiobiont ectoparasitoid whose main hosts are larvae of Crambidae, Pyralidae, Prodoxidae, and Psychidae (Lepidoptera) and Curculionidae and Cerambycidae (Coleoptera) (BARONIO et al., 2012; CRABB; PELLMYR, 2006; YU; ACHTERBERG; HORSTMANN, 2012). The genus includes about 260 described species with Afrotropical, Nearctic, and Neotropical distribution (YU; ACHTERBERG; HORSTMANN, 2012).

Species of this genus have been studied in biological control programs of *Eoreuma loftini* (Lepidoptera: Pyralidae) in sugarcane in Texas, and several species of *Diatraea* in USA and Latin America (SMITH; BROWNING; BENNETT, 1987; WHARTON et al., 1989).

The sugarcane borer *Diatraea flavipennella* Box, 1931 (Lepidoptera: Crambidae) is an important pest in sugarcane plantations in northeastern Brazil. Their control has been performed mainly through the use of larval parasitoid *Cotesia flavipes* (Hymenoptera: Braconidae) by means of inundative releases (DIAS-PINI et al., 2012; SILVA et al., 2012). The control with this parasitoid has shown a significant increase of 26% of parasitism on *Diatraea* spp. in cane fields of Northeast Brazil (BOTELHO; MACEDO, 2002). The number of parasitoids that control the species of *Diatraea* is vast. In Brazil, in addition to *C. flavipes*, other biological control programs were implemented such as the *Metagonistylum minense* Towns, 1927 and *Paratheresia claripalpis* (Diptera: Tachinidae) (BOTELHO, 1992).

However, there is little information available regarding the parasitoids associated with *D. flavipennella*. Dias et al. (2011) recorded the egg parasitoid *Telenomus alecto* Crawford, 1914 (Hymenoptera: Scelionidae) on *D. flavipennella* in the sugarcane plantations of the State of Alagoas, Brazil.

The objective of this study was to record the occurrence of the larval parasitoid of the genus *Digonogastra* (Hymenoptera: Braconidae) on *D. flavipennella* in sugarcane in the State of Alagoas, Brazil.

MATERIAL AND METHODS

The experiment was performed in the Usina Santa Clotilde area (9°25′S, 35°49′W, 127 m above sea level), in the municipality of Rio Largo, Alagoas State, Brazil. An artificial infestation was performed with caterpillar of *D. flavipennella* reared on an artificial diet of soybean meal, wheat germ, sugar, vitamin solution, Wesson salts, ascorbic acid, and water (VALENTE et al., 2014).

One hundred pieces of sugarcane culms (*Saccharum officinarum* variety SP 79-1011) measuring 50 cm in length were perforated using a drilling machine, creating 5 mm diameter diagonal holes, through which a single third-instar caterpillar was introduced with a soft brush (no. 0). Twenty-four hours after the artificial infestation, the culms were distributed in the field. An area of 225 m × 110 m was marked and divided into 10 parcels of 4.5 m × 2.0 m each. In each parcel, ten culms were put in the center, placed equidistantly in rows of 20 cm distance from each other. The culms were tagged and fixed using a string attached to sugarcane clumps. The methodology used here is similar to the one described in Volpe et al. (2011). The environmental conditions were on average 26°C temperature and 62% humidity.

After five days of exposure to parasitism, the culms were collected and brought to the Agricultural Entomology Laboratory at the Federal University of Alagoas to remove caterpillars. The caterpillars were individually placed in Petri dishes (6.0 cm diameter) containing artificial diet to keep them alive and observe the parasitism (Figure 1). Petri dishes were maintained under favorable environmental conditions of 26±1°C, 70±10% humidity, and 12 h photophase until the emergence of parasitoids or development of the borer.

Figure 1. *Diatraea flavipennella* caterpillar parasitized in sugarcane and in artificial diet.

RESULTS AND DISCUSSION

From the total of 100 caterpillars of *D. flavipennella* distributed in the field, 64 were recovered, of which 14.06% were parasitized. The parasitoid adults were sent to Dr. Angélica Maria Penteado-Dias at the Federal University of São Carlos, and were noted as an unidentified species of *Digonogastra* (Figure 2).

Figure 2. Adult of *Digonogastra* sp. and copies sent for identification.

This is the first record of this parasitoid genus associated with *D. flavipennella* in Brazil. Literature about this genus of Braconidae is scarce. According to Quicke (1988), several species of *Digonogastra* parasitize *Diatraea* spp. and other species of Pyralidae (= Crambidae). *Diatraea grandiosella* Dyar, 1911, *D. magnifactella* Dyar, 1911, *D. lineolata*, *D. considerata* Heinrich, 1931, and *D. saccharalis* (Lepidoptera: Crambidae) are known hosts of *Digonogastra kimballi* (QUICKE, 1988) (Hymenoptera: Braconidae). This study shows, for the first time, the parasitism of *D. flavipennella* by an unidentified species of *Digonogastra* in Brazil, which may offer a new perspective for the use of this parasitoid in the biological control of *D. flavipennella* in cane fields.

CONCLUSIONS

This is the first record of this parasitoid genus associated with D. flavipennella in Brazil.

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