

First Record of *Venturia* sp. Parasitizing the Coconut Moth

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Abstract. The coconut moth *Atheloca subrufella* Hulst (Lepidoptera: Phycitidae) is considered an important pest of coconut crops in Brazil, which is the fourth largest global coconut producer. Concerning the economic importance of this crop and aiming to increase the knowledge related to biological control, the present research aimed records the first occurrence of *Venturia* sp. (Hymenoptera: Ichneumonidae) parasitizing *A. subrufella* caterpillars in the State of Sergipe, Brazil. Coconuts infested by *A. subrufella* caterpillars were collected in coconut plantation and kept in the Entomology Laboratory (Universidade Federal de Sergipe – UFS) until the emergence of *A. subrufella* adults or the parasitoids. The parasitoids obtained were identified as *Venturia* sp..

Keywords: *Atheloca subrufella*; biological control; *Cocos nucifera*; natural enemy; parasitoid.

Primeira Ocorrência de *Venturia* sp. Parasitando a Traça-do-Coqueiro

Resumo. A traça-do-coqueiro *Atheloca subrufella* Hulst (Lepidoptera: Phycitidae) é considerada uma importante praga da cultura do coqueiro no Brasil, o qual é o quarto maior produtor mundial de coco. Devido à importância econômica desta cultura e visando aumentar o conhecimento relacionado ao controle biológico, o presente trabalho teve como objetivo relatar a primeira ocorrência de *Venturia* sp. (Hymenoptera: Ichneumonidae) parasitando lagartas de *A. subrufella* no estado de Sergipe, Brasil. Cocos infestados por lagartas de *A. subrufella* foram coletados em plantações de coco e mantidos no laboratório de Entomologia (Universidade Federal de Sergipe – UFS) até a emergência de adultos de *A. subrufella* ou dos parasitoides. Os parasitoides obtidos foram identificados como *Venturia* sp..

Palavras-Chave: *Atheloca subrufella*; *Cocos nucifera*; controle biológico; inimigo natural; parasitoide.

The coconut tree, *Cocos nucifera* Linnaeus (Arecaceae), is among the most widespread fruit trees in the world, occurring practically in all continents. Currently, Brazil is the fourth largest global coconut producer, having a production about 2.8 million tons in a 287,000 ha area (MARTINS & JESUS JUNIOR 2011). Among the ten largest coconut producer states in Brazil, seven of them are in the northeast region. The largest producer state is Bahia, followed by Sergipe and Ceará that together are responsible for more than 50% of coconut production in Brazil (MARTINS & JESUS JUNIOR 2011).

The coconut moth, *Atheloca subrufella* Hulst (Lepidoptera: Phycitidae), is considered an important pest in coconut crops in Brazil and its thermal requirements favor infestation throughout the whole year in the Brazilian North and Northeast region (SANTANA *et al.* 2010). *A. subrufella* caterpillars can develop inside female flowers, feeding on the carpel, or inside young coconut fruits, feeding on the mesocarp. Externally, infested fruits have feces bound by silk strands. Young coconuts and flowers infested by *A. subrufella* caterpillars are aborted and fall off, the ones that do not fall off become deformed and have its commercial value reduced (BONDAR 1940; FERREIRA *et al.* 1998, 2002). These characteristics allow them to escape and survive the insecticide applications. Therefore, complementary strategies such as biological control, should be evaluated to control this pest.

Several insect species, mainly hymenopterans, have been recorded as parasitoids, acting as biocontrol agents of a myriad of insects considered important crop pests (MARCHIORI *et al.* 2007).

Most species parasitoid hymenopteran are within of superfamily Ichneumonoidea that comprises two cosmopolitan families - Braconidae and Ichneumonidae (QUICKE 2014).

The objective of the present study was to collect and identify a parasitoid from *A. subrufella* in the State of Sergipe, Brazil.

Forty coconuts, with signs infestation by *A. subrufella* caterpillars, were collected in two coconut plantation located in Pirambu City, Sergipe. The coconuts were kept in the Entomology Laboratory (Universidade Federal de Sergipe – UFS) in plastic containers (17 cm height x 13 cm diameter) covered with voil for aeration until the *A. subrufella* caterpillars leave the coconut and reached the pupal phase. The pupae were isolated in plastic containers (5 cm height x 6.5 cm diameter) containing filter paper moistened with distilled water covered with voil, and kept under laboratory conditions (24 ± 1°C; 60 % RH) until the emergence of *A. subrufella* adults or the parasitoids.

The prevalence of parasitism was calculated using the formula: P = parasite pupae/total pupae x 100 (BUSH *et al.* 1997; SALLES 1995).

From the collected coconuts were obtained 24 *A. subrufella* pupae, being sixteen males and eight females. Among the *A. subrufella* pupae emerged five adult parasitoids, being one adult parasitoid per pupa, two of them emerged from male pupae and three from female pupae. The prevalence of parasitism

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observed was 20.83%. Two parasitoid adults obtained were sent to professor Dra. Angélica Maria Penteado Martins Dias from the Universidade Federal de São Carlos, and were identified as *Venturia* sp. (Hymenoptera: Ichneumonidae) (Figure 1).

Venturia genus belongs to the subfamily Campopleginae, which is known for the importance of its members in the population control of agricultural pests. Among the genera of Campopleginae, eighteen occur in Brazil (SANDONATO et al. 2010). Two new parasitism occurrences were recorded in this subfamily, the *Campoletis* genus was found parasitizing caterpillars of *Agrotis gypaetina* Guenée (Lepidoptera: Noctuidae) and *Agrotis malefida* Guenée (Lepidoptera: Noctuidae) in alfalfa pastures in Argentina (ESTELA 2005). No parasitoid species was

previously recorded parasitizing *A. subrufella*, but the *Venturia* genus has already been recorded parasitizing other Lepidoptera hosts, such as *Cryptoblabes gnidiella* Millière (Lepidoptera: Pyralidae) in Brazil, an important pest on grapevine orchards (BISOTTO-DE-OLIVEIRA et al. 2007), *Plodia interpunctella* (Hübner) (Lepidoptera: Pyralidae) and *Corcyra cephalonica* (Stainton) (Lepidoptera: Pyralidae) in England (SALT 1975), all of them belonging to the Pyralidae family.

The parasitoids were identified only until genus due the fact that there is not a current and complete review to the Ichneumonidae family (ESTELA 2005). This is the first record of *Venturia* sp. parasitizing *A. subrufella* pupae. However, to assert that *Venturia* sp. can act as biological control agent of *A. subrufella* in coconut

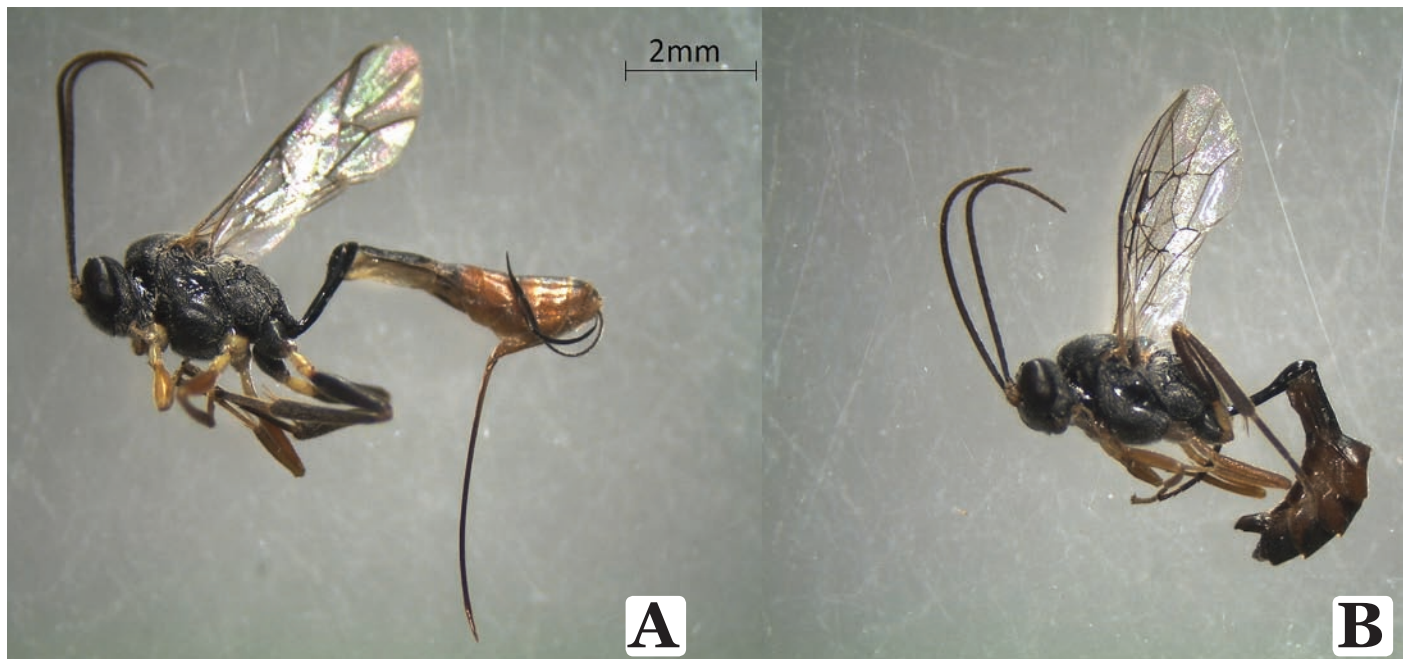


Figure 1. Adults of *Venturia* sp. sent to identification: side view of (A) a female, which can be identified by the presence of an ovipositor and (B) a male (Queiroz, A.F.O.).

plantations further relevant studies should be conducted.

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