First record of *Isia alcunena*, *Spodoptera cosmioides* and *S. eridania* (LEPIDOPTERA: NOCTUOIDEA) attacking Passion Fruit (*Passiflora edulis* Sims) in Brazil

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**Abstract** - Brazil is considered the center of origin and diversity of passifloras. These species have a great importance to *in natura* fruits consumption, industrialization, medicinal use and also as ornamental plants. The different *Passiflora* species are host of a great diversity of arthropods that can cause injuries, economic damages and, in some situations, the plant death. Among the arthropods, leafhopper caterpillars are considered frequent and severe pests in the main passion fruit producing regions. The present work is an occurrence report of *Isia alcunena* and *Spodoptera cosmioides* attacking passion fruit plants (*Passiflora edulis* Sims) in the Federal District, Brazil. The *S. cosmioides* and *S. eridania* caterpillars were collected while consuming leaves of *Passiflora edulis* intra-specific hybrid located in the Germplasm Active Bank ‘Flor da Paixão’ at Embrapa Cerrados. The caterpillars of *I. alcunena* were collected on leaves of the *Passiflora edulis* cv. BRS Rubi do Cerrado at the Agricultural Support Unit, Embrapa Cerrados. After collected, the caterpillars were individualized in a breeding system with leaves of the host plants. The development of the caterpillar was accompanied until the emergence of the adults, which were identified and fixed in entomological pins for permanent dry preservation.

**Index terms**: Insecta, polyphagous larvae, passion fruit, owlet moths, occasional pests.

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Primeiro registro de *Isia alcunena*, *Spodoptera cosmioides* e *Spodoptera eridania* (LEPIDOPTERA: NOCTUOIDEA) em maracujazeiro (*Passiflora edulis* Sims) no Brasil

**Resumo** - O Brasil é considerado o centro de origem e de diversidade das passifloras, que apresentam importância, tanto para o consumo *in natura*, industrialização, uso medicinal e também como plantas ornamentais. As diferentes espécies de *Passiflora* hospedam uma grande diversidade de artrópodes que, ocasionando injúrias podem causar danos econômicos e morte da planta. Dentre os artrópodes, as lagartas-desfolhadoras são consideradas as pragas mais frequentes e severas nas principais regiões produtoras de maracujá. Assim, o objetivo foi informar o primeiro registro da ocorrência das espécies *Isia alcunena*, *Spodoptera cosmioides* e *S. eridania* atacando maracujazeiros no Distrito Federal, Brasil. As lagartas de *S. cosmioides* e *S. eridania* foram coletadas enquanto consumiam folhas de híbridos intraespecíficos de *Passiflora edulis* cultivado no banco ativo de germoplasma “Flor da Paixão” da Embrapa Cerrados. Já as lagartas de *I. alcunena* foram coletadas em folhas de cultivar BRS Rubi do Cerrado, na Unidade de Apoio da Fruticultura da Embrapa Cerrados. Após a coleta, as lagartas foram individualizadas em sistema de criação com folhas das plantas hospedeiras. O desenvolvimento das lagartas foi acompanhado até à emergência dos adultos, que foram identificados e fixados em alfinetes entomológicos para preservação permanente, a seco.

**Termos para indexação**: Insecta, lagartas polífagas, maracujá, noctuoides, pragas ocasionais.
Passion fruit, widely distributed in the tropics and temperate regions, belong to the family Passifloraceae, which is composed of 24 subgenera and approximately 520 species. It is estimated that more than 150 of them are originated from Brazil and about 70 produce edible fruits (BERNACCI et al. 2013; VIEIRA & CARNEIRO, 2004).

The species of the genus Passiflora are important since they are associated to the basic needs of the human being and can be used in food, medicine manufacturing and also as ornamental plants due to the beauty and diversity of their flowers and leaves (FALEIRO et al. 2012).

Although there are several different species of Passiflora, only some of them are considered economically important. According to Faleiro et al. (2008; 2017), P. edulis Sims (sour passion fruit) is the most cultivated species worldwide. In general, in the commercial crops of P. edulis, phytosanitary problems occur resulted from the expansion and continued use of the same planting areas. Other species such as P. ligularis, P. alata, P. setacea, P. cincinnata, P. tripartita, P. quadrangularis and P. maliformis are also commercially cultivated mainly in Brazil and Colombia (FALEIRO et al. 2008; 2017).

Among the insects and pests that can damage the passion fruit tree, the Lepidoptera represented especially by the Nymphalidae and Notodontidae (subfamily Diptinae), are the most common species that attack passion fruit, which evolution coincides with the Passifloraceae (MILLER, 2009; MASSARDO et al. 2015). However, there have been species of Lepidoptera of other families associated to the Passiflora including: Coleophoridae, Cossidae, Erebidae, Geometridae, Gracillariidae, Hepialidae, Noctuidae, Oecophoridae, Psychidae, Pyralidae, Saturniidae, Sphingidae and Tortricidae (SILVA et al. 1968; CHACON e ROJAS 1984; MESSENGER, 1997; CAUSTON et al. 2000; PASTRANA, 2004; BRITO et al. 2013).

The present work is the first occurrence report of Isia alcumena (Berg, 1882) (Erebidae: Arctiinae), Spodoptera cosmioides (Walker, 1858) and Spodoptera eridania (Stoll, 1782) (Noctuidae: Noctuini) caterpillars attacking sour passion fruit plants (Passiflora edulis Sims) in the Federal District, Brazil.

The caterpillars of I. alcumena (n = 43) were collected on leaves, flowers and fruits of the P. edulis cultivar BRS Rubi do Cerrado in a greenhouse at the Fruit Support Unit, at Embrapa Cerrados, in Planaltina, DF. The S. cosmioides (n = 27) and S. eridania (n = 117) caterpillars were collected while consuming leaves, flowers and fruits of Passiflora edulis intra-specific hybrids located in the Germplasm Active Bank ‘Flor da Paixão’ at Embrapa Cerrados in Planaltina, DF (15°35′30″S; 47°42′00″W). The infestation caused by the larvae of I. Alcumena (December 2018), S. Cosmioides (September 2018) and S. Eridania (January 2019) was recorded (Figure 1).

After collected, the caterpillars were individually placed in transparent plastic containers with lids (30 mL) and fed with leaves of the passion fruit plants where they were found. The development of the caterpillars was monitored until the pupa stage and the emergence of adults. The pupae were kept in moistened containers and with expanded vermiculite. After the emergence, the adults were killed and fixed in entomological pins for permanent dry preservation.

The identification of the emerged adults was performed using bibliographical sources such as from Travassos (1947) for I. Alcumena, from the taxonomists and author José Augusto Teston and Pogue (2002) for S. Cosmioides and S. Eridania from the taxonomists and author Alexandre Specht. There are records of I. Alcumena caterpillars feeding on one type of arnica (“arnica do mato” - Chromolaena odorata L.) and mango (Mangifera indica L.), (GUAGLIUMI, 1966). On the other side, S. cosmioides are polyphagous and eat leaves of 126 host plants belonging to 40 botanical families (SPECHT e ROQUE-SPECHT, 2016). It is important to emphasize that S. eridania caterpillars were found eating P. edulis, in Puerto Rico, during an outbreak after the passage of hurricane Hugo in 1989 (TORRES 1992). Other authors that mention the association between S. eridania and P. edulis (POGUE 2012, MONTEZANO et al. 2014) also observed this fact. Therefore, the occurrence of S. eridania causing damages in passion fruits in Brazil is considered as the first record.

Both species of caterpillar belong to the superfamily Noctuoidea, which is represented by different species with a high degree of polyphagia. As for I. alcumena, although the bibliographic record (GUAGLIUMI, 1966) only refers to two host plants (“arnica-do-mato” and mango tree), the current report stating that the caterpillar of I. alcumena eat leaves of P. edulis cv. BRS Rubi do Cerrado represents the capacity of the caterpillars hosting plants of three different botanical families, which is in agreement with several studies that associate many species of the subfamily Arctiinae (Erebidae) with a high degree of polyphagia (ZENKER et al. 2016). As for the polyphagia, several species of the genus Spodoptera are reported as Passifloraceae pests throughout the American continent: S. androgea (JANZEN e HALLWACHS, 2009), S. exigua (CAUSTON et al. 2000), S. frugiperda (MONTEZANO et al. 2018) and S. ornithogalli (CHACON & ROJAS, 1984).

The first occurrence record of these caterpillars attacking passion fruits is an alert to make individuals aware that studies on bioecology and behavior are necessary. In the future, these studies will provide information so that if these species become pests, they will be managed more efficiently.
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