NOTA

First record of *Rachiplusia nu* (Lepidoptera: Noctuidae) as host of the egg parasitoid *Trichogramma bruni* (Hymenoptera: Trichogrammatidae)

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➤ **Resumen** — *Trichogramma bruni* Nagaraja (Hymenoptera: Trichogrammatidae) is recorded parasitizing eggs of the "sunflower looper", *Rachiplusia nu* (Guenée) (Lepidoptera: Noctuidae). This is the first report of this important pest as host of *T. bruni*. The association was registered in soybean crops in Tucumán, Argentina.

Keywords: Sunflower looper, soybean pest, Argentina, association host-parasitoid.

➤ **Abstract** — "Primera cita de *Rachiplusia nu* (Lepidoptera: Noctuidae) como hospedador del parasitoide de huevos *Trichogramma bruni* (Hymenoptera: Trichogrammatidae)". Se reporta por primera vez a *Trichogramma bruni* Nagaraja (Hymenoptera: Trichogrammatidae) parasitando huevos de la "oruga medidora" *Rachiplusia nu* (Guenée) (Lepidoptera: Noctuidae). Este es el primer registro de esta importante plaga como hospedador de *T. bruni*. Esta asociación fue registrada en cultivos de soja en Tucumán, Argentina.

Palabras clave: oruga medidora, plagas de soja, Argentina, asociación hospedador-parasitoide.

The «sunflower looper» *Rachiplusia nu* (Guenée) (Lepidoptera: Noctuidae) is a very important pest of soybean in northwestern Argentina (Valverde, 2007; Valverde *et al.,* 2008b). In our country, soybean pests are controlled by chemical pesticides, although recently transgenic germplasm expressing the Cry protein of *Bacillus thuringiensis* have been sown to control Lepidoptera larvae. Resistance of lepidopteran pests both to insecticides (Felland *et al.,* 1990; Yu, 1992; Thomas *et al.*, 1996; Mascarenhas and Boethel, 1997) and to Cry proteins of Bt events (Mascarenhas *et al.,* 1998; Zhang *et al.*, 2013) has been reported. To solve the problem of soybean pests, a rational management plan should be generated, considering all the factors affecting the crop and its productivity, focusing on the establishment of an integrated pest management (IPM). We should aspire to reduce or eliminate the use of pesticides and minimize the impact of agricultural activities on the environment. In this context, an accurate knowledge of the natural mortality factors affecting the pests is indispensable.

In Tucumán province, the soybean defoliating caterpillars have few larval parasitoids (Berta *et al.*, 2009) but egg parasitoids are more relevant reaching high parasitism rates (Valverde and Virla, 2007). Until now, only *Trichogramma pretiosum* Riley and *Encarsia porteri* (Mercet) (Hymenoptera: Aphelinidae) were recorded as egg parasitoids of *R. nu* in the region (Frías *et al.,* 1993; Ovruski and Frías, 1995; Valverde and Virla, 2007). Surveys to study the *Trichogramma* species and their associated hosts in soybean crops were occasional, and even more so in the northwestern region of the country. Thus, *T. pretiosum* from eggs of *A. gemmatalis* (Hübner) (Erebidae: Eulepidotinae), *R. nu* and *Chrysodeixis includens* Walker (Noctuidae: Plusiinae) were reported by Frías *et al.* (1993)

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and Valverde and Virla (2007). Later, *T. bruni* parasiting the eggs of *A. gemmatalis* was mentioned by Valverde *et al*. (2008a). The importance of soybean and its associated pests, and the limited information on biological control agents in the crop, determined the need to intensify studies to improve the knowledge of the egg parasitoids complex in this agroecosystem.

The surveys were conducted during three growing seasons in a commercial soybean crop (80 ha) at the Institute of Animal Research for the semiarid Chaco (INTA IIACS) in Santa Rosa de Leales (Leales Department, Tucumán, Argentina, 27º11'34.85"S – 65°13'31.96"W, 327 m). Eggs of *R. nu* were collected from soybean plants and placed individually in gelatin capsules (2 cm x 0.5 cm diameter). Eggs were checked periodically to verify the larvae hatching or emergence of adults of parasitoids. Identification of eggs at a specific level was performed according to the structure and design of the micropilar area of the chorion according to Angulo and Weigert (1974) and Angulo and Olivares (1991).

Parasitoids identification was based on the male genitalia, following the specific keys of Pinto (1999) and of Querino and Zucchi (2005). This work was performed in the laboratories of the Institute of Entomology, Miguel Lillo Foundation (Tucumán), where voucher specimens were deposited.

Examined Material

1 ♂, 2 ♀♀, Santa Rosa de Leales, Tucumán, 14-II-06, Valverde col., ex *Rachiplusia nu;* 1 ♂, Santa Rosa de Leales, Tucumán, 06-III-06, Valverde col., ex *Rachiplusia nu*; 2 ♂♂, 5 ♀♀, S. R. de Leales, Tucumán, 13-III-06, Valverde col., ex *Rachiplusia nu*; 1 ♂, 3 ♀♀, S. R. de Leales, Tucumán, 23-III- 06, Valverde col,, ex *Rachiplusia nu*.

Trichogramma bruni Nagaraja was described from specimens obtained from eggs of an unidentified Notodontidae species collected in Minas Gerais, Brazil (Nagaraja, 1983). It is distributed in the Neotropical region (Mexico, Costa Rica, Trinidad and Tobago, Venezuela, Bolivia, Brazil, Chile and Argentina) (Noyes, 2014). In Argentina, it was previously registered for Iguazú (Misiones) without mention of hosts (Querino and Zucchi, 2002) and later it was reported in soybean crops in Tucumán, in the same region where *Rachiplusia nu* specimens were collected (Valverde *et al*., 2008a).

Its known host species belong to different families of Lepidoptera such as: Notodontidae, Hesperiidae [*Urbanus proteus* (L.)], Erebidae [*Anticarsia gemmatalis* Hübner, *Hypocala andremona* (Stoll), *Anomis* sp.], Geometridae [*Erosina hyberniata* (Guenée) and *Melanolophia* sp.], Nymphalidae [*Hamadryas feronia* Fruhstorfer, *Heliconius* sp. *Heliconius erato phyllis* (Fabricius), *Mechanitis lysiminia* (Fabricius)], Gelechiidae (*Sitotroga cerealella*), Pyralidae (*Ephestia kuehniella*, *Corcyra cephalonica*) (Pinto, 1999; Querino and Zucchi, 2002; Pratissoli *et al.,* 2007; Valverde *et al.,* 2008a; Zucchi *et al*., 2010). Different aspects of its reproductive biology reared on alternative hosts were provided by Da Silva Dias *et al*. (2010). This study establishes the first record of *Rachiplusia nu* as host of *Trichogramma bruni*.

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