

## SCIENTIFIC NOTE

### Association of the Soil Bug *Atarsocoris* sp. (Hemiptera: Cydnidae) with the Weed *Senecio brasiliensis* Less

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Associação do Percevejo *Atarsocoris* sp. (Hemiptera: Cydnidae) com a Planta Invasora Maria-Mole (*Senecio brasiliensis* Less)

**RESUMO** - Os percevejos da família Cydnidae, entre eles *Atarsocoris* sp., são insetos-praga com ocorrência em várias culturas, acarretando perdas significativas em áreas com grande infestação do inseto; sendo também muito comuns associados a plantas daninhas. A ocorrência de *Atarsocoris* sp. foi observada em áreas de pastagens degradadas, nas raízes da planta maria-mole (*Senecio brasiliensis* Less). Mediante essa observação, foi levantada a hipótese da correlação entre a planta invasora e o inseto. O experimento foi realizado em solos de arenito (Latossolo Vermelho), em áreas de pastagem com a presença da maria-mole e sem a planta, totalizando três tratamentos e 10 repetições. Houve correlação positiva entre a planta invasora maria-mole e o percevejo (*Atarsocoris* sp.), sendo esta considerada uma hospedeira alternativa do inseto nas condições encontradas naquela área de estudo, ou seja, pastagens degradadas e solo arenoso. A correlação detectada permite sugerir a inclusão da maria-mole como bioindicadora do referido inseto nestas áreas.

**PALAVRAS-CHAVE:** Insecta, pastagem degradada, *Scaptocoris castanea*, percevejo-castanho-da-raiz

**ABSTRACT** - The burrowing bugs of the family Cydnidae, among them the brown burrowing bug *Atarsocoris* sp., are insect pests occurring in various crops, resulting in substantial losses in areas with high populations. *Atarsocoris* sp. is also frequently associated with weeds. The insect was found in the roots of the plant *S. brasiliensis* Less in degraded pasture areas. Based on this observation, the hypothesis of a correlation between this weed plant and the insect was raised. A study was conducted in sandy soils (red latossol), in pasture areas with and without *S. brasiliensis*, with three treatments and 10 replicates. A positive correlation was found between the weed plant and the burrowing bug. Hence this plant is an alternative host under the conditions of the study (degraded pastures and sandy soil). The positive correlation detected allows suggesting the *S. brasiliensis* plant as a bio-indicator of the occurrence of this insect pests in these areas.

**KEY WORDS:** Insecta, degraded pasture, *Scaptocoris castanea*, brown burrowing bug

The popular name "brown burrowing bug" refers to a root-attacking group of insects comprising various species of soil bugs, belonging to the family Cydnidae. Two species of this group, *Scaptocoris castanea* Perty and *Atarsocoris brachiariae* Becker, have caused extensive damage to agriculture and ranching (Oliveira *et al.* 2000).

The bugs of this group are characterized as having an oval-shaped body, a dark-gray, brown or black coloration, tibiae with spines, and generally excavator forelegs (Gassen 1989).

The first record of the brown burrowing bug in Brazil, occurred at the end of the 19<sup>th</sup> Century, when Perty described the species *S. castanea*, from samples originating from the State of Piauí (Becker 1967). In the State of Paraná, *S.*

*castanea* was found in Cornélio Procópio and Campo Mourão Counties (Embrapa 1999), and was possibly disseminated to other areas.

In other Brazilian states, another species of root-attacking soil bug besides the brown burrowing bug has emerged, referred to as the pasture bug (*A. brachiariae*) by Becker (1996), due to its frequent occurrence in pasture areas. The author reported on the similarity in behavior and biology between these species.

The brown burrowing bugs occur in various crops, particularly cotton, soybean, corn and pastures, producing damage for they live underground and suck on the roots of plants, resulting in significant losses in areas with large infestation (Andrade & Puzzi, 1951, Becker 1996, Oliveira

et al. 2000). This pest has grown in importance and its occurrence is more frequent in sandy soils (Picanço et al. 1999), causing losses up to 100% in soybean.

The majority of records, however, are limited to its occurrence and the damage they induce, without referring to biological aspects or any effective control measure or management of these insects (Nakano et al. 2001).

This species of soil bug often occurs in no-tillage cultivation system, or in areas under conventional soil management. The nymphs as well as the adults suck on the roots of numerous cultivated and non-cultivated plants, including weeds.

Recently, *Atarsocoris* sp. has been observed in pastures in the Paraná State, with the possibility of expanding to annual agricultural crop areas. Its occurrence was observed in areas of degraded pastures, in the roots of the weed plant *Senecio brasiliensis* Less, indicating that this weed could be a host for this insect.

The study of host plants of insect pests has increased, mainly because of the possibility of alternative food source and shelter for insects in between harvests (Panizzi 1997). The weed plant *maria-mole* is a herbaceous perennial commonly found in pastures, barren lands and cultivated areas.

Despite the brown soil bug has high degree of polyphagy, there are differences in susceptibility and/or preference for its hosts. *Brachiaria humidicola* is one of the preferential hosts (Amaral et al. unpublished). The knowledge of the food sources utilized by a particular group of phytophagous insects is important for the study of bioecology, population dynamics, alternation of hosts, and prevention of the emergence of species noxious to cultivated plants (Link & Grazia 1987).

Therefore, the aim of this study was at determining the association of the soil bug *Atarsocoris* sp. with the weed plant *S. brasiliensis*.

The investigation was conducted in sandy soils (red latossol), which predominate in degraded pastures of African star grass (*Synodora* spp.) and "mato grosso" grass (*Paspalum notatum*) in the region of Jaguapitã County, - State of Paraná, on September 19<sup>th</sup>, 2000. Three areas of collection were established (Table 1).

Table 1. Conditions for the collection of the root-attacking soil bug *Atarsocoris* sp.

Conditions	Areas
1	Pasture area without <i>S. brasiliensis</i>
2	Pasture area with <i>S. brasiliensis</i> (obtained from samples outside the root projection area of the plant)
3	Pasture area with <i>S. brasiliensis</i> (obtained from samples collected at the base of the plant)

For each condition, 10 samples were drawn from the soil samples running along the area in zigzag, establishing a distance of approximately 10 m from one point to other. A sample 20 cm x 20 cm x 20 cm was obtained at each location. The soil was dug with the aid of a spade (20 cm x 20 cm), placed in plastic bags and taken to the laboratory for nymphs and adults countings.

Data were analyzed by utilizing a test for comparison between proportions according to Curi (1997).

The soil bugs *Atarsocoris* sp. were found in significantly greater numbers around *S. brasiliensis* plants than in pasture areas. This association was more evident when samples collection was conducted at the base of the weed plants, with 79.9% of the insects captured (Table 2). Under the condition of *S. brasiliensis* absence, there was no incidence of the insect.

Table 2. Percentage of nymphs and adults of *Atarsocoris* sp., collected in sandy soils "arenito" in the region of Jaguapitã County, State of Paraná, Brazil, in pasture areas without the presence of the weed plant *S. brasiliensis* and areas with this plant.

Condition	Nymphs <sup>1</sup>	Adults	Nymphs + adults
<i>S. brasiliensis</i> absent	0 c	0 c	0 c
<i>S. brasiliensis</i> present (outside the root projection area)	19.9 b	21.2 b	20.1 b
<i>S. brasiliensis</i> present (at the base of the plant)	80.1 a	78.8 a	79.9 a

<sup>1</sup>Percentages followed by the same letter, in the columns do not significantly differ from each other, by the test for comparison between proportions.

The association of soil bugs of the family Cydnidae, among them *Atarsocoris* sp. and *S. castanea*, with weed and cultivated plants has been already reported by other authors (Puzzi & Andrade 1957; Becker 1967, 1996).

The knowledge of this positive correlation between the plant *S. brasiliensis* and the insect *Atarsocoris* sp. could be important in the management and control of this pest. Vendramin (1990) pointed out that plants could be utilized as "crop traps" or "bait plants," aiming at reducing the population of an insect in a particular crop.

The soil in the studied area had little organic material or biological activity, with low incidence of other organisms, except for larvae of beetles and termite nymphs. This was possibly the consequence of degradation, since the soil remained more than eight years without any maintenance, fertilization or plowing, and predominantly covered with African star grass. Picanço et al. (1999) observed a greater population density of *A. brachiariae* in sandy-textured soils than in clay soils. Perhaps this was due to higher aerobic conditions and lower apparent density of sandy soils, since these insects tend to burrow into soil during drier periods (Gassen 1989).

*S. brasiliensis* is an intensely branched perennial plant, which was found to be predominant in the area of study. Possibly, *Atarsocoris* found those conditions favorable for its development and growth, being able to survive in this host plant.

Subsequent monthly collections performed for a year revealed the occurrence of the insect during all the seasons, with greater abundance in the months of September and January.

Based on the results obtained, the weed plant may be considered as an alternative host for the insect in sandy soils as found in degraded pastures. The association detected suggests that the weed *S. brasiliensis* as a bio-indicator of the occurrence of insect pests in these areas. These results, however, must be confirmed by further studies.

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