SCIENTIFIC NOTE

Seasonal Occurrence of Tachinid Parasitism on Stink Bugs with Different Overwintering Strategies

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An. Soc. Entomol. Brasil 28(1): 169-172 (1999)

Ocorrência Estacional de Parasitismo por Taquinídeos em Percevejos com Diferentes Estratégias para a Passagem do Inverno

RESUMO - Realizou-se levantamento da incidência de parasitismo por moscas taquinídeas em duas espécies de pentatomídeos pragas da soja [*Glycine max* (L.) Merr.] no Norte do Paraná, de fevereiro de 1996 a janeiro de 1997. As duas espécies foram comparadas, por apresentarem diferentes estratégias para a passagem do inverno. O percevejo verde, *Nezara viridula* (L.) que se alimenta o ano todo em plantas hospedeiras (cultivadas ou não) apresentou altas percentagens de parasitismo (35 a 100%) pela mosca *Trichopoda giacomellii* (Blanchard) (= *Eutrichopodopsis nitens* Blanchard). O percevejo marrom, *Euschistus heros* (F.), foi parasitado por *T. giacomelli* e por *Hyalomyodes* sp., em menor proporção (de zero a 37%), não ocorrendo parasitismo de julho a outubro, quando o inseto abriga-se na palhada no solo para a passagem do inverno.

KEY WORDS: Insecta, Heteroptera, Pentatomidae, Tachinidae, parasites, soybean.

Since soybean [*Glycine max* (L.) Merr.] has become an important crop in Brazil, several species of Pentatomidae have become pests of this crop, particularly the cosmopolitan southern green stink bug, *Nezara viridula* (L.) and the neotropical brown stink bug, *Euschistus heros* F. (Panizzi & Slansky, Jr. 1985a). Both species have been reported in the literature as being parasitized by tachinid flies as adults in Brazil. *N. viridula* is attacked by *Trichopoda giacomellii* (Blanchard) (= *Eutrichopodopsis nitens* Blanchard) with several reports on this association in soybean fields and other crops (Gastal 1977, Corrêa-Ferreira 1984, Panizzi 1989, Corrêa-Ferreira *et al.* 1991). *E. heros* is attacked by *Gymnoclytia paulista* (Townsend) and *Cylindromia brasiliana* (Townsend) (Corrêa-Ferreira 1984).

It is known that in northern Paraná State, both pentatomids show different strategies to overwinter. While *N. viridula* concentrate on wild hosts, where they feed and reproduce during the unfavorable season (i.e., autumn and winter), *E. heros* enters in diapause (oligopause) remaining underneath dead

fallen leaves during this period (Panizzi & Niva 1994, Panizzi 1997). Because of these different strategies to overwinter, we conducted a survey of adult bugs year round to check the incidence of parasitism by tachinid flies, comparing the populations of a diapausing vs. a non-diapausing species.

During February 1996 to January 1997, weekly samples (20 adult bugs/sample) were taken at the Experimental Field Station of Embrapa Soja in Londrina, Paraná (latitude 23º 11'S, longitude 51º 11'W). Bugs were collected in the field on soybean, pigeonpea, *Cajanus cajan* L., wild radish, *Raphanus raphanistrum* L. and, during autumn and winter, underneath fallen dead leaves. Bugs were taken to the laboratory and checked for the presence of tachinid eggs, which is a reliable method to estimate the parasitism by these flies (Harris & Todd 1981). The mean (± SEM) percentage of parasitism by tachinids for each bug species in each month was calculated. From each sample, some parasitized bugs were kept in plastic boxes (12.0 by 12.0 by 3.8 cm) and fed with soybean pods to obtain adult flies which were identified and kept in the collection of Embrapa Soja.

Two species of tachinids were obtained. From *N. viridula*, the common species *T. giacomellii* was recovered, and from *E. heros*, *T. giacomellii* and *Hyalomyodes* sp. were obtained. The incidence of parasitism on *N. viridula* was much greater than on *E. heros* (Fig. 1). The percentage of *N. viridula* adults parasitized varied from 30% to 55% during December to April (summer to mid-autumn) when the bugs were mostly found on soybean. From May to November (late-autumn to

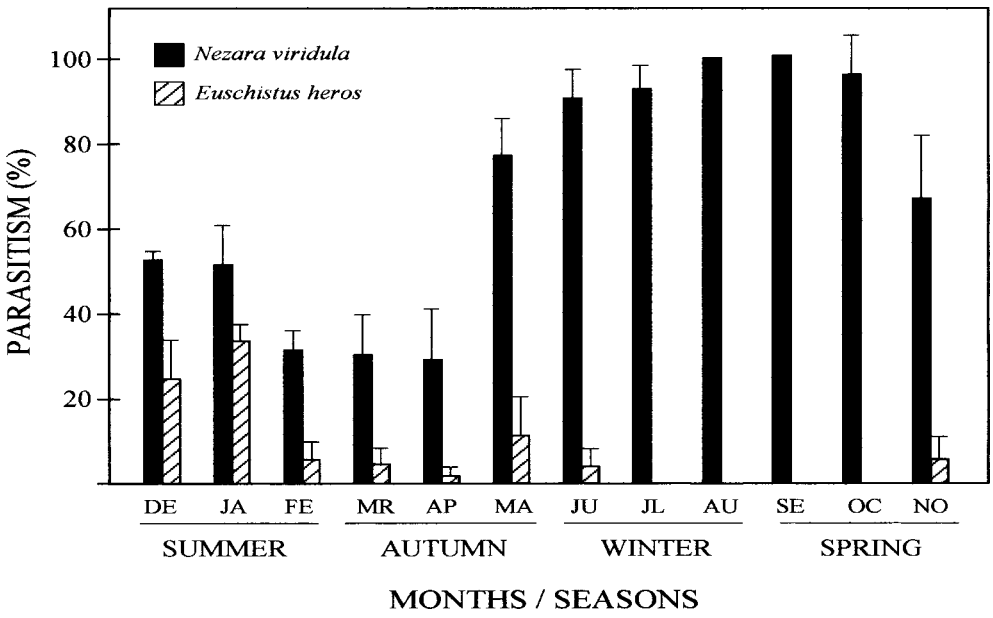

Fig. 1. Mean (± SEM) percent parasitism by tachinids on two species of pentatomids captured on different species of host plants, and underneath fallen dead leaves (*E. heros* from June to November), at the Field Experimental Station of Embrapa Soja, Londrina, PR, Brazil, from February 1996 to January 1997.

spring) the parasitism increased substantialy, ranging from 65 to 100%, when bugs were found on wild hosts and pigeonpea. For adult *E. heros*, the percentage of parasitism varied from zero during July to October (mid-winter to mid-spring) up to 37% in January (mid-summer). Because *E. heros* is not found on wild hosts during winter and spring, remaining on the soil underneath dead leaves (Panizzi & Vivan 1997), it probably escaped from being parasitized by tachinid flies during this time. In addition, the brown stink bug is smaller than the green stink bug, and this may make it less preferred by tachinids. The even smaller pentatomid *Piezodorus guildinii* (Westwood) is only eventually parasitized by the tachinid *Trichopoda pennipes* (F.), which commonly use the southern green stink bug as host in the United States (Panizzi & Slansky Jr. 1985b).

In conclusion, this survey of the tachinid parasitism on these two pentatomid pests of soybean in northern Paraná, was much greater on *N. viridula* than on *E. heros*. This may partially explain the decrease in numbers of the former species and the increase in numbers of the latter in recent years (Panizzi & Corrêa-Ferreira 1997). This is reinforced by the fact that the brown stink bug escapes from the action of egg parasitoids during the overwintering period, while the southern green stink bug, which reproduces all year round in this area, does not.

Acknowledgments

We thank Drs. Daniel R. Sosa Gómes and A. L. Nepomuceno for revising an early draft of this note. We also thank Dr. Beatriz S. Corrêa-Ferreira for the confirmation of the tachinid flies identification. This is a contribution of Embrapa Soja number 032/98, published with the approval of the technical director.

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Received 24/IV/98. Accepted 24/I/99.