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TACHINID FLIES ASSOCIATED WITH TIBRACA LIMBATIVENTRIS (HEMIPTERA: PENTATOMIDAE)

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The rice stalk stink bug, *Tibraca limbativentris* (Stål 1860) (Hemiptera: Pentatomidae), is a major pest of rice in Latin American countries including Argentina, Brazil, Columbia, Ecuador, Peru, Dominican Republic and Venezuela (Fernandes & Grazia 1998; Borges et al. 2006; Pantoja et al. 2007). The few reports of natural enemies associated with *T. limbativentris* are restricted to egg parasitoids, e.g., *Oencyrtus submetallicus* (Howard) (Hymenoptera: Encyrtidae), *Telenomus podisi* Ashmead 1893 (Hymenoptera: Platygastridae) and *Trissolcus urichi* Crawford 1913 (Hymenoptera: Platygastridae) in northeastern Brazil (State of Maranhão) (Maciel et al. 2007), and *T. podisi* and *T. urichi*, in southern Brazil (State of Santa Catarina) (Riffel et al. 2010). With regard to entomopathogens, the fungi *Beauveria bassiana* (Bals.) Vuill. and *Metarhizium anisopliae* (Metsch.) have been found on rice stalk stink bugs (RSSB) only after artificial infection (Martins & Lima 1994; Martins et al. 1997; Martins et al. 2004). This work reports the incidence of tachinid flies parasitizing *T. limbativentris* during the fallow period in southern Brazil.

A total of 60 pairs of RSSB of unknown age were collected from under rice straw after harvest in Jul 2011 in the municipality of Eldorado do Sul, State of Rio Grande do Sul, Brazil (30º 02' S; 51° 23' W). Each individual was placed in a plastic box (15 × 10 cm) with 10 g of rice straw sterilized with sodium hypochlorite solution (2%), for 30 min, and covered with voile. The bugs were kept under controlled conditions (25 ± 1 ºC; 60 ± 10% RH; 12:12 h L: D) without food, and inspected daily for pupae, and the straw was moistened with distilled water every 3 d.

The bugs were inspected daily and, whenever present, tachinid pupae were collected and stored under the same controlled conditions in Petri dishes (∅5 cm), with moistened cotton until the parasitoid emergence. Specimens were deposited in the Entomological Collection of the Museu de Zoologia, Universidade de São Paulo, Brazil (MZSP).

Adults of 2 species of Tachinidae emerged, both belonging to subfamily Phasiinae: *Cylindromyia brasiliana* (Townsend 1927) (Cylindromyiini) and *Phasia* (*Paraphorantha*) sp. (Phasiini). The parasitism by these 2 tachinid species was found only on males of *T. limbativentris* (35%/total collected). According to Aldrich (1995) and Aldrich & Zhang (2002), sex pheromones of male pentatomids might act as kairomones for the Scelionidae and Tachinidae; which could explain our results.

Cylindromyia brasiliana emerged (13 females and 3 males) from 71.4% of the parasitized bugs. *Cylindromyia* Meigen, 1803 (Tachinidae, Phasiinae, Cylindromyiini) is a species-rich genus distributed almost worldwide and with 25 species in the Latin America (Guimarães 1976). Several studies report species of this genus parasitizing pentatomid bugs with records in North America (Arnaud 1978; Eger & Ables 1981), South America (Guimarães 1977), Asia (Sâmet et al. 1977; Honda 1985; Nishiyama et al. 1995; Markova 1999; Richter & Markova 1999; Tillman 2008), Europe (Dupuis 1963; Gordún & Tschorsnig 2008), and Australia (Coombs & Khan 1997; Kay 2002). On the other hand, the only host record in South America is for *C. porteri* (Brèthes 1925) on the pentatomids *Acledra albocostata* (Spinola 1852) and *A. dimidiaticollis* (Spinola 1852) in Chile (Guimarães 1971, 1977). This is the first host, *T. limbativentris,* reported for a tropical South American species of *Cylindromyia*.

The second tachinid species, *Phasia* (*Paraphorantha*) sp., was observed in 28.6% of parasitized bugs, and 4 females and 1 male emerged. *Phasia* Latreille 1804 (Tachinidae, Phasiinae, Phasiini) is a worldwide distributed genus including about 110 species (Guimarães 1971; Sun & Marshall 2003; O'Hara & Wood 2004). *Phasia* contains 34 Neotropical species, two of them previously belonging to the genus *Paraphorantha* Townsend 1915 (now in synonymy with *Phasia*). The specimens collected in this study were not identified to the species level, but they correspond undoubtedly to a species formerly included in *Paraphorantha*. The South American *Phasia* have been recorded as parasitoids of a few species of Pyrrhocoridae, Coreidae and Meloidae (Guimarães 1977). According to Sun & Marshall (2003), *Phasia* species present low parasitism rates, varying from < 1% to 11% of parasitized individuals.

There are few reports of tachinid parasitoids in South America pentatomids, e.g., *Gymnoclytia paulista* (Townsend, 1929) and *Beskia aelops* Walker 1849 were reported on *Oebalus ypsilongriseus* (DeGeer, 1773) (Vecchio 1993) in rice crops, and *B. aelops* was registered parasitizing

the small rice stink bug *Oebalus poecilus* (Dallas 1851) in Guiana (Guimarães 1977; Sutherland & Bahaeally 2002).

This is the first record of *C. brasiliana* and *Phasia* (*Paraphorantha*) sp. as parasitoids on *T. limbativentris.* These data contribute to the knowledge of natural enemies associated with this stink bug, and may provide further management support to the biological control of *T. limbativentris* on rice crops.

Summary

Species-level identifications are important to integrated management for sustainable rice production. Adults of *T. limbativentris* (Stål 1860) (Hemiptera, Pentatomidae) were collected from under the straw during the fallow season of the irrigated rice crop in Eldorado do Sul municipality, State of Rio Grande do Sul, Brazil. Two species of Tachinidae were recorded on the rice stalk stink bug: *Cylindromyia brasiliana* (Townsend 1927) and *Phasia* (*Paraphorantha*) sp. This is the first report of these species parasitizing *T. limbativentris* under natural conditions.

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