

Occurrence of *Eretmocerus mundus* Mercet (Hymenoptera: Aphelinidae) parasitizing *Bemisia tabaci* (Genn.) biotype B (Hemiptera: Aleyrodidae) in Brazil

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Abstract

The parasitism of *Bemisia tabaci* (Genn.) biotype B nymphs on cotton plants was observed during a research on resistance of cotton genotypes to this whitefly. The experiment was set in a greenhouse at the Experimental Station of the Instituto Agronômico (IAC), in Campinas, São Paulo State, Brazil. Samples of the parasitized nymphs were collected and maintained in laboratory to monitor the parasitism and obtain the adult parasitoids. A total of 129 adult parasitoids were obtained, including one *Encarsia inaron* (Walker), 13 *En. lutea* (Masi), and 115 *Eretmocerus mundus* Mercet (Hymenoptera: Aphelinidae). This is the first report of *Er. mundus* in Brazil.

Key words: biological control, parasitism, silverleaf whitefly.

Ocorrência de *Eretmocerus mundus* Mercet (Hymenoptera: Aphelinidae) parasitando *Bemisia tabaci* (Genn.) biótipo B (Hemiptera: Aleyrodidae) no Brasil

Resumo

Parasitismo em ninfas de *Bemisia tabaci* (Genn.) biótipo B em folhas de algodão foi observado durante pesquisa sobre resistência de genótipos de algodoeiro a essa mosca-branca. O experimento foi conduzido em casa de vegetação no Centro Experimental do Instituto Agronômico de Campinas (IAC). Amostras das ninfas parasitadas foram mantidas em laboratório para acompanhamento do parasitismo e obtenção dos adultos dos parasitoides. Foram coletados 129 adultos, sendo um espécime de *Encarsia inaron* (Walker), 13 de *En. lutea* (Masi) e 115 de *Eretmocerus mundus* Mercet (Hymenoptera: Aphelinidae). Este é o primeiro registro de *Er. mundus* no Brasil.

Palavras-chave: controle biológico, parasitismo, mosca-branca.

During an experiment of resistance of cotton genotypes (*Gossypium* spp.) to *Bemisia tabaci* (Genn.) biotype B (Hemiptera: Aleyrodidae), under greenhouse conditions, a high level of parasitism of this whitefly nymphs on leaves of plants being evaluated was observed. The experiment was set at the Experimental Station of the Instituto Agronômico (IAC), in Campinas, São Paulo State (SP), Brazil. Leaves with parasitized nymphs were taken to laboratory and maintained in Petri dishes with their stems wrapped in moist cotton. Observation and collection of emerging parasitoids were daily registered. Then the specimens were mounted on slides in Canadian balsam following Noyes (1982). Identifications were made based on Woolley (1997) for genera, Zolnerowich and Rose (1998) for *Eretmocerus*, and Schauff et al. (1996) and Hernández-Suárez et al.

(2003) for *Encarsia*. The specimens were deposited in the “Coleção de Insetos Entomófagos Oscar Monte” of the Instituto Biológico, in Campinas (SP). One *Encarsia inaron* (Walker), 13 *En. lutea* (Masi), and 115 *Eretmocerus mundus* Mercet (Hymenoptera: Aphelinidae) specimens were collected.

Eretmocerus mundus is a species native to the Mediterranean and exhibits high specificity for *B. tabaci*, although it has also been recorded from 11 other species of Aleyrodidae (Zolnerowich and Rose, 2008). It is a solitary parasitoid, whose female oviposits externally on the host body, between the whitefly nymph and leaf (Gerling and Blackburn, 2013). After eclosion, the first instar larva penetrates the cuticle of the nymph, begins to feed and, when mature, pupates internally. Second and third instar

Table 1. Previous records of parasitoids of *Bemisia tabaci* in Brazil, with locality of record and respective reference

Species (Hymenoptera: Aphelinidae)	Local	Reference
<i>Encarsia pergandiella</i> Howard <i>En. desantisi</i> Viggiani	Campinas, São Paulo State	De Santis (1981)*
<i>En. luteola</i> Howard <i>En. pergandiella</i>	Campinas, São Paulo State	(3)
<i>En. aleurothrix</i> Evans & Polaszek <i>En. formosa</i> Gahan <i>En. hispida</i> De Santis <i>En. inaron</i> (Walker) <i>En. lutea</i> (Masi) <i>En. luteola</i> <i>En. nigricephala</i> Dozier <i>En. cf. porteri</i> (Mercet)	Brasília, DC	Oliveira et al. (2003)
<i>En. desantisi</i> <i>En. nigricephala</i> <i>En. lutea</i> <i>En. inaron</i> <i>En. hispida</i> <i>En. pergandiella</i>	Lavras, Minas Gerais State	Torres et al. (2014)

* Species cited as *En. bemisiae* (= *En. pergandiella*) and *En. bicolor* (= *En. desantisi*).

nymphs are preferred for oviposition (Foltyn and Gerling, 1985; Urbaneja and Stansly, 2004).

Eretmocerus mundus was introduced into the United States for controlling *B. tabaci* and since then it has become an important component of the native and introduced parasitoid fauna of the genus *Eretmocerus*. Thus, this parasitoid is established in the southwestern US, including Arizona, Texas and California, and in California it is predominant in surveys conducted for recapture of parasitoids released in the biological control program of *B. tabaci* with exotic agents (Ciomperlik and Goolsby, 2008; Gould et al., 2008; Pickett et al., 2008). *Er. mundus* has also been reported in Mexico (Hennessey et al., 1995) and Porto Rico⁽⁴⁾, and in South America it was reported in Argentina (López and Evans, 2008). In Brazil, it is possible that *Er. mundus* shows performance similar to that observed in the U.S., becoming an important agent of biological control of *B. tabaci*, since this species comprises about 90% of the parasitoids collected in this study.

The knowledge of natural enemies of *B. tabaci* in Brazil is very limited, mainly involving parasitoids. There are no studies on the efficiency of parasitoids of *B. tabaci* and the few existing ones refer to reports of occurrence, including only species of the genus *Encarsia* (Table 1). The observations of parasitism on nymphs of *B. tabaci* biotype B at the IAC Experimental Station in Campinas, and more recently in Lavras, Minas Gerais State, and Brasília (Federal District)

⁽³⁾ LOURENÇÃO, A.L.; VALLE, G.E.; ALVES, S.B.; TAVARES, M.T.; BERTI FILHO, E. Occurrence of natural enemies of *Bemisia tabaci* B biotype in Brazil. In: IX Taller Latinoamericano y del Caribe sobre Mosca Blanca y Geminivirus. Panamá, Ministerio de Desarrollo Agropecuario, 2000, Memoria, p.132

⁽⁴⁾ PANTOJA, A.; CABRERA, I. Informe de Puerto Rico. In: IX Taller Latinoamericano y del Caribe sobre Mosca Blanca y Geminivirus. Panamá, Ministerio de Desarrollo Agropecuario, 2000, Memoria p.176-178.

have only identified species of *Encarsia* (Table 1). Therefore this is the first report of *Er. mundus* in Brazil.

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