FIRST REPORT OF NATURAL INFESTATION OF *Pereskia aculeata* MILL. (CACTACEAE) BY *Ceratitis capitata* (WIEDEMANN) (DIPTERA: TEPHRITIDAE) IN BRAZIL

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ABSTRACT

This is the first report of the natural infestation of fruits of *Pereskia aculeata* Mill. (Cactaceae) by the Mediterranean fruit fly *Ceratitis capitata* (Wiedemann) (Diptera: Tephritidae) in Brazil. We also obtained specimens of *Anastrepha barbiellinii* Lima (Tephritidae) and *Neosilba* sp. (Lonchaeidae), and of the parasitoid *Doryctobracon areolatus* (Szépligeti) (Hymenoptera: Braconidae).

Palavras-chave: mosca-do-mediterrâneo, ora-pro-nobis, *Anastrepha barbiellinii*, *Neosilba*, *Doryctobracon areolatus*

RESUMO

Registra-se, pela primeira vez no Brasil, a infestação natural de frutos de ora-pro-nobis, *Pereskia aculeata* Mill. (Cactaceae), pela mosca-do-mediterrâneo *Ceratitis capitata* (Wiedemann) (Diptera: Tephritidae). Também foram obtidos espécimes de *Anastrepha barbiellinii* Lima (Tephritidae) e *Neosilba* sp. (Lonchaeidae), além do parasitóide *Doryctobracon areolatus* (Szépligeti) (Hymenoptera: Braconidae).

Key words: Mediterranean fruit fly, lemon vine, *Anastrepha barbiellinii*, *Neosilba*, *Doryctobracon areolatus*

INTRODUÇÃO

The Mediterranean fruit fly, *Ceratitis capitata* (Wiedemann), is distributed across most tropical and temperate regions of the world and constantly invades or re-invades new areas (Christenson & Foote 1960, Bateman 1972, Carey 1991). Among tephritids, it is the most harmful to agriculture, particularly because it is the most cosmopolitan and invasive species in its family (Malavasi 2009).

Ceratitis capitata was detected for the first time in Brazil in 1901, infesting oranges in the state of São Paulo (Ihering, 1901). It is one of the first recorded introduced pests in Brazil, which adapted itself to the subtropical local conditions and spread rapidly across several states (Zucchi, 2001). The species is currently found in 22 Brazilian states, with no record in only five states in the North and Northeast regions of the country (Silva *et al.*, 2011). It uses a wide range of host plants and its larvae can develop on 374 plant species across 69 families (Liquido *et al.*, 1998). In Brazil, the most recent compilation lists 58 host species (Zucchi, 2001), with preference for Rutaceae, Rubiaceae, Rosaceae and Combretaceae (Malavasi, 2009).

Pereskia aculeata Mill., commonly known as ora-pro-nobis, lemon vine or Barbados gooseberry, is a semi-woody scrambling cactus of moderate growth rate, with long spiny stems. Its leaves are elliptical, flat, fleshy and dark green; the fruits are spherical (1-3 cm diameter) and yellowish when mature (León, 1968; Alzugaray & Alzugaray, 1988; Lorenzi & Souza, 1995). It produces abundant mucilage, which is applied topically as an emollient in folk medicine. Its leaves are also edible, used in the preparation of a typical dish in the Brazilian state of Minas Gerais (Cruz 1995, Souza & Lorenzi 2005). *Pereskia aculeata* is native to Brazil and is distributed across the Northeast, Center-West, Southeast, and South regions of the country (Zappi *et al.*, 2010).

In the municipality of Ponte Nova (20°24'39" S; 42°55'15" W; 456 m), state of Minas Gerais, two samples of ora-pro-nobis fruits were collected (one directly from the plant and another from fruits recently fallen to the ground). The fruits were counted, weighed and stored in screen-top jars containing vermiculite and kept at room temperature. The material was examined every three days. Any found puparia were removed and transferred to transparent plastic flasks containing a thin layer of moistened vermiculite. The fruit flies and parasitoids that emerged were stored in glass flasks containing 70% ethanol, for subsequent identification.

The infestation rates were 84.00 puparia/kg of fruits sampled from the ground and 102.84 puparia/kg of fruits collected directly from the plant (Table 1). Specimens of *C. capitata*, *Anastrepha barbiellinii* Lima, *Neosilba* sp. and *Doryctobracon areolatus* (Szépligeti) were obtained (Table 1). This is the first report of natural infestation of *P. aculeata* by *C. capitata* in Brazil. A previous work reports a forced infestation of *P. aculeata* fruits by *C. capitata* after the fruits were placed in cages and exposed to the flies. In that study, approximately 150 larvae were found in five fruits (Keck & Marshall, 1930 apud Liquido *et al.*, 1991).

During this study, we obtained 62 females of *A. barbiellinii* from fruits collected on the plant, nine from fruits collected on the ground, and a total of 95 males of the species (Table 1). *Anastrepha barbiellinii* had already been observed on *P. aculeata* collected in the municipality of Arceburgo, Minas Gerais, as proven in the molecular studies by Smith-Caldas *et al.*, (2001). Later on, Garcia (2006) also observed *A. barbiellinii* in fruits of *P. aculeata*, this time in the state of Santa Catarina. However, the first record of *A. barbiellinii* in a not-identified species of

Pereskia ("goiapá fruits") was from specimens collected in Anhembi, São Paulo (Zucchi, 1983). *Anastrepha barbiellinii* also occurs in the states of Espírito Santo, Rio de Janeiro, Paraná and Rio Grande do Sul (Zucchi, 2008).

We also reared two females of *Neosilba* sp. (Lonchaeidae) in *P. aculeata*, but identification at the species level was not possible because the taxonomy of *Neosilba* is based on male characters. In Brazil, *Neosilba* larvae have been reported in *Pilosocereus arrabidae* (Lem.) Byles & G.D. Rowley (Cactaceae), in a restinga ecosystem in the state of Rio de Janeiro (Rosa *et al.*, 1994). This is the first record of *Neosilba* associated with fruits of *P. aculeata.*

The parasitoid *Doryctobracon areolatus* was detected in both samples (from plant and ground), but it was not possible to associate this parasitoid with any fly species collected.

The natural infestation of fruits of *P. aculeata* by *C. capitata* requires further study to enable a better understanding of the role played by this plant species as an alternative host for the Mediterranean fruit fly.

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Table 1. Rates of infestation of *Pereskia aculeata* Mill. by fruit flies and parasitism observed in the municipality of Ponte Nova, Minas Gerais, Brazil (10/25/2010).

Sample	Fruits (n)	Mass (kg)	Puparia (n)	Infestation*		Emergence (%)	Tephritidae (F/M)**	Lonchaeidae (F/M)**	Parasitoids (F/M)**
				PP/fruit	PP/kg				
Plant	220	1.76	181	0.82	102.84	90.6	*Ceratitis capitata* (3F/5M)	*Neosilba* sp. (1F/0M)	*Doryctobracon areolatus* (2F/2M)
							Anastrepha barbiellinii (62F/89M)		
Soil	36	0.25	21	0.58	84.00	95.2	*Ceratitis capitata* (3F/0M)		
							Anastrepha barbiellinii (9F/6M)	*Neosilba* sp. (1F/0M)	*Doryctobracon areolatus* (0F/1M)

* PP/fruit: Puparia/fruit, PP/kg: Puparia/kg ** (F/M): (Females/Males)