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Authors: Fernandes, Daniell R. R., Vacari, Alessandra M., Araujo, Elton L., Guimarães, Jorge A., Bortoli, Sergio A. De, et al.

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FRUGIVOROUS FLIES (DIPTERA: TEPHRITIDAE AND LONCHAEIDAE) AND NATIVE PARASITOIDS (HYMENOPTERA) ASSOCIATED WITH *POUTERIA CAIMITO* (SAPOTACEAE) IN BRAZIL

Daniell R. R. Fernandes[1*], Alessandra M. Vacari[1], Elton L. Araujo[2], Jorge A. Guimarães[3], Sergio A. De Bortoli[1] and Nelson W. Perioto[1,4]

[1]Universidade Estadual Paulista, Faculdade de Ciências Agrárias e Veterinárias. Via de Acesso Prof. Paulo Donato Castellane, 14884-900, Jaboticabal, SP, Brazil

[2]Universidade Federal Rural do Semi-Árido. Km 47 da BR 110, s/n, 59625-900, Mossoró, RN, Brazil

[3]Empresa Brasileira de Pesquisa Agropecuária, Centro Nacional de Pesquisa de Hortaliças. Rodovia Brasília/Anápolis, Km 09 da BR 060, 70359-970, Brasília, DF, Brazil

[4]Agência Paulista de Tecnologia dos Agronegócios. Av. Bandeirantes, 2419, 14030-670, Ribeirão Preto, SP, Brazil

*Corresponding author; E-mail: daniellrodrigo@hotmail.com

Pouteria caimito Radlk. (Ericales: Sapotaceae) is a fruit tree native from the Amazon region and found throughout several Latin American countries (Lorenzi et al. 2006). Its fruit has either an ovoid or spherical shape, with pulp usually translucent and peel yellowish (Almeida et al. 2008). In Brazil, this fruit tree is more commonly found in the northern region, but is currently being cultivated in orchards in different regions (Lorenzi et al. 2006; Nascimento et al. 2011).

Many species of Diptera infest fruits of *P. caimito* (Jirón et al. 1988; Carrejo & Gonzáles 1999; Raga et al. 2011). In Brazil, there are reports of 8 species of frugivorous flies associated with *P. caimito*: Tephritidae: *Anastrepha fraterculus* (Wiedemann), *A. leptozona* Hendel, *A. obliqua* (Macquart), *A. serpentina* (Wiedemann), *A. striata* Schiner and *Ceratitis capitata* (Wiedemann); and Lonchaeidae: *Neosilba glaberrima* (Wiedemann) and *N. dimidiata* (Curran) (Zucchi 2000; Zucchi 2001; Raga et al. 2003; Zucchi et al. 2011; Strikis et al. 2011).

Concerning the diversity of parasitoids associated to frugivorous flies in *P. caimito* fruit, little information is available (Guimarães et al. 2003; Costa et al. 2009; Nicácio et al. 2011; Uchôa 2012). Only *Doryctobracon areolatus* (Szépligeti) (Hymenoptera: Braconidae) was recorded parasitizing *A. serpentina* on *P. caimito*, in Brazil (Bittencourt et al. 2011).

This study reports new associations between Tephritoidea and Drosophilidae (Diptera) and their parasitoids (Hymenoptera) in *P. caimito* fruit in Brazil and also presents their respective infestation and parasitism rates.

Fruits of *P. caimito* (5 kg/112 fruit) fallen onto the ground were collected from a mixed orchard located in the municipality of Jaboticabal (State of São Paulo) (S 21°14'12" W 48°17'12'), southeastern region of Brazil in October 2007. The fruits were collected from 2 trees, and taken to the laboratory, where they were stored in plastic trays (40 × 30 × 10 cm) each with a thin layer of sterilized sand and covered with organza. The trays were placed in a room at 25 ± 1 °C, RH 70 ± 10% and L:D h 12:12. After 15 days, the sand was sifted to collect the pupae, which were separated by family, quantified and kept in Petri dishes until the emergence of adult flies and/or parasitoids. The emerging insects were counted and stored in vials containing 70% alcohol until they were identified.

The infestation rate was calculated based on the number of pupae/kg of fruit and the parasitism established by the equation: parasitism% = (number of emerging parasitoids/number of pupae) × 100.

The total number of pupae obtained was 3,137: Tephritidae (84.6%), Lonchaeidae (14.9%) and Drosophilidae (0.5%). From the pupae, the following emerged: *A. serpentina* (100%) (Tephritidae); *Neosilba* spp. (females) (62.1%), *N. glaberrima* (31.1%), *Neosilba zadolicha* McAlpine & Steyskal (4.9%) and *Lonchaea* sp. (1.9%) (Lonchaeidae); *Zaprionus indianus* Gupta (100%) (Drosophilidae). Raga et al. (2003) had already observed *A. serpentina* and *N. glaberrima* in *P. caimito*. However, these are the first reports of *N. zadolicha* and *Z. indianus* infesting *P. caimito* fruits in Brazil. *Z. indianus* is originally from the African continent, and because of its recent introduction in Brazil, little is known about its hosts (Vilela 1999; Fernandes & Araujo 2011). The highest rate of infestation detected was that of Tephritidae (526.4 pupae/kg of fruit), followed by the Lonchaeidae (92.7 pupae/kg of fruit) and Drosophilidae (3.4 pupae/kg of fruit).

From the pupae, also emerged: 18 adult parasitoids of Tephritidae: *D. areolatus* (75%), *Odontosema albinerve* Kieffer (Hymenoptera: Figitidae) (20.8%) and *Spalangia simplex* Perkins (Hymenoptera: Pteromalidae) (4.2%); 12 parasitoids of Lonchaeidae: *Lopheucoila anastrephae* (Rohwer) (Hymenoptera: Figitidae) (91.7%) and *D. areolatus* (8.3%); and 1 parasitoid of Droso-

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philidae - *S. simplex*. Bittencourt et al. (2011) had already observed *D. areolatus* as parasitoid of *A. serpentina* in fruit of *P. caimito* in Brazil. However, this is the first report of *O. albinerve* associated with *A. serpentina* on *P. caimito* fruits and the first record on the association between *S. simplex* with a species of the *Anastrepha* (*A. serpentina*), corroborating the information reported by Gibson (2009), which established the association of *S. simplex* with the Tephritidae. In addition, this study reports, for the first time, *L. anastrephae* parasitizing Lonchaeidae on *P. caimito* in Brazil and records *S. simplex* as a parasitoid of *Z. indianus*. The observed parasitism rates were of 0.9% in pupae of Tephritidae; 2.6% in Lonchaeidae and 5.9% in Drosophilidae.

Our results show that several species of frugivorous flies and their parasitoids are associated with the *P. caimito* fruit. In addition, new records are reported of the trophic associations which occur in *P. caimito* fruit, in Brazil.

Summary

This study presents new reports on frugivorous flies and their parasitoids associated with the fruits of *Pouteria caimito* Radlk. (Sapotaceae), a plant native to the Amazon region. In addition to the new reports, this study also presents the infestation and parasitism rates, for dipterous and hymenopteran parasitoids, respectively.

Key Words: new associations, *Neosilba zadolicha, Lopheucoila anastrephae, Odontosema albinerve, Zaprionus indianus*

Resumo

Este estudo apresenta novos dados de ocorrência de moscas frugivoras e seus parasitoides, associados à *Pouteria caimito* Radlk. (Sapotaceae), planta nativa da região Amazônica. Além dos novos registros, também são apresentados dados de infestação e taxas de parasitismo, para dípteros e himenópteros parasitoides, respectivamente.

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