

***Byrsonima crassifolia* (Malpighiaceae): new alternate host to carambola fruit fly in Brazil**Cristiane Ramos de Jesus-Barros¹, Orimax Monteiro Cruz², Ricardo Adaime³

1. Bióloga, Universidade Federal do Rio Grande do Sul. Doutorado em Agronomia (Fitotecnia), Universidade Federal do Rio Grande do Sul. Pesquisadora, Embrapa-AP, Brasil. E-mail: cristiane.jesus@embrapa.br

2. Acadêmico do Curso de Engenharia Florestal, Universidade do Estado do Amapá, Brasil. E-mail: max_monteiroap20@yahoo.com.br

3. Engenheiro Agrônomo, Universidade Federal do Rio Grande do Sul. Doutor em Agronomia, UNESP. Pesquisadora, Embrapa-AP, Brasil. E-mail: ricardoadaime@hotmail.com

ABSTRACT: Fruits of *Byrsonima crassifolia* (Malpighiaceae) are reported for the first time as hosts of *Bactrocera carambolae* (Diptera: Tephritidae) in Brazil.

Keywords: *Bactrocera carambolae*, quarantine pest, Amazon, murici.

***Byrsonima crassifolia* (Malpighiaceae): novo hospedeiro alternativo para mosca-da-carambola no Brasil**

RESUMO: Frutos de *Byrsonima crassifolia* (Malpighiaceae) são registrados pela primeira vez como hospedeiros de *Bactrocera carambolae* (Diptera: Tephritidae) no Brasil.

Palavras-chave: *Bactrocera carambolae*, praga quarentenária, Amazônia, murici.

The carambola fruit fly [*Bactrocera carambolae* Drew & Hancock, 1994 (Diptera: Tephritidae)] is native to Southeast Asia and is considered an invading species in South America, where it is found in Suriname, Guyana, French Guiana, and Brazil (CLARKE et al., 2005; GODOY et al., 2011). In Brazil, *B. carambolae* was reported in the extreme North of the country in 1996, in the municipality of Oiapoque, state of Amapá. It is currently considered a “quarantine pest present in the country”, given its distribution in a localized area under official control (GODOY et al., 2011). This is a phytosanitary problem of extreme relevance to Brazil, once the carambola fruit fly has brought major economic consequences to fruit-exporting countries on account of the quarantine restrictions imposed by importers (MALAVASI, 2001).

Over 100 species of host plants have been reported for *B. carambolae* (MALAVASI, 2001; SAUERS-MÜLLER, 2005). In Brazil, specifically in the state of Amapá, Silva et al. (2011) have reported the following hosts: *Psidium guajava* (L.), *Rollinia mucosa* (Jacq.) Baill., *Spondias mombin* L., *Malpighia emarginata* D. C., *Pouteria caimito* (Ruiz & Pav.) Radlk., and *Averrhoa carambola* L. More recently, Lemos et al. (2014), also in the state of Amapá, reported additional hosts: *Mangifera indica* L. (cv. 'Tommy Atkins'), *Syzygium malaccense* (L.) Merr. & L. M. Perry, *Manilkara zapota* (L.) P. Royen, *Capsicum chinense* Jacq., *Chrysobalanus icaco* L., *Eugenia stipitata* Mc Vaughe, and *Pouteria macrophylla* (Lam.) Eyma. So, at present there are 13 known hosts of *B. carambolae* in Brazil. Although collections have been made in native forest areas, it should be noted that all reports of *B. carambolae* hosts have been based on fruits collected in urban or rural areas that have been altered by human activity. This is consistent with the findings of Vijayasegaran et al. (1991) and Sauers-Müller (2010), which have stated that the species is rarely observed in undisturbed tropical forests.

Knowing the complex of host fruits of *B. carambolae* in Brazil is vital to the success of control techniques applied by phytosanitary defense authorities in the country. During the collection of potential fruit fly hosts in the urban area of Macapá (00°00'08'S and 51°05'27'W), state of Amapá, a sample of *Byrsonima crassifolia* (L.) Kunth (Malpighiaceae) was collected (481 fruits, 750.2 g) on 27/Jan/2014. A total of 16 Tephritidae puparia were obtained from that sample (infestation rate of 21.3 puparia/kg of fruit), from which nine adults of *B. carambolae* emerged (5♀, 4♂). This is the first report of carambola fruit fly on *B. crassifolia*.

In Brazil, *B. crassifolia* (Figure 1) is popularly known as “muruci” or “murici”. The species is native to the Amazon region. The fruits are small globose drupes with fleshy yellow mesocarp and characteristic flavor and aroma. They are consumed fresh or in juices, jams, liquors, and sweets (DONADIO et al., 2002; LORENZI et al., 2006). The pharmacological properties of *B. crassifolia* include bactericidal, fungicidal, anti-inflammatory and antidepressant effects (MALDINI et al., 2009; HERRERA-RUIZ et al., 2011).

Byrsonima crassifolia has already been reported as a host of *Anastrepha* (Tephritidae) and *Neosilba* (Lonchaeidae) species in the state of Amapá, with low rates of infestation. Pereira et al. (2008) have reported infestations of *B. crassifolia* by *Anastrepha striata* Schiner, *Anastrepha obliqua* (Macquart), and *Anastrepha fraterculus* (Wiedemann). Jesus-Barros et al. (2012) have reported *A. fraterculus* and *A. striata* on *B. crassifolia*. Adaime et al. (2012) have observed *Neosilba zadolicha* McAlpine & Steyskal and *Neosilba bella* Strikis & Prado on this host plant.

This new report expands the list of carambola fruit fly hosts in Brazil to 14 plant species. Studies on the temporal distribution of *Bactrocera carambolae* on *Byrsonima crassifolia* are required for a better understanding of how the fruit fly uses this food resource.



Figure 1. *Byrsonima crassifolia* tree in which fruits infested by *Bactrocera carambolae* were collected. Macapá, Brazil. January 2014. Photos A and C: Cristiane R. Jesus-Barros; Photo B: Orimax M. Cruz.

Acknowledgments

To the Brazilian Ministry of Agriculture and Food Supply for authorizing the publication of data on carambola fruit flies, as provided under Normative Rule No. 52/2007. To the National Council for Scientific and Technological Development – CNPq for the Research Productivity Fellowship granted to R. Adaime.

References

- ADAIME, R.; STRIKIS, P. C.; SOUZA-FILHO, M. F.; LIMA, C. R.; LASA, R. First report of Lonchaeidae (Diptera) infesting fruits of *Byrsonima crassifolia* in Brazil. *Revista Colombiana de Entomología*, v. 38, n. 2, p. 363-364, 2012.
- CLARKE, R. A.; ARMSTRONG, K. F.; CARMICHAEL, A. E.; MILNE, J. R.; RAGHU, S.; RODERICK, G. K.; YEATES, D. K. Invasive phytophagous pests arising through a recent tropical evolutionary radiation: The *Bactrocera dorsalis* Complex of Fruit Flies. *Annual Review of Entomology*, v. 50, p. 293-319, 2005.
- DONADIO, L. C.; MÔRO, F. V.; SERVIDONE, A. A. *Frutas brasileiras*. Jaboticabal: Novos Talentos, 2002.
- GODOY, M. J. S.; PACHECO, W. S. P.; PORTAL, R. R.; PIRES FILHO, J. M.; MORAES, L. M. M. Programa Nacional de Erradicação da Mosca-da-carambola. In: SILVA, R. A.; LEMOS, W. P.; ZUCCHI, R. A. (Ed.). *Moscas-das-frutas na Amazônia brasileira: diversidade, hospedeiros e inimigos naturais*. Macapá: Embrapa Amapá, 2011. p. 135-172
- HERRERA-RUIZ, M.; ZAMILPA, A.; GONZÁLEZ-CORTAZAR, M.; REYES-CHILPA, R.; LEÓN, E.; GARCÍA, M. P.; TORTORIELLO, J.; HUERTA-REYES, M. Antidepressant effect and pharmacological evaluation of standardized extract of flavonoids from *Byrsonima crassifolia*. *Phytomedicine*, v. 18, n. 14, p. 1255-1261, 2011.
- JESUS-BARROS, C. R.; ADAIME, R.; OLIVEIRA, M. N.; SILVA, W. R.; COSTA-NETO, S. V.; SOUZA-FILHO, M. F. *Anastrepha* (Diptera: Tephritidae) species, their hosts and parasitoids (Hymenoptera: Braconidae) in five municipalities of the state of Amapá, Brazil. *Florida Entomologist*, v. 95, n. 3, p. 694-705, 2012.
- LEMOS, L. N.; ADAIME, R.; JESUS-BARROS, C. R.; DEUS, E. G. New hosts of *Bactrocera carambolae* (Diptera: Tephritidae) in Brazil. *Florida Entomologist*, v. 97, n. 2, p. 841-843, 2014.
- LORENZI, H.; BACHER, L.; LACERDA, M.; SARTORI, S. *Frutas brasileiras e exóticas cultivadas: de consumo in natura*. São Paulo: Instituto Plantarum de Estudos da Flora, 2006.

- MALAVASI, A. Mosca-da-carambola, *Bactrocera carambolae* (Diptera: Tephritidae). In: VILELA, E. F.; ZUCCHI, R. A.; CANTOR, F. (Ed.). *Histórico e impacto de pragas introduzidas no Brasil*. Ribeirão Preto: Holos, 2001 p. 39-41.
- MALDINI, M.; SOSA, S.; MONTORO, P.; GIANGASPERO, A.; BALICK, M. J.; PIZZA, C.; DELLA LOGGIA, R. Screening of the topical anti-inflammatory activity of the bark of *Acacia cornigera* Willdenow, *Byrsonima crassifolia* Kunth, *Sweetia panamensis* Yakovlev and the leaves of *Sphagneticola trilobata* Hitchcock. *Journal Ethnopharmacology*, v. 122, p. 430-433, 2009.
- PEREIRA, J. D. B.; LEMOS, L. N.; DEUS, E. G.; SOUZA-FILHO, M. F.; SILVA, R. A. Novo hospedeiro de *Anastrepha* spp. (Diptera: Tephritidae) no Brasil. *O Biológico*, v. 70, n. 2, p. 160, 2008.
- SAUERS-MÜLLER, A. Host plants of the carambola fruit fly, *Bactrocera carambolae* Drew & Hancock (Diptera: Tephritidae), in Suriname, South America. *Neotropical Entomology*, v. 34, n. 2, p. 203-214, 2005.
- SAUERS-MÜLLER, A. 2010. *Bactrocera carambolae*. Available at http://www.caripestnetwork.org/vtt/docs/datasheets/diptera/bactrocera_carambolae.pdf. (Acessada em 02/04/2014).
- VIJAYSEGARAN, S. The current situation on fruit flies in Peninsular Malaysia. In: VIJAYSEGARAN, S.; IBRAHIM, A. G. (Ed.). *Proceedings of the First International Symposium of Fruit Flies in the Tropics*. Selangor: Malaysian Agricultural Research and Development Institute (MARDI), 1991. p.125-139.
- SILVA, R. A.; DEUS, E. G.; PEREIRA, J. D. B.; JESUS, C. R.; SOUZA-FILHO, M. F.; ZUCCHI, R. A. Conhecimento sobre moscas-das-frutas no Estado do Amapá. In: SILVA, R. A.; LEMOS, W. P.; ZUCCHI, R. A. (Ed.). *Moscas-das-frutas na Amazônia brasileira: diversidade, hospedeiros e inimigos naturais*. Macapá: Embrapa Amapá, 2011. p. 223-236