



Danger next door: new record of the whitefly *Bemisia tabaci* near to the Serra da Canastra National Park (southeast Brazil)

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The whitefly *Bemisia tabaci* (Gennadius, 1889) is an important hemipteran (family Aleyrodidae) pest being considered one of the most invasive and devastating species of agricultural and horticultural crops. This species also damages flowering plants, through the direct feeding (i.e. phloem-sucking species) or due to the injection of toxins and transmission of viruses. Consequently, the whitefly promotes several ecological and economic problems worldwide (Leite et al., 2012, 2015; Ramos et al., 2018). This species has a wide distribution range in Brazil, occurring from Northeast (state of Pernambuco) to the South Region (state of Paraná) of the country. The infestation of *B. tabaci* (native from Asia) started in 1923, in the state of Bahia (Northeast Region), however, only by the end of 1960's the species reached the Southeast Region of Brazil (Fontes et al., 2012). At natural conditions (disregarding agricultural and horticultural crops) the whitefly is well documented and studied in northern Minas Gerais state in the Cerrado biome (Leite et al., 2012, 2015). The Cerrado is a tropical savanna ecoregion of Brazil, which is characterized by a high diversity and endemism of plants and animals. This biome occupies approximately 22% of the Brazilian territory, but only 8.21% of this area is legally protected. Fifteen national parks are located in this biome, the Serra da Canastra National Park (Figure 1) is considered one of the most important parks in Brazil, covering six municipalities in Minas Gerais state (1,978 km² area) (ICMBio, 2019; Brasil, 2019). Until now, there were no documented records of *B. tabaci* nearby from or inside national parks in Brazil. In this note, we report a new record of the whitefly in the Southeast Brazil near to the Serra da Canastra National Park, also we discuss some ecological and conservation implications of this infestation.

From April to July 2019, entomological samples were performed monthly by the methods of sweeping net (active sampling) and Moeric trap (passive sampling) in areas with typical Cerrado *stricto sensu* vegetation, such as: *Caryocar brasiliense* Camb., *Stryphnodendron adstringens* Mart., *Vellozia* spp. and others Asteraceae, Caryocaraceae, Clusiaceae and Velloziaceae plants. The sampling site was situated at the “Trilha do Sol”, an ecotourism attraction site, approximately 2 km distant from Serra da Canastra National Park in the municipality of Capitólio (Minas Gerais state)

(Figure 1). We detected some microhemipterans which were separated, analyzed and identified according to Bellows Junior et al. (1994), Malumphy (2004) and Oliva Molina (2017). Forty-two specimens (22 adults and 20 nymphs) were obtained and analyzed, and a subsample of fifteen adult specimens had their body length (BL) measured under a Leica® stereomicroscope (software Leica® IM50). These insects had prominent compound red eyes, dark yellow body (Figure 2A-C) (some individuals were covered with white powdery wax), hyaline wings (with no veins) with anterior margin straight (Figure 2A, B) and narrow appearance in rest position. The mean (\pm SD) BL of the microhemipterans was 0.95 ± 0.06 mm (smallest individual: 0.90, largest individual: 1.06 mm BL). These characteristics fit well with the descriptions of *Bemisia tabaci* in Bellows Junior et al. (1994), Malumphy (2004) and Oliva Molina (2017). The identification was confirmed by Dr. Arlindo L. Boiça Junior of the Universidade Estadual Paulista (UNESP), Jaboticabal Campus, São Paulo state, Brazil. Voucher specimens collected were deposited in the entomological collection of the Plant health department of FCAV/UNESP – Jaboticabal Campus (São Paulo state, Brazil) under codes 2322, 2323 and 2324.

The new record presented herein is the first confirmed record of *B. tabaci* near to (maybe inside) a national park in Brazil. The Serra da Canastra National Park harbours a great variety of endemic plants, namely from families Asteraceae, Caryocaraceae, Clusiaceae and Velloziaceae (Nobrega and Nunes, 2012). This new pest record is worrisome in this national park, since *B. tabaci* is a vector of approximately 150 species of viruses (Fontes et al., 2012; Ramos et al., 2018), and it is known that whitefly infects Cerrado trees such as *Caryocar brasiliense* (Leite et al., 2012, 2015) - a common tree species near/within the park (Nobrega and Nunes, 2012). Also, we verified that the whitefly population is well-established in areas around the park showing constant and growing occurrence over months (Figure 2D). Byrne et al. (1996) showed that *B. tabaci* specimens could migrate ~3 km (or even more) from their original area. Thus, we can conclude that *B. tabaci* may already be within the Serra da Canastra National Park. In this context, we suggest constant monitoring of this pest, and future studies are necessary to verify if this

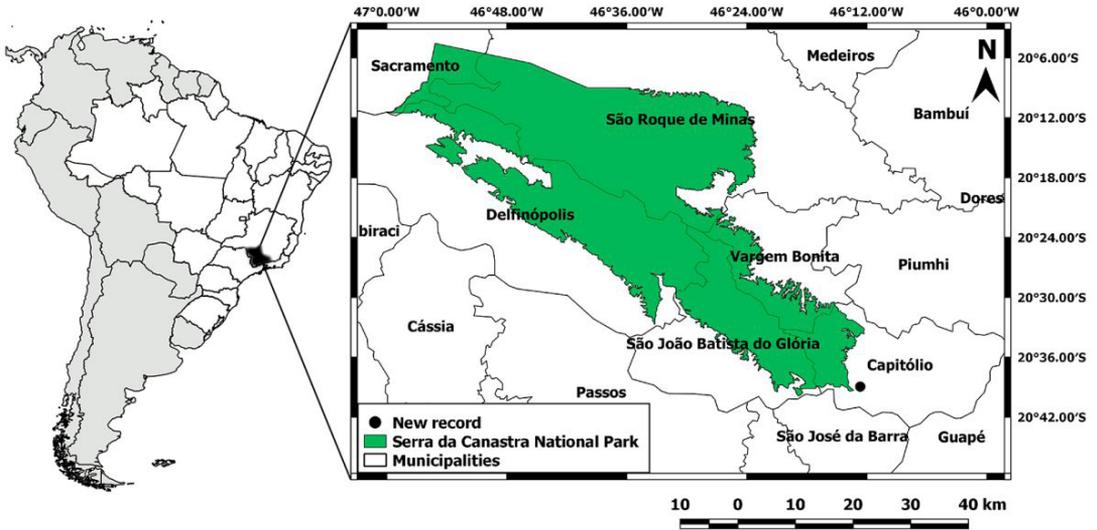


Figure 1. Map showing the new occurrence of *Bemisia tabaci* in the state of Minas Gerais (Southeast Brazil). This new record was registered near to the Serra da Canastra National Park.

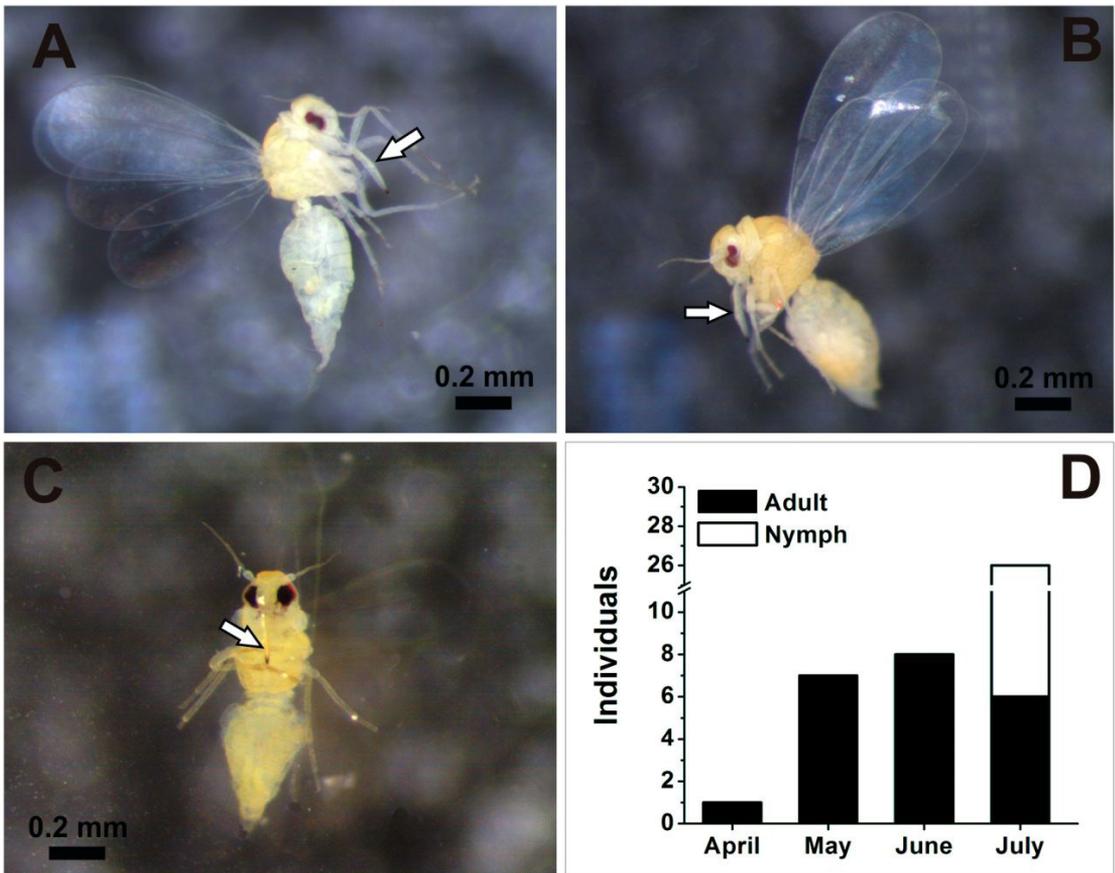


Figure 2. *Bemisia tabaci* (Gennadius, 1889). (A, B) Lateral view of the male and female microhemiptera, respectively; (C) Ventral view of the microhemiptera. White arrows show the stilet (fully extended) of the species. Note the black pigmentation of the stilet tip; (D) Total number of individuals collected during monthly samplings from April to July 2019 near to the Serra da Canastra National Park, Minas Gerais state, Southeast Brazil.

microhemiptera can affect specific species of plants, using new hosts and if it can spread some kind of disease in the flora of this national park. Additionally, the means of introduction of the whitefly into the park is still unknown, but we suggest that *B. tabaci* was brought through some common culture in the southeastern region, such as tomatoes or coffee. The impact of whitefly presence on the flora of the Serra da Canastra National Park is still unknown and it may be enhanced due to human degradation - a serious problem that has been occurring in the study area in later years (Paschoal, pers. comm.). The danger is next door, now we must act!

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