



Short Communication

SINGHIELLA SIMPLEX (SINGH) (HEMIPTERA: ALEYRODIDAE) IN AN URBAN AREA OF RIO DE JANEIRO CITY, BRAZIL

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Article History: Received 5th April 2015; Accepted 5th June 2015; Published 11th June 2015

ABSTRACT

Singhiella simplex (Hemiptera: Aleyrodidae) is an urban pest originating in the Oriental Region, with recent records in the Americas. In Brazil, the species is recorded for the states of Rio de Janeiro, São Paulo, Minas Gerais, Rio Grande do Norte, and Pernambuco. This study records an additional occurrence of the species in an urban area of the municipality of Rio de Janeiro.

Keywords: Urban fauna, Alien species, Whitefly, Neotropics, SE Brazil.

Commonly known as whiteflies, insects of the family Aleyrodidae (Hemiptera: Sternorrhyncha) are pests that attack different cultures and can cause economic losses because of high infestations (Vieira, 2007). The whiteflies can affect plants in four ways: 1) by direct feeding on phloem, inducing chlorosis and leaf abscission; 2) the production of honeydew, what turns into a medium for sooty mould growth that can reduce yielding, by decreasing of photosynthesis rates; 3) while feeding, the whiteflies inject toxin that can produce symptoms; 4) as vectors of plant viruses (Alonso *et al.*, 2012). The populations can continuously reproduce since there are favorable conditions of temperature and photoperiod (Trindade *et al.*, 2011). The whitefly is distributed by all the agricultural regions of the world. In Brazil, species occur in various states causing damage in several crops of around 30% to 100%, especially in fruits and vegetables (Araújo, 2005).

Native from Burma, China and India, the ficus whitefly, *Singhiella simplex* (Singh, 1931), is a small insect that feeds on cultivated ornamental and invasive plants, causing direct damage to the plant. Adults are small (about 1 to 1.5 mm in length), the body is yellowish, white

wings with a small light gray band in the middle, and wings are covered with powdery white substance (Jesus *et al.*, 2010). In August 2007, in Florida (USA) there were severe attacks caused by *S. simplex* in several species of fig trees, with intense defoliation and death plants. There are records of this pest attack in Puerto Rico, Jamaica, Cayman Islands and recently in Brazil (Jesus *et al.*, 2010; Vichiato *et al.*, 2013).

In Brazil, the first occurrence of *S. simplex* was recorded in August 2009, in Rio de Janeiro city (Jesus *et al.*, 2010; Lopes-da-Silva *et al.*, 2014), specifically in Campo Grande neighborhood, Western Zone of the city (Paciolo *et al.*, 2009). In the state of Rio de Janeiro, other municipalities of pest occurrences are Barra do Piraí, Japeri, Mesquita, Miguel Pereira, Nova Iguaçu, Queimados, São João de Meriti, and Seropédica (Jesus *et al.*, 2010). Recently it was also recorded in the city of São Paulo, state of São Paulo. Infestations of this species were also found in Natal and Mossoró (state of Rio Grande do Norte), in several municipalities of the state of Pernambuco (Tavares, 2013) and in Belo Horizonte city (state of Minas Gerais) (Lopes-da-Silva *et al.*, 2014). The spread in the regions where it occurs is fast and can be expected the

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finding in other states of Brazil (Jesus *et al.*, 2010).

Each female can lay 100 to 300 eggs over lifetime. After the eggs hatch, only the first nymphal stage is mobile. To find ideal place to suck the sap in the leaf, nymphs become sessile and remains in the same spot to become adult. Adults when disturbed in the leaves quickly soar. These flights may be only for nearby locations or adults can be carried by wind currents and thus infect other areas. The life cycle of this insect (egg, nymph and adult insect) lasts between 20-30 days (Amaral *et al.*, 2013). It is necessary to carry out more research on biology and behavior to facilitate their prevention and control in urban areas (Velasco *et al.*, 2011).

During a survey of urban insects of Rio de Janeiro, we record the occurrence of large numbers of winged individuals of *Singhiella simplex* (Figures 1-3) in light globes of a residential building in Cachambi neighborhood, urban area of the Northern Zone of Rio de

Janeiro city. In March 8, 2015, we inspected 18 light globes of the parking building, both in open and closed areas. Some of these globes were placed more than 3 meters high. The light globes were prior cleaned to February 15, 2015, so that the collected specimens were trapped within the 21 days apart. We found no infestation of immature specimens on the surrounding plants, indicating that adults came from a more distant place and can have active flight for a considerable distance (unlike postulated by Amaral *et al.*, 2013) when attracted to light. It was observed the presence of specimens in a light globe positioned in a residential unit located on the fifth floor of the building, confirming the active flight occurrence in the species. Most of the specimens were obtained in light globes positioned in the garage of the underground, which has only two connections with the outside, a ramp for vehicles and a gap of communication (1m x 5m) with the upstairs, for incoming air. This is another indicator that the species is capable of active flight.



Figure 1. Insects collected in light globes, mostly specimens of *Singhiella simplex*.



Figure 2. Cluster of specimens of *Singhiella simplex*.



Figure 3. Male and female specimens of *Singhiella simplex*.

In total, we obtained about 3,000 individuals, which may indicate an outbreak of the species. Collected specimens are preserved in ethyl alcohol 70%, following the procedure of Araújo (2005). Photographs were taken with a mobile Samsung S5 attached to a stereomicroscope Physis. The material is deposited in the collection of Laboratório de Insetos Aquáticos, Departamento de Zoologia, Instituto de Biociências, UNIRIO, Rio de Janeiro, RJ, Brazil.

REFERENCES

- Alonso, R.S., Racca-Filho, F. and Lima, A.F., 2012. Occurrences of whiteflies (Hemiptera: Aleyrodidae) on cassava (*Manihot esculenta* Crantz) crops under field conditions in the State of Rio de Janeiro, Brazil. *Entomo Brasiliis*, 5(1): 78-79.
- Amaral, D.S.S.L., Couto, C.L., Medeiros, M.R., Vichiato, M., Silva, P.W. and Pereira, L.S., 2013. Relatório técnico - Infestação e manejo da mosca-branca-dos-ficus em logradouros públicos e áreas verdes do município de Belo Horizonte – MG. Secretaria Municipal de Meio Ambiente, Belo Horizonte, Brazil.
- Araújo, R.O.C., 2005. Ocorrência e flutuação populacional de *Aleurothrixus aepim* (Goeldi, 1886), *Bemisia tuberculata* (Bondar) (Hemiptera: Aleyrodidae) e *Iatrophobia brasiliensis* (Rübsaamen, 1907) (Diptera: Cecidomyiidae) em genótipos de mandioca em Teresina, Piauí – Brasil. M.Sc. Thesis, Universidade Federal do Piauí, Teresina, Brazil.
- Jesus, L.F.M., Trindade, T.D., Ferreira-Jr, A.J., Racca-Filho, F. and Lima, A.F., 2010. Registro de uma espécie exótica de mosca-branca-dos-ficus (Hemiptera: Aleyrodidae) e sua disseminação no Brasil. Resumo. In: XXIII Congresso Brasileiro de Entomologia, Natal, Brazil.
- Lopes-da-Silva, M., Sanches, M.M., Stancioli, A.R., Alves, G. and Sugayama, R., 2014. The role of natural and human-mediated pathways for invasive agricultural pests: a historical analysis of cases from Brazil. *Agric.Sciences*, 5: 634-646.
- Paciolo, T.S., Lima, V.N., Frade, C. and Carvalho, E.R.M., 2009. Pesquisadores da UFRRJ anunciam a descoberta de uma nova espécie no país. *Rural Semanal*, 16(25): 1.
- Tavares, A.M., 2013. *Montandoniola confusa* Streito & Matocq (Hemiptera: Anthocoridae): biologia e predação de *Gynaikothrips ficorum* Marchal (Thysanoptera: Phlaeothripidae). Ph.D. Thesis, Universidade Federal Rural de Pernambuco, Recife, Brazil.
- Trindade, T., Racca Filho, F. and Lima, A.F., 2011. Espécies de *Paraleyrodes* Quaintance (Hemiptera: Aleyrodidae) no Estado do Rio de Janeiro, Brasil. *Entomotropica*, 26(2): 69-77.
- Velasco, G.D.N., Moura, R.G., Berti-Filho, E. and Couto, H.T.Z., 2011. Avaliação da infestação por *Singhiella simplex* (Hemiptera: Aleyrodidae) em *Ficus benjamina* no município de São Paulo - SP, Brasil. *Rev. Agric.*, 86(2): 134-141.
- Vichiato, M.R.M., Vichiato, M., Silva, P.W., Couto, C.L., Pereira, L.S., Lima, M.L.P. and Prado, E., 2013. Defoliation and progressive death of branches on *Ficus microcarpa* L. trees in the city of Belo Horizonte, Minas Gerais State, Brazil. *Rev. Soc. Bras. Arbor. Urb.*, 8(3): 17-27.
- Vieira, L.P., 2007. Controle da mosca-branca-do-cajueiro, *Aleurodicus cocois* (Curtis, 1846) (Hemiptera: Aleyrodidae), com fungos entomopatogênicos, detergente neutro e óleo vegetal. M.Sc. Thesis, Universidade Estadual do Norte Fluminense, Campos, Brazil.