Mini data sheet on *Singhiella simplex* (Hemiptera: Aleyrodidae)
Ficus whitefly

Added to the EPPO Alert List in 2014 – Deleted in 2018

Reasons for deletion:
Singhiella simplex has been included in EPPO Alert List for more than 3 years and during this period no particular international action was requested by the EPPO member countries. In 2018-06, the Working Party on Phytosanitary Regulations agreed that it could be deleted, considering that sufficient alert has been given.

Why: The ficus whitefly, *Singhiella simplex,* was originally described in India. It has been introduced into the Americas and the Caribbean where it has shown an invasive behaviour, as well as a capacity to damage ficus trees in urban environments. Because it was recently found for the first time in Europe in Cyprus, the EPPO Secretariat decided to add this whitefly species to the EPPO Alert List.

Where: It is thought that *S. simplex* originates from Asia. It was originally described from material collected in Bihar, however the EPPO Secretariat could not find recent publications on the current situation of this whitefly species in Asia. In the 2000s, its presence was first noticed in the Americas and within a few years, the pest rapidly spread within this region.
EPPO region: Cyprus, France (on *Ficus* plants in a glasshouse), Turkey (Anatalya province). Several American publications mentioned the finding of *S. simplex* in Israel in 2011, but no specific papers could be found in the literature to confirm this statement.
Asia: China (no details), India (no details), Myanmar.
North America: Mexico, USA (California, Florida).
Central America and the Caribbean: Barbados, Cayman Islands, Dominican Republic, Guadeloupe, Jamaica, Panama, Puerto Rico.
South America: Brazil (Minas Gerais, Rio de Janeiro, Sao Paulo), Colombia.

On which plants: *S. simplex* feeds on various species of *Ficus* (Moraceae): e.g. *Ficus aurea, F. altissima, F. bengalensis, F. benjamina, F. binnendijkii, F. citrifolia, F. lyrata, F. maclellandii,* and *F. microcarpa.* Not all *Ficus* species (or varieties) are attacked by *S. simplex*, in particular *F. religiosa* (sacred fig) and *F. carica* (edible fig) are not considered to be susceptible. In the literature, there is also an incidental record on *Rhododendron indica* (azalea), but the host status of azaleas remains to be confirmed. In its introduced range, *S. simplex* has mainly been reported in urban trees, planted along roads, in parks and gardens.

Damage: Adults and immature stages feed on the foliage. Unlike many other whiteflies, immature stages can be found on both the lower and upper surface of leaves. Feeding may cause yellowing of leaves, severe defoliation, and branch dieback. High populations are able to stunt the growth of young trees. *S. simplex* populations may reproduce rapidly and numbers of emerging adults may be quite large. In California, in some cities of Los Angeles county where *Ficus* trees were commonly planted on sidewalks and streets, clouds of adult whiteflies were observed creating a nuisance for residents.
S. simplex adults (approximately 1.4-1.6 mm long) have white wings with a faint greyish-brown band towards the middle of the wing. Pupae are small (1.3 mm long), red-eyed, with tan to light green (often semi-transparent) oval bodies. Elongate and yellowish eggs are mainly laid along the mid-rib on the underside of the leaves.

Pictures of the pest and its damage can be viewed on the Internet:
http://borboletasbr.blogspot.fr/2012/07/singhiella-simplex-hemiptera.html
http://www.freshfromflorida.com/Divisions-Offices/Plant-Industry/Plant-Industry-Publications/Pest-Alerts/Fig-Whitefly

Little information is available on the biology of *S. simplex*. However, studies carried out in Florida (US) have shown that the total duration of the immature stages varied from 97.1 days at 15°C to 25.2 days at 30°C, adults live 8 days at 15°C, 4.2 days at 25°C and 2.5 days at 30°C.

Dissemination: Adults can fly over short distances (as in the case for other whiteflies, they readily fly when disturbed). Over long distances, trade of plants for planting of *Ficus* spp. is probably the main pathway.

Pathway: plants for planting, bonsais? of *Ficus* from countries where the pest occurs.

Possible risks: Many ornamental *Ficus* species are grown across Europe, under glass in the north but also outdoors in the south and around the Mediterranean Basin. In Florida, this pest is causing problems to home owners who are given advice on how to protect their trees and hedges. In Brazil, some large city trees were so severely defoliated and disfigured, that the municipalities had to take measures (survey, pruning) to protect their patrimonial value. Chemical control measures are available against *S. simplex* but the application of insecticides in the urban environment is not always possible. Under glasshouses, the arrival of a new pest is likely to increase the costs of treatment and may jeopardize IPM strategies already in place. Investigations are being carried out to identify potential natural enemies (e.g. *Encarsia* spp., entomopathogenic fungi) which may limit pest populations. As serious damage has been reported on ornamental *Ficus* spp. in areas where the pest has been introduced, it seems desirable to monitor the situation of *S. simplex* in the EPPO region and prevent its further spread.

Sources

Anonymous (2009) Invasive alert - new species found - Ficus whitefly. *Aliens of Xamayca: a newsletter on non-indigenous species in Jamaica* **2**(3), p 1.

Germain JF, Lemmet S, Balmès V, Streito JC (2017) Incursion d'un nouvel aleurode nuisible aux ficus en France. *Phytoma* n°705, 9-11.

González-Julián P, Carapia VE, Muñoz-Viveros AL, Castañeda-García CN (2013) Registro de la mosca blanca del Ficus *Singhiella simplex* (Singh, 1931) (Hemiptera: Aleyrodidae), en México. *Entomologia Mexicana* **12**(2), 1488-1493.

INTERNET

- Agrociencia Panamensis (2009-03-13) Deteccion de la mosca blanca del ficus, Singhiella simplex Singh. (Hemiptera: Aleyrodidae), en Cocle, Panama written by Eduaro Esquivel Rios. http://agrociencia-panama.blogspot.fr/2009/10/deteccion-de-la-mosca-blanca-del-ficus.html
- Department of Los Angeles. Department of Agricultural Commissioner/Weights and Measures. Ficus whitefly (Singhiella simplex). www.cdfa.ca.gov/plant/ppd/PDF/Singhiella_simplex.pdf
- Florida Department of Agriculture and Consumer Services. The fig whitefly *Singhiella simplex* (Singh) (Hemiptera: Aleyrodidae). http://www.freshfromflorida.com/Divisions-Offices/Plant-Industry/Pests-Diseases/The-Fig-Whitefly
- University of California, Riverside. Center for Invasive Species Research. Ficus whitefly (*Singhiella simplex*). http://cisr.ucr.edu/ficus_whitefly.html

Jesus MLF, Ferreira Jr AJ, Trindad, TD, Racca Fillho F, de Lima AF (2008) Registro de uma especie exotica de mosca branca (Hemiptera: Aleyrodidae) e sua disseminaçao no Brasil. Abstract of a paper presented at the XXII Congresso Brasileiro de Entomologia (Uberlândia, BR, 2008-08-24/29). http://www.seb.org.br/eventos/cbe/xxiiicbe/verartigo.asp?cod=P2370&titulo=REGISTRO%20DE%20UMA%20ESP%C9CIE%20EX%D3TICA%20DE%20MOSCA%20BRANCA%20%28HEMIPTERA:%20ALEYRODIDAE%29%20E%20SUA%20DISSEMINA%C7%C3O%20NO%20BRASIL

Kondo T, Evans G (2012) *Singhiella simplex* (Singh) (Hemiptera: Aleyrodidae), a new aleyrodid invasive species for Colombia. *Boletín del Museo de Entomología de la Universidad del Valle (BHEUV)* **13**(2), 31-33.

Kondo T, Simbaqueba Cortés R (2014) *Sarucallis kahawaluokalani* (Kirkaldy) (Hemiptera: Aphididae), a new invasive aphid on San Andres island and mainland Colombia, with notes on other adventive species. *Insecta Mundi* **0362**, 1-10.

Legaspi JC, Mannion C, Amalin D, Legaspi Jr BC (2011) Life table analysis and development of *Singhiella simplex* (Hemiptera: Aleyrodidae) under different constant temperatures. *Annals of the Entomological Society of America* **104**(3), 451-458.

Myartseva SN, Coronado-Blanco JM, Ruíz-Cancino E (2013) [First records of 'ficus whitefly' *Singhiella simplex* (Singh, 1931) (Hemiptera: Aleyrodidae) for Tamaulipas and Nayarit, México]. *Dugesiana* **20**(2), 81-82 (in Spanish).

NPPO of Cyprus (2014-11).

Serra CA, Cayetano X, Réliz A, Ferreira M, Garcia S, Godoy G, Halpay, Martines RT, Mendes RM, Moya JD, Silverio L, Matos L (2011) Impacts of recently emerged invasive exotic species and major threats to the Dominican agriculture. *Proceedings of the Annual Meeting of the Caribbean Food Crops Society (Bridgetown, Barbados, 2011-07-03/08)*, 146–156.

Velasco DNG, Goularte Moura R, Berti Filho E, Zarate do Couto HT (2011) [Evaluation of the infestation of *Singhiella simplex* (Hemiptera: Aleyrodidae) on *Ficus benjamina* in Sao Paulo city, Brazil]. *Revista de Agricultura* **86**(2), 134-141 (in Portuguese).

Yükselbaba U, Topakcı N, Göçmen H (2017) A new record of Turkey Aleyrodidae fauna, ficus whitefly *Singhiella simplex* (Singh) (Hemiptera: Aleyrodidae). *Phytoparasitica* **45(5)**, 715-717.