Fig whitefly

Singhiella simplex

Fig. 1. *Singhiella simplex* adult female (left), with a dark yellow body and faint greyish bands on the wings, and mature fourth-larval instar or puparium (right), with conspicuous red eye spots, on *Ficus* © Fera

*Singhiella simplex* (Singh, 1931) (Hemiptera: Aleyrodidae), is an Asian species that feeds exclusively on figs, causing damage to plants both directly by its feeding and indirectly due to the associated sooty moulds growing on honeydew excreted by the larval stages. It is commonly known as ‘fig whitefly’ or ‘mosca blanca del ficus’ in Spanish. It was originally described from specimens collected from *Ficus bengalensis* in Pusa, India and has recently been introduced to North and South America, the Caribbean and Israel. It can cause complete defoliation and dieback of branches of ornamental figs. The literature pertaining to this whitefly was recently reviewed by Kondo & Evans (2013) and much of the information in this fact sheet is based on their work.

Geographical distribution

*Singhiella simplex* is native to Southeast Asia and has recently been introduced to the Americas and the Mediterranean.

**Asia**: Burma; China; India (Evans, 2008).
**South America**: Brazil (Velasco *et al.*, 2011; Colombia (Kondo & Evans, 1913).
**Caribbean**: Cayman Islands; Jamaica; Puerto Rico (Kondo & Evans, 2013).
**Palearctic**: Israel (2013) (Kondo & Evans, 2013).
Fig. 2 *Singhiella simplex* eggs © Fera

Fig. 3 *Singhiella simplex* first instar © Fera

Fig. 4 *Singhiella simplex* second instar © Fera

Fig. 5 *Singhiella simplex* fourth-larval instar or puparium © Fera

Fig. 6 *Singhiella simplex* adult emerging from pupal case © Fera

Fig. 7 *Singhiella simplex* empty pupal case © Fera
**Fig. 8** *Singhiella simplex* pupal cases on *Ficus* © Fera

**Fig. 9** *Singhiella simplex* adult female laying eggs © Fera

**Fig. 10** *Ficus binnendijkii* leaf infested with *Singhiella simplex* showing sooty mould growing on excreted honey dew © Fera

**Fig. 11** *Ficus* hedge in Florida defoliated by *Singhiella simplex* © 2011 JP Miller & Sons Services
Host plants

*Singhiella simplex* is oligophagous on *Ficus*, and exhibits a preference for weeping fig *F. benjamina*. It has also been recorded on *Rhododendron indica* (L.) Sweet. (Ericaceae) but this needs confirmation.

**Moraceae:** *F. aurea* Nutt (strangler fig), *F. altissima* Blume (council tree), *F. bengalensis* L. (Indian banyan), *F. benjamina* L. (weeping fig), *F. binnendijkii* (long leaf or sabre fig) (new host plant), *F. lyrata* Warb. (fiddle-leaf fig), *F. microcarpa* L. (Cuban laurel), *F. maclellandii* King (banana-leaf fig) and *F. racemosa* L. [= *F. glomerata* Roxb.] (Kondo & Evans, 2013).
**Description**

The adult whiteflies (1.4-1.6 mm) are a deep yellow with conspicuous red eyes (Figs 1 and 9). Their wings are cream-coloured with faint grey bands on each wing (Figs 1 and 9), which are easily visible with a x10 hand lens. The adults are very active and readily fly when disturbed. The eggs are ‘kidney’ shaped in lateral view, yellow to light brown, and attached to the host plant by a thin stalk (Fig. 2). The eggs are laid in dense groups, mostly adjacent to the mid vein and near the base of the leaf. The first, second and third larval instars are almost translucent and difficult to spot (Figs. 3-4). The puparia (1.3 mm long and 1.0 mm aide) (Figs 1 and 5-8) are oval, translucent to pale yellow, with the adult red eye spots becoming conspicuous with maturity (Figs 1 and 5). One unusual feature is that the eggs and larval stages occur on both the lower and upper surfaces of the foliage (the larval stages of most whitefly species only occur on the lower surface).

Several other whitefly species may also be found on *Ficus* in the Mediterranean but none in such large populations or with adults with the characteristic grey bands on their forewings (Fig. 1): *Bemisia tabaci* (Gennadius) (tobacco or sweet potato whitefly) (Fig. 16), *Dialeurodes citri* (Ashmead) (citrus whitefly) (Fig. 15), *Singhiella citrifolii* (Morgan) (cloudy-winged whitefly) (Fig. 14) and *Trialeurodes vaporariorum* (Westwood) (glasshouse whitefly) (Fig. 17).

**Pest biology, dispersal and detection**

All whiteflies have six developmental stages: egg; four larval stages, the fourth larval stage being known as the puparium; and the adult. The biology of *Singhiella simplex* has been recently studied by Legaspi et al. (2011). The total duration of the immature stages varies from 97.1 days at 15°C to 25.2 days at 30°C the adults live 8 days at 15°C, 4.2 days at 25°C, and 2.5 days at 30°C. A large number of natural enemies have been recorded for *S. simplex* including: the parasitoids *Encarsia tricolor* Foerster (Hymenoptera: Aphelinidae) (Evans, 2008; Hodges, 2007), *Encarsia protransvena* Viggiani and *Amitus bennetti* Viggiani & Evans (Platygastridae); the lacewing predators *Chrysopa* spp. (Neuroptera: Chrysopidae): and the ladybird predators *Harmonia axyridis* (Pallas) (Coleoptera: Coccinellidae), *Olla-v-nigrum* (Mulsant), *Exochomus children* Mulsant, *Chilocorus nigritis* (F.), and *Curinus coeruleus* (Mulsant) (Mannion, 2010). Various enzootic pathogenic fungi have also been isolated from *S. simplex* in Florida, namely *Isaria fumosorosea* Wize, *Paecilomyces lilacinus* Thorn (Samson), and *Lecanicillium* sp., *Fusarium* sp., and *Aspergillus* sp. (Avery et al., 2011).

Adult whiteflies are winged and capable of flight, but they are poor fliers and natural dispersal is limited. The eggs and larvae may be distributed over long distances in plant trade.

Infestations of *S. simplex* are likely to be easy to detect since severely infested *Ficus* plants shed many of their leaves and appear defoliated (Fig. 11). They also exhibit significant chlorosis (yellowing of the leaves) and the leaves may be spotted with black sooty mould growing on the excreted honeydew (Fig. 10). There may also be small clouds of tiny white, gnat-like adult whiteflies flying from the foliage which are easily observed when branches of infested plants are shaken.

**Economic importance and damage**

*Singhiella simplex* is an economic pest of *Ficus* spp. in the USA (Florida), India, Brazil and Israel (Kondo & Evans, 2013). Feeding by the whitefly causes yellowing of leaves, severe defoliation and branch dieback, and high populations are able to stunt the growth of young trees. The impact in the Mediterranean is potentially large due to the abundance of *Ficus* as ornamental plants. However, it is important to note that there are no published records of the whitefly attacking the common fig *Ficus carica* L.
References


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