

Whiteflies

(Hemiptera, Aleyrodidae)

Bemisia tabaci (Gennadius), also referred to as *B. argentifolii* or silverleaf whitefly

Description:

The whitefly *Bemisia tabaci* (Gennadius) is a species complex containing at least 35 morphologically indistinguishable cryptic species. Some members of the complex are pests of agricultural and horticultural crops in temperate and tropical regions. In the past 20 years, whiteflies have risen to international prominence due to their global invasions.

Immature stages – Immature stages begin with a pointed oblong yellow egg (0.2 mm) which darkens at the apex just before hatching. The first instar or crawler stage (0.2-0.3 mm) settles down on the underside of leaves close to the egg shell and goes through three more molts as a sessile, flattened oval nymph. Late third and fourth instars begin to develop eye spots and are often referred to as red-eyed nymphs. The last instar, or "pupal stage" (0.7-0.8 mm, late instars are shown in the photo), has very distinct eye spots.

Adult stages – The adult is small, about 0.9 to 1.2 mm in length and holds solid white wings roof-like over a pale yellow body at rest.

Biology:

Life Cycle – The life cycle from egg to adult may be 18 days under warm temperatures (86°F) but may take as long as 2 months under cool conditions. The number of eggs produced is also greater in warm weather than in cool weather. The rate of reproduction ranges from 50 to 400 eggs (avg. 160, of which about $\frac{2}{3}$ are female)/female.

Seasonal Distribution – In Georgia, whiteflies are generally not an economic problem in early spring if winter temperatures are cold enough to keep populations low. Whiteflies can become severe in mid to late summer, and cause severe economic losses to several crops, especially cotton and cucurbits.

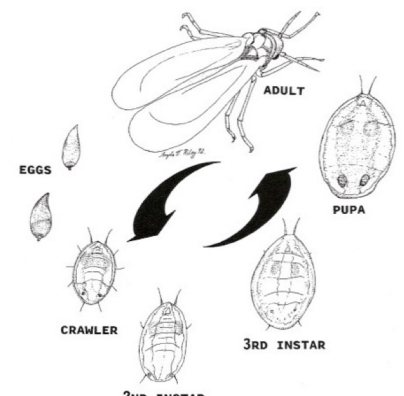
Damage to Crop:

In tomato, cucurbits, and beans the main damage caused by whitefly results from the transmission of plant viruses (e.g., in tomato mainly Tomato yellow leaf curl [TYLCV], see leaf image) which causes a severe stunting of the plant and a drastic reduction in yield. The presence of high whitefly numbers in vegetables can also cause severe direct damage even if the virus is not present. When virus is present in the field even low number of whiteflies can cause damage. In cotton, whiteflies can build up high populations, causing sooty mold, sticky cotton, and heavy migrations of adults from defoliated cotton can cause severe problems in vegetable crops in the area.

Whitefly adults on squash leaf



Whitefly life cycle



TYLCV damage in tomato



Management:

Use effective, curative insecticide treatments based on crop specific thresholds or preventative treatments and host plant resistance to virus when whitefly transmitted viruses are present. Natural of mortality for the whitefly include predation by beneficial insects such as lacewing or coccinellid larvae, parasitization by wasps such as *Encarsia* or *Eretmocer* species, mechanical injury, desiccation, insect pathogens such as *Beauvaria*, *Paecilomyces* or *Verticillium* species, and lack of host plant material.

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