

**Illustrated guide of
insects and mites
on vegetable crops
in the Lesser Antilles**

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Photographs : Philippe RYCKEWAERT
Cover photo : vegetable crops in Morne Vert, Martinique
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Foreword

The photographs included in this guide will help the reader recognize the principal insects and mites of the Lesser Antilles as well as the damage they cause to vegetable crops. However, these illustrations may not be sufficient to precisely identify particular species which require the expertise of specialists who analyze in detail specific characteristics.

These illustrations will also be helpful to growers and technicians. By helping them identify all the different types of insects (adults or larvae) and mites, and differentiate injurious insects (pests) from beneficial organisms, they will be able to better protect their crops whenever necessary. However, because of the minute size of certain species, some insects and mites cannot be detected in the fields, even with a magnifying glass, and only the damage caused to the crops will reveal the presence of these tiny pests. Some predators and most of the parasitoids are also difficult to spot but their presence must nevertheless be knowned.

Pests then beneficials organisms are presented in this guide. A text attached to each illustration gives some informations both their morphology and biology.

This book does not deal with the different methods used to control such pests : they are detailed in a specific technical report published by CIRAD.

Note

Insect and mite nomenclature

All living organisms are designated by a generic name (or genus name) followed by a specific name (or species name). The name of the author(s) who described the species may be added (in parentheses when first described with a different generic name). The names are latinized and printed in italics except for authors and are written as follows : *Genus species* Author(s).

«*Genus sp.*» means that the species is not yet determined.

«*Genus spp.*» means that several species belonging to the same genus are considered.

Common names may be given to some species, for convenience mostly. They usually change from place to place.

Example : *Coccinella septempunctata* Linné

7-spotted lady beetle, Ladybird.

Ranking next above the genus is the family with an «-idea» ending, which in turn ranks next below the order with a «-ptera» ending.

Example : the aleyrodidae (whiteflies) and aphididae (aphids) are families pertaining to the order Homoptera.

Insect life cycles

All insects grow through different larval stages to become adults (from egg to adult). However, there are different types of larvae depending on the groups of insects. At the end of each stage, the skin is shed and the insect enlarges. The adult size is final. There are two types of insects : insects with complete metamorphosis (the larvae are very different from the adult insects) and insects with incomplete metamorphosis which, once hatched, look just like adult insects, only smaller and wingless.

Examples of groups of insects with complete metamorphosis :

Lepidoptera : egg - caterpillar or worm - chrysalis (with or without cocoon) - adult (butterfly)

Coleoptera : egg - larva (grub) - nymph - adult (beetle)

Diptera : egg - maggot - pupa - adult (fly)

Hymenoptera : egg - «maggot» - nymph - adult (wasp)

Examples of groups of insects with incomplete metamorphosis :

- Homoptera, Heteroptera, Thysanoptera : egg - larva - adult (aphids, true bugs...)

PESTS

Pest insects are plant feeders. By feeding on cultivated plants, they cause more or less direct damage to crops such as drop in yield, in quality or quantity, or total destruction of the crops, as well as indirect damage such as sooty mold or viral diseases transmitted to the plants.

The following groups of insects are illustrated in this document :

- Homoptera (whiteflies, aphids...)
- Heteroptera (stink bugs)
- Thysanoptera (thrips)
- Lepidoptera (caterpillars, worms, butterflies)
- Coleoptera (beetles...)
- Diptera (flies)
- other pests
- mites

N.B. : the synonym name «depredator» could be confusing and therefore should not be used.

Extent of damage

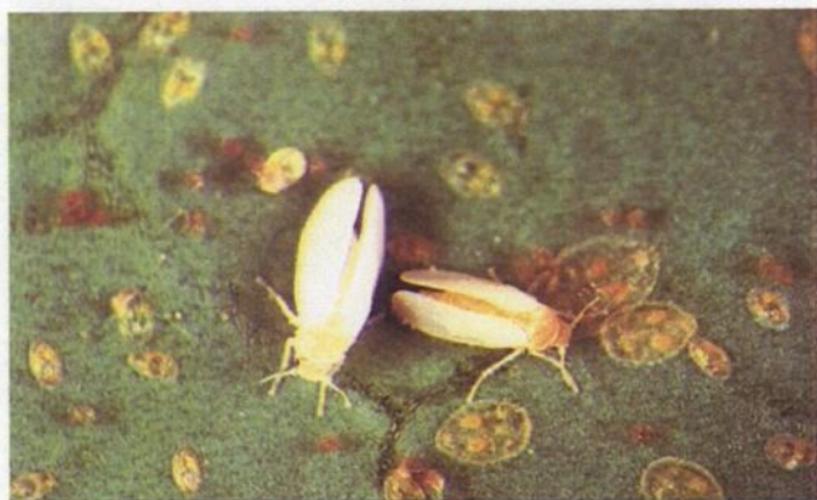
① : primary pests which significantly affect or even destroy crops

② : secondary pests which only cause slight damage to crops and only under certain conditions

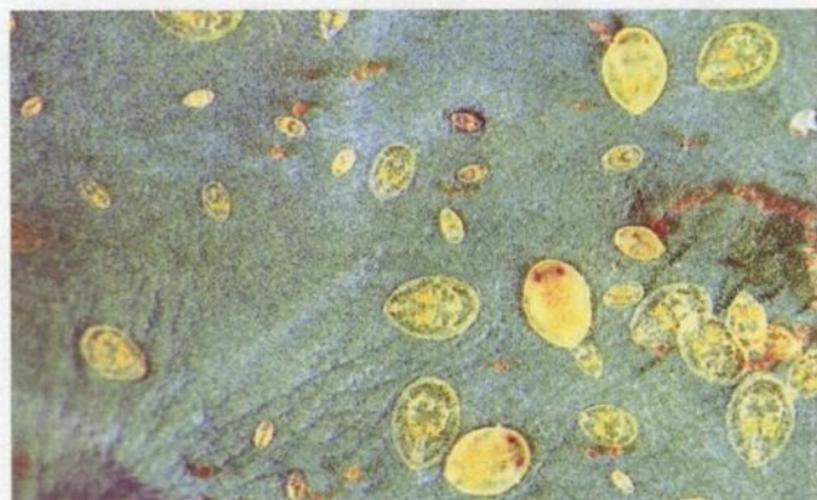
Homoptera _____



1



2



3

Bemisia argentifolii Bellows & Perring Silverleaf Whitefly

Family : *Aleyrodidae*

1

Description

Whitefly adults resemble tiny white flies, barely any longer than 1mm (photos 1 & 2). They sometimes form dense colonies on the undersides of tender leaves. They take flight suddenly when disturbed.

The whitefly larva is oval and pale yellow with no white wax deposits. It is 0.8 mm long (photo 3). It is attached to the underside of foliage. The last instar is a nonfeeding nymph, also miscalled pupa.

Damages

Whitefly nymphs and adults are sap-sucking insects which delibitate plants when in large numbers.

These insects secrete a viscous liquid called honeydew covering leaves and fruits which encourages the growth of a sooty fungus or Sooty Mold (photo 4).



4



5



6

Bemisia argentifolii Bellows & Perring Silverleaf Whitefly

Family : *Aleyrodidae*



Damages (continued)

This species, similar to the Sweet Potato Whitefly *Bemisia tabaci* (Gennadius), is characterized by its ability to cause the squash silverleaf disease (photo 5). This disease is a reaction to the whitefly larva's bite and not a transmitted disease. Symptoms disappear by eliminating the nymphs. Other reactions to the insect's bite such as the irregular ripening of tomato fruit and the yellowing of lettuce leaves can also be observed.

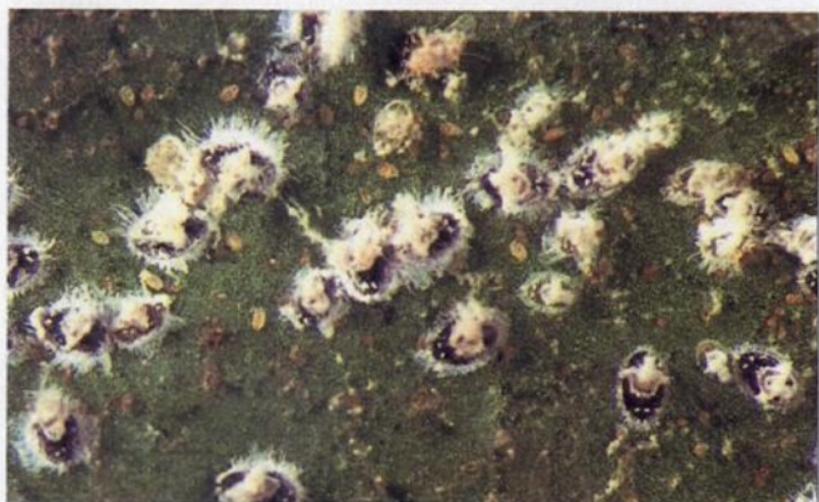
Whiteflies of the genus *Bemisia* also transmit numerous viruses to plants. In the Lesser Antilles, *B. argentifolii* inoculates a geminivirus in tomato plants which stunts the plants, curls the leaves upward, and mottles the fruit (photo 6).

Host plants

Whiteflies are considered highly polyphagous feeders because they develop on a large variety of plants : almost all vegetable crops, a large number of ornamental plants, flavouring and fruit crops, as well as weeds and wild plants.



7



8

Aleurotrachellus trachoides (Back) Sweetpepper Whitefly

Family : *Aleyrodidae*

②

Description

Because many species of adult whiteflies are similar in appearance, entomologists use the last nymph stage for specific identification. The nymphs are always found on the lower surface of their host plant leaves.

The nymphs of the Sweetpepper whitefly are black but are soon covered by a white waxy bloom (photos 7 & 8). Nymphs and adults are the same size as *Bemisia argentifolii*.

Damages

All whiteflies are sap-sucking insects. They all excrete honeydew in which dark sooty mold grow. This particular species does not however, cause any physiological disorder among plants and does not transmit any viruses.

Host plants

All solanaceous plants (tomatoes, eggplants, peppers...) and very occasionally, sweet potatoes.



9



10



11

Aleyrodes proletella (L.) Cabbage Whitefly

Family : *Aleyrodidae*

②

Description

The cabbage whitefly larvae resemble *B. argentifolii* except that both larvae and adults are twice as big (photos 9 & 10).

This particular species is only found in specific areas of some islands of the Lesser Antilles : it is believed to have arrived with cabbage imported from Europe.

Damages

The damage done to the plants is identical to the damage caused by any other species of whiteflies. This species does not transmit viruses.

Host plants

Exclusively cabbage, broccoli, cauliflower...

Other whitefly species

Trialeurodes vaporariorum (Westwood) is very similar to *Bemisia* except that its larvae are thicker and covered with a few hair. This species is also highly polyphagous. It was reported at moderate elevations, along leeward coasts to the Martinique and Guadeloupe.

Aleurodicus dispersus Russel : its larvae resemble *A. trachoides*, only three times as big (2.5 mm long) (photo 11). This species is relatively polyphagous and can be found on eggplants.