CORNELL Cooperative Extension
of Chemung County

Human Resources Center
425 Pennsylvania Avenue
Elmira, NY 14904-1766
Tel: 607-734-4453
Fax: 607-734-7740
www.cce.cornell.edu/chemung

Whiteflies

Description. Adult whiteflies are small insects, approximately 1/16th inch (1.5 mm)in length, with four powdery white wings. When heavily infested plants are disturbed, one may notice a "cloud" of tiny white insects rising above it. The immature stages (eggs, crawlers, scales and pupae) are all yellowish and found primarily on the underside of leaves.

Injury. Whiteflies are sucking insects, feeding on plant sap. As a result plants are weakened, may exhibit symptoms of stunting or wilting, and may have large amounts of honeydew on them. In New York State, the greenhouse whitefly is the most common species. It feeds on over 60 host plants. It usually does not survive our winters out of doors to cause new infestations, but is brought in anew each year.

Life History. The whitefly has a complex life history. It undergoes five distinct stages of development. Eggs are laid on the undersides of the leaves, and are at first pale yellow, but turn gray before hatching in 5 to 7 days. The crawler is a small, translucent, mobile stage that actively searches for a feeding site. Within a few days crawlers settle down and begin feeding, soon transforming to the sedentary scale stage. The scale is a highly modified sucking insect, and its outer covering thickens after it feeds giving it added protection. Adult development (pupation) occurs within the scale cover. Four days later, adults emerge. The life cycle takes about 40 days, depending on temperature.

Management. This insect is difficult to manage. The five distinct stages of the life cycle all differ in their tolerances to insecticides. Eggs are resistant to most insecticides as are the scale and pupal stages. The crawler is quite susceptible to insecticides, especially contact materials, and the adults are also susceptible to fumigant and contact materials. All stages, however, can coexist. A single application of a particular insecticide only affects the susceptible stages present at the time of treatment or shortly thereafter. Other stages will survive and ultimately reproduce again continuing the cycle. Therefore, when sprays are recommended, they are usually applied at 5-day intervals covering the 40-day period that it takes for completion of the life cycle. This means eight sprays, spaced five days apart. Missing even one application would allow the pest to continue to develop and possibly re-infest the area.

There are some practices that one can employ to help prevent whiteflies:

- Prevent whiteflies from entering the growing area; when new plants are brought home, isolate them for about one month to allow you to monitor the newcomer(s) for development of pests
- Learn to recognize the various stages of the whitefly, and…
- Isolate and treat infestations (or discard plants) early before the insects have a chance to spread.

Houseplants. Use houseplant formulations containing either acephate, resmethrin, or insecticidal soap as a dip or spray application. Five day intervals between treatments covering a 40 day period (8 treatments) are recommended. Read the pesticide label first to be sure it is registered on the plants you want to use it on. *Do not use insecticidal soap on newly rooted cuttings.*

Home vegetables and flowers. Do not purchase whitefly-infested transplants; inspect carefully before purchasing. Out of doors, whitefly populations are usually not sufficiently damaging to make treatment necessary. Occasionally however, populations build up to damaging numbers, and in these cases either the insecticide malathion or insecticidal soap should be used. Check the label first to be sure the plants you want to treat are listed. Two applications at 5 day intervals are recommended. Follow manufacturer's directions.

Biological Control. *Parasites and Predators*: A number of beneficial insects attack whiteflies e.g., predaceous bugs. The tiny parasitic wasp, *Encarsia formosa* can be effective against the greenhouse whitefly. These natural enemies do not remove the whiteflies but they can reduce their numbers so that little damage results. Further research is needed to make this method a practical alternative to chemical control methods, at least in commercial greenhouses.

Mechanical Methods. Yellow sticky boards have been used with some success in the control of adult whiteflies. This method may be most useful in a home greenhouse. Whiteflies have a natural attraction to the color yellow, and if yellow boards are painted with a sticky material, whiteflies will fly to them and adhere. Research on the use of yellow sticky boards has been going on for a number of years. The yellow color used in USDA experiments with success was Rust-Oleum 659* yellow, however, other deep orange-yellow paints would also be effective. Of the sticky substances tried, Tack trap, *a commercial insect-trapping compound worked the best. The USDA research also used heavy motor oil (SAE 90)* successfully on the boards to trap whiteflies and found the oil easier to wash off the boards than the sticky trapping materials.

A combination of the use of sticky yellow boards and the parasite *E. formosa* in some cases provided almost complete control of the whitefly in commercial greenhouses.

*The products mentioned above are only mentioned as part of the research and are not recommended by USDA or Cornell University over other products.

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