County of San Diego

Department of Agriculture, Weights and Measures

Whiteflies

Symptoms:
Plant vitality reduced, presence of sticky honeydew and black sooty mold. Ants are attracted to plant.

Problem Time of Year:
Spring, summer, and into fall, year round in coastal areas.

Hosts:
Landscape ornamentals, fruits and vegetable plants.

IPM Techniques:
Beneficial insects, yellow sticky traps, insecticidal soap.

Introduction:
Whiteflies are insects that inflict damage by sucking plant juices. In San Diego County, several different types of whiteflies are found: the giant whitefly, woolly whitefly, silverleaf whitefly, and greenhouse whitefly (to name a few). The variety of plants preferred by each type of whitefly may differ. They can be found on over 80 plant species including avocado, citrus, hibiscus, xylosma, houseplants, and most vegetables.

Life Cycle and Description:
Not really "flies" at all, whiteflies are closely related to aphids, scale insects, and mealybugs, all of which feed by sucking sap from plants. Their eggs are laid on the undersides of leaves. They hatch in four to twelve days into six-legged crawlers. After the first molt the crawlers look like small scales, fall, round and slightly smaller than a pinhead. After the second molt they become pupae, and finally four-winged adults. The life cycle may take six weeks to a year to complete. There are several sizes of whiteflies, each with a fine white powdery wax covering the wings and body. The giant whitefly creates a protective white mat of waxy filaments on the undersides of leaves which can measure up to an inch in length, and hang down from infested leaves like angel-hair.

Damage:
As a result of whitefly larvae feeding on the undersides of leaves (using piercing-sucking mouth parts to puncture the leaf cells and suck out the plant juices), the tops of the leaves become pale, yellow, and then eventually drop. The feeding by whiteflies can also spread plant viruses, for which there is no cure.

Whiteflies secrete a honeydew that is an excellent growing medium for black sooty mold. The mold is unattractive and interferes with photosynthesis which leads to lessened plant vigor. Black sooty mold can be washed off plants with a strong spray of water. Ants also feed on the honeydew. A trail of ants to a plant usually indicates feeding by whiteflies or other insects. While the whiteflies themselves are hard to see, they can be seen in swarms when an infested plant is shaken or disturbed.

Controls:
There are several control methods for whiteflies: biological, cultural, trap, and pesticides.

Biological:
Many natural enemies feed on the adult and immature whiteflies. These beneficial insects include ladybird beetles, spiders, green lacewings, praying mantis, and assassin bugs. These predators and parasites do not eliminate the whitefly, but rather keep the population of whiteflies at a level where they do not cause significant damage. Also, a weekly rinsing of the infested plant with a hard stream of water from the

garden hose will enable beneficial insects to reach the whitefly larvae found on the underside of the laves. Do not use non-selective pesticides; they will kill populations of beneficial insects, allowing the whiteflies to reproduce without the treat of natural predators. Ants will protect whiteflies from their natural enemies. Controlling the ants will encourage biological control of the whitefly. Currently, exploration for new natural enemies that are associated with the whitefly in its native habitat are being researched.

Cultural:
Whiteflies exhibits a tendency for group feeding behavior on the undersides of leaves. This type of behavior leads easy removal of newly infested plant material. Thus, sanitation by way of affected leaf removal, is a means of inhibiting the spread of the whitefly to other plants. Once the affected leaves have been removed, the material should be bagged and removed from the property. If left in the open, some of the adult whiteflies will migrate to new plants.

Pruning of heavily infested leaves (usually the lower leaves) during the growing season will slow spread of this insect. Eliminating or closely mowing weeds, both in and around the garden, will help. And pruning or eliminating whitefly-susceptible vegetation during the winter will greatly reduce the number of whiteflies surviving until the next growing season.

Trap:
Whiteflies are attracted to the color yellow. The placing of a yellow card covered with a sticky substance near the problem area attracts the whiteflies which stick to the card. Once the card is full, just dispose of it and the trapped whiteflies. This is a good control method for indoors or in a greenhouse situation.

Pesticides:
A temporary control is to spray the plant with insecticidal soap (considered a "soft" pesticide), which will make the wings of the adult stick together. This makes the whitefly unable to fly to infest other plants or to lay eggs. Insecticidal soap is a contact spray with no residual action and it is harmless to people and pets. Repeated weekly applications will be needed.

Controlling Whiteflies with Pesticides is Difficult Because:

- All stages of the insect exist on the plant at any one time, with some stages very resistant to chemicals;
- Whiteflies live on the undersides of leaves where it is difficult to obtain thorough coverage with sprays and dusts;
- Whiteflies have developed high genetic resistance to may insecticides; thus rotation of the type of chemicals used is required; and
- The insecticides currently registered for whitefly control in California will not give control of the whitefly without continual repeated applications of at least once a week for 12 to 16 weeks, perhaps longer in summer or if your neighbor's plants are also infested.

Most Important:
If pesticides are used, spraying the underside of the leaves is essential since both the adult and immature whiteflies feed on the lower surface of the leaves. Applications made only to the upper leaf surface will kill beneficial insects while missing whiteflies, and thus do more harm than good.