

## YELLOW STICKY TRAPS FOR WHITEFLY MANAGEMENT

Roger G. Adams  
Extension Entomologist

Whiteflies are a major pest of greenhouse crops and can be quite difficult to control. Recently there have been many articles in the popular literature concerning the use of sticky boards for greenhouse whitefly control. Most of the articles are based upon research done by USDA entomologists Ralph E. Webb and Floyd F. Smith. In this article I will review their findings and their recommendations for use of sticky traps in the greenhouse.

But first, let's review the biology of the greenhouse whitefly, *Trialeuroides vaporariorum*. The complex life cycle includes five distinct stages and may be completed in four to five weeks under greenhouse conditions. The small white adults live for about one month, and females lay up to 100 eggs on the undersurface of leaves. The newly laid eggs are white, but turn grey to black in three to four days. They hatch into yellowish-green crawlers in five to 10 days. The crawlers have legs and antennae and move a short distance to a new feeding site. Upon settling, they insert their piercing-sucking mouthparts into the plant tissue and begin to feed.

After molting, they lose their legs and antennae and become a transparent to greenish-yellow, flat, scalelike nymph. The nymphs excrete large quantities of honeydew, a clear, sugary, sticky liquid which mars the foliage. Within three weeks the nymph transforms into the nonfeeding, caselike pupa stage. The pupa has a raised, yellowish-green body with conspicuous

black eyes. The edges of the body are perpendicular and often have threadlike waxy projections. Within one to two weeks the small, whitewinged adults emerge from the pupal case. Adults begin to lay eggs in two to seven days.

The insect attacks a wide variety of greenhouse plants. Because whiteflies develop and spend much of their time on the undersurface of leaves, their presence often goes unnoticed until large numbers are reached.

Fortunately, the greenhouse whitefly is unable to survive the winter outdoors in the northeast. However, populations continue throughout the year in greenhouses. Outdoor plants are usually infested by adults leaving the greenhouse when outdoor temperatures become favorable. In the autumn, a reverse migration of whitefly adults from outdoors into greenhouses occurs.

The sticky traps consist of 10 x 10 inch squares of plywood, pressboard, or plexiglass painted orange-yellow (Rust-Oleum 659 or brands of similar color) and covered with a thin coating of material such as Tack Trap or Heavy SAE 90 oil. The address for a source of Tack Trap is: Animal Repellents, Inc., P.O. Box 168, Griffin, GA 30223. Tangle Foot is reported to be less effective on these insects since it tends to dry out and become hard.

The color of the sticky panels is very important. Research has shown that certain shades of yellow serve as super-normal mimics of light reflected from plant foliage. Thus, the insect views the orange-yellow panel as a superattractive plant on which to feed and lay eggs. As a result, when adult whiteflies fly from leaf to leaf, they are attracted to the yellow panels where they become stuck on the surface.

Trap placement is important. They should be placed among the plants so that the tops of the traps are even with the tops of the plants and spaced at approximately 10 foot intervals.

The USDA scientists reported that the insects are attracted from several feet, and when infested plants are shaken, most adult whiteflies dart to the sticky panels "like iron filings to a magnet." The best use of the traps, however, is for suppressing populations and for helping to keep uninfested plants "clean" rather than for controlling "roaring" populations.

The USDA researchers reported that fungus gnats and winged aphids can also be suppressed in greenhouses through the use of sticky panels. The traps have not been tested extensively under commercial conditions, but you may wish to test their value in your greenhouse. They may be a useful tool in whitefly and fungus gnat management. Dead insects will have to be scraped off the traps periodically and a new layer of sticky material applied.