



Using Sticky Cards to Monitor for Greenhouse Insects

Sticky cards are an important part of an Integrated Pest Management (IPM) program for greenhouse growers. They are a useful tool to alert you to the presence of certain insect pests.

Sticky cards will trap the adult stages of flying insects such as western flower thrips (WFT), whiteflies, fungus gnats, shore flies, leafminers and winged aphids. Spider mites, broad mites, mealybugs, scales, and wingless aphids do not fly so will not be caught on the sticky cards. In addition, immature stages of thrips and whiteflies are not caught on the cards. Sticky cards can often help you detect early pest infestations more effectively than will intensive plant sampling. By using sticky cards, you can keep track of insect population trends, and make more informed and timely pest management decisions. However, they are only part of an IPM program that includes visual monitoring and the use indicator plants.



Figure 1: Use of sticky cards in a greenhouse. Photo by L. Pundt

Types of sticky cards

Most commonly, 3 x 5 inch sticky cards are used in the greenhouse. Some cards have a grid system that makes it easier to count the insects on the card. Larger sticky cards are also available.

Yellow or blue colored sticky cards are commercially available. Blue cards may be more attractive to thrips (and even shore flies), and may be used to detect low thrips populations on especially susceptible crops. Use yellow sticky cards for general pest monitoring.

Figure 2: Use blue sticky cards for thrips and yellow sticky cards for general pest monitoring. Photos by L. Pundt



Some growers place sticky tape known as “hopper tape” on their irrigation booms to “mass trap” adult shore flies in their propagation houses.



Figure 3: Use of hopper tape on irrigation boom to mass trap shore flies. Photo by L. Pundt

Suggestions on Using Sticky Cards

Use at least 3 to 4 cards per 1000 sq. ft., or a minimum of one card per 1000 sq. ft. with additional cards placed near doors, vents, to detect migration of insect pests from outdoors. Place more cards near especially insect-prone plant species or cultivars. Use clothespins and stakes to attach sticky cards just above (4 to 6 inches) the crop canopy. As plants increase in height, move the sticky card upward on the stake. Storing the sticky cards in the refrigerator helps make the cards and tape less sticky and easier to use.

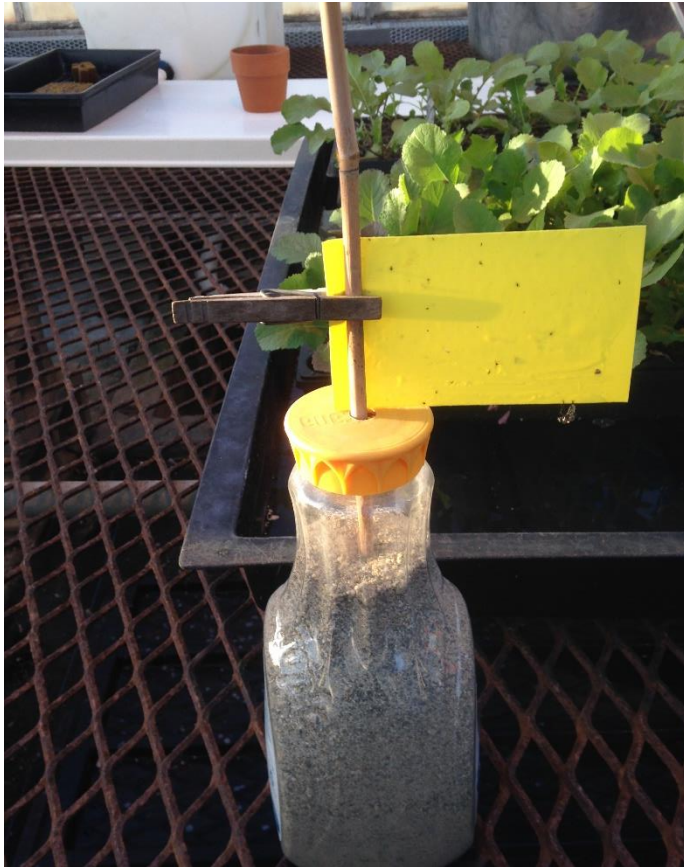


Figure 4: Place cards on a bamboo stake with a clothespin. Photo by L. Pundt

As more growers are using biological control programs, the use of sticky cards needs to be fine-tuned. If you are releasing biological control agents with a winged stage, reduce the number of sticky cards used. Adult parasitic wasps will be caught on the traps! You will also want to schedule your weekly counts so that the cards are not up the evening that you are releasing the winged natural enemies. Wait one or two days before replacing the cards. Talk to your biological control supplier about the number of cards to use in your particular situation to gather the data needed on both pest and beneficial insect activity.

If you are using bumblebees for pollination in greenhouse tomato crops, reduce or eliminate the use of blue cards. (Bumblebees are attracted to blue cards).

Monitor cards weekly to track trends in insect population development. With increasing temperatures and insect development, spot check cards twice a week. Inspections that are more frequent will allow quicker identification of localized infestations where spot treatments or releases of natural enemies may be beneficial.

Change the cards weekly. Cards lose their effectiveness trapping insects as their surface becomes coated with debris. You may be able to change their cards less frequently in the winter months because of slower insect development and activity.

The cost of monitoring is due to the time spent identifying and counting insects on the sticky cards and not the initial cost of the cards. In one study, University of California researchers looked at ways that growers may more efficiently use their sticky cards. Yellow sticky cards (4.5 " by 5.4") were placed 50 feet apart in three California greenhouses where various bedding plants (African marigold, verbena, geranium, ageratum, dianthus, and petunia) were grown. Sticky cards were placed 8 to 16 inches above the crop and researchers changed the cards once or twice a week. (Note: most CT growers use 3 x 5 inch cards for insect monitoring).

Western flower thrips, greenhouse whiteflies, leaf miner adults, and winged aphids were caught on the cards. Whitefly catch tended to be uniform, but more aphids and thrips were caught on the bottom half of the cards. There was also more variation in trap catch along the length compared to the width of the card. The authors suggested to only need to count a one-inch-wide vertical column in the center of each card to estimate the total numbers of insects caught. The researchers concluded, however, that growers should not cut their cards to a 1" by 5" size. Larger cards tend to catch a greater diversity of insects than smaller cards, and trap catches tend to increase with size.

Thrips

Place cards just above the crop canopy to more effectively trap thrips. Placing cards at bench level tends to catch more thrips compared to card placement at hanging basket or floor levels. Card counts may be higher at the ends of the greenhouse, where the passively carried thrips tend to drop out of air circulation patterns. Under mist propagation, fewer thrips will be caught on sticky cards, as adults are less able to fly, due to the water on their fringed wings.

Tolerance levels will vary depending upon the crop, potential damage, time in the production cycle and whether tospoviruses are present. If tospoviruses are present, the threshold is as close to zero as possible.

Fungus gnats

Horizontal placement of cards just above the soil surface is more effective than vertical placement just above the crop canopy, especially early in the crop cycle when fungus gnats tend to be of most concern.



Figure 5: Use horizontal card placement to monitor for adult fungus gnats. Photo by L. Pundt

Whiteflies

Whitefly (WF) populations tend to be aggregated and not uniformly distributed within the greenhouse. You may consider using more cards near greenhouse whitefly-favored plant hosts such as lantana, flowering maple, hibiscus, rosemary, tomato, chenille plant, and regal geraniums or sweet potato whitefly favored hosts such as poinsettia, gerbera daisy and hibiscus.

Winged Aphids

Yellow cards will only catch winged aphids. If winged aphids are present, they may have blown in from outside during the warmer months. If winged aphids are present on sticky cards during cooler months (when aphids are not active outside), this may indicate that a significant infestation is present on plants or weeds inside the greenhouse. Focus on plant inspection for aphid detection. Winged females usually develop when there are high aphid populations present on plants or if the plants nutritional quality declines. This allows aphids to disperse to plants that are less crowded and will be an adequate food source.

Tips on Identifying Insects on Your Sticky Cards

Use a 10x-15x hand lens to see the identifying characteristics of insects caught on the cards. (LED lighted hand lens are helpful). With practice, it becomes much easier to distinguish a shore fly from a fungus gnat or a thrips from a grain of peat moss. A hands free optivisor TM helps you see the entire card.

See the PowerPoint presentation, [Identifying Some Pest and Beneficial Insects on Your Sticky Cards](#) on this website for more color photos and specific tips.

Miscellaneous Insects

There are many different insects in the world. Besides pest and beneficial insect species, you may see innocuous insects, too. If you see large numbers of insects you cannot identify, especially for longer periods, consult an Extension entomologist for help in identification.

Data Collection and Record Keeping

Keep records of data from weekly inspections of sticky cards. Often it is helpful to develop your own Excel worksheet to collect data that is converted into weekly graphs for decision-making. Train your employee scouts and give them specific directions on how to collect the data you need to make useful decisions.

By Leanne Pundt, UConn Extension, 2011, updated 2019

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