Identifying Some Pest and Beneficial Insects on Your Sticky Cards

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http://ipm.uconn.edu/pa_greenhouse/

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Sticky Cards

- Blue sticky cards may be more attractive to thrips and shore flies.
- However, yellow cards are best for general monitoring.
Scouting

- Use yellow sticky cards to trap adult whiteflies, fungus gnats, winged aphids, leafminers, & shore flies
Use in Retail Greenhouses
Pest Infested Indicator Plants

Poinsettia plant tagged as pest infested indicator plant. There are immature whiteflies on the tagged leaf.
Pest Infested Indictor Plants

Can be used to track whitefly development, monitor effectiveness of biological or chemical controls.
Random plant inspections

Needed to find spider mites, broad mites, mealybugs, scale insects, immature stages of aphids, whiteflies, thrips.
Random Plant Inspections

Inspect roots to see if they are white and healthy.

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Magnification Needed

Use a 10x-20x hand lens to see identifying characteristics of insects on sticky cards.

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A hands free Optivisor™ helps you see the entire card
Horizontal Placement

More effective to catch fungus gnat adults.

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Pest Insects Trapped on Sticky Cards

• Aphids
• Fungus Gnats
• Shore Flies (nuisance pests)
• Leafminers
• Leafhoppers
• Thrips
• Whiteflies
Winged Aphids

• Aphids have pear shaped bodies with two cornicles or “tailpipes” at their rear.

• Legs & antennae are long and thin.

• Trapped aphids may give birth to several nymphs before they die.
Winged Aphids

• Wings tend to be spread on either side of their body on the sticky cards.

• Wings are longer than their body.

• Look for two parallel veins close to the edge with a darkened area.
Winged Adult Aphid

Thrips

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Aphids vs. Midges vs. Fungus Gnats
Adult Fungus Gnats

- Small, dark mosquito-like flies with grayish wings.
- Have long, slender legs and antennae.
- Look for distinct Y-shaped vein at the tip of the single pair of wings.
- Bodies may be hump-backed (depends upon species).
Adult Fungus Gnats

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Look for distinct Y-shaped vein at the tip of the single pair of wings.
Fungus Gnat Larvae

Potato slices or chunks can be used to monitor for larvae.

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Shore Flies

• Look for:
  – three to five pale spots on their grayish wings.
  – short bristle-like antennae.
  – moderately long legs.

• Have robust, stout body compared to fungus gnats.

• About the size of fruit flies.
Fungus Gnats vs. Shore Flies
Shore Flies

Often found near algae, their food source.
Adult Shore fly

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Adult Leafminers

• Small, robust flies with noticeable yellow patch on their body.
• Have short antennae and two transparent wings.
• Have a large cannon-shaped structure at the end of the abdomen that is used to puncture leaves and lay eggs.
• Often confused with shore flies (look for yellow on their body) plus plant damage.
Leaf miner adults & egg-laying punctures

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Adult Shore Flies vs. Leafminer Adults

Adult shore fly

Adult leafminers
Shore flies vs. Leafminers

- Mines from leafminer larvae
- Fecal droppings from shore flies
Leafhoppers

• Slender insects with short bristle like antennae.
• Wings are held roof like over the abdomen.
• Wedge shaped, tapering to the rear.
• No antennae visible.
• Color vary depending upon species.
Adult Leafhopper

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Adult Leafhopper

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Thrips

- Generally, the smallest insects you will see on the cards.
- Narrow and cigar shaped.
- Look for red eyes, short antennae, fringed wings with hairs on end to distinguish from grains of peat moss.
Thrips
Thrips

Grain of peat moss

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Whiteflies

• Look for whitish bloom which tends to disappear after a few days.
• Whiteflies becomes orange in color as they blend into the sticky material on the trap.
• Slightly larger than thrips.
Whiteflies

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Adult Whitefly

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Banded Winged Whiteflies

- Similar to greenhouse whiteflies.
- Look for two grayish bands that form a zigzag pattern across each front wing.
- Entering greenhouses from outdoor weeds (especially pigweed & ragweed) in the fall.
- Not a pest of poinsettias, do not include in whitefly card counts.
Banded Winged Whitefly

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Greenhouse Whitefly Pupae

Dried, discolored pupae infected with *Beauveria bassiana* on underside of greenhouse tomato leaf.

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Greenhouse Whitefly Pupae

White pupae with straight elevated sides and a fringe of wax filaments around the edge. Red eyes indicate adults are ready to emerge.

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Sweet potato whitefly pupae

Bright yellow without fringe of wax filaments around its edge. Red eyes indicate adults are ready to emerge.

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Some Beneficial Insects Trapped on Cards

• Parasitic Wasps (many different types)
  – Often attracted to yellow sticky cards

• Hunter flies, syrphid flies (or hover flies) and other beneficial flies
Parasitic Wasps

• Often *Hymenoptera* species.
• May be stout or slender.
• In comparison with flies, often have longer, elbowsed antennae and bodies may be more pointed toward the rear.
• Many have clear wings with only one distinct, angular vein along the front of each forewing.
Parasitic Wasps

Winged Aphids

Fungus Gnat

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Aphidius colemani is a commercially available parasitic wasp.

R. McGaughey
Encarsia formosa

• Commercially available parasitic wasps used to control whiteflies (especially greenhouse whiteflies).

• Small, parasitic wasp with black head and thorax and yellow abdomen.

• May look like tiny black dots on yellow card.
Encarsia formosa

Note: This card was used for quality control of a shipment and NOT found in a greenhouse.
Encarsia formosa

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**Eretmocerus sp.**

- Commercially available parasitic wasp used against whiteflies (especially sweet potato whiteflies).
- Yellow or straw colored.
- With elbowed antennae.
Note: This was part of quality control by the grower and sticky card was not found in the greenhouse.
Eretmocerus compared to thrips

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Shore Fly Parasitoid

*Hexacola* sp. is a parasitic wasp that lays its eggs into shore fly larvae.

From: Fungus Gnats and Shore flies in Greenhouse Crops
http://www.omafra.gov.on.ca/english/crops/facts/14-003.htm
Synacra pauperi

• Naturally occurring parasite of fungus gnats.
• Adults are about the same size as fungus gnats.
• Look for narrowing between the head and thorax & between thorax & abdomen.
• Abdomen tapers to a sharp tip.
• Antennae are beaded & elbowed.
• May be seen in unsprayed greenhouses.
Fungus Gnat Parasitoid – *Synacra pauperi*
Hunter Flies

• Same family as house flies but are smaller.
• Males are a lighter gray than females.
• Wings are uniformly clear (unlike shore flies).
  (Shore flies are about ½ the size of hunter flies)
• Hunter flies prey on fungus gnats, shore flies, leafmining flies.
Hunter Fly

Note: Shiny wings without spots

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This shows the size comparison between a shore fly on the left and hunter fly on the right.

From: Fungus Gnats and Shore flies in Greenhouse Crops
http://www.omafra.gov.on.ca/english/crops/facts/14-003.htm
Syrphid Flies

• Also known as flower flies or hover flies
• Have clear yellow and black markings.
• Only a single pair of wings.
• Have short antennae.
• Adults feed on pollen and nectar.
• Larvae feed on aphids and other soft-bodied insects.
Syrphid fly

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Syrphid fly larvae

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Some Miscellaneous Insects Observed on Cards

• Midges (not a plant pest).
• Moth flies (not a plant pest).
• Springtails (not a plant pest).
Midges

• Small, delicate insects resembling mosquitoes.
• Narrow, elongate body may be confused with fungus gnats.
• Males have very feathery, plumose type antennae.
• Not a plant pest, seen in areas with poor drainage where fungus gnats and shore flies occur.
Midge Adult

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Moth or Drain flies

• Adult drain flies are small (\( \frac{1}{6} \) to \( \frac{1}{5} \) inch long), fuzzy, dark colored insects with the body and wings densely covered with hairs.

• Their wings are held roof-like over the body when at rest, giving them a moth-like appearance.
Moth Flies

• Small, gray insect with a single pair of very large broad wings.
• Wings have a fringed, hair like appearance similar to moth wings.
• Antennae are beaded.
• Not a plant pest, seen in areas with poor drainage where fungus gnats and shore flies occur.
Moth Flies

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Springtails

• Very small, (~1/16 inch in length), primitive insects without wings.

• Many have a specialized fork like structure known as a “furcula” so they can jump or hop, which you may see after watering.

• Feed upon fungi, algae and organic matter in the growing media.
Springtails

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Springtails

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References

• Ball Identification Guide to Greenhouse Pests and Beneficials
• Greenhouse IPM with an Emphasis on Biocontrols  PA IPM Program
• Sticky Trap Monitoring of Insect Pests
  – Univ. of California Publication 21572