

## Integrated Pest Management Scouting in Perennial Agricultural Crops

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Scouting and monitoring for pests is a critical step in quantifying potential damage that can be caused by a pest and aids in determining if intervention to control the pest is warranted. Scouting also helps growers determine the present life stage of the insect or disease which is often critical to properly selecting and timing management strategies.

Scouting for insect and disease pests involves monitoring the crop and cropping area for insects and diseases. Scouting for diseases includes monitoring the crop for signs, like visible fungal colonies, and disease symptoms, like leaf spots, and may include following protocol to determine the incidence or severity of the disease. Scouting for insect pests includes looking for the insect at all life stages – egg, immature or adult – and attempting to quantify the population. Scouting for insects may also include inspecting for crop damage caused by the insect and setting traps to collect them.

Growers should keep records of their scouting, including maps of their fields, a record of sampling and pest pressure, as well as control measures utilized. Scouting should begin as soon as plants begin to grow or pests become active and should continue until the crop is dormant or the risk of the pest has passed.

### Tools for scouting

Scouts may find the following tools useful:

- **Hand lens** for inspecting small insects, mites, insect eggs or feeding damage.
- **Traps of various forms** that may include lures to attract insects.
- **Beating tray or scouting board** to collect and count pest and beneficial insects.
- **Sweep net** for collecting winged insects or those in the understory.
- **Knife and pruners.**
- **Containers** for collecting plant, disease and insect samples.
- **Small cooler** for transporting and preserving samples.
- **Camera for taking pictures.**
- **Reference materials** for helping identify pests (find these resources at the [Michigan State University Extension Bookstore](#)).
- [MSU Diagnostic Services submission forms](#) to guide information gathering and streamline sample submission.



Douglas fir needle midge emergence trap to determine midge flight and properly time pesticide application.



Not all insects are bad. Lady bug adults and larvae feed on soft-bodied insects including aphids and mites.

## Methods for scouting

To make best use of time spent scouting, growers should consider the following general recommendations:

- Section your farm off into manageable portions based on location, size and crop or variety and scout them separately. It is more practical to deal with blocks that are 10 acres or smaller and contain plants of the same variety, age and spacing.
- Walk a transect when scouting to ensure you view plants from the edge and inner portion of the block. Common transects are walking in an X or a W pattern to cover the whole field. Change the path you walk each time you scout to inspect new areas. Reexamine hotspots where you have historically encountered high pest pressure.
- Scouting weekly is recommended. If degree day tools or biological information is available to predict the emergence or arrival of certain pests, use them to gauge when you might scout more intensively.

## What am I looking for?

One of the hardest things to learn about scouting is how to pick up on the visual cues that something is damaging the crop. Damage can come in many forms. Consider the following signs of insect damage and disease:

- Cupped, chlorotic, spotted or malformed foliage.
- Discolored, damaged, swollen or sunken areas of the bark.
- Large number of insects.
- Pockets of less vigorous or dying plants.
- Anything out of the ordinary.

## Trapping

In some cropping systems, sticky traps are utilized to capture pests. They may be baited with attractants, like plant volatiles or pheromones, or provide a visual cue that lures in the pest. Pheromone traps often mimic females to draw in males and plant volatiles often mimic the host plant. Traps that provide a visual cue may mimic a tree trunk or a fruit, depending on the crop and pest. Follow these guidelines to get the most benefit from insect trapping:

- Place traps at least two weeks before the projected emergence of the target insect.
- Follow manufacturer or university recommendations on the number of traps per block.
- Place traps based on manufacturer or university recommendations.
- Check and clean the traps at least weekly. Consider checking them more often until the first catch of the season or when emergence is happening quickly and traps are becoming dirty more frequently.
- Replace attractant lures as recommended and store them in the freezer to preserve them.



Yellow sticky trap hung in a chestnut tree (left) to catch potato leafhoppers (right).

## Consider the weather

One of the greatest allies a grower can utilize to be an effective scout and pest manager is historical and forecast weather data. Degree day models are available for many pests and can be tracked using locally accurate degree day information available via [MSU Enviro-weather](#). Some models even use forecast data to estimate when important events, such as egg hatch, adult flight or spore release, will occur. This information can inform you of when to intensify your scouting for certain pests and disease, when to apply a pesticide to optimize treatment and when the ideal conditions might occur to apply a spray.

For more information on integrated pest management of perennial agriculture crops and other production topics, [subscribe to the MSU Extension newsletters](#) that interest you.



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