

The presence of eggs can be a foreboding sign of potential problems. Squash bugs, common pests of squash and pumpkin, lay bronze, football-shaped eggs.

Cutter bees are rarely seen, but there is no doubt they have been visiting when you see the distinctive circular leaf-feeding patterns.



Be a Gardening Detective

Story and Photography by Douglas A. Spilker

Gardening is a very task-oriented hobby. There are numerous jobs that must be done at the right time in order to grow that perfect tomato or that beautiful bloom. Among the tasks demanding our attention, we need to include the very important one of monitoring for pests. Even so, you may notice the damage, but not the pest. This is where you need to use your detective skills!

THE POWER OF OBSERVATION

Every gardener needs to make time for frequent, close observations for plant maladies. This means being on the lookout for any signs that might indicate the presence of insects or mites. Integrated pest management (IPM) is a pest-control system that doesn't call for frequent use of synthetic pesticides, but

it won't be effective unless problems are correctly identified early. Some signs of pests are easy to find, such as bagworms, but it can be more challenging if pests are tiny, have inconspicuous coloring, or only feed at night. That is why it is important to look for the evidence that they leave behind.

THE MACRO PICTURE

One of the most basic, and often overlooked, first steps is determining the extent of the problem. Is the problem confined to a single plant, multiple plants of the same type, or several different plant species? Nature does not exhibit problems in concise patterns. If patterns don't appear to be random, then narrow down potential sources of the problem such as unfavorable site or soil conditions,

chemical injury, mechanical damage, nutritional deficiencies, and other non-biological factors.

THE MICRO PICTURE

Many signs are first observed on foliage, so always be sure to check the undersides of leaves. Are they chewed or have a lacy appearance? Is there honeydew (insect secretion) or sooty mold? Are they off-color or missing entirely? This examination allows you to match the plant species with typical pests of that plant, which will hopefully point you in the right direction. A simple tool to help observe small pests, such as mites and aphids, is a sheet of white paper. Tap the foliage over the paper to see what falls out. A hand lens can be useful to see the smallest ones.



← Nature rarely exhibits problems in patterns, and do not assume all problems are caused by diseases or pests. This damage to boxwood (*Buxus* spp.) was caused by the maceration of foliage by a hedge trimmer.

➤ Black peppercorn-like droppings below tomato plants mean you need to be on the lookout for well-camouflaged tomato hornworms.

FOLIAGE SIGNS

One can see feeding damage on leaves, and sometimes even find the pest at work. However, others tend to feed at night or are very elusive. Leaf damage on roses is often attributed to Japanese beetles, and rightfully so, but do not underestimate the night feeding of May/June beetles if damage is present, but no daytime feeding is seen. A night foray with a flashlight may be required in order to be the best detective. Some pests, such as cutter bees and grasshoppers, have distinctive feeding patterns. Do a bit of research so you will be able to identify these patterns.

The presence of eggs is definitely a sign of a potential problem. The squash bug, a common pest of squashes and pumpkins, lays distinctive bronze football-shaped eggs in groups of 12 or more. Always be sure to check the undersides of leaves for any eggs.

DROPPINGS AND OTHER DEBRIS LEFT "BEHIND"

Pests produce a wide variety of droppings (excrement), as well as various other liquid or waxy secretions, which can be important clues for identification. Many insects have a liquid diet, which may include nectar and plant juices. In some cases, these droppings are quite noticeable and can provide a clue to pest presence. Many insects that feed on sap excrete a sweet, sticky substance called honeydew. Its presence becomes even more evident when sooty mold, a black fungus, begins to grow on it. If you see honeydew, look for signs of aphids, soft scales, whiteflies, or mealybugs. However, if the goo appears more slimy, it could be the slime trails of slugs and snails.



Frass By Any Other Name....

"Frass" is what gardeners commonly call insect excrement. However, the original meaning of the word – from the German word *fressen*, which means to devour – refers to any debris left behind by insects after feeding – including droppings, dust from wood-boring insects, and other waste products. Therefore, its use as a definition for pure excrement is imprecise. However, the observation of these "frass" items can be the key to identifying many pests, both on plants and around the home. I would not have been able to prevent a carpenter bee infestation under my deck had I not seen the "frass" (sawdust) floating down! I was just glad it wasn't excrement!



Foliage-feeding insects take bites rather than sucking plant juices, so they have more solid droppings. The droppings of night-feeding pests may be the only evidence of the pest other than the damage. Tobacco budworm is a serious pest of many annual flowers, including *Geranium* and *Petunia*. These small green worms are difficult to see, but you can easily find the droppings that look like small black seeds scattered around the plant. Some of the largest excrement pellets are from other caterpillars, especially the elusive tomato hornworm.

TRACKS ON TWIGS AND STEMS

Although leaves with a speckled appearance is often the first sign of spider mite infestation, they often will spin webbing between stems for shelter. Use this combination of clues to properly identify the pest. Scale insects have featureless bodies, so they often just look like smooth, rounded domes, which may look like a part of the twig.

Do not hesitate to use your thumbnail to rub any unusual outgrowths, especially on woody ornamentals, to see if they can be scraped off.

▲ Spider mites are too small to see without a hand lens, but leaf-speckling and webbing are telltale signs of an infestation.

▼ Some pests, even small ones such as these oleander aphids, might be observed actually causing damage, but you may need to be a detective to determine those that “hit-and-run” or feed at night.



You don't need to wear a deerstalker cap, just use your power of observation to detect clues that will help you properly identify a problem in the early stages. ♣

Douglas A. Spilker, Ph.D., is a consulting ornamental plant pathologist and entomologist, garden writer, and lecturer. Dr. Doug can be reached at askdrdoug@gmail.com.