

Integrated Pest Management

Integrated pest management (IPM) is a ten-step process that involves planning and scouting as part of a disease and pest management system. This system, if implemented properly, reduces the need for chemical control and encourages good horticultural practices for healthy, thriving plants.

- 1) **Plan around disease and pest issues:** The first step in an IPM program begins before you plant your garden. Take time to research each plant you want to use in your garden. Look at the major problems for that plant and if you're able, select varieties that offer disease or pest resistance. Resistant plants can save significant time and money, especially for tomatoes. As you look at the major problems your planned plants may experience, learn what their symptoms look like. This may be black spots appearing on your rose leaves or yellowish flecks on lower tomato leaves. Knowing what these symptoms look like before they appear will help you to spot them sooner in your garden, often giving you more options for control.

As you plan, make sure to place plants appropriately in the garden. Plants prone to foliar leaf issues may need to be spaced further apart for increased air flow. Vegetables, especially tomatoes, should be rotated around the garden each year. It is also important to avoid monocultures (lots of one type of plant) and work to create plant diversity. Rows and rows of the same plant, like summer squash, are calling to diseases and plants as an all-you-can-eat buffet. If instead you had summer squashes planted among flowers, fruits and other vegetables you may help to reduce your disease and pest issues. Diverse gardens make it harder for pests to find plants, but they also create tiny ecosystems that give food and shelter to beneficial insects that can help control pest populations.

- 2) **Monitor and look for common symptoms:** As soon as you plant your garden, you should begin to scout for potential issues. This could include spots on leaves, browning leaves, wilting, blemishes on fruit or missing leaves or shoots. Pay attention to the timing of these problems, you may only need to scout for some issues during certain months of the year. Scouting is one of the most important parts of maintaining a healthy garden, but it doesn't require special trips to the garden. You should examine your plants while you water, weed and harvest. Each trip to the garden is an opportunity to scout for issues and keep an eye out for garden friends, like ladybeetles and green lacewings!
- 3) **Identify pest or disease properly:** Misdiagnosing plant problems often leads homeowners to spray chemicals that are not appropriate for the problem. Furthermore, there are often non-chemical control options for common plant problems. Call, e-mail or stop by our office (<https://www.shawnee.k-state.edu/>) if you need assistance with this step in your IPM plan!
- 4) **Evaluate the damage:** It isn't practical to expect every plant in your garden to be perfect all the time. A key element to IPM is to identify how much damage you can tolerate for each plant. For example, a rose in your backyard may have a disease called black spot—causing black splotches to appear on the leaves. If this rose bush is in a back corner, out of sight, you may have a high tolerance for the disease and choose not to treat, but instead to prune the shrub next year for better air flow. If the plant in question is in your front flower bed however, you may want to

treat to keep your home's curb appeal. Not all problems require treatment, especially if the problem is non-lethal to the plant.

- 5) **Determine need for control:** Along the same lines of evaluating the damage, consider how the problem is impacting the plant's function. A common problem with peonies is powdery mildew on their leaves. This typically occurs after the plant has bloomed in the spring and many homeowners choose not to treat for the powdery mildew as the plant is no longer a feature in the landscape. A problem that many people *would* choose to control would be tomato hornworms on tomato plants. These large caterpillars can strip entire plants of their leaves, restricting the plant's ability to produce fruit. The restriction in the plant's function that the caterpillar feeding causes calls for some type of control.
- 6) **Consider all control methods:** Once you have determined what the problem is and that it needs to be controlled, start with the least lethal method. For the abovementioned tomato hornworm, hand picking the caterpillars to feed chickens or birds is an easy control option. This option saves your plant while feeding animals and avoiding the use of chemicals that could harm nearby beneficial insects. In all IPM plans, chemical control is the last resort, used only when all steps have been followed and other control has not been effective.
- 7) **Monitor and adjust:** As with any plan, adjustments may be needed. Monitor issues and escalate control if they persist.