

## Pests in the Garden

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Gardeners face many of the same challenges as farmers—only on a smaller scale. They have to contend with whatever Mother Nature throws at them, from drought to flood, scathing heat or frigid cold, but to top it off, there are insects, diseases and animals to contend with. Now that the garden season is at its peak, the problems are also rising.

Gardeners should walk their gardens if not daily, then at least once a week. Finding a problem before it becomes a big problem, can go a long way in controlling issues. Properly identifying a problem is also important. There are insects and diseases that can have similar symptoms. If problems are occurring over a vast group of different types of plants, chances are it is not an insect or a disease, since most insects and diseases tend to have more specific host plants, or at least start on one, and then move on to others. Deer, and other animals may not be as particular, or an improper application of a chemical will also damage across plant species.

Insects are the most diverse group of organisms on Earth. There are over a million described species of insects. There is not a place on earth that doesn't have some type of insect that lives there. Not all insects are bad. Where would we be without the pollinators who provide us with crops, or butterflies which beautify the environment. Ladybugs in both their adult and larval stage eat aphids, and praying mantis eats both good and bad bugs. But there are bad bugs out there, and if not controlled, they can kill or ruin your plants.

Insects can multiply rapidly in warm climates. Some years some insects are worse than others. Many yards have been plagued by the variable oak leaf caterpillar this year—in larger numbers than we can ever remember. Some years we have more tent caterpillars in the spring or fall webworms in the fall. With insects that feed on large shade trees, normally the damage is not life threatening. Repeated defoliation on young trees can be a different story, but since they are smaller they could be sprayed if warranted.

Some insects feed on weakened or stressed plants, while others like tender new growth more. If you see problems on your plants, you need to start to investigate what the culprit is and then take action.

Insects feed in various ways, so identification should start with the physical damage. Some have chewing mouthparts—like caterpillars and grasshoppers which eat holes in the leaves or large sections of the foliage. Others have sucking mouthparts like aphids and lacebug insects. Think of it as inserting a straw into the leaf and then sucking out the plant juices. Instead of holes in the leaves, the foliage is marred with little specks. When enough feeding has been going on, the entire leaf surface is silvery or whitish where the chlorophyll has been taken out of the leaves. Rasping mouthparts are when an insect scrapes off the top surface of the leaf and then sucks out the sap. Mites and thrips are the culprits here. They are small insects, so the damage is silvery in appearance, but there are no holes in the leaves. Then there are tiny larvae of insects that actually feed between the surfaces of the leaves, leaving a trail of tunnels or squiggly lines in the foliage. These insects are called leaf miners, because they are basically mining out the sap in between the two surfaces of the leaves. Thankfully, they usually look worse than they are, and you can cut off the damaged leaves and be done with it. And lastly there are boring insects—those that can bore holes in trees or in the stems of your squash plants. For wood boring insects, they usually go after weakened trees, but not always. Once inside, they are difficult to kill, since they construct a series of tunnels inside so contact sprays are not effective. Squash vine borer adults are a clear winged moth that resembles a wasp. The adult female lays eggs near the base of the

squash plant. When the larvae hatch, they bore into the stem of the squash plant and tunnel through, killing the plants fairly quickly.

If you have holes or missing chunks of foliage in your leaves, try to find what is feeding. Sometimes you can easily spot the culprit, and sometimes you have to investigate. Many insects use camouflage to mask themselves or help them blend in. There are some common insects that we see annually on certain plants. If you are growing hardy hibiscus, the mallow sawfly may turn the leaves into lace. Cabbage worms can do the same to members of the cabbage family, and the tomato hornworm can feed on a tomato plant and destroy it quickly. Corn left unprotected is usually attacked by the corn earworm. Flea beetles are common on eggplants, and slugs love hostas. So start by looking for the most common complaint.

When grasshoppers hit, it seems like the plague of locusts—they feed on many different plants and the Japanese beetle is the bane of many a gardener in the northern tier of the state. Bagworms attack junipers and cedars first, and construct their protective sack out of the plant they are feeding on. If you can't find what is out there, try using traps or baits to spot them, so you know how to control them. Know which are good caterpillars and which are bad. Many gardeners grow parsley and fennel to attract caterpillars and butterflies, so don't kill them. Learn to recognize the larvae of the good and the bad bugs.

Aphids are the rabbits of the insect world. These small insects give birth to living young, and when conditions are right, those newborns begin propagating as well. They can be green, yellow or black in color and often congregate along the stems or tips of tender new growth. They suck sap out and give off a sticky substance called honeydew. Where honeydew lands—car windows, patio furniture or plants, a black sooty mold can form on the leaves. Aphids attach flowers, vegetables, shrubs and even trees. Think about parking your car under a large shade tree. That sticky residue is probably the droppings of aphids feeding on the tree foliage.

Other sucking insects that give off honeydew include white flies and scale. Whiteflies commonly attack gardenias. It looks like specks of white dandruff flying off the plant. Then the foliage can be covered in the black sooty mold. Whiteflies are also an issue on some flowering tropical's and can get on vegetables and other ornamentals. Scale insects and mealy bugs are also common on a wide variety of plants. Camellias commonly get tea scale, while mealy bugs are soft bodied scales that attack on the underside of the foliage and in the joints where leaves are attached to the stems. Golden euonymus is frequently attacked by the euonymus scale. Scale insects are not going to kill a plant overnight, but left unchecked, they will multiply and gradually weaken a plant. Scale insects come in all sizes and shapes from tiny white and black tea and euonymus scale to the hard armored scales and the white oyster scales. The hard outer coating protects the insect inside, so typically some type of systemic approach is needed.

Whether your garden has insect or disease problems, practice good integrated pest management practices. Give your plants what they need to grow—proper plant selection for your site, then the right cultural practices including water, fertilizer and pruning. Monitor your garden regularly. Decide how much damage you are willing to live with. When those thresholds are met, take action. Look at what is available to control the pest—physical barriers, sprays of water, pruning out damaged plants, or organic or non-organic sprays. Spraying is usually the last resort. But if you do spray, make sure that what you are using is labeled to control your pest and that you are applying it at the recommended rate. Many home gardeners think that if a little bit is good, a lot will do better, and that isn't the case.

Gardening can be challenging, but the end results outweigh the challenges. If you have problems in your garden and you don't know the cause, take a good sample to your local county extension agent. Good photos are also beneficial. Once you can identify the problem, you are on the road to solving it.