

# Insect and Disease Problems

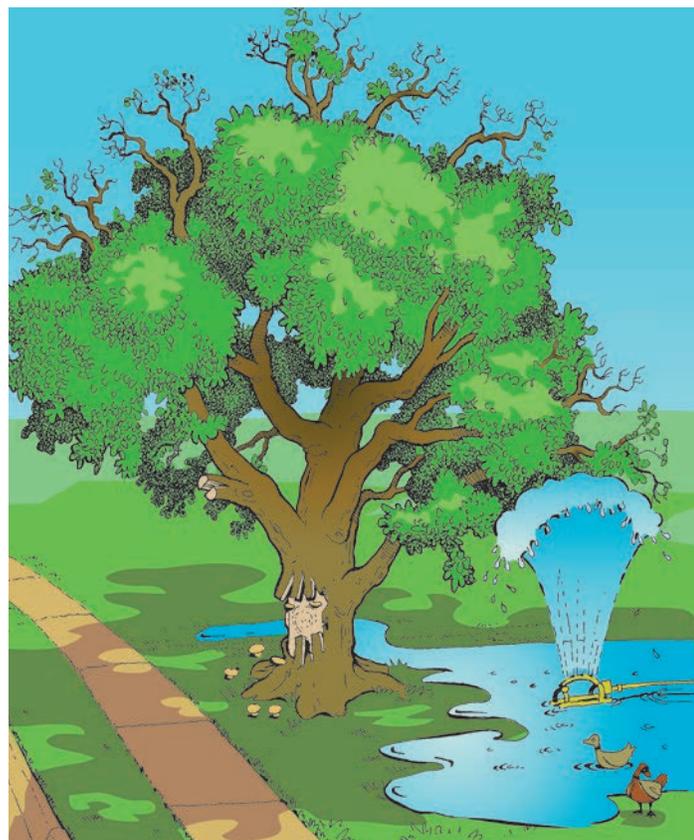
Improve your knowledge about insects and diseases that may affect tree health, and learn proper steps for diagnosis.



Insects and diseases can threaten tree health. As soon as you notice an abnormality in your tree's appearance, you should begin a careful examination of the problem. You should contact an ISA Certified Arborist® or identify the specific symptoms to try to diagnose the problem and select an appropriate treatment.

## Stress

- For plants to grow and be healthy, they require sufficient light and a proper balance of nutrients. An improper balance may cause plant stress.
- Trees adjust their growth and development patterns to deal with environmental stresses.
- Sometimes the stresses trees experience in the landscape are more severe than they can handle and may make them more susceptible to certain insects and diseases.



## Diagnosis

Correct diagnosis of plant health problems requires a careful examination of the situation.

1. Accurately identify the plant. Many insects and diseases are plant-specific. This helps limit the list of suspected diseases. Treatment without confirmation of the issue is often ineffective.
2. Look for a pattern of abnormality. Compare the affected plant with others on the site, especially those of the same species. Non-uniform damage patterns may indicate insects or diseases. Uniform damage over a large area usually indicates disorders caused by physical injury, poor drainage, chemical damage, or weather.
3. Carefully examine the landscape. The history of the neighboring property may reveal problems. Most living pathogens take a long time to spread, so if a large percentage of plants are affected quickly, a pathogen or insect is probably not involved.
4. Examine the roots. Brown roots may indicate dry soil or the presence of toxic chemicals. Black roots may indicate overly wet soil or the presence of root-rotting organisms.
5. Check the trunk and branches. Wounds caused by weather, fire, mechanical damage, or animals can provide entrances for pathogens and wood-rotting organisms. Large defects may indicate a potentially hazardous tree.
6. Note the position and appearance of affected leaves. Leaf damage alone is not generally sufficient to identify the pest or disease. Evidence of the affliction is needed to confirm the issue.

## Insects

- Some insects cause injury and damage to trees and shrubs. Generally, the insect problem is secondary to problems brought on by a stress disorder or pathogen.
- Most insects are beneficial rather than destructive. They help with pollination or act as predators of more harmful species.
- Killing all insects without regard for their kind and function can actually be detrimental to tree health.

Insects may be divided into three categories according to their method of feeding: chewing, sucking, and boring. Insects from each group have characteristic patterns of damage that help with diagnosis.

**Chewing insects** eat plant tissue such as leaves, flowers, buds, roots, and twigs. Damage by these insects is often defined by uneven or broken margins on the leaves, skeletonization of the leaves, and leaf mining.

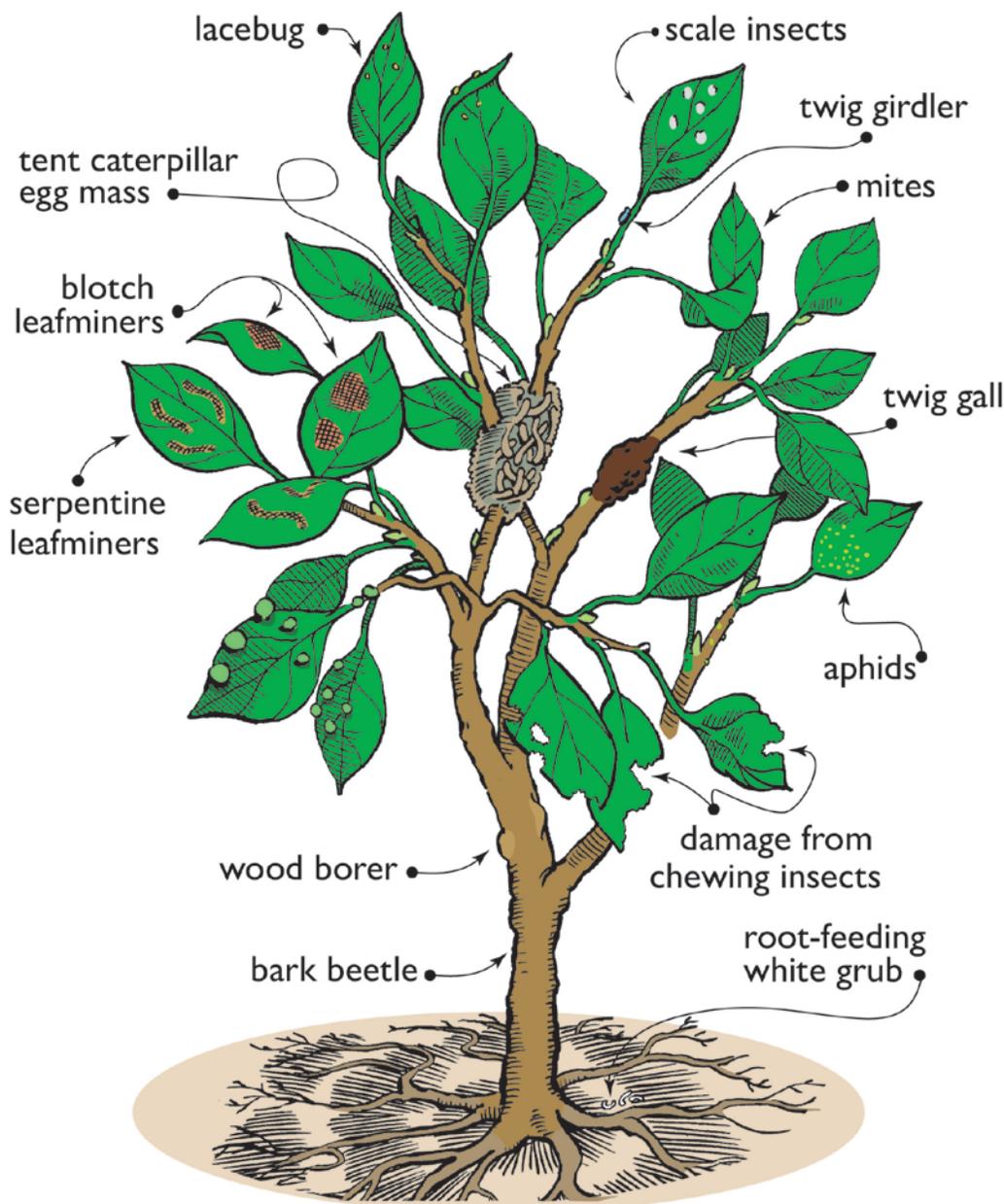
Chewing insects include beetle adults or larvae, moth larvae (caterpillars), and many other groups of insects. The damage they cause (leaf notching, leaf skeletonizing, etc.) will help in identifying the pest insect.

**Sucking insects** insert their beak (proboscis) into the tissues of leaves, twigs, branches, flowers, or fruit and then feed on the plant's juices. Some examples of sucking insects are aphids, mealy bugs, thrips, and leafhoppers.

Damage caused by these pests is often indicated by discoloration, drooping, wilting, leaf spots (stippling), honeydew, or general lack of vitality in the plant.

**Boring insects** spend time feeding beneath the bark of a tree as larvae. Some borers also kill twigs and leaves, either when adults feed or when larvae bore into stems after hatching from eggs.

Other borers, such as bark beetles, mate at or near the bark surface and lay eggs in tunnels beneath the bark.



## Diseases

Three things are required for a disease to develop:

- A pathogen (disease-causing agent).
- A plant susceptibility to that particular pathogen.
- An environment suitable for disease development.

Plants vary in susceptibility to pathogens. Many disease-prevention programs focus on the use of pathogen-resistant plant varieties. Diseases can be classified into two broad categories:

- Infectious: transmittable diseases caused by microscopic living agents.
- Non-infectious: non-transmittable diseases that are inherited or the result of non-living agents.

Examples of infectious agents include fungi, fungal like microorganisms, viruses, and bacteria. Non-infectious diseases, the majority of plant problems in urban areas, can be caused by such factors as compacted soil, nutrient deficiencies, temperature extremes, vandalism, pollutants, and fluctuations in moisture. Non-infectious diseases often produce symptoms similar to those caused by infectious diseases. It is essential to distinguish between the two to determine proper treatment options.



*Twisted or curled leaves may indicate viral infection, insect feeding, or exposure to herbicides. The size and color of the foliage may tell a great deal about the plant's condition.*

## Treatment

The treatment method used for a particular insect or disease problem will depend on the species involved, the extent of the problem, and a variety of other factors specific to the situation and local regulations. Always consult an ISA Certified Arborist® if you have any doubt about the nature of the problem or the proper treatment method to use.

### What Is a Certified Arborist?

ISA Certified Arborists are individuals who have proven a level of knowledge in the art and science of tree care through experience and by passing a comprehensive examination developed by some of the nation's leading experts on tree care. ISA Certified Arborists must also continue their education to maintain their certification. Therefore, they are more likely to be up to date on the latest techniques in arboriculture.

### Finding an Arborist

Visit [TreesAreGood.org](https://www.treesaregood.org) for free tools:

- The "Find an Arborist" tool can help you locate an arborist in your area.
- The "Verify a Credential" tool enables you to confirm whether an arborist has an ISA credential.

### Be an Informed Consumer

One of the best methods to use in choosing an arborist is to educate yourself about some of the basic principles of tree care. Visit [TreesAreGood.org](https://www.treesaregood.org) to read and download all brochures in this series.



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