

MANAGING PLANT HEALTH

Keeping ornamental landscape plants healthy is easier than dealing with them after they have developed a problem. A healthy plant is the result of an on-going landscape management program as outlined in the calendar. Part of the program is regular inspection of the plants to catch any problems before they become serious.

An Ounce of Prevention

Preventive measures may be the only control for some plant problems. Disease controls are designed to prevent diseases and can not help much after a plant has succumbed to a fungus or bacterium.

Select Plants with Care

Every ornamental plant has characteristic traits, some good and some bad. The management required by that landscape plant is based on the expression of those traits. If most traits are good, the plant may be relatively trouble free. If the traits are mostly bad, the plant may be more trouble than the good traits are worth. For instance, many Siberian elms, which are usually sold as Chinese elms, are planted because they grow fast. That's the good trait. The bad traits are weak wood, annual elm leaf beetle infestations on the tree and in the home, and susceptibility to wetwood disease.

With thoughtful plant selection you can avoid many common landscape pest problems. When you know a disease may be a problem, seek out disease-resistant or -tolerant cultivars of ornamental landscape plants. For instance, scab-susceptible crabapples infected with apple scab will

drop all their leaves in mid- to late summer. Tolerant cultivars may develop spots on the leaves but will not drop all their leaves. Resistant cultivars may have no or only mild symptoms and will probably suffer no leaf drop due to scab.

When no resistant or tolerant cultivars are available, look for alternative species of ornamental plants. If no suitable alternative can be found, be sure you understand the required management program before installing the plant in the landscape. For example, European white birch is often planted because it has ornamental white bark. The required management program includes sprays for both birch leaf miner and bronze birch borer, plus watering and fertilizing to promote vigor and reduce susceptibility to borers.

The proper selection of ornamental landscape plants is discussed more fully in Extension bulletin E-1936 "Selecting Ornamental Plants for Michigan Landscapes".

Match Plant and Planting Site

If your carefully chosen plant is to thrive and exhibit its good qualities, it must be planted in a site that meets its growing requirements as closely as possible. Placing a tree or shrub in a growing area to which it will not adapt can increase the incidence of problems.

An example of a plant in a poorly selected site--or a poorly selected plant for a particular site--is a lilac planted in the shade. Lilacs are highly susceptible to powdery mildew, and mildew problems are worse in the shade. Another example is a pin oak planted in a soil that is not sufficiently acid. The leaves become yellow and chlorotic because the tree can't obtain sufficient iron from the soil.

Use Good Cultural Practices

Cultural practices required to care for landscape plants--pruning, fertilizing and watering--are covered in more detail in other sections of this publication. Properly planting and caring for a landscape plant will maximize its

growth and keep it healthy. Improper cultural practices or lack of care can retard growth or weaken the plant's ability to withstand adverse environmental conditions or pest attacks.

Improper cultural practices can even enhance disease development. Watering plants lightly through overhead sprinkling in the evening or at night, for example, can create wet foliage conditions that favor leaf diseases. Allowing plants to get too dry may predispose them to cankers. Blue spruce, for example, tree usually does not show wilting or other symptoms of drought stress, but drought conditions will increase the possibility of infection by *Cytospora* canker.

Inspect Plants Regularly

Despite all efforts to keep plants healthy, problems often occur. Early detection of problems will make it easier to manage and control them. Allowing problems to reach an advanced state may make control difficult or impossible. Regular plant inspections help you learn how healthy plants should look so you can recognize an abnormal condition when it occurs.

A plant inspection involves more than standing next to a plant and giving it a quick glance. Many insect and disease problems start on the lower leaves or stems that are hidden by the foliage. Part the foliage of low, dense plants to look at the interior of the plant. Look for scales on the stems. Inspect the lower leaves for leaf spotting or disfigurement caused by insect injury.

Problems in tall trees sometimes go unnoticed for a long period of time, especially if the symptoms first occur at the top of the tree. Inspect tall trees from a distance and from several directions so you can see the total canopy. Look for dead branches in and out of the canopy. The first symptoms of some problems are leaves on one or more branches that are smaller than leaves on other parts of the tree. Be sure to inspect the trunk closely for signs of boring insects or canker diseases.

What is the Problem?

Despite all efforts to keep plants healthy, some problems will occur. Prompt detection followed by accurate diagnosis of the problem will aid in dealing with the pest or condition affecting the plant.

Accurate diagnosis is the first step in a successful control program. Most garden centers, retail nurseries and Cooperative Extension Service offices can diagnose plant problems for you. Trying to diagnose the problem by talking to neighbors can lead to a wrong diagnosis unless the neighbors are experienced and knowledgeable in caring for plants. Books may show a plant or pest that looks similar to the problem your plant is having but it may or may not be the same problem. Most books do not describe all the possible problems a plant may have.

If you decide to seek a diagnosis of your plant problem based on a sample submitted to a diagnostic lab, be sure to collect and preserve the sample properly. Ideally, insects should be placed in individual small containers and covered with rubbing alcohol. When no alcohol is available, put the insects alone in a small container. Do not fasten them to paper with tape. Samples of delicate insects sent through the mail can be battered into unrecognizable pieces. When insects can not be separated from the plant, submit a small branch that contains the insects and shows symptoms typical of the problem. Small samples should be submitted in plastic bags to keep them from drying out, but do not put wet paper toweling or other wet material in the bag with the sample. Wet paper toweling may induce rotting of the sample.

To diagnose diseases, plant pathologists need plant parts that show the symptoms. When the symptoms go through stages that look somewhat different, submit samples showing the range of symptoms for comparison. In most cases, it's preferable to submit a branch showing diseased leaves rather than submitting just leaves. Also include some healthy tissue in the sample. Many disease organisms will be found at the junction of the healthy and diseased tissue.

Information about the plant and the care it has received are also needed. Information on site characteristics, such as soil type and exposure, the age of the plant, how long it has been in the present location, and how it has been cared for will all contribute to a diagnosis of the problem. The names of chemicals sprayed on or near the plant should be included, as well as the dates when the chemicals were applied. When the symptoms developed will be important, as will a description of any symptoms that could not be submitted for examination.

Is the Problem Controllable?

Once the problem has been properly diagnosed, a treatment must be chosen. If the problem is diagnosed as one that is not controllable with chemicals or cultural practices, the whole plant is usually removed carefully and replaced with a more resistant species.

Is the Problem Worth Treating?

Even if the problem is treatable, it may not be worth the effort. Rose chafers are an example. These light tan beetles feed on most ornamental landscape plants. Sprays will kill the insects, but they occur in such large numbers that no appreciable control is apparent. In such a case, spraying is not worth the effort because it will not prevent plant injury. Another example is galls caused by mites on maple leaves. These galls are harmless so they're not worth the expense and effort of spraying. Some leaf blights may cause leaf drop in some years but not in other years. These periodic episodes are not serious and plants easily tolerate them. A large tree may tolerate a moderate amount of feeding by leaf-eating insects without adverse affect.

What Kind of Treatment?

Some plant problems are not treatable after the plant has developed symptoms. For instance, most diseases can not be controlled once the plant is infected. However you may be able to help the plant recover through such cultural practices as fertilizing, pruning or watering. A treatment

to aid in recovery may be combined with preventive sprays next year.

If the problem can be most effectively controlled with pesticides, use them properly for the best effect. There is not a pesticide for every problem, however, and every problem does not necessarily require a pesticide.

Use The Proper Pesticide

Not all pesticides control all pests. In fact, not all insecticides are effective against all insects. Using a product merely because you have it on hand is not advisable. The pesticide should be labeled for the host plant and the problem infecting or infesting the plant.

Many pest problems are controlled with dormant sprays of superior oil. The sprays are called dormant sprays because they are applied while the plant is dormant. The oil coats and suffocates the stage of the pest that overwinters on the host plant. High quality superior oils can also be used during the growing season but, be sure to follow label directions closely.

Use Pesticides Properly

The label on a pesticide will give all the information you need to use the pesticide properly. These instructions are based on test results and give maximum pest control while minimizing the possibility of injuring the host plant.

Buy only the amount of pesticide you use during a single growing season. Read the label to determine what kind of protective clothing must be worn while applying the pesticide.

Mix and apply a pesticide according to label directions. Doubling the dose will not kill insects twice as dead, but increased rates of application can cause leaf burn. The effectiveness of systemic herbicides will be reduced if the dosage is increased so that it kills the leaf before the pesticide is absorbed and moved through the plant.

Timing of the application is important. If a pesticide is used to prevent a pest problem, it must be used before the pest attacks the plant. Later applications will be ineffective. Many pests can be controlled only during a particular phase, a weak or vulnerable stage, of their life cycle. If you do not apply controls during that time, you have lost your chance to control the pest until it is again in that stage of its life cycle. Spray applications applied after nearly all possible injury has occurred have little positive effect on the plant and offer only a measure of revenge to the gardener. When certain insects should be sprayed can be predicted. This information is available from most garden centers, retail nurseries or Cooperative Extension Service offices (see the Landscape Management Calendar).

Apply leftover pesticides and sprayer rinse water to the appropriate crop. Rinse empty pesticide containers at least three times and pour the water into the sprayer.

Store pesticides in a secure, dry area away from children. Avoid storage areas exposed to sunlight and subject to temperature extremes.