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**Fix My Tree!**

There are a large number of "cosmetic" plant diseases, usually found on the leaves. On woody plants these include some anthracnose blights, powdery mildew, tar spot of maples, and tubakia leaf spot of oaks. Chemical treatment for these diseases is rarely warranted. This is largely due to two considerations: efficacy and need.

When deciding on recommending management plans, we consider the principles of Integrated Pest Management (IPM): pest identification; monitoring and assessing pest numbers and damage; guidelines for when management action is needed; preventing pest problems; using a combination of biological, cultural, physical/mechanical, and chemical management tools. The purpose of IPM is to use an understanding of the biology of the pest, along with available pest control methods, to "manage pest damage by the most economical means, and with the least possible hazard to people, property, and the environment" (quote from the Environmental Protection Agency). Simply put, the idea behind IPM is to decide if a pest needs management and, if so, how to do so in an effective, safe, and economical manner.

Let's consider the pictured maple tree. The owner of the tree may be understandably worried when they first notice large black spots on the leaves. Their first thought is "How do I fix this?" but the better question would be "Is this really a problem?" To determine if it's a problem, we first have to identify the problem. In this case, it's tar spot, a common fungal disease that does not threaten the overall health of an otherwise healthy tree. This answers part of that first question: "Is this really a problem?" The answer is no, at least not from a plant health standpoint. If that's all we care about, our management decision is easy: no control is needed.

However, if the aesthetics of the tree are still an issue, we may want to consider management. Recommendations for tar spot include a number of contact fungicides and destroying fallen infected leaves. Let's start with the least invasive first: sanitize, or rake and remove the fallen infected leaves. This will help reduce infection the next season. Destroying the fallen leaves will not "fix" the infected leaves still on the tree. Still want to spray a fungicide? Unfortunately, fungicides won't fix the current leaves either. The fungicides labeled for use against tar spot in maple are protectants which protect newly-emerging leaves from infection. The fungicides will not be able to "cure" the already infected leaves.

Another important consideration when making a decision involving pesticides is what level of control can I expect? A general rule of thumb for most contact pesticides is around 80%. Now consider the size of the tree canopy, and the fact

that the fungicide needs to be applied to both sides of the leaf surfaces. The cost for the fungicide and application should also be factored into the decision. In most cases, treating a mature tree for a cosmetic issue simply isn't environmentally sound, effective, or economical.

Finally, we should consider contributing factors. If the tree is a newly-transplanted seedling and we're concerned about it establishing well, or if it's a bonsai enduring the stress of being pruned and shaped, that may alter some of our decisions. In both of those cases, a protective fungicide applied at the right time may be worth considering to reduce stress on the tree, and because the tree should still be small enough that the application is feasible.

Regardless of the situation, multiple management strategies should be considered, and multiple strategies can be used. In the above scenario, I would recommend removing the infected fallen leaves regardless of whether a fungicide is used; in this way we reduce the amount of spore-producing inoculum near the susceptible host.

Considering the principles of IPM when making management decisions helps us manage the pests that need to be managed while reducing the pesticide load in the environment, and taking into account the amount of control expected and the cost associated. We frequently see cosmetic diseases at the Plant Clinic. Along with pest identification, we prepare management recommendations for each sample and explain the factors to take into account when deciding on a management plan. We advocate using the principles of integrated pest management to help guide management decisions. (*Diane Plewa*)

**Bacterial Leaf Spot on Oakleaf Hydrangea**

Hydrangeas are known hosts to several leaf spots, both fungal and bacterial. Oakleaf Hydrangeas, in particular, are known to develop leaf spots caused by the bacterial pathogen *Xanthomonas campestris*.

Bacterial leaf spot on hydrangea overwinters in diseased plant debris. The pathogen moves to developing plant tissues by splashing water from rain or irrigation. Once in contact with the host, the bacteria enter the plant through stomata, other natural openings, and/or plant wounds. Symptoms of infection first appear on lower leaves as water-soaked spots that eventually darken to a reddish-purple color and develop an angular shape. Multiple spots may enlarge, coalesce and cause death to mature leaves. Disease development is favored by warm, wet conditions which allow for increased bacterial production and dissemination. Overhead irrigation and close plantings extend the amount of time leaves remain wet and favor disease development.

Cultural disease control options should be your first course of action.

1. Remove diseased debris from the site. Debris harbors the bacteria and provides inoculum for future infections. Infected debris should be burned, buried or discarded. On-site composting is not advised.
2. Monitor the plants closely during the growing season. Leaves displaying leaf spot symptoms should be removed from the plant and site.
3. Avoid pruning or working near problematic plants when they are wet.

These activities will likely spread the pathogen as well as create wounds and entry points. Disinfecting your pruners between cuts will further help reduce the spread of the pathogen.

4. Avoid overhead irrigation and wetting the foliage. If unavoidable, irrigate at a time of day that minimizes the duration of leaf wetness. Adequate plant spacing will also help limit the duration of leaf wetness.

Pesticides containing copper sulfate and copper octanoate (copper soap) are broadly labeled for control of leaf spots on ornamentals, but are only marginally effective. They should be applied preventatively or at first sign of disease. Use products containing copper with caution as they may cause phytotoxicity. (*Travis Cleveland*)

**White Grubs**

It's time to be watchful for white grub damage in turf areas. Damage is most likely in drier areas, such as the tops of berms and south-facing slopes. Portions of the state experiencing lower rainfall such as northwestern, southwestern, and southeastern Illinois are more likely to have obvious grub damage.

With sufficient soil moisture, turf will look fine even with marginally high white grub numbers because the grass grows new roots fast enough to replace those being eaten by the grubs. Well-watered turf with grub numbers as high as 20 per square foot may look fine, whereas un-watered turf is likely to wilt and turn brown with 8-10 grubs per square foot. High use, watered turf such as soccer and football fields can show grub injury with even fewer grubs.

Thus, an alternative to insecticide treatment at this time of year is increased irrigation if the scouted white grub population is only marginally high. If September brings cooler temperatures and increased rainfall, infested cool-season turfgrasses are likely to grow well without irrigation. Depending on the weather, irrigation may only be needed for a couple of weeks during the transition to cooler, wetter fall weather.

As stated in the last issue, high grub numbers can be reduced to non-damaging levels in three to five days with an application of trichlorfon (Dylox) or chlorantroniliprole (Acelepryn). (*Phil Nixon*)

**Fall Webworm**

Fall webworm is numerous throughout the state. It lives as a group of caterpillars that spin a communal silk web. This silk nest typically encloses the end of the branch and associated leaves. The caterpillars remain in the webbing, feeding on these enclosed leaves. When the leaves inside the web are eaten, the silk webbing is expanded to include more leaves. Webs of mature caterpillars are typically 2 to 3 feet long.

This insect has an extremely large host range, being found on almost any deciduous tree and some shrubs. It is most commonly found in Illinois landscapes on crabapple, walnut, hickory, pecan, redbud, sweet gum, maple, and oak.

Loss of leaves from caterpillar feeding at this time of year has little impact on tree health as long as their loss does not trigger new bud break. As long as damage is limited to a few branches, new leaf pro-

duction is unlikely to occur. Control at this time of year is primarily recommended to reduce aesthetic damage so fall webworm colonies at the tops of tall trees and in other less obvious locations can be ignored, depending on client preferences.

Pruning off the branch with its webbing and disposing of it is an effective control. Many insecticides are effective in controlling fall webworm. *Bacillus thuringiensis kurstaki* (Dipel, Thuricide), carbaryl (Sevin), pyrethroids, and other labeled insecticides are effective. However, the webbing is waterproof, making it spray resistant. Enough spray pressure is needed to break into the web and get the insecticide onto the leaves within the nest. Nest webs are typically expanded only every week or so, so insecticide deposited on leaves outside the webs is likely to break down before the caterpillars expand the webbing over treated leaves. (*Phil Nixon*)

**Fall Turf Management**

Fall is the start of the year for cool-season grasses.

That statement may seem strange since most professionals either view January 1 or sometime in April as the start of the growing year. That's when everything starts to grow, coming out of winter's dormancy and bursting forth with massive growth.

Most of the plants grown in Illinois could be classified as warm-season annuals, biennials, or perennials, and herbaceous or woody, and thrive during the warmth of May through August. Cool-season grasses, such as Kentucky bluegrass, perennial ryegrass and tall fescue are the exceptions. Sure, they green up quickly and have lush growth in the spring, but that can be misleading.

By the nature of the term, "cool-season" grasses thrive when the temperatures are cool. This year's mostly cool and moist conditions have allowed them to thrive during the summer, albeit with a stronger disease presence.

Let's look at why fall should be considered the start of the cool-season calendar. From September 1 through May you have nine months of potential growth, with roots growing as long as the ground isn't frozen. Normally in June through August, the plant goes dormant due to the heat. So you have nine months to get the grass in top shape to withstand the 3 months when it's the most stressed.

Remember, cool-season turfgrass root growth occurs between 32°F. and 65-70°F. Anything that promotes root growth correlates to a stronger root system to survive droughts. Top growth occurs between 55°F. and 75°. Looking at the calendar, you can see that for most of the fall and early spring, both the shoots and roots will grow.

If you think March or April is the start of the lawn care season, you have two to three months of growing conditions before the turf is hit with summer's conditions. So which is better for the turf – two or three months of growth or nine months? The answer is nine months.

The list of cool-season turf practices done in September encompasses just about everything except crabgrass control. The list includes aeration/core-

cultivating (to loosen the soil and stimulate root growth), dethatching, seeding, sodding, fertilizing, and even some broadleaf perennial weed control, as the weeds will translocate most of the herbicides to the roots as they move food from the leaves to the roots.

Fall seeding and sodding usually produces the most weed-free turf. Few weeds germinate in late summer-early fall so there is practically no competition as the turf becomes established and fills in.

None of these activities, though, succeed well without moisture. It's tough to aerate when the ground is like concrete. Seeds won't germinate without water and sod won't root without it. Fertilizer won't benefit the lawn without moisture. Make sure the soil has been thoroughly watered a couple of days beforehand. (*David Robson*)