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FIGHT plant disease

PLANNING, PROPER IRRIGATION KEY TO CONTROLLING DISEASES IN THE LANDSCAPE. BY BRIAN ALBRIGHT

NOTHING MARS the appearance of an otherwise attractive landscape like yellow, brown or wilted plants. Fungal and bacterial diseases can lay waste to ornamentals and perennial gardens if left uncontrolled, leaving plants deformed, stunted, defoliated or worse.

With proper planning and plant care, though, many common diseases can be effectively treated or avoided altogether.

This year, the eastern half of the U.S. has experienced unseasonably cool and wet summer weather, leading to an increase in fungal infections in many landscapes and gardens.

"We are seeing more bacterial problems than we normally do, as well as foliar leaf spots and blights on perennials," says Sharon Douglas, head of the Department of Plant Pathology and Ecology at the Connecticut Agricultural Experiment Station.

"The weather has exaggerated the diseases appearing this year," adds Margery Daughtrey, senior extension associate at Cornell's Depart-

ment of Plant Pathology. "These diseases are always around, but are much more obvious when you have this kind of rainy weather."

That's why it is important to be able to identify and treat the most common problems, and care for plants in a way that's unlikely to contribute to future infections.

Common disease types

The most common problems in the landscape are typically foliar leaf spots or blights. Leaf spot can be caused by both fungi and bacteria, and result in dark blotches or spots on foliage of perennials like irises, phloxes or hellebores.

Gray mold (*botrytis*) frequently appears on flowers, and is common on roses and geraniums. "Gray mold is very tough to control, especially when we have weather like this," says Steve Nameth, professor and associate chair of the Department of Plant Pathology at The Ohio State University.



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Bacterial leafspot on coralbell (*Heuchera*) can ruin the decorative foliage that make the plants popular.

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Mildews thrive in the type of cool, wet conditions that have been present most of this spring and summer. Powdery mildew can be found on a wide variety of plants, including phlox, lungworts and peony, and causes plants to develop white and gray blotches on leaves. Downey mildew, on the other hand, appears as a fuzzy white or gray growth on the undersurface of leaves, buds, flowers and stems. It's often more difficult to spot and to control, and can affect black-eyed susan, speedwell, bluets, dead nettle, roses, and other plants.

Leaf and stem rust, as the name implies, causes rust-colored spots on leaves, and can be seen on hollyhocks, asters, pansy, phlox, hibiscus, and daylily.

More serious diseases, such as root, stem and crown rots, will make plants to turn yellow and droop, and often stunt growth. Vascular wilts, caused by fungi and bacteria, block water within the vessels of the plant, causing serious growth impairment or death.

Ornamental shrubs and trees can also be afflicted by mildews, leaf spot and wilt, along with Anthracnose (which causes spotting on leaves and defoliation), heart rot (which decays trunks and limbs), cankers, leaf curl viruses on ornamental trees, and monilinia fungus (brown rot) on fruit trees.

Proper planting can prevent infection

The best way to fight plant diseases is to avoid or minimize the risk of infection, starting with the initial planting.

"So much of prevention starts right at the beginning," Douglas says. "You have to select the right plant for the right site, and that can go a long way to help manage disease, regardless of the weather."

Plants should be placed in the correct soil and light conditions, and at the correct depth. Space plants far enough apart to promote air circulation, which can prevent many fungal infections.

Inspect purchased plants for any signs of disease, and try to install cultivars that have been bred to resist common pathogens.

Don't mulch too closely to stems or crowns, and keep plants properly fertilized. Also keep weeds out of the garden. "Not only are weeds competing for nutrients, but they also create an environment that tends to hold more moisture in," Nameth says.

By far the biggest contributor to many plant diseases is improper water management. While no one can control the weather during a rainy season, they can control the way they water plants under normal circumstances.

That means no overhead watering of plants in the evening, which leaves foliage wet for long periods and encourages the growth of many leaf spots, blights and mildews. "Irrigation should be done in the morning," Nameth says. "That's a hard one for people to follow, because it's nice and cool in the evening and people want to be outside. But if that foliage stays wet overnight, it's a disaster." He adds that over watering is another problem, and can encourage the development of root and stem rots.

Keep the garden clean, removing dead foliage at the end of the season and carefully disposing of any already infected plants or cuttings.

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Anthracnose on dogwood (top); Heterosporium leaf spot on iris (middle); downy mildew on Lamium (bottom) and powdery mildew on peony (left) are common diseases in landscape plantings.



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"You should anticipate problems for the next season," Daughtrey says. "Any diseases you're seeing with higher impact this year will produce inoculum that will lead to more problems next season unless you are well protected. Find out what the proper timing is for treatment, and make sure you treat plants before you see a lot of infection."

Rx for plant diseases

Once a disease has set in, in most cases it is important to prune away the affected parts of the plant and properly discard the clippings to avoid spreading the infection.

Because many of the common diseases are caused by fungi, a broad-spectrum, copper-based fungicide can be used for many pathogens. However, applying them effectively in wet weather can be a challenge. Many chemical treatments are also designed as protectants, and have to be applied before the disease sets in.

"You have to be confident that if you apply a fungicide, it will stay on long enough to be effective," Nameth says, adding that chemicals should really be used as a last resort.

Perennials can generally tolerate many diseases, and when they do become infected (as is the case with rust or powdery mildew) the damage is often aesthetic — spots, or wilted or yellow leaves.

"In some cases, the disease will kind of pass and you have it every year anyhow," Nameth says. "There's no need to treat the plant. You get powdery mildew on lilacs, for example, but the flowers are usually gone by the time you see it." Other diseases, like vascular wilts, typically don't



Monilia on a cherry tree (above) and septoria leaf spot on phlox (left) are fungal infections that can be treated.




respond to chemical treatments.

For more serious ailments, like root rot, the soil has to be treated and the plants removed. Because many of these rots are plant specific, it is recommended to not replant the same species in an area where there has already been a disease outbreak.

Because the fungi that cause these diseases can live in the soil for some time, planting a disease-resistant cultivar may be the best option to replace damaged or dying plants that have been infected with a rot or a vascular wilt.

Douglas recommends keeping good records of what's going on in a landscape. "If you have a perennial garden, and you know you had septoria leaf spot on rudbeckia last year, you need to watch those plants for the first symptoms of recurrence and either spray or monitor them closely."

"Whenever we speak about diseases on plants, you have to remember that diseases are the exception, not the rule. By and large most plants are healthy," Douglas adds. "You have to have that disease triangle — a susceptible plant, the right environment and a pathogen." 



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