



UNIVERSITY OF ILLINOIS EXTENSION

HOME, YARD & GARDEN PEST

College of Agricultural, Consumer and Environmental Sciences, University of Illinois at Urbana-Champaign
Illinois Natural History Survey, Champaign

NEWSLETTER

No. 12 • July 11, 2007

Field Guide to Herbicide Injury on Landscape Plants

Distinguishing herbicide injury from other causes of abnormalities on landscape plants can be challenging. The *Field Guide to Herbicide Injury on Landscape Plants* presents more than 200 color photographs of several herbicide families, with images of vegetables, annuals, and herbaceous and woody perennials. Diseases and environmental conditions that may show similar symptoms are also highlighted in the key.

This 112-page, color-coded field guide can make your diagnosis more accurate and efficient. It is available for \$10 and can be ordered by calling Kris Ritter at (217)333-4424 or by email (karitter@uiuc.edu). (*Dawn Nordby, Michelle Wiesbrook, and Scott Bretthauer, Extension Specialists, University of Illinois*)

PLANT DISEASES

Sooty Molds

Have you noticed black mold growing on your lawn furniture, garden umbrella, or other cloth in the landscape? This is sooty mold, so named for the dark pigments in the cell walls of the hyphae. Sooty molds are made up of a complex of fungi, including *Cladosporium*, *Aureobasidium*, and *Capnodium*. We see sooty mold on plants, as well as on furniture and structures. Usually the sooty molds grow on honeydew excrement from sucking insects, although some plants also exude substances that support growth of sooty molds. In the Midwest, if you see sooty mold on a plant, look closer for the insect that is the underlying problem. Plants that might exude sooty mold attractants on their own include catalpa, hibiscus, and juglans species (such as walnut). The sooty mold growth actually helped alert the grower to a problem with scale insects, so these molds are not all negative.

Sooty mold is unsightly and can interrupt photosynthesis by blocking light. So although sooty molds probably won't kill plants, they can add to plant stress. Still, most people just find them unsightly. They are more prevalent in drought because many sucking insect populations tend to be higher in drought. In addition, there is less rainfall, so the honeydew is not washed away or diluted.

How can sooty molds be managed? The obvious method is to determine what insect might be present and

control the insect. Without the insect, there is no honeydew, and the mold has no food source. Hosing down plants to remove or dilute honeydew may also help. For outdoor furniture or structures covered with sooty mold, try cleaning solutions that contain a mix of household detergent, mild bleach, and water. Various formulations are recommended on the Internet. Be careful to try the mix on small areas first, and do not let the solution wash onto live plant material. (*Nancy Pataky*)

Slime Molds in the Landscape

Mulched areas under shrubs and at the base of trees provide the perfect habitat for harmless, but nevertheless alarming, slime molds. These organisms were once believed to be fungi but are now understood to be amoeba-like protists, similar to fungi.

Slime molds feed on decomposing organic matter, and can be found in almost any given spot in the home landscape: sidewalks, mulched areas, wood chips in play areas, or over vegetation such as turfgrass, strawberries, flowers, ground covers, weeds, and the base of woody plants. Because they are not parasitic, they do not cause direct harm to your plants or your family. Occasionally, they can cause problems on lawns or low-growing ground covers by blocking the sunlight that plants need to grow.

Slime molds range in color and size, often seeming to appear suddenly after a period of warm, wet weather. They are also commonly found during the summer in irrigated landscapes. The plasmodium, or "feeding" stage, appears as a slimy, amoeba-like organism. Slime molds may be watery-white, gray, cream to light yellow, bright yellow to orange, violet, blue, green, or purple-brown greasy masses and can get as large as one to two feet in diameter. One type of slime mold displays an unpopular resemblance to dog vomit. The plasmodium soon develops colorful, crusty fruiting bodies filled with masses of dusty spores. These organisms do "move," albeit too slowly to watch. Homeowners are often concerned when, after a day to several days, they notice that the colorful and slimy "blobs" have migrated a short distance.

No chemical controls are known, or needed, to combat slime molds. They usually dry up and disappear in dry weather. If you have some unsightly patches in a garden that you wish to eliminate, remove the spore masses in a plastic bag and break up the remaining masses by vigorous raking or brushing. Although some like to hose

down the spores with a water stream, keep in mind that water can also spread the problem by spreading around the swimming spores. Mowing is usually sufficient to remove the spore masses from slime molds on lawns.

For more information about slime molds, read *Report on Plant Disease*, no. 401, "Slime Molds of Turfgrass." The publication is available in Illinois Extension offices or at <http://www.ag.uiuc.edu/~vista/abstracts/a401.HTML>. An excellent site with images of slime molds was created by Tom Volk, a University of Wisconsin mycologist, and can be viewed at http://botit.botany.wisc.edu/toms_fungi/june99.html. (*Shanyn Siegel and Nancy Pataky*)

Powdery Mildews Must Enjoy This Weather

Powdery mildew is a fungal disease that appears in warm, humid weather (now). You have probably seen the white, powdery growth on leaves of lilac, zinnia, and hundreds of other landscape plants. The powdery growth is composed of mycelia and spores, and the spores are easily spread throughout the landscape in the wind. The spores germinate on foliage when the relative humidity is 23 to 99% but not in free moisture (rain). Based on weather we have experienced this past week, powdery mildew ought to be thriving soon.

Powdery mildew is a common fungal disease problem on many perennials, as well as annuals, shrubs, and even trees and turf. The most common hosts in Illinois seem to be lilac, zinnia, phlox, and rose; but certainly other species are affected. Powdery mildew is a particular problem on gerbera daisy. There are many different types of powdery mildew fungi, and most are very host specific. For that reason, we will probably never see an epidemic of this disease in Illinois. Still, on one plant the disease may spread very quickly, especially in humid weather. Despite the fact that this disease does not kill plants, if your zinnias, roses, or other plants are infected, that may be a major aesthetic concern to you.

Symptoms of powdery mildew include a white mildew type of growth on leaves, shoots, buds, flowers, or stems. This mildew is composed of threadlike mycelium and asexual spores of the fungus. Spores can be blown to other plant parts and cause further infection. New growth is particularly sensitive. The disease is very obvious, often unsightly. Occasionally, infected foliage exhibits a purple cast rather than a white color, as is true of infected apple or crabapple foliage, as well as strawberry leaves.

To avoid problems with powdery mildew, provide conditions for adequate airflow in the planting. This may mean that plants need to be thinned or pruned to allow better air movement. Use recommended mature plant spacings when establishing new plants. Because the pathogen thrives in humid conditions, water the plants early in the day to promote rapid drying. Avoid syringing

foliage, and try to water the soil rather than the foliage. Even with these precautions, powdery mildew may be plentiful. Resistant varieties may be the answer.

If you have had problems with powdery mildew, look through garden catalogues for resistance to this disease pathogen. Ask for similar information at nurseries. The Internet is also a good reference for such information. Try searching under the host name and the disease name. For example, the Chicago Botanic Garden has a list of 10 *Monarda* cultivars resistant to powdery mildew.

Fungicides can be used to control powdery mildew. Scout for the appearance of the disease and then treat the plants according to label directions. Fungicides are used to fight powdery mildew as preventives. Sprays are used to protect the new growth from infection. Consult the *2007 Commercial Landscape & Turfgrass Pest Management Handbook* or the *Home, Yard, & Garden Pest Guide* for a list of registered fungicides by host and by disease. These manuals are available in local Extension offices. *Report on Plant Disease*, no. 617, "Powdery Mildews of Ornamentals" is available on the Extension Web site <http://www.ag.uiuc.edu/~vista/horticult.htm> or in Extension offices and provides detailed information about powdery mildew. (*Nancy Pataky*)

INSECTS

Ground-Nesting Wasps

Several ground-nesting wasps are active as adults now. Their presence can greatly restrict the use of golf courses, lawns, and other turf areas. Although most are unlikely to sting, the fear that people have of these insects commonly requires control. Female wasps dig holes in the soil, while males patrol in aerial territories. Common ground-nesting wasps include cicada killer, velvet ant, steel-blue cricket hunter, sand wasps, and yellowjackets.

In home lawns, educating the human residents may foster tolerance. These wasps are more common in bare soil areas, so sodding, planting groundcovers, or mulching may greatly reduce the problem.

Nesting areas in public become a major problem. Area treatment of these insects is usually not effective, nor desired. Carbaryl (Sevin) dust applied at nest openings so that the wasp walks through the insecticide provides control. The dust sticks to the hairs on their leg, and is then ingested during grooming. In areas where the Sevin Dust does not stay dry, application of permethrin or other labeled insecticide to the burrowed area should kill the females. Once the females are gone, the males leave. Sandboxes can be covered when children are not using them, and this deters the wasps. Sand used below children's swings, jungle gyms, and other playground equipment can be replaced with bark mulch or shredded tires. (*Phil Nixon*)

Cicada Killer

Cicada killers are about 2 inches long and black, with yellow bandlike marks. The head and transparent wings are brownish red. These are solitary wasps, the female of which digs a 6- to 10-inch burrow (with a diameter of 1/4 to 1/2 inch) in the ground. These burrows typically have a 3- to 6-inch-diameter mound of fine soil around them. She locates and stings a large insect such as a cicada, drags it to a chamber in the burrow, and lays an egg on it. The female covers up the burrow, digs another one, and repeats the process. The egg hatches into a legless, grublike larva that eats the paralyzed insect, pupates, and emerges the next summer as an adult.

Male wasps establish aerial territories and patrol for intruders. Someone walking into the territory typically is confronted with a large wasp hovering in front of the face, zipping to the side and to the back before leaving. A male cicada killer drives off males entering his territory and tries to mate with female cicada killers that enter. Apparently, after determining an intruder is neither, he ignores the person. Unfortunately, as you walk across a lawn, fairway, or other area where these wasps are nesting, the process is repeated as you walk through each male's territory. These wasps are unlikely to sting. Wasp and bee stingers are modified egg-laying devices, so males are not equipped to sting. Females sting if crushed, as when stepped on or grabbed by bare hands. (*Phil Nixon*)

Velvet Ant

Velvet ants are bright-colored wasps. The females are typically wingless, and the males have wings. Velvet ants get their name from the velvetlike hair (setae) that covers their bodies. Many velvet ants that live in hotter, desert areas have very long hair that may trap an insulating coat of air that helps keep the wasp cooler. In desert areas, as well as Illinois, velvet ants are very active during the hot, sunny part of the day, so protection from the heat is needed. Velvet ants are common in southern Illinois, becoming less common farther north, and are essentially absent in northern Illinois.

Most velvet ant species are brightly colored. Females of the most obvious species in Illinois are about 1 inch long and bright orange-red with black bands. They run quickly and nervously about in dry, sandy areas and on sidewalks, where they are easily noticed. Females have long stingers that can protrude from the abdomen about 3/8 of an inch. These stingers are normally kept inside their abdomens until needed for use. Even though some species are commonly called cow killers, their sting is similar to that of other wasps.

The males are colored similarly to the females but also have transparent, black wings. Like cicada killers, they fly in areas where females are located but generally

fly a few inches above the ground rather than the several feet above the ground typical of cicada killers. Because they fly closer to the ground, male velvet ants are not as noticeable to passersby as cicada killer males. As with cicada killers, male velvet ants cannot sting, as the stinger is a modified egg-laying device.

Velvet ants are parasites of bumblebee nests. Adults enter the nests to feed on honey stored there by the bumblebees. Velvet ants have very hard exoskeletons, perhaps to make them impervious to bumblebee stings. Mated female velvet ants lay their eggs into bumblebee pupal cells, laying one egg per pupa. The eggs hatch into larvae that eat the bumblebee pupae and then pupate in the pupal cells. The velvet ant pupae spend the winter in the bumblebee nest, emerging during the following growing season. Bumblebees abandon their nests in the fall, establishing new ones in the spring. Thus, the velvet ant pupae have the nests to themselves during the winter and the following spring. (*Phil Nixon*)

Steel-Blue Cricket Hunter

Steel-blue cricket hunters are bluish black, slender wasps with transparent dark blue wings. Their legs and antennae are black. They move with quick, nervous actions in sandy and bare soil areas, flying readily when approached. They are smaller wasps, about 5/8 inch long.

Adult cricket hunters feed on flower nectar. Females dig downward-slanting burrows into the soil, leaving fine soil around the entrance. The females seek out crickets and grasshoppers and sting them, causing them to be paralyzed. A single, paralyzed prey is dragged down to the bottom of the burrow by the female, who lays a single egg on the prey. She then closes the burrow, digs a new burrow, and repeats the process.

The egg hatches into a larva, which eats the still living, parasitized cricket or grasshopper. The wasp larva pupates in the burrow, emerging as an adult the following summer. (*Phil Nixon*)

Sand Wasps

Sand wasps have similar habits to the cicada killer and steel-blue cricket hunter. There are several species, ranging in size from 1/2 to almost 1 inch long. They are dark-colored, slender wasps with one or more contrasting gray to reddish bands. Adults feed on flower nectar.

Females dig burrows in sandy or other soil, preferring areas bare of vegetation. These burrows descend several inches and have loose soil around the entrance. Depending on the species, adult females capture flies, crickets, camel crickets, or katydids. The female drags the individual stung and paralyzed prey item to the bottom of the burrow, lays an egg on it, and then fills in the burrow opening. She digs a series of burrows, repeat-

ing the process. The egg hatches into a larva that eats the prey and pupates in the burrow, emerging during the following growing season. (*Phil Nixon*)

Yellowjackets

Yellowjackets are very common throughout the state. These are the 1/2-inch-long, yellow-and-black-banded wasps that are very numerous around garbage cans and picnics. Many people call them bees, but honey bees are 1/2 inch long, with black and amber to brown bands.

There are two common species of yellowjackets in Illinois. Both species build underground nests, but the eastern yellowjacket tends to nest underground in abandoned rodent burrows. The German yellowjacket tends to nest inside the walls of buildings, typically entering through an opening in the eaves.

Yellowjacket adult queens overwinter under loose bark and in other protected areas. They emerge in the spring to start their nests, typically underground or in a building wall. The nests are made of paper, which the wasps construct by scraping the surface wood off dead tree limbs and unpainted fences, mixing it with their saliva and applying it into place with their jaws. Their nests are similar in construction to the football-sized and -shaped nests of their close relative (the baldfaced hornet) found hanging from tree branches.

Through the summer, several generations of wasps are produced, with the adults foraging for caterpillars and other forms of meat to feed the legless, grublike larvae in the nest. The adults feed on flower nectar and other sweet liquids. As fall approaches, larval production ceases, and the mainly adult population switches from a single reproductive queen with numerous sterile female workers to a queen, workers, males, and reproductive females. The males and reproductive females mate, the males die,

and the newly mated females find overwintering sites.

The old nest is left with an old queen and about 2,000 workers seeking flower nectar as food. As fall approaches, flowers near the end of their seasonal cycle and cease to bloom, greatly restricting food for a very large yellowjacket population. Once it freezes, blooming ceases. The result is a very large, very hungry population of wasps that are short-tempered and sting with little provocation. These wasps do not die until there is a 5- to 7-day period when the high temperature is below 45°F. They search out every nook and cranny for food, including those on humans. If one is on your neck or inside elbow and you turn your head or flex your arm, you are likely to pinch the yellowjacket's leg or body in a fold of skin, resulting in the yellowjacket stinging you immediately.

Disturbed nests are strongly defended, with each female wasps typically stinging repeatedly. Not only is the sting painful, but it can be life threatening. Sensitive individuals can enter anaphylactic shock and die from a single sting. Annually, 40 to 50 people die in the United States from yellowjacket stings. (*Phil Nixon*)

Home, Yard, and Garden Pest Newsletter is prepared by Extension specialists from the University of Illinois at Urbana-Champaign and the Illinois Natural History Survey. Information for this newsletter is gathered with the help of staff members, Extension field staff, and others. Karel Jacobs and Donna Danielson of The Morton Arboretum also provide information and articles.

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