

Down the Garden Path



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Plant & Pest Diagnostic Laboratory

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GARDEN

Rudbeckia

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Black-eyed Susan, Gloriosa Daisy, Yellow Oxeye Daisy; these are just a few of the common names that plant botanists and many gardeners call Rudbeckia. There are several species of this golden-yellow flowering plant, though the most popular garden specimens belong to *Rudbeckia hirta* var *pulcherrima*. Some types are grown as annuals, but most will either self-seed or are true perennials that come back each year.

Rudbeckia is a member of the sunflower family and has the typical daisy-type flower. It has a center button of brown-blackish colored fertile flowers (called the disk flowers), surrounded by a collar of long, golden-yellow fertile flowers (called the ray flowers) which most people think are just petals.

Rudbeckia has a long season of bloom compared to many perennial flowers; it blooms all summer until frost. Plants reach two to three feet tall and perform best in full sun or light shade in just about any type of soil. Hot dry summers are its forte!



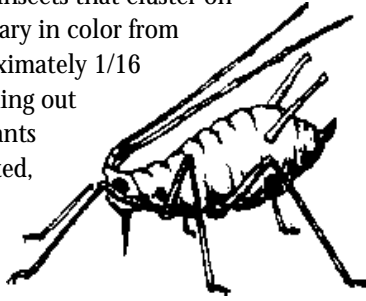
Diseases:

Rudbeckia is a relatively problem-free perennial, however fungal leaf spot diseases can become troublesome, particularly in wet weather or when plants are irrigated by overhead sprinklers. The fungi that cause leaf spots overwinter in the soil and plant debris and fungal spores are splashed first onto the lower leaves of the plants. In the cool, moist environment of the lower canopy, the fungi infect the leaves, causing small, brown, leaf spots that will eventually grow in size, coalesce with one another and eventually blight the entire leaf. It is easy to overlook the initial symptoms since infected leaves may be hidden at the base of the plant. As the disease progresses, spots will develop on younger leaves as well. Uninfected foliage can be protected from infection by the application of a garden fungicide, such as chlorothalonil. This will not cure spotted leaves. Good cultural practices such as proper plant placement (avoiding poorly drained areas), balanced fertility, avoiding overhead sprinkling of plants infected with leaf spots, periodic thinning to maintain good air circulation and removal of dead plant material during, as well as at the end of the growing season (good sanitation) will help promote vigorous, healthy plants.



Insects:

Aphids, goldenglow sawflies, and four-lined plant bugs are pests of Rudbeckia. Aphids are pear-shaped, soft-bodied, sucking insects that cluster on stems, flower buds, or leaf undersides. They vary in color from white, red, green, to black. Aphids are approximately 1/16 to 1/8 inches long with tubes (cornicles) sticking out of their abdomen. Most aphids feeding on plants are wingless. Aphids cause poor growth, twisted, or distorted leaves. Aphids also produce a clear, sticky liquid called honeydew. Honeydew serves as a medium for black sooty mold fungi which can reduce the plants aesthetic quality. Avoid overfertilizing Rudbeckias with nitrogen. Plant pollen and nectar attracts natural predators and parasitoids that can control aphids. A hard spray of water can be used to knock aphids off plants. Materials that can be used to control aphids include insecticidal soap, neem, orthene (acephate), rotenone, or diazinon.



Goldenglow sawfly may completely defoliate Rudbeckia. The larvae are gray with dark stripes. Females use their ovipositor (egg-laying device), which has teeth on one side, to lay eggs into the stem of plants. Diazinon, malathion, or sevin (carbaryl) can be used to control goldenglow sawfly.

Four-lined plant bug is a minor pest of Rudbeckia. Injury results in small (1/16 inch) round, brown, sunken spots on leaves. Damage occurs in spring and summer when nymphs are active. Nymphs are reddish-orange and move to the leaf underside when disturbed. Adults are lime-green with four black stripes on the back. Materials such as insecticidal soap and sevin (carbaryl) can be used to control four-lined plant bug. ☺

- Mow the area to 1 or 1.5 inches to reduce competition from established grasses.
- Apply a starter fertilizer (high in phosphorus) over the entire lawn at 1.5 lbs P₂O₅/1000 ft².
- Aerify the area, punching at least 20 to 40 holes/ft² with the largest tines possible. This will increase the seed-soil contact and improve germination and establishment rate. You can never over-aerify at this time, so make many passes over the lawn. A power raking at this time will also help to increase the seed-soil contact.
- Apply the seed to the lawn with either a dropseeder or a power overseeder which is a machine that will drop the seeds into small grooves that it cuts into the soil. Try to make two to four passes over the lawn in different directions with either the drop-seeder or the power overseeder to insure a uniform seeding. Table 1 lists the suggested seeding rates.
- Water the newly-seeded area three to four times daily. Light, frequent irrigation is the rule.
- Mow frequently to limit the competition from the established turf. Mow at 1.5 inches until new seedlings have been cut at least two times. After that, raise the mowing height in 1/2 inch intervals over the next three weeks until a normal mowing height of 2.5 to 3.5 inches is reached.
- Six weeks after germination, apply 1.0 lb N/1000 ft² with a fertilizer containing N, P, and K. ☺

YARD

Lawn Improvement Through Overseeding

Zac Reicher , Turfgrass Extension Specialist

The article in the last issue of *Down the Garden Path* discussed improving your lawn by killing it and starting over. Fortunately, most of our lawns are not that bad and we can improve them with overseeding followed by proper fertility and weed control this fall. The optimum time to seed cool-season turfgrasses is between August 15 and September 1 in central Indiana, a week earlier in northern Indiana, and a week or so later in southern Indiana. Now is the time to start planning.

Table 1. Recommended seeding rates for lawns in Indiana.

Seed Mix	Seeding rate	
	lbs./1000 ft ²	lbs./acre
100% Kentucky bluegrass	1.5-2.0	65-87
80-90% Kentucky bluegrass + 10-20% perennial rye	3.0-4.0	130-175
50-70% Kentucky bluegrass + 30-50% fine fescue	4.0-5.0	175-220
100% tall fescue	6.0-8.0	261-348

It's Too Late to Control Crabgrass

Zac Reicher, Turfgrass Extension Specialist

Crabgrass is running rampant in Indiana lawns right now. Crabgrass is a light-green, wide-bladed grass that invades thin lawns, bare patches, and areas next to sidewalks and driveways during summer. Crabgrass is best controlled with maintenance that produces a dense lawn.

Additionally, a preemergence herbicide applied in early spring will help to prevent crabgrass. There are products available that will control young crabgrass plants. However, crabgrass is so large by now that is extremely difficult to control with herbicides and control should not be attempted. Though crabgrass is growing vigorously and is very conspicuous in the lawn right now, cooler temperatures will slow crabgrass growth and it will die with the first frost. If you have crabgrass in your lawn now, wait for the weather to control it rather than trying to kill it with herbicides. ☺

UPCOMING EVENT

Indiana State Fair
August 12 - 23, 1998

Visit Purdue's *Plant Wellness Center* at the Indiana State Fair. Visit with Master Gardeners and staff from the Plant and Pest Diagnostic Laboratory, the Department of Horticulture and Landscape Architecture and the Department of Botany and Plant Pathology. The *Plant Wellness Center* will be located with the other Purdue exhibits in the Pioneer Hi-Bred Our Land Pavilion. ☺

THE GRAPE VINE

Trees and Lightning

Rita McKenzie, Urban Forester

- FACT:** Lightning kills more people than tornadoes and hurricanes.
- FACT:** Most deaths occur in open fields near or under trees or around water.
- FACT:** Lightning strikes the earth 100 times per second.
- FACT:** The temperature of a lightning flash can be 30,000 degrees Celsius- five times hotter than the sun.
- FACT:** Peak currents can be 20,000 amps.

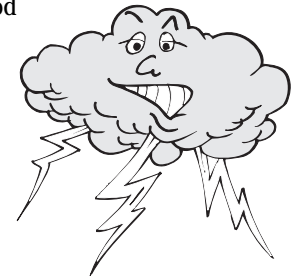
Lightning occurs when strong negative charges in low clouds and strong positive charges on the ground meet in the air. The negative charges in the clouds move downward in a series of chain reaction steps called stepped leaders. The return stroke occurs when the positive charges in the ground are attracted by the negative charges in the air. This upward path is called a streamer. A lightning strike takes place when these paths meet in ionized air. We don't see these two parts of a lightning strike because the leader stroke takes about 20 milliseconds and the return stroke 70 microseconds.

A widely held myth that lightning only strikes good conductors like metal is not true. Lightning seeks the path of least resistance to the ground through the best available conductor in the area such as wood or metal. The difference between a good and bad conductor is that good conductors are not damaged as severely as bad conductors.

Trees, because of their height, are natural lightning rods. Damage can be minimal or quite literally explosive. Since water or sap is a better conductor than wood, lightning damage is often related to the concentration of moisture in and around a tree. For instance, if the moisture is concentrated in the phloem between the bark and the wood, then the lightning strike will follow this channel and create an explosive separation of the bark. If there is more moisture in the center of the tree, the explosion from within may blow the tree apart. Yet, rain soaked bark often shows little damage because the lightning may follow the outside of the bark and flow into the ground. Internal tree structure, such as spiral grains, can induce a spiral pattern on the outside of the bark as the lightning follows the moisture within the tree.

Death of a tree from a lightning strike per se, is not easily diagnosed. Some trees die immediately from seemingly small external damage while others will live for a number of years. One of the problems with a lightning scar (loss of the protective bark) is the inherent problem of exposing the tree to insects and diseases. If a tree survives a strike, it often succumbs to these secondary problems.

A tree struck by lightning has been stressed severely. The intense heat of the strike takes a great deal of energy from the tree. To deal with stress, trees need additional nutrients. Studies have indicated that additional water after a strike may assist the tree in gathering as many nutrients as possible from the soil. Preventing insect and disease problems also may help reduce future stresses. Wound paint, however, is not a recommended practice for this



Chicory



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problem, in fact it may exacerbate the situation by providing a conducive environment for harboring insects and disease-causing organisms.

To prevent lightning damage to special trees in your yard or community, a lightning protection system may be installed. This is accomplished by attaching a series of copper cables to the tree's highest branches and then grounding them a safe distance from the tree. If lightning strikes the tree, then the current flows down the cables and safely to ground. These systems, when properly installed, can be quite expensive, costing up to \$1000 for a large tree. If interested in a lightning protection system, consult with an arborist. To find a certified arborist in your area, visit The International Society of Arboriculture's webpage (www.ag.uiuc.edu/~isa/arborists/arborist.html). ☺

OVER THE BACK FENCE

Q: What are the pretty blue flowers that are now blooming along Indiana roadsides? They don't have very noticeable leaves.

A: Chicory is a weed that is commonly found along roadsides and in turf, meadows, and uncultivated crops. It is a perennial with a leaf rosette similar in appearance to a dandelion rosette. The leaves are toothed, like dandelions, but the teeth point in all directions, unlike dandelions. The wiry branching stems of chicory can reach one foot or greater in height.

On the stems are greatly reduced leaves and daisy-like flowers that are usually sky blue when in bloom (occasionally pink, purple or white.) Chicory is in the sunflower family and the flowers open in the mornings and close about mid-day.

Chicory was imported from Europe and has been grown as a greenery for use in salads. The thick and deep root resembles the carrot shape and has been used as a substitute for coffee. -- *Nathan Saxe* ☺



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