



## Maintaining a Healthy Lawn

I get a lot of calls this time of the year about poorly growing lawns. Many times, after looking at the situation, improper mowing is the issue. Most of us don't think about the mowing process until Saturday or when the neighbors start to mow their lawns. Then it's a rush to get it done and put the lawn mower away. Mowing, even if considered a hindrance, has a measurable effect on the way grass grows.

How often should a lawn be cut? The rate of growth and the height of the cut determine the frequency of cutting. Mow the grass often enough that you remove one-third of the plant each time you mow. You will mow more often during the summer months than spring and fall months. Dr. Ron Strahan's turfgrass article in this issue has more information about proper grass heights. To measure mowing height, operate the lawn mower at the highest deck setting. Mow a 10-foot pathway and measure the distance from the soil level to the top of the grass plants. Do this for each deck setting and record the information in the owner's manual for later use.

Different mower types affect the grass differently. Rotary mowers are the most common type. The blades on a rotary

mower can become dull over a growing season and tear leaf tissue, causing increased water loss and creating entryways for plant pests. Reel-type mowers make cleaner cuts but are more difficult to sharpen. Although rotary mowers dominate the home lawn industry, reel mowers are becoming more and more popular. They can be as simple as the manual mowers used by our ancestors or as complex as the 8-foot gang mower used to mow Tiger Stadium. Bermudagrass responds extremely well to reel mowers when compared to rotary mowers. Remember that when using either type of mower, a smooth turf free of sticks, stones and other debris is advisable.

Removing clippings is not necessary if you mow as recommended. Research has shown that moderate amounts of clippings decompose rapidly in warm weather with good moisture. Nutrients in the clippings are recycled without contributing to the thatch layer. Clippings should be removed if they form clumps on the surface. Clumping normally occurs if the grass grows too high before mowing. Remember to follow the one-third rule for mowing frequency to prevent any issues with leaving clumps behind after you mow.

Another issue in our lawns is lack of watering or improper watering. Usually 1 to 2 inches of rainfall is needed on lawns each week. During dry periods, water the lawn only once or twice a week with at least 1 inch of water. Light, frequent watering only wets the surface of the soil, resulting in shallow root development and a weak grass plant. The best time to water is early in the morning. Grass plants are more efficient at taking up water earlier in the day before the daily temperatures reach 90 F. Also, reducing excess water on the leaf surface can be extremely helpful in preventing the spread of disease.

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Gary Stockton  
County Agent, Bienville, Jackson, and Lincoln Parishes

# Mulching: Make Maintenance Manageable

Applying mulch is an easy to do activity that saves on labor in the future. Mulches are materials, either organic or inorganic, that are used to cover the soil around a plant to prevent weeds. The application of mulch is a wonderful sustainable landscaping step in any home garden situation.

Organic mulches are derived from once-living materials that add beneficial organic matter to the soil as well as providing an aesthetic appearance. Some examples of organic mulches are fallen leaves, pine straw, pine bar, newspaper, etc. It is important to remember that not all wood-based mulches are created equal. For example, many of the cheaper dyed wood mulches may contain large amounts of hardwoods. Hardwoods can slowly increase the pH of your soil and take vital nutrients away from your plants to aid in their breakdown.

Inorganic mulches or materials derived from nonliving sources include products such as plastic sheets, landscape fabric / weed barriers, and stone chips / gravel. Two of the more popular examples are rubber mulch (made from recycled tires) or synthetic pine straw. These inorganic mulches have been made to look like their organic counterparts but last longer in the environment. The drawback to inorganic mulches is they do not provide any organic matter as they breakdown.

The foremost reason to use mulches is to control weeds. When weeds are removed, new weed seeds are able to germinate, starting the problem all over again. An application of mulch works to stop this by blocking light from reaching the soil surface. Most weed seeds need light to germinate. When covered over with mulch and not able to get light they do not germinate. To create this barrier to weed growth, organic mulches must be applied thick enough to do the job. Apply organic mulches about 2 inches thick around bedding plants and vegetables and 2 to 4 inches thick around shrubs for best weed control. A further important function of mulches is conserving moisture in the soil. Plants receive a more even supply of moisture and the gardener saves money on their water bill. Mulches also moderate soil temperature and reduce soil compaction. That's a lot of benefit from a simple gardening technique that is easy to do.

*Mark A. Wilson  
Northwest Regional Horticulture Agent*



Pine straw is an excellent natural mulch.



## Decoding Your Fertilizer Needs

As an agent, the first question I am often asked is, "Can I use 13-13-13 or 8-8-8?" My first response is generally, "Yes, you can use whatever fertilizer you would like." But I immediately follow up with another question: "What does your soil test say?" Many of these questioners have never had their soil tested. I also learn many people do not understand what the numbers actually stand for.

These numbers represent the amount of N-P-K, which are essential nutrients that all plants need. N (nitrogen) helps promote plant vigor and growth. Nitrogen is what makes plants green. P (phosphorus) helps stimulate root growth. Lastly, K (potassium) promotes overall plant health, including disease and drought tolerance. When you see 13-13-13 or any combination of numbers on fertilizer, you are getting a percentage of those nutrients per hundredweight. For example, 13-13-13 means you are getting 13 pounds of each nutrient per 100 pounds.

How do I know exactly what I need in my yard or garden? Simple. Contact your local LSU AgCenter extension office to get a soil test kit. Dig down about 3 inches and get a sample of your soil. Place that sample in your bucket. Repeat these steps up to 10 times in random spots and mix the samples thoroughly. Place the soil mixture in bags that come with the kit and place them in the mail. The results will be mailed to you and will tell you the exact nutrient amounts you need. Contact your local extension agent for assistance.

*John Monzingo  
Assistant County Agent, Claiborne and  
Webster Parishes*





Loquats flower in the fall and fruit matures in the spring.

## Growing an Edible Landscape

There's a whole lot of mowing going on around town and all over the state this time of year. Grasses thrive in this hot and humid weather. Drive anywhere and you will see landscape crews and homeowners out on mowers and with string trimmers trying to tame the weeds and grass — all to start the cycle over again in a week's time. It's a daunting task at times, and I, for one, am thankful that my husband handles that duty and leaves me to tend the garden and bedding plants.

Why not reduce the amount of time you spend manicuring your turfgrass and lawn and consider putting in plants that yield a return for all that hard work? Don't get me wrong, I love a nicely manicured lawn, but I also love and embrace the idea of minimizing the inputs while maximizing the outputs. It brings to mind a saying: "Work smarter, not harder!"

A great way to minimize your inputs while maximizing your gardens outputs is to use plants that are edible. Many fruit and vegetable plants not only provide food, they are also very beautiful. When you garden this way, your yard becomes twice as valuable by adding beauty while putting food on the table, too! Edible plants can be just as attractive with blooms that later yield fruit. Many edible tubers, such as sweet potatoes, have beautiful foliage and have been bred to be used as ornamental plants.

There are many benefits to edible landscaping. You can save money on groceries by growing your own food. You'll also save money in water and fuel costs when you reduce the amount of turf areas in your lawn. Lawns require large amounts of supplemental water when there is no rain and the mowing has to be

kept up. You can also enjoy homegrown flavor, and because you tend your garden you know for certain what chemicals have been applied and when they were used. That gives you the control to make wise decisions when using pesticides and herbicides.

Additionally, it helps the environment. When you grow your own food, you eliminate the need to ship from the farm to the grocery. If you garden organically you can take it one step further. By growing native plants, you will also support the environment and native insects and wildlife that are integral to our ecosystems. I love watching birds, and many foods that are edible to us are just as loved by birds and other local wildlife.

Some things to consider are that fruits and vegetables require six to eight hours of sun to produce well. Some native plants will be more tolerable of some shade, along with plants that have edible leaves, such as lettuce and kale. So, consider these types of plants when your area is more shaded. Dwarf yaupon holly is a native shrub that has leaves and stems that can be brewed to make a tea that has a higher caffeine content than coffee or green tea from *Camellia sinensis*. Both are edible shrubs that tolerate shade and are edible. Yaupon holly (*Ilex vomitoria*) has red berries that birds just love and are a great selection for decorating in the wintertime.

Be sure you think about the mature size of the plants you select. Trees will require much more room and may need watering when rain is scarce. Some trees to consider for Louisiana are figs, persimmons, pecans, satsumas, mayhaws, pawpaws, date palms, olives, pomegranates, lemons, kumquats, loquats, and some peaches, apples and pears in the more northern parts of the state. Consult the LSU AgCenter website for a list of varieties suitable for your



Persimmon fruit hangs on the trees in fall even after leaves have dropped.

area. Make sure you keep in the mind the chilling hours required to produce fruit. Remember to consider your climate and temperatures when selecting your trees.

Some edible shrubs to consider are blueberries, currants, \*evergreen huckleberry, \*elderberries, \*serviceberries, yaupon holly, tea (*Camellia sinensis*) and pineapple guava. (\*denotes native plants).

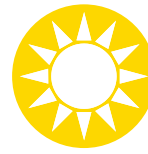
Some vines to consider are blackberry, cucumbers, snap peas, field peas, and muscadine and table grapes. These will require some trellising. Additionally, a plethora of vegetables can be grown here in Louisiana — artichokes, asparagus, eggplant, corn, okra and tomatoes. Some will produce better than others, but they are all worth a try! Some cool-season crops to consider are broccoli, cauliflower, Brussels sprouts, mustard greens, lettuce and arugula.

There are also many herb options to consider, such as rosemary, oregano, basil, dill, thyme, tarragon, curry and lavender. When some of the herbs go to seed, they produce gorgeous flowers! Don't be afraid to think outside the box of how we have traditionally thought our landscapes should look. It is exciting to watch plants perform in their natural habit and support their growth at all stages. This type of landscaping does not have to be all or nothing. Use your imagination and get creative with all the options our state and climate will support! You'll save yourself a great deal of time and have a greater return on your work. It's good for the soul, too! Gardening is a great way to get some exercise and spend time with your family. It is a great stress reliever, and it can provide so much joy and good food, too! So, get out there and greaux your edible landscapes.

Dr. Heather Kirk-Ballard  
Horticulture Specialist



Olives



# Checklist for June, July and August

## Bedding Plants

- **Plant:** Most annuals and perennials were planted in the spring from March to May. However, containerized plants can still be planted in the summer, and the earlier in the summer the better. Take into account the increasing temperatures and water demands. Newly planted bedding plants will need to be watered more frequently for good establishment.
- **Annual plants to consider:** Celosia, cosmos, Mexican heather, nicotiana, pentas, purslane, salvia, sedums, sunflowers and zinnias.
- **Perennials to consider:** Angel trumpet, butterfly weed, coreopsis, daylily, native hibiscus, lantana, plumbago, salvia, Shasta daisy, pennisetum, verbena and yarrow. Many of the perennials listed make great specimens for a pollinator garden!



## Lawns

- Plant warm-season grasses throughout the summer. Planting in June will provide more opportunities for lawns to become established before going dormant in the winter.
- If you fertilized your bermudagrass, zoysia and St. Augustinegrass lawns in April, you can make another application this month. Do not fertilize centipedegrass.
- **Herbicides:** It's time to stop using weed killers in the lawn during these hot summer months, as the heat will cause injury to the lawns.
- **Pesticides:** Chinch bugs and mole crickets are a problem this time of year. If these are a problem in your lawn, follow pesticide labels and directions to deal with any issues these pests cause.
- Mowing will be the most common practice in the home landscape these summer months as the grass thrives and grows aggressively. Be sure to cut your lawn to proper heights once a week or every other week depending on growth and rain activity:  
Bermudagrass, 1-1 ½ inches; centipedegrass, 1-2 inches; St. Augustinegrass, 2-3 inches; and zoysia, ½-1 ½ inches.



## Shrubs and Trees

- **Plant:** Increasing heat and water requirements make planting shrubs and trees this month more challenging; however, container plants can still be installed. Be aware of the need for more frequent watering as plants use water faster when it is hot and they are actively growing. Transplanting trees and shrubs from one location to another this month is not recommended.
- **Pests:** Control aphids on crape myrtles. For roses continue a spray program that includes both a fungicide for black spot control and an insecticide to control pests.
- Prune roses in August to get them in shape for fall blooming season by cutting back to the desired height and removing all dead, diseased and spindly stems.
- Fertilize roses just after pruning with a rose fertilizer to provide extra nutrients for the fall bloom.



*Dr. Heather Kirk-Ballard  
Horticulture Specialist*



# Vegetable Gardening in June, July and August

The dog days of summer are upon us. What does this phrase even mean? Well, this article was written in March, a period in my life when gardening and home schooling were happening simultaneously. Thanks, COVID-19! It just so happened that I needed to write this article for work, and I needed to help my fifth grader son learn about astronomy. We were reviewing the constellations, their major stars and why astrology — not astronomy — is thought of as a pseudoscience. The dog days of summer to us in the 21st century means serious heat. However, to the ancient Greeks it meant the period when the “Dog Star,” or Sirius, was visible in the night sky ... and that used to happen in July. Depending on where you live in the northern hemisphere, you may or may not see Sirius in July anymore because of your latitude and the Earth’s wobbly spinning motion. However, what we do know is June, July and August are hot months and, like astrology and astronomy, good and bad garden advice will circulate. Therefore, if you are looking for sound horticulture science, not pseudoscience, look no further than the few paragraphs below.



Cantaloupe



Tomatoes



Broccoli

## June

Collard greens, cucumbers, watermelons, cantaloupe, okra, southern peas, pumpkins and summer squash can all be seeded directly into the garden during June. Wait until late June to plant pumpkins if you want them ready for early October and Halloween decorating.

You can plant sweet potato slips this month.

In mid-June, plant a summer crop of heat-set tomatoes. Planting heat-set tomatoes is very important. These cultivars have been bred to set fruit during high nighttime temperatures, whereas other cultivars will not. If managed correctly, heat-set tomatoes will produce fruit through October. Preferred varieties include Florida 91, Solar set, Sun Master, Phoenix and Bella Rosa.

## July

Transplant another fall crop of heat-set tomatoes (late July). These will take you through the first freeze. Transplant bell peppers as well.

Direct-seed okra, southern peas, cucumbers, squash, cantaloupe and watermelons throughout July. Direct-seed pumpkins in the first week of July for an early October harvest.

Late July or early August is a good time to start thinking about your fall garden. Order broccoli, Brussels sprouts, cauliflower, Chinese cabbage, cabbage and all your root crop seeds. This is very important because all the good gardeners are also ordering seeds now, and you don’t want the leftovers!

## August

Plant bush lima beans in the garden.

Start seeds of broccoli, Brussels sprouts, cauliflower, Chinese cabbage, cabbage, cucumbers, squash, mustard greens and shallot sets for an early fall garden start in September. Start your seeds on a table outdoors under the shade. Do not forget to keep them moist.

You can transplant broccoli and Brussels sprouts as early as mid-August in the garden but beware of worms. They will get you this time of year. I personally like to wait until mid-September to transplant fall crops. But some people like the thrill of being the first on the block with the fall produce. In a garden rush? At the end of this month, direct-seed beets and lettuce for an early crop.

Late August is the perfect time for a fall crop of Irish potatoes. It is hard to find them at the hardware store, so many people save the smaller potatoes from their spring harvest for a fall planting. If you are doing this, you do not need to cut the potatoes into pieces. Just plant the small potatoes whole.

Are your okra and eggplants looking a little spindly? Cut them back about knee height and add a little fertilizer. They will flush out again and produce until the first freeze.

Enjoy the garden!

*Dr. Kiki Fontenot  
State Vegetable Extension Specialist*

# Tips for Summer Care of Turfgrass

Summer is the peak growing season for lawns in Louisiana. If you did not fertilize during the spring, you still have time to fertilize and get your yard in good shape prior to fall. Keep up a good fertility program through early to late August. Remember to apply all granular materials on a dry lawn and water very soon after application. Make sure lawns are getting adequate amounts of moisture during the summer months, but don't overwater. Water deeply only once or twice per week or as needed based on the amount of rainfall. The purpose of irrigation is to supplement rainfall. I am not a fan of watering lawns every day unless we are in severe drought.

Consider aerifying compacted soil. I've seen aerification completely change thin lawns caused by compacted soil into thick and healthy turf. Aerifying helps with water percolation and increases the turf's rooting depth and makes for a more drought-tolerant lawn.

## Fertilizing the Lawn

St. Augustinegrass and zoysia both respond well to fertilizer applications. St. Augustinegrass may be fertilized up to three times during the growing season — April, June and mid-August. Fertilize zoysia twice per growing season — in April and again in July.

Bermudagrass is an even bigger fertilizer user and can be fertilized from three to five times during the growing season, especially if you like to mow grass. Carpetgrass and centipedegrass are not big fertilizer users. Usually, two applications, in April and July, will take care of centipedegrass, and one application in April will be sufficient for carpetgrass.

Centipedegrass should receive its second and final fertilizer application in July. For centipedegrass, apply only one-half of a pound of actual nitrogen per 1,000 square feet. For example, apply 3 pounds of 17-0-17 per 1,000 square feet or 5 pounds of 10-0-10 per 1,000 square feet. St. Augustinegrass would need 6 and 10 pounds of the aforementioned fertilizers.

If your lawn is not performing well, there could be a nutrient deficiency in the soil. The only surefire way to know what your soil needs is to collect a soil sample and submit it for testing at the LSU AgCenter Soil Testing and Plant Analysis Lab. In order to simplify the soil sampling and submission process, there are pre-addressed submission boxes with sampling instructions at several garden centers throughout the state and at your local parish extension office. Once submitted, the results will be sent to your home mailbox or email, usually in less than two weeks. Your parish LSU AgCenter extension agent can help you interpret the results from the soil sample and tell you exactly what's needed nutrient-wise to make your lawn beautiful.

## Correct Mowing Heights Are Highly Important

You may not know this, but there is a correct mowing height for your lawn. St. Augustinegrass is very finicky when it comes to mowing height. Don't cut it too short and don't allow it to get too tall. It likes to be maintained around 3 inches, the tallest mowing height of all the lawns grown in Louisiana. If you cut St.

Augustinegrass too short, it becomes stressed and more prone to disease and weed infestations.

Centipedegrass is often maintained too tall. Centipedegrass should be mowed to 1 to 1.5 inches. This helps prevent thatch buildup. Zoysia also likes to be mowed in the 1-to-1.5-inch range. Bermudagrass should be mowed from 1 to 2 inches. Shorter mowing heights are better when more frequent mowing is possible. Keep mower blades sharp to ensure a clean cut and good lawn health.

## Insect Pests

Watch for chinch bugs in St. Augustinegrass and bermudagrass lawns. Treat them with an LSU AgCenter-recommended insecticide, such as bifenthrin (Talstar and many other trade names). Chinch bug problems show up as yellowish-brown to straw-colored areas of the lawn during hot, dry weather. These insects extract plant juices from turfgrass stems and crowns while pumping toxic salivary fluids into the lawn. The fluids disrupt the plant's vascular system. The damage actually resembles herbicide damage.

Check for chinch bugs in the lawn by saturating suspected areas with a gallon of water mixed with a few squirts of lemon dishwashing soap. This soapy solution irritates chinch bugs and brings them up near the grass surface so you can see them and determine if the bugs are causing the lawn damage. If it's hot and dry and there are dead spots in your St. Augustinegrass, chinch bugs are the first thing that I would consider.

Additional insect problems that appear during the summer include armyworms and tropical sod webworms. These moth larvae or "worms" can cause severe lawn damage very quickly and will need to be killed with insecticides to prevent further damage. Tropical sod webworms can devastate St. Augustinegrass and carpetgrass lawns. Armyworms prefer bermudagrass and can completely defoliate acres of pasture and lawns. Bifenthrin is a good insecticide option for tropical sod webworms, armyworms and chinch bugs infesting the lawn.

Be mindful of these pests as you walk through your lawns. Investigate damaged areas and treat them accordingly.



Chinchbugs



## Virginia Buttonweed and Other Summer Weeds

In late spring to early summer, Virginia buttonweed starts forming mats that can eventually smother out the lawn. Pull up small populations of Virginia buttonweed or carefully treat them with herbicides like metsulfuron (MSM Turf and other trade names) or Celsius. These herbicides work well with repeated applications spaced four to six weeks apart. Metsulfuron and Celsius can be safely applied on St. Augustinegrass, centipedegrass, bermudagrass and zoysia during warm weather. Carpetgrass will be damaged by Celsius herbicide. Bahiagrass will not tolerate metsulfuron or Celsius.

Common lespedeza is a mat-forming annual legume that emerges in the spring and lingers deep into fall throughout Louisiana. By late summer, the plant matures and becomes woody and tough on lawn mower blades. Metsulfuron works well on this weed but early summer applications are more effective.

Torpedograss is a perennial grass that's mainly a problem in south Louisiana, but I do get calls from north Louisiana as well. There are few lawn problems more devastating than a torpedograss infestation. Torpedograss is extremely tolerant of herbicides and easily outcompetes centipedegrass and other slow-growing grasses.

The weed often starts from soil brought in during flower bed construction. However, it quickly spreads from the flower bed to the lawn. The ability to suppress torpedograss in lawns depends on the turfgrass species. Selectively removing torpedograss out of lawn grasses and sports fields is rarely completely achievable. Quinclorac (Drive and other trade names) is a herbicide that is somewhat effective in suppressing torpedograss in bermudagrass and zoysia. Unfortunately, you cannot use quinclorac in centipedegrass and St. Augustinegrass.

Sethoxydim (Bonide Grass Beater and other trade names) will temporarily injure torpedograss infesting centipedegrass, but it does not provide long-term control. The torpedograss recovers and the weed infests the centipedegrass again. Unfortunately, there are no selective herbicide options for torpedograss infesting St. Augustinegrass. Often, complete renovation is necessary when centipedegrass and St. Augustinegrass are severely infested.

If you decide to renovate and install a new lawn, consider sodding the lawn with zoysia (semishady or full-sun lawns) or bermudagrass (for full sun only). Converting to zoysia or bermudagrass will allow the use of quinclorac, the most effective selective herbicide on torpedograss. Installing zoysia may be the better fit for Louisiana because of its good shade and drought tolerance. Zoysia is not a high-maintenance grass when managed properly. Maintain zoysia at 1 to 1.5 inches with a sharp mower blade and fertilize twice per year. There are several sod farmers in Louisiana that grow zoysia, so it is readily available.

Proper lawn maintenance keeps your lawn healthy and reduces the need for the use of pesticides. If it becomes necessary to use a pesticide in the lawn, it is highly important to always read and follow their labels before using. The label will tell you how to use the product safely to achieve satisfactory results. You will find the label attached to the product's container.

*Dr. Ron Strahan  
Weed Scientist and Turfgrass Specialist*



Virginia buttonweed begins flowering in mid-summer.



Common lespedeza.



# Plant Disease Management in Home Vegetable Gardens

Vegetables grown in home gardens are susceptible to several diseases caused by fungi, water molds, bacteria and viruses. Plant diseases are infectious and able to spread from plant to plant. Some pathogens attack a wide variety of plants, but others are host specific.

Plant pathogens can attack all plant parts, but many only attack certain tissues, such as roots or leaves. Plant diseases occur in the home vegetable garden when environmental conditions are suitable for pathogens to develop on susceptible hosts. Plants weakened by adverse conditions may be further predisposed to attack by pathogens.

Successful disease management begins with accurate identification of the cause of the problem. Knowing the common diseases of individual crops aids greatly in disease identification and management. Many diseases are readily identified based on characteristic signs — observations of the pathogens themselves — and their symptoms.

Prevention is the key to successfully managing plant diseases in the home garden.

When available, resistant or tolerant varieties should be chosen. Insects can introduce viruses and bacteria into a plant, causing disease. The principal methods to manage diseases spread by insects are to remove infected plants as soon as they are observed and to prevent insect infestations with insecticides.

Choose a well-drained planting site or plant on raised beds that allow for adequate drainage. Water on a regular basis, but do not overwater. If a disease occurs, avoid planting the same or other susceptible plants in the same location in the following year. Good sanitation practices, which include cleaning tools, may reduce the disease spread. Manage weeds as they can harbor both viruses and their insect vectors.

## Common Plant Diseases of Home Vegetables

**Leaf spots/blights.** Anthracnose, leaf spots, leaf blights and fruit rots are caused by a variety of fungi and bacteria. Symptoms vary depending on the pathogen and include circular to irregularly shaped brown spots (lesions) on the leaves, stems and fruit. Spots may be surrounded by yellow or greasy water-soaked halos. On fruit, spots may be raised and crusty (bacterial diseases), smooth and sunken (anthracnose) or dark and water soaked (soft rots) (Figure 1).

**Downy mildew.** This disease is caused by various "water molds" that commonly occur on cole crops, cucurbits, onions, lettuce, spinach, sweet basil and other leafy greens. The first symptom usually is the appearance of pale green to light yellow spots on the upper leaf surfaces. As the disease progresses, the spots turn yellow and angular to irregular in shape. During moist weather, downy pale gray to purple growth and spores (called sporangia) form on the undersides of the spots. Leaves eventually wither and turn brown. Spores are disseminated primarily by wind and rain, and the disease develops during periods of cool, wet weather, except for downy mildew on cucurbits, which can develop and grow at temperatures as high as 90 degrees Fahrenheit. Moisture on the leaves is required for disease development (Figure 2).

**Powdery mildew.** This is a type of fungal disease that is common on a variety of vegetables, including beans, peas, okra, tomatoes and all the cucurbits. On many vegetables the first symptoms are yellow spots on the surface of older leaves. As the disease progresses, a grayish or whitish powdery growth is visible first on the upper surface of infected leaves. When disease pressure is high, a whitish powdery growth appears on the undersides of the leaves and spots are observed on stems and fruit; however, fruit symptoms on most vegetables are rare. Fruit become sunburned because heavily infected leaves usually drop prematurely. Disease develops most frequently on plants grown in shade or partial shade when temperatures are moderate to warm and humidity is high (Figure 3).

**Phytophthora root rot.** Root and crown rots commonly affect plants in the home garden, particularly those in poorly drained sites with compacted soils. The first noticeable above-ground symptoms generally include wilting of the leaves, especially during the heat of the day, and stunting of the plants. Additional



Figure 1. Tomato early blight.



Figure 2. Sweet basil downy mildew.



Figure 3. Chayote powdery mildew.



symptoms, such as defoliation and dark elongated lesions on the stems, are observed in the later stages of disease development. Dark reddish-brown lesions are observed on the roots. In case of *Phytophthora* infections, the outer layer of the root (cortex) easily sloughs off, resulting in rattail-like symptoms (Figure 4).

**Southern blight.** The fungus attacks the lower stem of a variety of vegetables at or near the soil line during warm and wet conditions. Infected plants rapidly wilt and collapse. Closer examination of the base of a diseased plant reveals a lesion that girdles the stem. When conditions are very humid and moist, white fungal strands (mycelium) and specialized tan-colored overwintering structures (sclerotia) are observed on the base of the plant (Figure 5).

**Southern bacterial wilt.** Southern bacterial wilt of tomatoes, peppers, eggplants and potatoes is caused by the soil-borne bacterium. Bacteria enter the roots through wounds. Wet soils and high temperatures favor disease development. Disease severity often is higher in soils infested with root-knot nematodes. Infected plants initially go limp but recover overnight. As the disease progresses, plants rapidly wilt and die. Dark brown sunken lesions may be observed on the bases of infected tomato plants. When stems of wilted branches are cut in a 1-to-2-inch cross-section and suspended in clean water in a glass container, milky threads of bacteria stream from the cut stem (Figure 6).

**Plant viruses.** Viruses can infect many types of vegetables. Typical virus symptoms include mosaic, mottle and ring spot or line patterns on the foliage or fruit, leaf distortion and distorted fruit. Some common viruses found in home gardens are cucumber mosaic virus, impatiens necrotic spot virus, tobacco mosaic virus, tomato spotted wilt virus (Figure 7) and tomato yellow leaf curl virus (Figure 8). Viruses are spread primarily by various insects. Aphids, whiteflies and thrips are the most common. Many viruses also can be transmitted by seeds or mechanically in sap or on pruning shears or on hands. Keep in mind that some symptoms caused by viruses look similar to the symptoms caused by nutrient deficiencies or herbicide injuries. Once infected with a virus, a plant cannot be cured.

## Fungicides Available for Disease Management in Home Vegetable Gardens

Many fungicides and some bactericides are available to aid in the management of these plant diseases, but they should always be used in conjunction with cultural practices intended to modify the environment to make it less conducive to disease development. Some of the common fungicides include captan, chlorothalonil, copper, mancozeb, myclobutanil, neem oil, phosphorus acid, potassium biocarbonate, propiconazole (sweet corn only) and sulfur. For complete detailed information on use of fungicides, go to [lsuagcenter.com](http://lsuagcenter.com) and search for the LSU AgCenter Plant Disease Management Guide.

*Dr. Raj Singh*  
*Plant Pathologist and Director of Plant Diagnostic Center*



Figure 4. Okra *Phytophthora* root rot.



Figure 7. Tomato spotted wilt disease.



Figure 5. Tomato southern blight



Figure 6. Tomato southern bacterial wilt.



Figure 8. Tomato yellow leaf curl disease.





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[LSUAgCenter.com/SoilTest](http://LSUAgCenter.com/SoilTest)



Flame Thrower  
Coleus  
Spring 2020



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Lucky Star  
Pentas  
Summer 2020





# How to Take a Soil Sample

The LSU AgCenter Soil Testing and Plant Analysis Laboratory is the only laboratory that incorporates the latest Louisiana-specific soil fertility research in its recommendations system. The lab offers testing for nutritional status of plants, irrigation and pond water. Soil test kits are available at local garden centers or your parish LSU AgCenter extension office. Kits include directions for gathering soil samples, a soil test request form, a sealable plastic bag and a pre-addressed, postage-paid box.



1

Divide area into sections to be tested on basis of slope, type of plants to be grown or other variations.



2

Sample to depth of 2-3 inches for turf and 6 inches for cultivated beds.



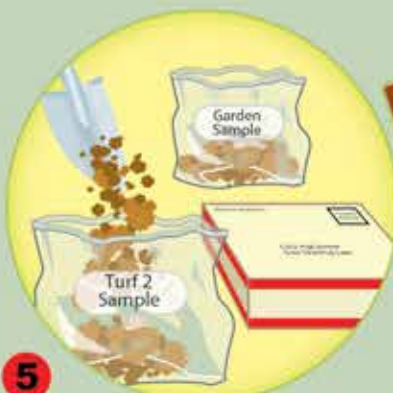
3

Take soil from at least 10 places in each section to be tested to obtain a representative sample.



4

Combine soil for section to be tested. Mix soil thoroughly. Soil for each test section should be kept separate.



5

Place one pint of soil in a sealable plastic bag for each section to be tested. Label each bag according to soil test request form. Sample boxes are available from your parish LSU AgCenter extension office or local garden center.



6

Fill out the soil test request form, place it in the box and put the pre-addressed, postage-paid box in the mail.



LSU AgCenter Soil Testing  
and Plant Analysis Lab  
225-578-1219  
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