

## Horticultural Oils and Neem Oil

Probably every gardener — or anyone who has even thought about being a gardener — has heard of horticultural oils and neem. Horticultural oils have been an effective method of controlling certain insects and diseases since the 1880s. Neem oil comes from the neem tree (*Azadirachta indica*), a fast-growing ornamental shade tree native to Southeast Asia and India. For thousands of years it has been prized for its insecticidal properties and for use in cosmetics and medicines. Neem oil can be found in all parts of the plant, but the concentration is highest in the seeds.

### Horticultural Oils

Essentially all commercial horticultural oils available today are highly refined petroleum products sometimes known as mineral oils. Oil impurities that might injure plants, such as aromatic compounds and compounds containing sulfur, nitrogen or oxygen, are removed. Filtration, distillation and dewaxing produces the finished base oil. Final pesticidal formulations normally have an added emulsifier so the product will mix well with water. These products are usually used at a 2% dilution rate.

Horticultural oils work by suffocation. The oil covers the insect body, blocking the spiracles, or breathing openings. There is evidence that they may also interact with fatty acids in the insect's cells, thus disrupting cell membranes and metabolism. They may also act as an antifeedant for some leaf chewing insects. Horticultural oils are also disruptive to fungal hyphae that grow on the leaf surface, such as powdery mildew.

Because of the mode of action, horticultural oils are contact pesticides and complete (100%) coverage is absolutely essential for good control. Any insect or egg that is not covered will not be killed. Small spray droplet size facilitates total coverage. Follow the label for directions on use and proper protective equipment.

Horticultural oils are easy to apply with inexpensive equipment and quickly dissipate through evaporation. Labels also list the insects and diseases that are controlled by that particular product.

The primary limitation of horticultural oils is their small but real phytotoxic potential on certain plants or under certain conditions. They may also stain some surfaces. Some recommended precautions are:

- **Avoid using horticultural oils on nontarget sites and do not allow the oils to drift to them.**
- **Do not apply when temperatures are below 40 F or above 90 F.**
- **Do not apply to wet plant surfaces or when rain is likely. These conditions inhibit oil evaporation and drying and increase plant injury risk.**
- **Do not use horticultural oils in combination with sulfur-containing pesticides or if sulfur-containing pesticides (e.g., captan) have been recently applied. Sulfur compounds can react with oils to form phytotoxic compounds.**
- **Horticultural oils are nonselective, so avoid spraying when pollinators or beneficial insects are active on the plant.**
- **Application to plants in flower may result in spotting on the flowers.**
- **Do not use on young seedlings or tender young shoots. Damage of tender tissue is likely.**

Horticultural oils are an extremely safe and effective means of control for several insect and mite pests as well as some diseases. They are an important part of most integrated pest management (IPM) programs. Because of their mode of action, pests are highly unlikely to develop resistance.

### Neem Products

Raw neem seed oil contains several biologically active compounds. The most active and best studied is azadirachtin. Azadirachtin is not a single compound. Azadirachtin is actually over 25 different compounds that are very closely related. Neem oil or neem oil extract contains the active ingredient "clarified hydrophobic extract of neem oil." This is the raw neem seed oil from which azadirachtin and similar compounds have been removed. Azadirachtin is separated from raw neem oil using

Never miss an issue of Horticulture Hints from the LSU AgCenter!

Visit the Horticulture Hints website at [www.lsuagcenter.com/HortHints](http://www.lsuagcenter.com/HortHints)

Then click on the Subscribe button!

alcohol fractionation and is the active ingredient in several commercial insecticides, such as AzaTrol, AzaMax and Azatin.

Neem oil has several modes of action. The oil forms a coating on the insect body that blocks the breathing openings (spiracles) and suffocates the insects. It has also been shown to have repellent effects against certain insects and mites (see the individual product label). Neem oil has also been shown to prevent the germination and penetration of some fungal spores, such as powdery mildew. Neem oil is a contact pesticide; therefore, complete coverage when spraying is essential for good control. Commercial neem oil products usually contain 70% clarified hydrophobic extract of neem oil and are used at concentration of 0.5% to 2.0%. Always read and follow label directions.

Azadirachtin is a powerful insecticide that affects insects in several ways. It is an antifeedant, insect growth regulator, sterilant, repellent and oviposition inhibitor. Azadirachtin has weak systemic properties and is sometimes sold as a root drench with activity against chewing and piercing-sucking insects. Azadirachtin has no fungicidal activity.

Neither neem oil nor azadirachtin is persistent in the environment. They are quickly broken down by UV light and microbes. Both products are safe for use on plants. They carry the same precautions as horticultural oils. Both products are practically nontoxic to mammals, birds, reptiles, bees and other beneficial insects. However, they can be lethal if applied directly to beneficial insects. So, do not apply when pollinators are active. Both are slightly to moderately toxic to fish and aquatic organisms; therefore, they should not be applied to or used around bodies of water or where runoff might happen. The individual product label will tell you what plants it can be used on and what it is labelled to control.

Joe Willis  
Extension Horticulture Agent, Orleans Parish



Neem oil is a contact pesticide for insects and fungal disease.

**MONTEREY**  
**HORTICULTURAL**  
**OIL**  
Fungicide, Insecticide and Miticide

FOR ORGANIC PRODUCTION

ORNAMENTALS • ROSES • VEGETABLES • CITRUS  
• SMALL FRUITS • TREE FRUITS & NUTS  
Controls Aphids, Mites, Scales, Whiteflies and  
Other Soft-bodied Insects

Year-Round Usage — Dormant and Growing Season

For use only in Home Fruit and Vegetable Gardens, Home Greenhouses, Interior Plantscapes & Ornamental Gardens

**OMRI**  
Listed

Active ingredient: Mineral Oil 80.0%  
Other ingredients: 20.0%  
Total: 100.0%

\*Contains petroleum distillates.  
Unfractionated Petroleum Distillate 10.0% max

EPA Reg. No. 44815-1-04703 EPA Est. No. 44488-Ca-1

NET CONTENTS: 1 Pint, 1 Quart, or 1 Gallon

Manufactured For:  
**LAWN AND GARDEN PRODUCTS, INC.**  
P.O. Box 70202 • Fresno, CA 93741 • (559) 499-2700  
info@lawnandgardens.com

**KEEP OUT OF REACH OF CHILDREN**  
**CAUTION**

FIRST AID	
<b>If On Skin or Clothing:</b>	<ul style="list-style-type: none"> <li>Take off contaminated clothing.</li> <li>Wash skin immediately with plenty of water for 15-20 minutes.</li> <li>Call a poison control center or doctor for treatment advice.</li> </ul>
<b>If Inhaled:</b>	<ul style="list-style-type: none"> <li>Immediately call a poison control center or doctor for treatment advice.</li> <li>Do not induce vomiting unless told to do so by the poison control center or doctor.</li> <li>Do not give ANY liquid to the person.</li> <li>Do not get anything by mouth to an unconscious person.</li> </ul>
<b>If In Eye:</b>	<ul style="list-style-type: none"> <li>Hold eye open and flush slowly and gently with water for 15-20 minutes.</li> </ul>

**PRECAUTIONARY STATEMENTS**  
**HAZARDS TO HUMANS AND DOMESTIC ANIMALS**  
**CAUTION:** Harmful if absorbed through skin. Avoid contact with eyes, skin, or clothing. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals. Wear long-sleeved shirt, long pants, shoes, socks and chemical-resistant gloves made of barrier materials or vinyl. Wash thoroughly with soap and water after handling. Remove contaminated clothes and wash them before reuse. Keep all persons other than applicator and pets out of treated areas until sprays have dried.

**ENVIRONMENTAL HAZARDS**  
This pesticide is toxic to fish. To protect the environment, do not allow pesticide to enter or run off into rivers, streams, drainage ditches, ditches or surface waters. Applying this product in calm weather when rain is not predicted for the next 48 hours will help to ensure that wind or rain does not blow or wash pesticide off the treated area. Having application equipment under the treated area will help avoid run-off to water bodies or drainage systems.

**DIRECTIONS FOR USE**  
It is a violation of Federal Law to use this product in a manner inconsistent with its labeling. Apply this product only as specified on the label.

**PRODUCT INFORMATION**  
This insecticide's mode of action is through suffocation of eggs, larvae and nymphs of insects and mites and adults of soft-bodied insects. This mode of action necessitates total area coverage. Use a fungicide this product in combination with the treatment of the pathogen in the host and acts as a fungicide.

**USE PRECAUTIONS:**  
All horticultural oils interfere with or slow plant transpiration and respiration during periods of evaporation. DO NOT spray during periods of drought or when plants exhibit moisture stress.

Monterey horticultural oil label.

**AZATIN O**  
BIOLOGICAL INSECTICIDE SPECIMEN LABEL

INSECT GROWTH REGULATOR  
FOR INDOOR AND OUTDOOR USE ON ORNAMENTALS, TURF (INCLUDING COMMERCIAL LAWNS), VEGETABLES, AND OTHER HORTICULTURAL CROPS

ACTIVE INGREDIENT: Azadirachtin 4.5%  
OTHER INGREDIENTS: 95.5%  
TOTAL: 100.0%  
This product contains 0.28 fl. oz. (17% w/v) of azadirachtin per 16 fl. oz. pint.

EPA Reg. No.: 70051-9-59807 EPA Est. No.: 39578-TX-01

**KEEP OUT OF REACH OF CHILDREN**  
**CAUTION**  
To control no vertebrate invertebrates, including a group of parasitic wasps to be employed on alfalfa. If you do not understand the label, leaf someone to explain it to you in detail.

FIRST AID	
<b>If in eyes:</b>	<ul style="list-style-type: none"> <li>Hold eye open and flush slowly and gently with water for 15-20 minutes.</li> <li>Remove contact lenses, if present after the first 5 minutes, then continue flushing.</li> <li>Call a poison control center or doctor for treatment advice.</li> </ul>
<b>If on skin or clothing:</b>	<ul style="list-style-type: none"> <li>Take off contaminated clothing.</li> <li>Wash skin immediately with plenty of water for 15-20 minutes.</li> <li>Call a poison control center or doctor for treatment advice.</li> </ul>
<b>If inhaled:</b>	<ul style="list-style-type: none"> <li>Move person to fresh air.</li> <li>If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth, if possible.</li> <li>Call a poison control center or doctor for treatment advice.</li> </ul>
<b>If swallowed:</b>	<ul style="list-style-type: none"> <li>Call a poison control center or doctor immediately for treatment advice.</li> <li>Have person sip a glass of water if able to swallow.</li> <li>Do not give anything by mouth to an unconscious person.</li> <li>Have the product container or label with you when calling a poison control center or doctor, or going for treatment.</li> </ul>

Net Line Number: 1-800-350-4947

Net Contents: 1 Quart (32 fl. oz.) (946 mL)

**PRECAUTIONARY STATEMENTS**  
**HAZARDS TO HUMANS AND DOMESTIC ANIMALS**  
**CAUTION:** Avoid contact with skin, eyes or clothing. Harmful if swallowed or inhaled. Avoid breathing vapors or sprays mist. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, or using the toilet. Remove and wash contaminated clothing before reuse.

**PERSONAL PROTECTIVE EQUIPMENT**  
Some materials that are chemical resistant to this product are listed below. If you want more options, follow the instructions for Category C in an IRL chemical resistance category selection chart.

**Applicators and other workers must wear:**

- Long-sleeved shirt and long pants
- Chemical-resistant gloves, such as barrier laminate, butyl rubber, nitrile rubber, neoprene rubber, polyvinyl chloride (PVC), or Viton.
- Shoes plus socks
- Protective eyewear

Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's contents. Do not re-use them.

**User Safety Recommendations**  
Users Should:

- Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet.
- Remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
- Remove PPE, immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

**ENVIRONMENTAL HAZARDS**  
This product may be toxic to fish and aquatic invertebrates. For beneficial uses, do not apply directly to water, or

**ohp** Partners with nature

Azatin O can be used as an insecticide on many crops. Take care to not spray insecticides when pollinators are active.





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).

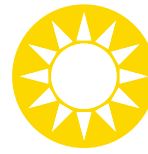
Some vines to consider are blackberry, cucumbers, snap peas, field peas, and muscadine and table grapes. These will require some trellising. Additionally, a plethora of vegetables can be grown here in Louisiana — artichokes, asparagus, eggplant, corn, okra and tomatoes. Some will produce better than 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.





The  
LSU AgCenter  
Soil Testing Lab  
is  
**OPEN**

**Get your soil tested!**

For more information, visit our website  
or call 225-578-1219.



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



Flame Thrower  
Coleus  
Spring 2020



*Ask for*

**Louisiana Super Plants**

Selected for superior performance under Louisiana growing conditions.  
Visit our website to learn more about these and other Super Plants.



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



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.



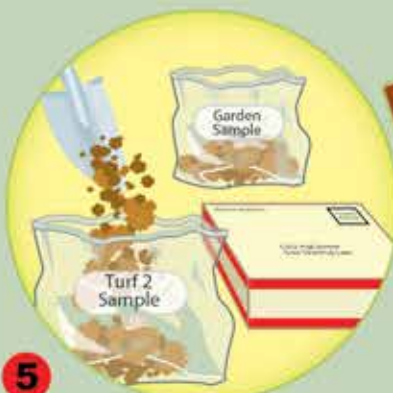
3

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

School of Plant, Environmental and Soil Sciences  
Horticulture Division  
155 J. C. Miller Hall - LSU  
Baton Rouge, Louisiana 70803



**Visit our LSU AgCenter Store**  
[www.LSUAgCenter.com/OnlineStore](http://www.LSUAgCenter.com/OnlineStore)

School of Plant, Environmental and Soil Sciences  
155 J. C. Miller Hall - LSU, Baton Rouge, Louisiana 70803  
225-578-4070; Fax: 225-578-1068

**Visit our website: [www.LSUAgCenter.com](http://www.LSUAgCenter.com)**

William B. Richardson, LSU Vice President for Agriculture, Louisiana State University Agricultural Center, Louisiana Agricultural Experiment Station  
Louisiana Cooperative Extension Service, LSU College of Agriculture  
PUB 3655-20-SU-SE (online) 5/20

The LSU AgCenter and LSU provide equal opportunities in programs and employment.