



Anthocyanin pigments are responsible for purple and maroon colors of leaves in fall. Photo by Heather Kirk-Ballard, LSU AgCenter

The Science of Fall Foliage Change

Shorter, cooler days bring brilliant foliage color changes for many trees and shrubs in fall. This time of year can be very beautiful as green foliage gives way to brilliant colors of gold, orange, maroon, red and yellow.

The reason for the color change has to do with trees preparing for winter, and the science behind fall color change has to do with that preparation. Broadleaf hardwood trees do this by losing their leaves so they won't freeze when temperatures drop.

The leaves of deciduous broadleaf trees are tender and susceptible to damage because they are thin and not protected by waxy coverings like evergreen trees. The fluid in the cells of the leaves freeze and must be sealed off and dropped in order to survive winter temperatures.

Evergreens such as pines and cedars are able to survive winter because they have needles covered with a heavy wax coating and they produce fluids that resist freezing. Thus the foliage of evergreens can safely withstand all but the severest winter conditions, although they do shed.

Autumn color can vary from year to year depending on the weather leading up to the falling of the leaves. The main influences are temperature and moisture. This can make foliage color changes differ each year.

Late springs and severe summer droughts or extended heat can delay the onset and decrease the intensity of the color change. However, a warm wet spring and good summer weather, followed by warm sunny fall days with cool nights and shorter days signal winter is coming. This is when deciduous trees begin their transformation.

Longer, cooler nights as we move toward winter signal the tree to stop making food. This stops the production of the green pigment chlorophyll that gives

leaves their green color. When this happens other pigments such as carotenoids now become visible, revealing the beautiful colors of orange and yellow.



Trees stop the production of green pigment chlorophyll revealing carotenoid pigments that give way to yellow.
Photo by Heather Kirk-Ballard, LSU AgCenter

Plants produce their own food through the process of photosynthesis. This process harnesses the energy of the sun and makes food from carbon dioxide removed from the air through the use of the green pigment chlorophyll to create sugar and starches.

Cooler nights signal to the plants to gradually close the veins in the leaves and the sugars produced during the day become trapped and cannot move out. This leads to the production of plant pigments such as anthocyanins that are responsible for the colors displayed such as maroon, purple and red.



Fallen leaves can be raked and used as mulch in landscape beds and gardens or composted. **Photo by Heather Kirk-Ballard, LSU AgCenter**

The veins that carry fluids into and out of the leaf gradually close off as a layer of cells forms at the base of each leaf. Once the leaves are sealed off, the leaf is ready to fall when a heavy rain or wind removes it from the tree.

Tree species can be recognized by their distinct colors in winter. Chinese pistache turns to brilliant reds and yellows. Beeches turn light tan or gold. Oaks typically turn red, russet and brown. Poplars turn yellow, hickories golden bronze, black tupelo turns crimson, and maples can be red or orange-red and yellow. Most other trees, the leaves simply shrivel up and turn brown.

Leave the leaves. Needles and leaves that fall are not wasted. They decompose and replenish the soil with nutrients and make up part of the spongy humus layer of the forest floor that absorbs and holds rainfall. Fallen leaves also become food for numerous soil organisms vital to the forest ecosystem.

By leaving fallen leaves on the ground, you provide materials for earthworms to break down and shelter for insects such as butterflies and moths, who overwinter in leaf litter providing a winter food source for many bird species.

Chop or shred leaves to make it easier for worms and beneficial microorganisms such as fungi and bacteria to break down the leaves. Leaves can be composted first to make leaf mold, or you can work the leaf mold into the top several inches of the soil in autumn. In addition, chopped leaves can be used as a winter mulch on top of garden beds to help retain moisture, reduce weeds and insulate roots from cold temperatures.

Autumn colors can be observed anywhere trees grow. There are many state and federal parks with beautiful scenic byways to observe the brilliant colors against dark, broadleaf evergreens and conifers. Take it easy and enjoy the changing of the season and the natural gift of color this fall.

*Heather Kirk-Ballard, Ph.D.
LSU AgCenter Horticulturist*

Fall is in the Air: Seasonal Gourds, Pumpkins and How to Enjoy Them

Though Halloween is still a month away, this weekend I noticed that several of the local garden centers and my grocery store had beautiful displays of pumpkins and gourds. Gone are the days of the basic jack-o'-lantern! The diversity of gourd and pumpkin cultivars being offered this year is pretty amazing and includes a lot of heirloom varieties that are great not just for decorations but for culinary uses as well.

Many were bred to be good storage foods that last for months in dry, cool places. Long Island Cheese, Cinderella, Yellow of Paris and Tokyo Blue pumpkins were all spotted. I also found Blue Hubbard, Turks' Cap and kabocha squashes, along with many I didn't recognize. They came in smooth, warty, large, small and every color imaginable. The classic field pumpkin, or jack-o'-lantern pumpkins, are also out there and are bred to have a large open cavity and an easy-to-carve rind. Be sure to grab a few of those for carving with the kids or grandkids but consider picking up some of the fancier squashes and pumpkins for your seasonal displays.

Many of the squash and pumpkins with thicker rinds last for months as decorations, even in our climate. Don't throw them on the compost heap when it's time to put the Christmas lights up, however. Many of these varieties being offered as decorations are also choice, delicious cultivars for cooking or baking. They were bred for superior flavor over many years and should find their way onto your holiday table.

If you are carving pumpkins this season, be sure to save everything you scoop out and sort the seeds from the stringy insides. The seeds can be roasted lightly in a pan with a little olive oil and tossed with some salt for a healthy but delicious snack. The roasted seeds are also great on salads, as a topping for soups, or accompanying roasted vegetables. Store roasted seeds in a closed container in the fridge if you aren't eating them right away. They can be reheated and crisped up by quickly sautéing them in a hot skillet for a minute or two.

The heirloom pumpkins and gourds are best eaten roasted. The rind can be difficult to cut with a kitchen knife, so in the past, an axe or hatchet would be used. You can roast them whole or in halves rubbed with some olive oil to keep the flesh from burning. Preheat your oven to 400 F, place the pumpkin or gourd on a cookie sheet and roast for at least one hour. Check if it is done by piercing it with a fork. There should be no resistance if the pumpkin or gourd is cooked fully. Larger ones take longer to cook through than smaller ones. The rinds should peel easily from the flesh. From here, they can be served mashed, as ravioli filling, as a pureed soup, or in pies, breads and other baked goods. Each year I also like to can pumpkin butter for gifts.

Many of the gourds and pumpkins found at the grocery or garden centers this time of year are open-pollinated heirlooms. Seeds can be saved from these for planting next year if there's something that caught your attention. Jack-o'-lantern and white carving types are usually hybrids so the seed may not come true to type, but they will still grow into some kind of cucurbit. The heirloom cultivars were developed by saving seeds year after year until a stable lineage of plant was established. Cucurbit family members can cross-pollinate readily though, so there is a chance the resulting fruits grown next year from seeds saved this year will not look like the parent. Cucumbers,

squash, zucchini, melons and gourds are all cucurbit family members. Still, if you'd like to try saving seeds for replanting next year, it is not difficult. Scoop the insides out of the pumpkin or gourd and separate the seeds from the stringy stuff like you would before roasting. Gently rinse the seeds in a colander. Place the rinsed seeds on paper towels or newspapers to dry. Make sure to space them out so they do not stick to one another and can dry evenly. Allow them to dry for a week, then store in a paper bag or envelope in the refrigerator. They can be planted next March through September. For pumpkins or gourds for Halloween next year, plant in the first two weeks of July.

Anna Timmerman
Assistant Extension Agent

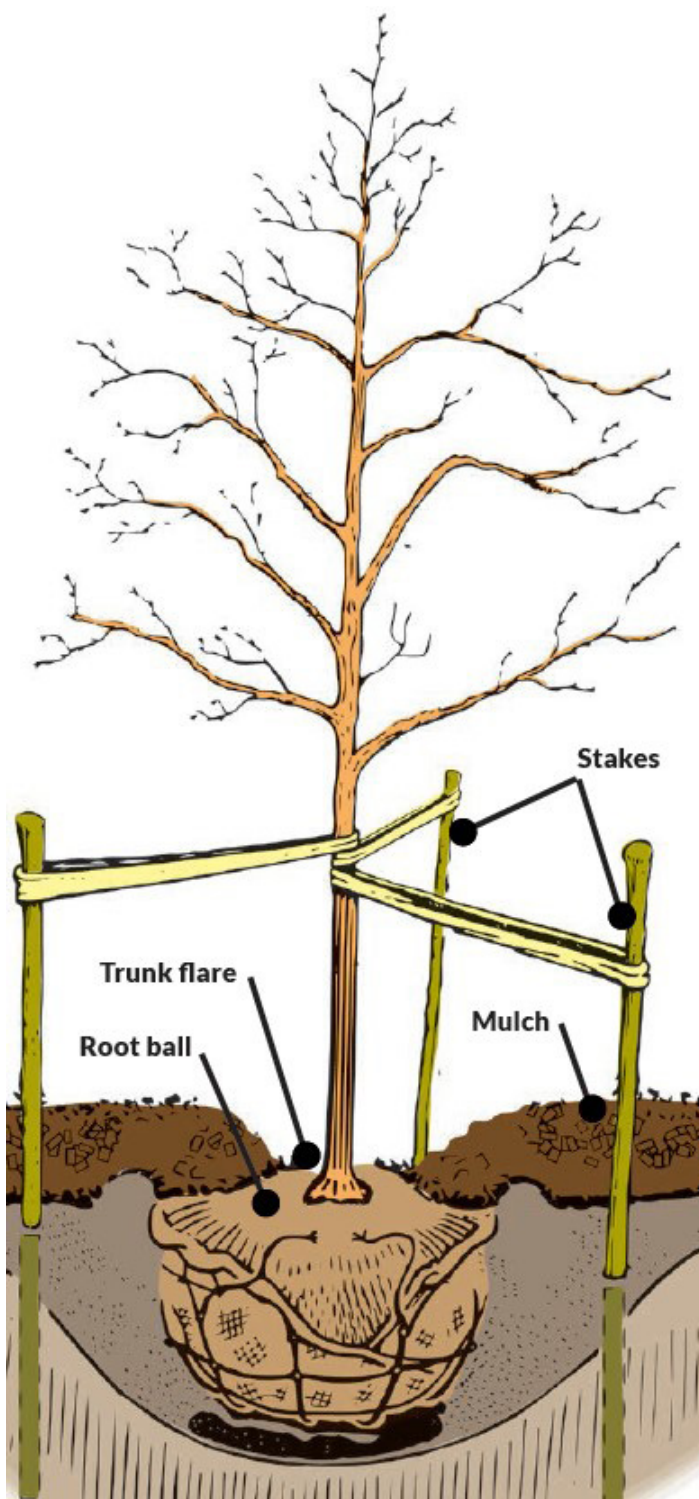
Planting a Tree

Digging a hole is not the most exciting garden task in the world, but digging a proper planting hole is the best thing that can be done to ensure the long-term success of a landscape tree. As daily temperatures start cooling down this fall, horticulturists and plant enthusiasts will start recommending the planting of shrubs and trees. Plant nurseries and garden centers have caught on with these recommendations and will increase their inventories of these larger landscape components.

As an extension agent making house calls, I often see a significant amount of tree problems that are caused by improper planting techniques, all of which could have been avoided if done right the first time. Review the following procedure and evaluate your technique to reduce tree decline and failure.

The very first step in planting a tree is determining what tree to plant and where to plant it. Choose trees by mature size and desirable features. The area where the tree will be planted will determine that maximum size. Call 811 so that they can mark underground utility lines in the vicinity. You may need to modify the location if there is an issue.

- Locate the trunk flare on the newly acquired tree. This is the area of trunk that expands outward before transitioning into the root system. This feature will be apparent on both container and field-grown plants, which are also known as ball and burlap trees. The trunk flare should be above grade and visible after the tree has been planted.



Tree planting diagram.

- Dig a shallow, wide planting hole. The depth is measured from the bottom of the root ball up to the trunk flare section. Do not make the mistake of using the height of the container (for container grown trees). Expand the planting hole two to three times wider than the root ball. Pile the backfill soil near the hole to replant with.

- Remove the tree from the container with minimal disruption of the root ball. Obvious circling roots and roots that turn and come in close contact with the main trunk, also known as girdling roots, can be pruned with sharp, clean pruners. Keep root pruning to a minimum by selecting quality plants at the nursery prior to installation.
- For planting a ball and burlap trees, it isn't necessary to remove the wire basket. The basket may be cut at the top, but removal can be stressful on the roots contained within. The nails can be removed and the burlap laid back if desired.
- Place the tree in the center of the planting hole and reconcile planting height and width. Have someone check straightness from a distance with two lines of sight 90 degrees apart.
- Fill the planting hole with the original backfill. Amend the backfill by chopping and fluffing with a shovel. Decomposed organic material can be included if desired. If that is the case, aim for a mix of 30% organic material and 70% original backfill soil. Replacing the soil completely will cause issues down the road.
- Mulch the soil directly above the root ball after planting. Maintain this mulch layer at 2 to 3 inches for maximum effect. Avoid mulching directly next to the trunk by pulling it 6 inches away. This will reduce moisture and prevent decay at the base of the tree.
- A three-stake system should be installed on larger trees to prevent them from blowing over and uprooting. Stakes can be molded plastic, metal or even crudely shaped from a two-by-four. Place three stakes equidistance from each other in a circle. Cloth webbing and straps make for good guy line material. Guy lines should be taught but not tight. Remove the stake system after the first growing season or when the plant has established new roots.
- Lastly, provide follow-up care to the new tree during the first year of growth. Water once or twice a week if the weather runs dry. Trees need more water during warmer times of the year, so adjust accordingly. Implement a fertilizer plan in year two by taking a soil sample, noting nutrient deficiencies and supplementing with fertilizers or soil amendments that fill in the gaps.

Set your new landscape trees up for success by following these guidelines. These practices will ensure a quicker root system establishment time so you can watch your tree grow into its new location with less stress. Well established root systems are the key to raising long-lived landscape trees.

*William Afton
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Picking the Right Pecans for Your Place

Planting pecans can be an excellent long-term, fruitful investment for your property. Pecans are often slow to mature, taking five to 10 years to enter production, but yield bountiful crops once they hit their stride. One of the most critical points to consider before getting started is what pecan cultivar or variety you want to establish. Ideally you want a cultivar with both great longevity and disease resistance that can thrive in a homeowner setting without too much extra maintenance. Additionally, there are several cultural practices that can help pecans be fruitful earlier and more productive over the life of the tree.

Pecan cultivar or variety is the number one consideration when thinking about getting started. A pecan's ability to thrive in homeowner conditions, where regular fungicide and insecticide applications are not practical, is the biggest factor that determines whether it will be productive. Some selections that worked well in the past are no longer recommended since they have lost their scab resistance.

Pecan scab is the main disease limiting pecan cultivation in low-input or organic conditions. It can affect leaf, stem and fruit tissues of the plant. In most cases it can be noticed by black spots that occur on those tissues but in extreme cases or sensitive varieties it can turn pecan shucks mostly black. When this occurs early in the season, it can result in a total crop loss. When it happens later, they can still develop but often at reduced quality. You want to plant something that has a proven track record of resistance or tolerance to pecan scab in small-scale orchard or residential settings to avoid any costly preventive measures.

I have spent the past few years traveling across the state and documenting what pecan cultivars are doing well and which ones are not in many different growing environments. Since the majority of those wanting to plant new pecans are wanting to do so in residential or low maintenance environments, I have been paying close attention to trees that have been productive with fewer inputs. I would not venture as far as saying I have found any that thrive on neglect, but I have found some vigorous selections that can shine in home gardens.

The cultivar Elliot is a trusted standby for pecan production in Louisiana. It makes a small, slightly teardrop shaped pecan with great flavor that shells out nicely into halves fairly easily. It has maintained superior scab resistance in our growing environments. In south Louisiana, it does have a tendency to lose its leaves earlier in the season due to a separate fungal complex but that can be usually controlled by those that can spray once or twice a season. Even if you cannot spray it, it tends to be productive but may be more prone to falling into an alternate bearing pattern. Alternate bearing is something common in pecans where they will have a crop one year followed

by a reduced or no crop the following year. This natural tendency in pecan can usually be ameliorated by good cultural practices including weed management, watering and fertilization. However, this can still happen even when best management practices have been adopted.

Kanza is a great cultivar to plant with Elliot since they have similar characteristics. Kanza's kernels and tree vigor resemble Elliot and have the advantage of having slightly better cold tolerance and a slightly earlier harvest date as well.



Elliot cultivar pecans.



Woodman cultivar pecans.

Unfortunately, Kanza and Elliot do not have complimentary cross pollination windows. Two selections I would consider for your pollinators are Woodman and Syrup Mill. Woodman is a selection from Pointe Coupee Parish that has shown great vigor and productively in low-input settings. It consistently makes pecans most seasons and holds onto its leaves late into the fall. I would consider it a medium sized pecan that can have a slightly darker kernel than average, but its ability to make a crop every year makes it a standout

selection for a residential or orchard setting. Syrup Mill has excellent golden kernels with nice flavor and is one of the best pecan pollinators. The shell comes to a point that is usually hollow, so its technical shell-out percentage is a bit lower. Despite that, the quality of the pecans is usually outstanding. Both of these selections have good scab resistance and should thrive in a homeowner setting.

For those that might be impatient and want pecans a bit sooner, I would consider getting a few Lakota pecans. It is a very vigorous selection of a subset of pecans termed precocious cultivars. That means they mature and enter production much quicker, and I have personally seen Lakota producing pecans in a 5-gallon pot at a nursery. Because of that, I often call it one of my old man trees, which means an old man can plant it and live to see something from it. Now it does come with a few issues like a tendency to overbear later in life, which means it struggles to develop those kernels, but it can be worth it for the early production potential.

No matter what pecan cultivars you end up deciding are best for your growing environment, good cultural practices including fertilization, orchard floor management and irrigation can greatly jumpstart the productivity of your planting. Those planted and left to their own devices can take 10 to 15 years to start producing pecans. In contrast, I have seen pecans in ideal settings start producing pecans in four to five years. So, if you have the option make sure to water, fertilize and control weeds regularly.

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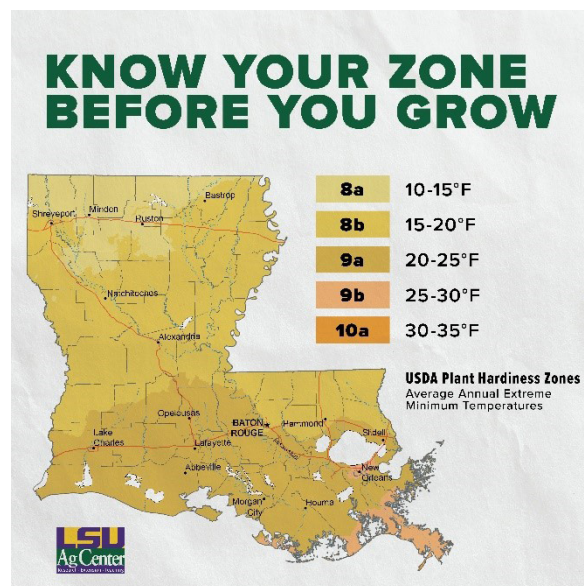
Beehive Buzz: Will the Manuka Plant Grow in Louisiana?

Local honey is a popular natural sweetener and a healthy food. Honey, in general, has healthful benefits including antioxidants, wound healing, improved digestion, soothing sore throats and more. Kayanush J. Aryana, a professor in the School of Nutrition and Food Sciences, wrote in an AgCenter article, “Honey acts as a sleep aid by raising insulin levels, which releases serotonin, a chemical converted to melatonin, a critical component in creating sleep. Honey has antibacterial properties because it has bee-derived antibacterial peptide defensin-1, methylglyoxal, hydrogen peroxide, a high osmotic effect, caffeic acid, ferulic acid and low pH. Several phytochemicals, organic acids, vitamins, and enzymes in honey are sources of dietary antioxidants. Honey helps intellectual development through its antioxidants, which help brain cells thrive and stay in great shape. Generally, darker honeys have a higher antioxidant content than lighter

honeys. Based on color shades, there are distinct types of honeys, including light, amber and dark. Honey has also been reported to increase the counts of probiotics, namely bifidobacteria and lactobacilli, in the colon.”

The University of Technology Sydney in Australia is studying manuka honey and reported, “Manuka honey from New Zealand is already established as a valuable antibacterial agent, particularly for treating slow-healing wounds. Now scientists will evaluate the potential of honey derived from related trees in Australia to meet the increasing worldwide demand for medical honey.”

The manuka plant (*Leptospermum scoparium*) is native to New Zealand and Australia. What if a gardener or a beekeeper wanted to grow manuka for its healthful honey? Would manuka grow in Louisiana?



USDA Hardiness Zones for Louisiana.

The short answer is probably “yes” because manuka will grow in USDA Hardiness Zones 9 and 10 which includes coastal Louisiana. Most of Louisiana is in Zone 8, however, so manuka would have to be protected from cold temperatures like citrus and figs are when freezing temperatures are forecast.

The website of the Missouri Botanical Garden (MBG) reports that its mature height ranges from 6 feet to 10 feet. It is a long-lived perennial shrub in the myrtle family with evergreen, fragrant foliage. This plant prefers full sun, and fertile soil with acidic pH less than 6.

Manuka blooms from June to July and includes red, pink or white flowers. These pretty flowers are highly attractive to bees, and their nectar enables honeybees to make medicinal honey.



Manuka flowers. Photo by the Missouri Botanical Garden

MBG shared this note about manuka invasiveness, “This plant has escaped gardens and naturalized in certain parts of Hawaii where it is now considered to be an invasive plant. Double flowered cultivars often produce little seed, however, making them less likely to naturalize.” However, manuka failed to make the USDA’s Invasive Species Profiles List.

An online search of American nurseries that sell manuka plants revealed that California and Arizona have these nurseries. However, one retail nursery in Forest Hill, Louisiana, is known to have manuka plants.

Finally, another name for manuka is “tea tree” because Captain Cook, a British explorer, and his crew brewed a tea-like drink with the manuka leaves.

If you want to contact Beehive Buzz, please email your questions and pictures to khawkins@agcenter.lsu.edu or call 318-264-2448. Also, you can be on the “beemail” email list by emailing your request to the address above.

Keith Hawkins
Area Horticulture Agent

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Growing Garlic in Louisiana

Garlic (*Allium sativum*) is a widely used spice favored by chefs for both its flavor and potential aphrodisiac properties. Garlic is also used as a natural medicine for many health ailments related to heart functions. Louisiana’s late fall and early winter months are the ideal time to plant garlic as exposure to cool temperatures followed by longer days are needed for garlic to form bulbs of desired sizes. Garlic planted between September and November will produce usable bulbs approximately eight to nine months after planting.



Fresh garlic growing in the garden. Plastic mulch is used in larger gardens to keep weeds at bay. Natural mulches are also very effective.

Three predominant types of garlic grow in Louisiana: elephant or Tahiti garlic (mild-flavored, large, dark-colored cloves), Creole garlic (white cloves intermediate with respect to size and pungency), and Italian garlic (strong-flavored, small, pink-skinned cloves). Elephant garlic is actually a different species than regular garlic and is more closely related to leeks. Both the elephant and Italian garlic have excellent storage life.

Louisiana gardeners will do well planting both softneck and hardneck garlic types. Silverskin is a white, softneck type with a medium-large head. Other softneck cultivars, such as California Early and New York White Neck, also can be grown here. Keep in mind where the plants are coming from when ordering garlic. Sometimes the garlic found in produce sections of stores will not be the best types or cultivars to be grown here. Especially if those garlic bulbs are long-day rather than short-day types. When purchasing garlic for planting, it’s best to obtain the bulbs from a local plant nursery or garden center, to ensure it is from a reputable source and is a variety known to produce well here.

Garlic bulbs or heads should be stored whole and only broken apart into toes or cloves just before planting.

Plant individual garlic cloves 2 to 3 inches deep and 3 to 6 inches apart. Be sure that the top ends (the pointed end) are pointed upwards. When planted in rows, garlic can be double drilled. In other words, two or more “drills” (rows) of plants can be spaced about 1 foot apart within each row. To help with sprouting, store the seed bulbs in the refrigerator one to two weeks before planting.



Garlic bulbs must be separated into individual toes before planting in the garden.

Before planting, the soil or beds should be prepped to form a loose soil. Fertilizer should be incorporated into the soil prior to planting. Garlic performs best on a well-drained soil and should be planted in full sun. If drainage is an issue, high hipped rows or raised beds are the best options. An application of 4 to 5 pounds (8 to 10 cups) of 8-24-24, 10-10-10, or 13-13-13 fertilizer can be mixed into the soil for every 100 feet of row (or 300 ft²). Fertilize the garlic stand several times throughout the growing season. This is called a side-dress application because it is applied after planting and to the side of the plants about 4 to 6 inches from the base. Side-dress applications should be made when shoots emerge from the soil (about three to four weeks after planting), when new growth begins in late winter (around mid-February), and three to four weeks after the second application (around early March). When side-dressing, 1 pound of 33-0-0, 1.5 pounds of ammonium sulfate or 2 pounds calcium nitrate can be used each time for every 100 feet of row (or 300 ft²). Soil sulfur is important for growing allium crops. The use of ammonium sulfate, which has slight acidifying characteristic, would be used instead of calcium or ammonium sulfate if your soil pH is 6.5 or greater.

Weeds and insects can be an issue when growing garlic. A heavy application of mulch 3 to 4 inches thick in the winter, after planting, can greatly reduce weed pressure through the winter and into the spring. As for insects, a common issue seen on long-season crops is a very small insect called thrips. At first sighting of these insects, an application of malathion, insecticidal soap or neem oil can be applied as needed.

Harvest mid-May through June when the leaves turn yellow and when 50% to 60% of tops have fallen over. If left in the ground too long, the heads will split open in the soil. When harvesting, lay the garlic bulbs in the shade to set the skin or cover the heads with foliage to avoid sunburn. Trim roots and braid or trim the necks to 1 inch in length. Store trimmed garlic in sacks like dried onion bulbs. You may save some seed stock to replant in the fall if no virus was visible.

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Not All Fall Lawn Care Tips Are Created Equal

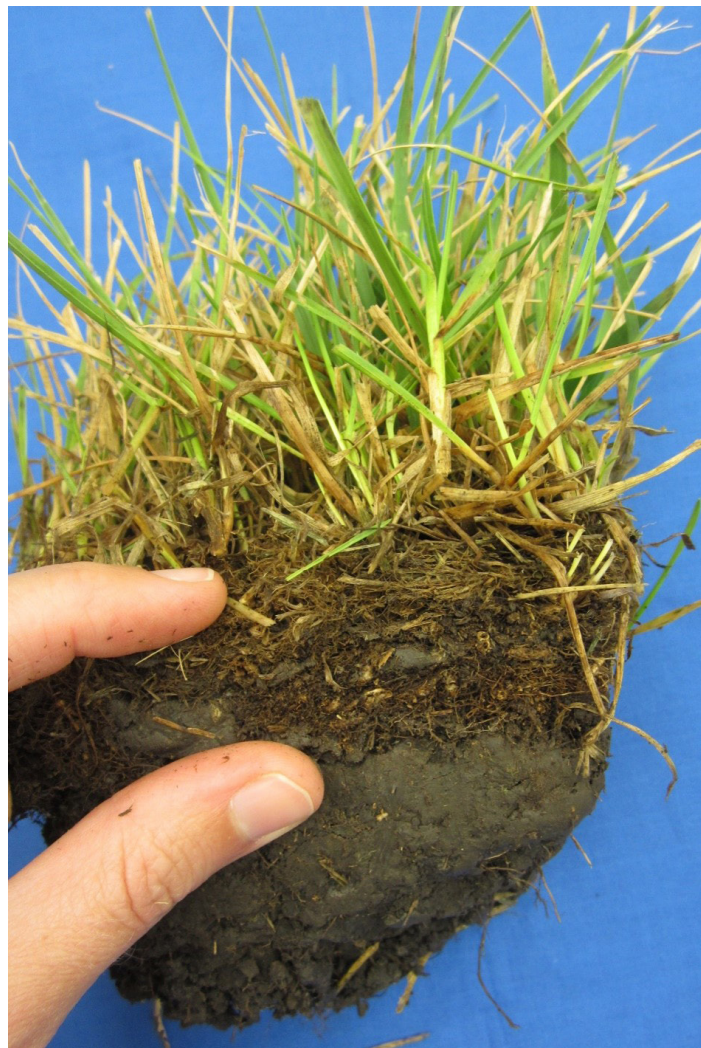
If you search the web for “fall lawn care tips” or “lawn care tips for fall,” you will most certainly come across various articles suggesting many of the same actions or practices. Things like seeding, aerating, thatch removal and fertilizing are all likely to make many generic fall lawn care checklists. But how do the previously listed practices fit when it comes to Louisiana lawn management for fall? Let’s look closer and evaluate when you should and shouldn’t heed their advice. For the sake of this article, the assumption will be made that we are discussing fall management of warm-season grasses common throughout Louisiana such as centipedegrass, St. Augustinegrass, bermudagrass and zoysia.



An implement used to aerate soil including a detailed look at an aerated lawn.

Aerating

Aeration, or aerifying, is the practice of manually or mechanically removing small cores of turf and soil, which opens channels in the root zone and facilitates the downward movement of air and water through the soil. It is also commonly done to help reduce soil compaction. Fall aeration is suggested for cool-season grasses grown in northern regions of the United States. This is because fall is one of the seasons where cool-season turf grows most vigorously. Aeration can be stressful to turf, so it is commonly suggested during times of most active growth. Fall in Louisiana signals warm-season grasses to start hitting the brakes on vigorous growth and start accumulating resources to get through the winter months. Pulling cores and injuring your turf as it’s trying to prepare for winter would not be considered a best management practice, this is why fall aeration of warm-season turf is not recommended. A better time to conduct aeration for turf in Louisiana would be during the late spring and early summer when the grass is actively growing and has plenty of time to recover before winter.



A closer look at what thatch is and how it impacts lawns.

Thatch Removal

Thatch removal can be referred to by a few names. Scarifying, verticutting and vertical mowing all refer to the physical removal of thatch, which is the layer of dead and living shoots, stems and roots that accumulate above the soil surface but below the grass canopy. Removal is commonly done using vertically oriented blades that slice through the top layer of soil and pull thatch up to the surface, along with living portions of grass. You’ll commonly hear thatch referred to with negative connotations but remember, it’s not all bad. A small layer of thatch (less than 3/4 inch) can be a good thing. It can act as a sort of mulch layer in your lawn, helping to moderate drastic soil temperature and moisture fluctuations. It’s when this layer is allowed to continually accumulate that problems begin to occur and thatch removal is suggested.

Again, like aeration, thatch removal can be stressful for your lawn. This means it’s best done to a stand of actively growing grass. Because fall is when warm-season grasses begin to shut down for the year, damaging the lawn at this time is not recommended. If

you decide to perform some fall thatch removal, you're not going to do irreparable damage, but it's best to wait until spring and summer to focus on this process.

Fertilizing

Nitrogen, phosphorus and potassium are represented by the three numbers you've likely seen on bags of fertilizer, such as 10-10-10. For winter, two of these take center stage – nitrogen and potassium. You've likely heard of winterizer fertilizers. These fertilizers contain moderate amounts of nitrogen and relatively large amounts of potassium. Potassium has been shown to boost the winter stress tolerance of grasses, but mostly on soils that are deficient in potassium. This means more isn't always better. Soil testing in the fall can help you determine the potassium levels in your soil. If potassium is deemed sufficient, using a winterizing fertilizer in the fall will likely yield little benefit for your lawn and result in a wasted fertilizer application.

Speaking in broad generalities, nitrogen should be limited on warm-season turfgrasses after the month of August. Bermudagrass would be the exception where a September nitrogen application may enhance fall color without sacrificing winter hardiness. Multiple studies have shown that September nitrogen applications to bermudagrass did not increase winter injury but enhanced spring green-up. That research was conducted on specific cultivated varieties (cultivars) of bermudagrass and may not apply to all bermudagrass turf. For the long-term health of your lawn, playing it safe is probably the best idea, so instead of fall nitrogen, consider foliar applications of iron for a greening effect without a flush of succulent growth heading into winter.

Seeding

Seeding for repair of summer damage to cool-season lawns makes sense during the fall. If done early enough, there can be ample time for the seedlings to grow and establish before the first frost event. With warm-season grasses, the shorter days and cooler temperatures are not as hospitable as they are for cool-season grasses. Growth is slow for warm-season turf in the fall and seed may not have enough time to mature before winter stressors set in. It's not impossible to try establishing some warm-season seed in the fall, but the likelihood of survival into the spring depends on how soon you get it growing. Like the previously listed items, there's no absolute saying you shouldn't, but it's much safer for your seed and your wallet to wait until after the last frost the following spring.

Adjusting Mowing Height

This is a standard tip that makes most lists, but referencing which grass type is being mowed is not as common. Lowering the mowing height of cool-season grasses going into winter can be a great idea. Ideally, homeowners would have raised the mowing height of their cool-season lawns for summer, allowing them to better cope with the stress of

heat and drought. Dropping the mowing height back down in the fall as temperatures cool helps reduce the amount of matted leaves and succulent tissue that can harbor disease during the winter months. Since extended periods of snow cover are not a concern in Louisiana, lowering the mowing height on warm-season grasses is not recommended. Instead, continue to mow at the recommended mowing height for your warm-season grass until the first frost.

Lawn care, especially in a state as big as Louisiana, can be highly nuanced. You might have noticed that there isn't a straightforward, cookie-cutter answer for many of the listed practices. We try not to speak in absolutes regarding your lawn and what you would like to do with it. Hopefully, looking closer at some fall lawn care practices will help you make informed decisions regarding what's best for you and your lawn.

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Louisiana Vegetable Gardening



Lettuce comes in a variety of textures and colors. Try several varieties to add color to your garden and your dinner plate.

September can be hot, but we at the LSU AgCenter have high hopes for a cool fall in October and November – not too cold of course, but just right. “Just right” is probably the best way to sum up Louisiana fall gardens. The temperatures aren’t unbearable, and the insects seem to be on a diet. They are still here and eating of course, but not as ravenously as in the summer. Diseases, while always present, seem to give us a little break in the fall. So, while its just right, let’s go out to the garden and start planting edibles!

Vegetables to Plant

September

- **Plant seeds early:** Parsley and snap beans.
- **Plant seeds late:** Endive, carrot, English pea, snow pea, garlic, kohlrabi, lettuce, mustard and onion.
- **Plant seeds all month:** Radish, rutabaga, shallot (sets), spinach, Swiss chard, turnip and kale.
- **Plant transplants or seeds all month:** Beets, broccoli, Brussels sprouts, cabbage, Chinese cabbage and cauliflower.

October

- **Plant seeds early:** Mustard, turnips, collards, kale, parsley, shallots, radishes, beets, spinach, leaf lettuce, Chinese cabbage, celery, onion, Swiss chard, garlic, carrot and endive.
- **Plant transplants all month:** Broccoli and cabbage.

November

- **Plant seeds early:** Kale, radishes, mustard, carrots and turnips.
- **Plant seeds or transplants early:** Beet, Swiss chard and spinach.
- **Divide and replant now through spring:** Shallots.



Iceberg lettuce can be grown in Louisiana, however, expect very small, loose heads. Iceberg is pictured here, but other types, such as Romaine, butterhead and leaf will grow much better.

A Few of My Favorite Crop Highlights

Green Shallots

Plant shallot sets any time during the fall or winter. Replant a portion of the bulbs each time you harvest. By doing this, you will continue to produce shallots throughout the spring. The largest shallot bulbs for sets are produced when transplanting from mid-November to December.

Lettuce

September and October are the best months to plant lettuce. All lettuce types (head, butterhead, Romaine and leaf) should be planted so they are harvested before a hard frost. Date from seed to maturity varies by cultivar. Space lettuce plants 12 inches apart in the row. They may be double drilled. Three to four weeks after transplanting, side-dress lettuce and repeat side-dressing again two to three weeks after the first application. Leaf lettuce can be directly seeded. Remember lettuce seed requires a little bit of light to germinate. So, press it firmly into the soil and water in.

Greens

Direct-seed greens throughout the fall. As the seeds emerge, thin them to 3 to 4 inches between plants. A trick to avoiding thick plantings is to shake the seeds out of a recycled herb/spice container into the soil. For optimum germination, keep the soil moist. To control weeds, incorporate Treflan into the soil prior to planting. Double drills may be planted on one row, allowing 10 to 12 inches between drills. You may also simply scatter them across the top of the row or raised bed. When harvesting, leave a few inches of green material in the ground. Add a little liquid fertilizer and the greens will regenerate new foliage giving you a second and sometimes third harvest.

Broccoli and Cauliflower

Transplant both broccoli and cauliflower during September and October in south Louisiana. I usually space broccoli on 12-inch centers and double drill them on the row. Cauliflower is very large, so we do not recommend double drilling and space at least 18 inches apart.

Both crops respond to high rates of fertilizer. Apply 0.5 to 0.6 pounds of 13-13-13 per 10 feet of row as a pre-plant fertilizer. Side-dress cauliflower and broccoli with calcium nitrate or potassium nitrate about two to four weeks after transplanting. Side-dress again at two-week intervals two to three more times. This will increase yield.

Chinese Cabbage

Chinese cabbage is an excellent crop for fall gardens because the heads are pretty as well as tasty. Seeds are planted in September. Solid heads form 55 to 60 days after seeding.

Spinach

Spinach requires a cool, fertile and well-drained soil with a pH of 6 to 7. Wait until temperatures cool for best germination, or germinate seed in the refrigerator prior to sowing. Moisten seeds and place them in the refrigerator for 24 hours, then sow.

Apply 0.5 pounds of a complete fertilizer such as 13-13-13 per 10 feet of row about two weeks before planting. Use calcium nitrate for side-dressing approximately one month after seeding. Doing so will keep spinach growing quickly, making it tender and improving quality. An additional side-dressing after harvest will improve yields on second cuttings.

Plant seeds about 1/2 inch deep and thin plants to 1 to 3 inches apart in the row. Since seeds are slow to germinate, be sure to keep soil moist. Double drills may be planted on one row. Allow 8 to 12 inches between drills.

Carrots

Start direct-seeding carrots during September and continue to plant throughout the fall season. Form high, well-drained rows. Thin seedlings to about 2 inches apart. If you have heavy clay soils, simply cover the seeds with a loose potting mix. Clay soils tend to form a crust and prevent the seeds from emerging. Some carrot varieties require light for germination so firmly pressing seed into the soil and watering is a good technique if you have had trouble with germination in the past.

Enjoy the garden!

*Kathryn Fontenot, Ph.D.
Extension Vegetable Specialist*

Fall Lawn Care in Louisiana

Should You Fertilize the Lawn During Fall?

Louisiana usually stays warm well into the fall, and lawns continue to grow until nighttime temperatures dip into the 50s. So be sure to mow and water your lawn, as needed, to keep it healthy.

If the fall feels more like summer, keep an eye out for armyworms in bermudagrass. Sod webworms and chinch bugs may still be active in St. Augustinegrass deeply into the fall. Chinch bugs are most active in hot and dry weather. Insecticides such as carbaryl, bifenthrin, and chlorantraniliprole are effective insecticides for killing chinch bugs and moth larvae such as armyworms.

When summer is over, it is time for your fertilizer spreader to hibernate until next. Fertilizing warm-season lawn grasses during the fall with high nitrogen (summer type) fertilizers or winterizing fertilizers containing high

levels of nitrogen are not recommended for Deep South lawns. Stimulating fall growth of St. Augustinegrass, centipedegrass and zoysia with nitrogen leads to increased large (brown) patch disease and winter kill. Bermudagrass may be fertilized into September, but I would not make any more applications of high percentage nitrogen-containing fertilizers after late August on St. Augustinegrass, centipedegrass or zoysia.

If you would like to extend the green color in home lawns this fall, apply foliar iron spray or spreadable iron granules. This will give you a nice flush of green color without increased growth.



Bedstraw germinates in October and matures in the spring.

Winterize the lawn?

I am sure that you have heard of winterizer fertilizers. Potassium – the last number in the three-digit analysis on a fertilizer bag – is the nutrient associated with winter hardiness and increased disease resistance with turfgrass. There is an advantage to having the correct amount of potassium in the soil when it comes to dealing with environmental stress. Get a soil test before applying high potassium fertilizer, however, since there is no advantage to applying excessive amounts of this nutrient. If a soil test indicates that potash is lacking, choose a

fertilizer containing potassium but with zero or a very low percentage of nitrogen (the first number on a fertilizer bag) during the late summer or early fall since we are not trying to stimulate growth for the reasons discussed above. If a soil test calls for adding potassium, you can apply during late summer to early fall while the lawn is still growing. Very slow growth still occurs even though day lengths get shorter by late September and October. I am sure that you have probably noticed before that you do not have to mow your lawn as often in October.

An important fact to consider if you bag your lawn clippings - the removal of grass clippings from lawns can severely deplete the soil of potassium. Grass leaves and stems contain very high levels of potassium. Keep in mind that when a lawn is mowed appropriately, it is better to leave clippings to decompose on the lawn as a good source of turf nutrients, including potassium. Clippings from a lawn that is mowed regularly have only a small role in the overall buildup of thatch in turfgrass.

Speaking of Soil Tests ...

Fall is the best time of the year to get your soil tested by the LSU AgCenter Soil Testing Lab.

Soil testing really is the first step to a beautiful lawn next spring and is the best way to determine exactly what your lawn needs to become lush and healthy. If you have not tested your soil in the past several years, do it now.

To test your soil, submit a pint of soil to the LSU AgCenter Extension Service office in your parish. This pint of soil should be a composite soil of samples collected from several different areas in the lawn. You only need to go about 4 inches deep for lawns. Also, to simplify the soil sampling and submission process, there are pre-addressed submission boxes with sampling instructions at several garden centers throughout the state. There is a small fee for testing.

The sample results will be sent to your home mailbox and email in less than two weeks. An LSU AgCenter extension agent can help you interpret the results from the soil sample. The results may indicate that lime is needed to increase soil pH. If so, fall/winter is a good time to apply lime, since it takes several months to activate in the soil. Elemental sulfur may be recommended to reduce soil pH in alkaline soils.

Weed Control

The best way to cut down on winter weed problems is to get your lawn thick and healthy during spring and summer months. If your lawn struggled during the growing months, inevitably it will be full of winter weeds next spring. Late summer/early fall is your first opportunity to reduce winter weed infestations with pre-emergence herbicides. Pre-emergence herbicides such as prodiamine, pendimethalin, dithiopyr, isoxaben and indaziflam may be applied in mid to late September to help manage the first flush of winter

weeds like annual bluegrass, chickweed, and lawn burweed. Consider reapplication in early November. These herbicides work prior to the emergence of the weeds, so timing the application before the weeds germinate is critical. Atrazine can be applied on most southern lawns for annual bluegrass and broadleaf weeds in October except for bermudagrass. Atrazine could be applied on



Yellow woodsorrel is a common weed seen in the fall.

bermudagrass after the bermudagrass is dormant. MSM (metsulfuron) can be highly effective post-emergence on broadleaf weeds such as white clover and lawn burweed. Lawn burweed or “sticker weed” is a winter annual that germinates in October and grows all winter long. Next April, lawn burweed produces the burs that are capsules that contain burweed seed. To avoid the stickers in the spring, you must treat lawn burweed during fall and winter.

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Armillaria Root Rot of Woody Ornamentals, Fruits and Trees

Root rot caused by *Armillaria* species is a destructive disease of a wide variety of woody ornamentals, trees, shrubs and fruit trees. Common host plants include roses, camellias, azaleas, bottle brush, jasmine (confederate), oaks, pines, Leyland cypress, peaches, pecans and more. The disease is generally attributed to *Armillaria mellea*, however, several different species of *Armillaria* can cause root rot. In the southeastern United States, *A. tabescens* is primarily responsible for causing the disease.



Figure 1. Yellowing of foliage on a rose infected with *Armillaria* root rot.

Symptoms caused by this disease are similar to those caused by other root rot pathogens. Infected plants wilt, rapidly decline and eventually die. Leaves turn yellow and defoliate (Figure 1). In some hosts species, the entire canopy turns brown (Figures 2 and 3). A white fungal mycelium is usually present underneath the bark at the base of the stem and the roots, which can be easily seen by removing a section of the bark (Figure 4). In severely infected shrubs or trees, the white mycelium extends into the crown region (Figure 5), and even a few feet up on the trunk (Figure 6). Clusters of honey-colored mushrooms commonly appear at the base of infected plants (Figure 7).

Armillaria tabescens is a soil-borne fungal pathogen normally associated with hardwood forests. It may survive in the soil on infected roots for several years. Disease can be more problematic in urban landscapes that are created on previously wooded areas. The pathogen becomes active when roots from a new tree or shrub come in contact with old, infected roots. The disease spreads from one plant to another through root-to-root contact or by the growth of the fungus through the soil by means of fungal structures called rhizomorphs.



Figure 2. Italian cypress (tree on right) showing browning of entire canopy because of root rot caused by *Armillaria* root rot.



Figure 3. A sawtooth oak exhibiting browning of entire canopy caused by *Armillaria* root rot.



Figure 4. White fungal mycelium of *Armillaria* species visible on the stem of a viburnum shrub after removing a section of the bark.



Figure 5. White fungal mycelium present on the crown under the bark of an infected rose bush.



Figure 6. Bottle brush showing white fungal mycelium extended two feet up on the trunk.



Figure 7. Cluster of honey-colored mushrooms produced by *Armillaria* species.

There is no cure for this disease. Once a plant is infected and the fungus is established, little can be done to save it. No chemicals are available to control this disease. However, there are culture management practices that may help to either avoid or reduce the impact of this disease. Start with disease-free, healthy plants. Do not plant them too deep. Completely remove and discard plants suspected to be infected with *A. tabescens*. Careful removal of the stumps and roots along with significant amount of soil from previously infected sites may help reduce the fungal inoculum. Avoid planting susceptible hosts in the same locations where infected plants were previously removed. Water thoroughly and deeply and as infrequently as possible without causing drought stress. Avoid continuous wetting of the base and crown region of the plants, which favors the growth of the fungal pathogen. Use of excessive mulch (mulch mounds) around the base of the plant should be avoided to keep the crown region dry. Follow a proper fertilization program.

Suspected host plants infected with *A. tabescens* can be submitted to the Plant Diagnostic Center for confirmation. For more information, please visit our website at www.lsuagcenter.com/plantdiagnostics.

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