



Horticulture Hints

for **NORTHWEST** Louisiana

Fall 2019

Upcoming Events:

Ruston Fall Gardening Seminars

August, September and October

Contact Gary Stockton for more information.

GStockton@agcenter.lsu.edu

North Central Louisiana Master Gardeners Fall Plant Sale

Early October

Visit the North Central Louisiana Master Gardeners Facebook Page for updates on date and time.

Northwest Louisiana Master Gardeners Fall Bulb Sale

8:00 a.m.-noon Oct. 26

Randle T. Moore Senior Center
3101 Fairfield Ave., Shreveport

Look for Signs of Fall Armyworms in Your Lawn

This time of the year can be very stressful on turfgrass in northwest Louisiana — either too much rain, not enough rain, high heat or many other things. Once these turfgrasses get stress, they have a harder time dealing with some of the more common insects and recuperating from insect injury.

One of the more common and destructive insect pests we have from June to November is the fall armyworm. These caterpillars can destroy an entire lawn overnight or leave bare spots and chewed up grass blades behind. Armyworms are tan to green to brownish black in color. They have stripes on the sides of their bodies, but the most distinctive marking is an upside-down Y on the top of their head.

Signs of armyworm-infested turfgrass can be bits of chewed leaves, green fecal pellets and entire leaves chewed. Often you will notice an increase in birds feeding.

A great method to help reduce injury to your lawn is by maintaining a healthy lawn. Apply proper fertilizer according to LSU AgCenter soil test recommendations. Irrigate when needed, getting at least 1 inch of water per week. Maintaining proper blade height with regular mowing can also improve the health of your lawn.

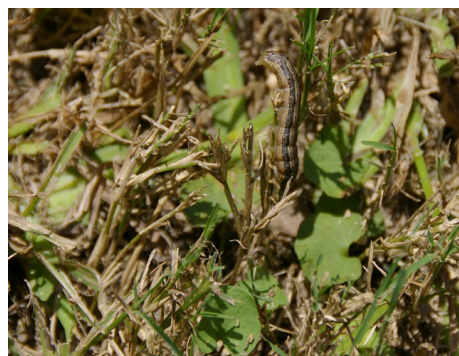
When armyworms cause excessive damage, then chemical control may become necessary. A good insecticide for armyworm control will contain one of the following active ingredients: bifenthrin, chlorantraniprole, halofenozide, carbaryl or spinosad.

As always, call your local LSU AgCenter office for more information.

*Gary Stockton
County Agent, Lincoln and Bienville Parishes*

Never miss an issue of *Horticulture Hints* from the LSU AgCenter!
Visit the *Horticulture Hints* website at
www.lsuagcenter.com/HortHints

Then click on the *Subscribe* button!



Fall armyworm turfgrass injury.



Fall armyworm adult moth.

Planting Autumn Alliums, Plants That Add Variety to Your Garden and Flavor to Your Kitchen

Garlic, onions and shallots are all members of the Alliaceae, or onion, family. Plants in this family are native to central Asia, and they are easily recognized by their characteristic flavors derived from their sulfur compounds. Onions are the most popular of these crops in much of the country. However, for us in Louisiana, shallots and garlic come in a close second. While Alliums are used mostly for seasonings, they also provide a good source of vitamin B and contain simple sugars glucose, fructose and sucrose. Alliums are easy to grow, are quite hardy and grow from fall to late spring. They are the perfect plant for the sunny, well-drained ground garden, raised bed or large container.

Of all the Allium species, garlic is a wonderful choice to plant in a container. It is an easy crop to grow but takes a long time to finish. It is generally harvested in late May. This is why it is a great container plant. You can still enjoy growing it without taking away valuable space in your garden bed.

To plant garlic, break apart the garlic bulb into individual cloves. You may see garlic “cloves” sometimes referred to as “toes.” This is because, in some countries, a garlic bulb is referred to as a foot of garlic and thus the individual cloves are said to be toes. Try to only plant the larger toes, as this will be the garlic’s starting energy it needs to begin producing roots and a shoot. Place the garlic pointy end up the

soil, pushing the toe just below the soil line. The toes should be spaced around 8 inches apart. After planting them, make sure to keep them watered. They will do most of their vigorous growth throughout the winter season. Mulching the container with leaves or other mulch material can help reduce weed competition and improve maintenance over the winter and spring.

It is always important to check planting dates before seeding or directly planting any crop in Louisiana. To do so, check out The Louisiana Vegetable Planting Guide, LSU AgCenter publication No. 1980, which can be picked up at your local LSU AgCenter extension office or downloaded online at www.lsuagcenter.com/profiles/bneely/articles/page1481835882715.

*Mark A. Wilson
Northwest Regional Agent
County Agent, Claiborne and Webster Parishes*



Garlic toes should be spaced about 8 inches apart and planted in a sunny location.



The petunia, such as this Opera Supreme Pink Morn variety, is a great annual to plant in the fall.

Fall Annuals

As fall approaches many of us take our minds from gardening and flower beds to football and hayrides. Fall and winter are the times of year we often do not think about new growth. We think about leaves turning different colors and falling off, cool nights and plants going dormant. But many people do not think about the numerous plants that can thrive with cooler day and night temperatures.

In Louisiana, we are blessed with a long growing season and should take advantage of those days. There are many beautiful fall annuals that can be planted in late summer and early fall and can brighten up a fall day. Annuals can be grown from seeds or by going to your local gardening store and buying the actual plant. Many are easily grown in pots, hanging baskets or in existing flower beds. Some examples of these are pansies, violas, aster, mums and petunias. These plants need rich, moist soil that is well drained. They can be placed in partial to full sun. Many of the fall annuals can survive a light frost and continue growing into early winter.

Adding annuals is an easy way to add beautiful colors to fall days.

*John Monzingo
County Agent, Claiborne and Webster Parishes*



Louisiana Super Plants Selection for Fall 2019

Jolt Series Dianthus

The Jolt series dianthus is a hybrid (*Dianthus barbatus Jolt*) cool-season annual for Louisiana. It is an interspecific series that has three showy colors to choose from: cherry, pink and pink magic. In Louisiana, it is best to plant these in the fall for beautiful winter color or in the very early spring for color through May, and if you're lucky it may last year-round. This dianthus is said to be more heat tolerant than some other types of dianthus and holds up better to Louisiana heat.

Jolt dianthus prefers an enriched, well-drained soil and blooms best in a full- to partial-sun locations. It makes gorgeous showy flowers. Jolt has a continual bloom without setting seed. It is a very durable plant that can withstand hotter temperature conditions and has few disease issues. This dianthus is well-branched and easy to produce. It has dark green leaves on shorter, more compact plants compared to the Amazon dianthus. Jolt grows to 16 to 24 inches in height and 12 to 14 inches in width. Its growth habit is tall and rounded and is especially attractive to butterflies, bees and other pollinators.

The colors Jolt Pink, Pink Magic and a darker red color called Jolt Cherry all have clusters of flowers on well-branched stems. To encourage continuous blooming, deadhead or trim the faded flowers.

These flowers will look great paired with other summer favorites still blooming into the fall. To name a few, black-eyed Susan, bee balm,

zinnias, marigolds, cassias, angels trumpet, butterfly bush, firecracker plant, firebush, Mexican Heather and vincas. In your landscape, make a statement by installing a mass planting, use it as a border, place in containers as a filler or thriller plant or use them for cut flowers. If you plant it in the middle of a bed, add more compact plants in front to create a full, flowery look.

Blooming Plants for Fall

In addition to the Jolt series dianthus, there are several plants found blooming in the summertime that will carry over into the fall in Louisiana, including butterfly bush, firebush, Turk's cap, cassia plant, angel's trumpet, salvias and sedums. You can also continue to plant marigolds and zinnias for a great fall-flowering bedding plant.

It is also likely in the fall that many of your warm-season bedding plants, such as periwinkle, blue daze, purslane, scaevola, impatiens and begonias as still going strong. If that's the case, leave the beds alone for as long as you can enjoy the display. Once the cooler temperatures settle in, it will be time to convert beds to cool-season plants.

If you don't already have some of these plants in your landscape, container plants can still be transplanted so that you may enjoy these gorgeous fall bloomers. There are some great fall-blooming perennials out there for you to try.

One of my favorites is the firebush (*Hamelia sp.*). Lime Sizzler firebush (*Hamelia patens Grelmsiz*) is a Louisiana Super Plant. It can be found in most local nurseries. The hummingbirds just love this plant! It has gorgeous orange and red flowers on a yellow-green variegated foliage. This shrub will bloom best in full sun to partial shade and it will add quite the sizzle to your landscape.

Turk's cap (*Malvaviscus drummondii*) is another great bloomer for the fall. A native plant of North America, it is a root-hardy perennial but may grow year-round in protected areas. Otherwise, it will come back from its roots in the spring. This plant grows well in full

sun to partial sun and has striking red flowers that never truly unfurl. Bees, butterflies and hummingbirds just love this flower, too! Dark green foliage makes it another striking selection for your landscape beds.

Cassias always come to mind when I think of fall bloomers. The gorgeous yellow flower clusters typically bloom between September and November in Louisiana, having a two- to three-week bloom time.

There are a few different cassias commonly grown here. *Cassia splendida*, and other cassias commonly known as the candlestick plant or tree, *Cassia corymbosa* and *Cassia alata*. You may also see popcorn cassia, *Cassia didymobotrya*, being sold and grown in Louisiana. All the cassias tend to be medium-to-large herbaceous, and sometimes woody, shrubs. They are easy care plants with few pest and disease problems. They grow best in full to partial sun and are another favorite of pollinators.

Salvias are another great choice for fall flowering plants. *Salvia guaranitica* varieties Black and Blue and Argentine Skies, start flowering in summer and save their best bloom for the fall. Some fall blooming salvias are rosebud sage (*Salvia involucrata*) and forsythia sage (*S. madrensis*). Rosebud sage tend to be very large, growing 5 to 7 feet and should be planted



Butterfly bush.

behind smaller growing plants in the landscape. Forsythia sage is much smaller. They both grow well in full sun to partial shade, and, you guessed it, are also great flowers for pollinators including bees, butterflies and hummingbirds.

Angel's trumpet is another fantastic fall-flowering plant. It is a tropical plant that will freeze in the wintertime when temperatures drop low enough but will come back from the roots each spring and have showy bugle-shaped flowers in later summer through the fall. A truly gorgeous addition to the landscape, it comes in all shades of color, including yellow, pink, white, purple and orange to name a few. The hummingbirds love this plant, too.

There are some sedums that bloom in the fall. One example is Autumn Joy, *Hylotelephium Herbstsfreude*. It has succulent leaves and stems with showy clusters of rosy or copper to brown flowers that are just gorgeous for the fall. They typically bloom in early summer and again in the fall and they perform best in full sun and can tolerate some drought and heat once established.

Marigolds and zinnias are another great blooming bedding plant for the fall. You can plant both now and enjoy until freezing temperatures hit.

Marigolds come in a wide range of varieties. The African marigolds are taller, larger, and can be used as a cut flower. We all recognize the fall primary colors of orange, gold and yellow. The French marigolds are the shorter variety, with smaller-flowers types that display more color variations.

Many zinnia species are also available. Traditional, older zinnia varieties are the *Zinnia elegans*. Some of these varieties are good for cut flowers, like the Benary's Giant series. Other varieties are better as short bedding plants, such as the Dreamland series. A wide range of flower colors is available in zinnias.

Both zinnias and marigolds are easy care and profuse bloomers that love full sun to partial shade, and the pollinators love these flowers just as much as we do! Remove faded flowers to encourage new blooms.

And last, but certainly not least, are chrysanthemums. They have become synonymous with fall by sporting all the gorgeous fall colors. They can be used for fall decorating for Halloween or Thanksgiving gatherings and grow well in containers but can also be grown in the landscape in areas that get full to partial sun.

*Dr. Heather Kirk-Ballard
Horticulture Specialist*



Angel's trumpet.

INNOVATE EDUCATE IMPROVE LIVES



At the LSU AgCenter, we're helping Louisiana grow in areas that improve your life. Our research and educational programs provide the tools you need to live well and thrive in a growing, changing world.



www.LSUAgCenter.com
@LSUAgCenter





Checklist for September, October and November



Trees do best when planted in the fall.



Yellow marigolds are a great fall-blooming bedding plant.



Plant herbs such as rosemary in the fall.

1. Fall is a great time to plant! Plant bedding plants, trees, shrubs, ground covers, vines, fall vegetables and fruit trees.
2. Take soil samples from landscape beds and submit them to the LSU AgCenter Soil Testing and Plant Analysis Laboratory for analysis. Check with your parish LSU AgCenter extension office for more information.
3. Prepare beds and amend your garden soil if your soil test indicates any insufficiencies.
4. Enjoy fall-blooming plants. Many spring- and summer-blooming plants will carry over into the fall. This is a great time to enjoy these or transplant new containers to your landscapes. You can plant fall-blooming annuals and perennials, including cassias, butterfly bush, firebush, angels trumpet, marigolds, zinnias, Turk's cap, salvias and sedums. Many warm-season bedding plants, such as periwinkle, blue daze, purslane, scaevola, impatiens and begonias, are still going strong. Leave the beds alone for as long as you can enjoy the display. Once the cooler temperatures settle in, it will be time to convert beds to cool-season plants.
5. Fall is an excellent time to plant many herbs in the garden. A few herb plants provide a lot of harvest, so don't plant more than you can use. Herbs to plant now include parsley, sage, thyme, dill, cilantro, rosemary, oregano, borage, fennel, nasturtium, French tarragon, chives, mint and catnip.
6. Plant spring-flowering bulbs in your gardens from late October through early December. Exceptions are tulips and hyacinths, which must be refrigerated and planted in late December or early January.
7. Garden mums make a great addition for fall color. Check at your local retail garden center for availability.
8. Watch azalea plantings for early fall infestations of lace bugs. Control with acephate, horticultural oil sprays (bifenthrin, cyfluthrin or permethrin) and other recommended insecticides.
9. Build a compost pile out of leaves, grass clippings and remains from your vegetable garden.
10. September is a good time to divide and transplant Louisiana irises. Fertilize your irises in October.
11. Many of the summer-blooming perennials are finished or finishing up their floral display for the year. Cut back the flower stalks and old, faded flowers to keep the plants looking attractive.
12. October weather can be dry. Water plantings as needed. Pay special attention to any newly planted areas. It generally is best to water direct-seeded beds of flowers or vegetables lightly every day to make sure the seeds do not dry out.
13. Prune ever-blooming roses by early September.
14. Enjoy the fall color in trees such as bald cypress, Nuttall oak, Shumard oak, cherry bark oak, flowering pear, Chinese pistachio, ginkgo, Japanese maple, sweetgum, sumac, red maple, Southern sugar maple and hickory. Plant some if you don't already have them in your landscape.

*Dr. Heather Kirk-Ballard
Horticulture Specialist*



Fall Vegetable Gardening

There is a lot to “fall for” in the fall vegetable garden. First, fall in love with the idea that temperatures have slightly fallen. Insect and disease pressure have also slightly fallen. And, finally, the leaves are falling! Why leaves, you ask? Because they absolutely make the best mulch for the garden — free and plentiful. Don’t want to rake yours? Plenty of neighbors will have their leaves bagged and curbside ... just get there before the other garden scavengers do. So, grab a cup of tea, soda, coffee or water and fall into the garden advice in the rest of this article.

Lots of crops can be planted in the next few months. Before planting, ask yourself:

Have I ...

- Removed diseased and insect-ridden plants?
- Removed all weeds?
- Turned the soil?
- Collected soil and submitted my soil for testing at least every three years?
- Added a complete fertilizer or compost before planting? Hint: Use soil test results if you have them.
- Planned for irrigation?

This sounds like a whole lot of preparation, but trust me, the more you do now, and the easier it will be to manage the garden over the next few months.



September

Broccoli (T), Brussels sprouts (T), cabbage (T), Chinese cabbage (T), cauliflower (T), collards (T or S), endive, carrots, English peas, snow peas, garlic, kohlrabi (T), lettuce (S or T), mustard, onions (seeds late September for transplant in December), parsley (T)*, snap beans*, radishes, rutabagas, shallots, spinach, strawberry bare root plants (late September), Swiss chard (S or T), turnips and kale.

October

Cabbage (T), beets, broccoli (T), mustard, turnips, collards, kale, parsley, shallots, radish, beets, spinach, leaf lettuce, Chinese cabbage (T)*, celery, onions (seeds early to mid-October for transplanting in December), Swiss chard, strawberry bare root plants, garlic*, carrots and endive*.

November

Beets*, shallots, Swiss chard (T), spinach*, kale, radishes, mustard, carrots and turnips.

*Plant during the first part of the month. (T) = Transplant (S or T) = seeds or transplants. If nothing is noted after the crop, plant by seed.

Tips for the Fall Garden

Spacing of fall crops is critical. Broccoli and cabbage can be double-drilled on 12-inch centers, but widen that space to 24 inches between plants for cauliflower and single drill. Carrots and radishes can be scattered in the garden or planted in up to four drills if your rows are wide enough. Space both carrots and radishes 1 inch apart or thin as they grow for nicely shaped roots. Hint: Carrots often need light to germinate. Scatter seeds, then water them in. Do not bury them. Carrots do a lot better in loose soils. Make sure you have turned yours over even if you are growing in pots. Make that soil loose! Mustards, collards, kale and leaf lettuce can also be directly seeded but should be thinned to 4 to 6 inches between plants. If you want bigger kale and lettuce bunches, then plant them every 12 inches on double drills. Turnips and beets can be directly seeded and thinned as they grow to 3 to 6 inches apart depending on how big you want the final product. Now for the giants! Artichokes, space plants 4 feet apart ... just trust me, it is necessary. Many gardeners get excited, I can’t blame them, but we often try and cram too many plants into our smaller gardens. This is setting yourself up for disaster.

The plants will compete for light, water and nutrients. Plus, insects will love all the tight niches you've created. Correct spacing takes a garden from good to excellent!

Remember those falling leaves? Take every last one of them and put them in the garden. For large gardens, leaves belong in the row middles where you walk. In raised beds, mulch the entire top of the garden with leaves. Place them in your pots, too! The leaves should be 3 to 5 inches deep. This will conserve water, block sunlight-reducing weed germination and help you walk in the garden after a major rain.

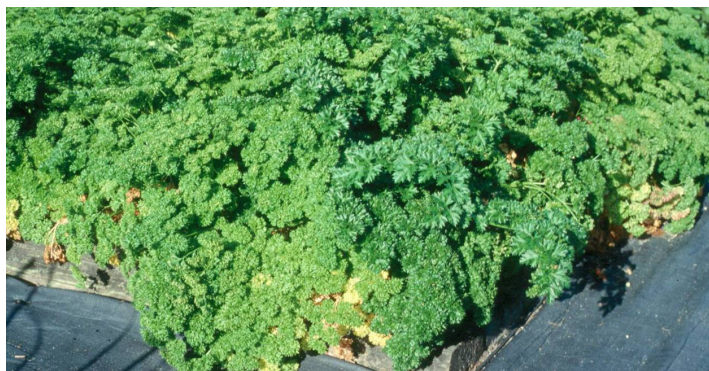
Irrigation is critical the first two weeks after planting (especially direct-seeded crops) and throughout the growing season. One inch of rainfall or irrigation is adequate.

Check the garden at least once a week. Be on the lookout for worms, caterpillars and stink bugs in gardens planted in early September. All of these will wreak havoc on your newly planted crops. I like waiting until late September or even into October, when this pressure is lowered. But you'll still need to be on the lookout for aphids. They have a way of making themselves at home in the fall. Thrips love shallots and green onions. And snails and slugs love strawberries. These are the biggest fall garden culprits. Disease will be present but reduced. The biggest culprits are anthracnose and black rot. When purchasing transplants, look out for tiny worms. Moths love laying their babies on broccoli, cabbage and cauliflower transplants early in the season. They can find these plants anywhere. Also, look for aphids on transplants. Make sure you are purchasing clean plants.

Herbs are a great addition to the fall vegetable garden. Fall herbs include dill, cilantro, borage and parsley. Mint and rosemary can be planted too.

Finally, to really "fall" in love with your vegetable garden, make it a comfortable space. The garden should be worked in and relaxed in. The temperatures are lower, so spend a little time out there. Add a bench or small table and chairs. Consider decorating the garden with fun ceramic plant labels. Add a bit of whimsy with a gazing ball, arbor or any yard art. Then "fall" back and relax.

*Dr. Kathryn Fontenot
Community and School Garden Specialist*



Curly-leaf parsley.

Fall Lawns in Louisiana

Should You Fertilize Your Lawn During the 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.

More than likely, however, it is time to put up your fertilizer spreader. Fertilizing warm-season 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.



Do You Need to "Winterize" the Lawn?

I'm sure that you have heard of winterizer fertilizers. Potassium (the last number in the analysis on fertilizer bag) is actually the nutrient associated with winter hardiness and increased disease resistance with turfgrass. There is definitely an advantage to having the correct amount of potassium in the soil. Get a soil test before applying high-potassium fertilizer, however, because there is no advantage to applying excessive amounts of this nutrient. If a soil test indicates that potash is lacking, choose a potassium-containing fertilizer with zero or a very low percentage of nitrogen (the first number on a fertilizer bag) during the late summer or early fall because we are not trying to stimulate growth for the reasons discussed above. If a soil test calls for adding potassium, you can apply

during September while temperatures are still warm, and the lawn is still growing. Very slow growth occurs as day lengths get shorter by late September and 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.



Fall is good time to collect soil samples.

Speaking of Soil Tests ...

Fall is the best time of the year to get your soil tested by the LSU AgCenter Soil Testing and Plant Analysis Laboratory.

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 thick and healthy. If you haven't 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 office in your parish. The pint should be a composite of soil samples collected from several different areas in the lawn. You only need to go about 4 inches deep. 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 sample results may indicate that lime is needed to increase soil pH. If so, fall and winter are good times to apply lime because it takes several months to activate in the soil. Elemental sulfur may be recommended to reduce soil pH in alkaline soils.

Weed Control

If your lawn was full of winter weeds last spring, this fall is your first opportunity to reduce infestations with pre-emergence herbicides. Pre-emergence herbicides, such as prodiamine, pendimethalin, dithiopyr, isoxaben and indaziflam, may be applied in 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 in October with the exception of bermudagrass. Atrazine could be applied on bermudagrass after the bermudagrass is dormant.

*Dr. Ron Strahan
Turfgrass Specialist*



How does your garden grow?

With help from LSU AgCenter Publications

The LSU AgCenter offers a wealth of research-based information on gardening and other topics that affect your life every day.

Visit our online store for publications that interest you.



LSUAgCenter.com/OnlineStore

Bitter Rot of Apples

Apples (*Malus domestica*) are a member of the Rosaceae family and known to have originated in central Asia. They are grown worldwide, and the U.S. ranks No. 2 in apple production in the world after China. Usually, apples are grown in colder climates because of their requirement of a minimum number of cold hours between 32 and 45 degrees Fahrenheit during winter (the chilling requirement), after which they bloom in spring. However, varieties of apples, including Anna, Dorset Gold, Ein Shemer, and Ozark Gold, a variety suited for north Louisiana, may perform well under Louisiana's mild winter weather.

There are several fungal and bacterial pathogens that can cause diseases on both trees and fruits; however, three fungal diseases, including black rot, white rot and bitter rot are commonly known to occur on fruits. Of these three diseases, bitter rot is the most destructive and can result in significant yield loss in commercial production. All stages of fruit development are susceptible to fungal infection, but most infection occurs during midseason as the fruit approaches maturity. The symptoms first appear as small, circular brown flecks on the surface of fruits (Figure 1). As the disease progresses, slightly sunken, soft, watery, and light to dark-brown lesions develop (Figure 2). Later, fungal fruiting bodies are produced in concentric rings on the lesions (Figure 3). During wet weather, large quantities of spores (conidia) in salmon-colored masses are produced from these fruiting bodies and result in secondary infection. The tissue subsequently rots, and the fruits shrivel into a mummified state.

Bitter rot of apple is a fungal disease commonly caused by two species known as *Colletotrichum gloeosporioides* and *C. acutatum*. Both fungal species overwinter in mummified fruit and in dead wood and cankers. Spores are primarily dispersed by splashing water or rain. Infection may occur within five hours at an optimal temperature of 80 degrees Fahrenheit. Disease develops rapidly under warm, moist conditions.

Management of bitter rot in both commercial and home garden apple production requires an integrated pest management approach. Cultural management practices that reduce disease in home gardens and orchards play an important role in combatting bitter rot. Growers and homeowners must practice good sanitation practices, including removal of mummified fruits from trees and the ground, pruning dead branches and twigs, and removal of older and current season fire blight-infected branches to avoid fungal infection. If feasible, burn the pruned and diseased tissue or discard it properly. Removal of diseased fruits during growing season is essential to reduce disease spread. Growers should follow regular pruning and a proper fertilization program to improve tree health. In home gardens, use of the cultural practices mentioned above is the most effective way to manage the disease. Preventative fungicides used in conjunction with good sanitation practices are beneficial in managing the disease in commercial production. Several fungicides

are available for commercial apple production, and growers are encouraged to follow the apple spray schedule recommended in the LSU AgCenter Plant Disease Management Guide, publication No. 1802. For more information about plant health problems, please visit our website at www.lsuagcenter.com.

Dr. Raj Singh
Plant Pathologist, Director of Plant Diagnostics Center



Figure 1: Fruit showing initial symptoms of bitter rot, including, small circular brown flecks caused by *Colletotrichum* spp.



Figure 2: Slightly sunken, soft, watery and light to dark-brown lesions on the fruit caused by *Colletotrichum* spp.



Figure 3: Fruiting bodies of *Colletotrichum* spp. with salmon-colored spore masses produced in concentric rings on the lesions.

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

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

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. 3655-19-F-NW (online) 9/19

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