



A Guide to Louisiana-Friendly Landscaping



Louisiana
Yards & 
Neighborhoods 

CONTRIBUTORS AND REVIEWERS

LSU AgCenter Authors: Bill Branch, Bill Carney, Carrie Castille, Denyse Cummins, Don Ferrin, Bobby Fletcher Jr., Stuart Gauthier, Dan Gill, Henry Harrison, Jessica Kastler, Tom Koske, Brian LeBlanc, Allen Owings, Dale Pollet, Don Reed, Rene Schmit, Jay Stevens, and Ron Strahan.

The Louisiana Yards & Neighborhoods program is a partnership of the Louisiana State University Agricultural Center (LSU AgCenter) and the University of Florida and the Florida Yards & Neighborhoods program. Partial funding was provided in part by Texas A&M (Cooperative Extension Service) through the Southern Region Water Quality Program subgrant TCE 450031.

Thanks to the University of Florida, Institute of Food and Agricultural Services (UF/IFAS) Environmental Horticultural Department, Florida Yards and Neighborhoods program for their cooperation and support of this project. This handbook is based on the Florida Yards and Neighborhoods Handbook.



Special thanks to Louisiana Master Gardeners in the development and implementation of this educational publication and program

Louisiana Yards and Neighborhoods

Table of Contents

Section 1 Planning Your Louisiana-Friendly Yard

About the LYN Program	2
How to Use This Book	3
From Yard to Waterway	3
Creating Your Louisiana-Friendly Yard	5
Soil – Foundation of Healthy Plants	9
Deciding Which Plants to Keep	10
Landscape Design	12
Proper Tree Planting	13
Hiring Reputable Professionals	17

Section 2 Landscaping Principles

Right Plant, Right Place	19
Planning Your Louisiana Landscape	20
Site Analysis	22
Louisiana One Call	23
Soil, Soil Amendments, Bed Preparation	24
Plant Material	25
Ground Covers	28
Shrubs and Trees	30
Water Efficiently	33
Efficiency Factors	34
Watering Tips	36
Irrigation Systems	37
Maximize Mulch & Recycle Yard Waste	39
Simple Facts About Mulch	40
Recycle Yard Waste	42
Fertilize Effectively	45
Maintaining the Environment	46
When to Apply	47
Selecting a Fertilizer	47
Fertilizing Competing Landscape Plants	52
Manage Yard Pests	55
Responsible Pest Management	56
Identifying Pest Problems	57
Integrated Pest Management	58
Common Plant Pests	60
Weed Management	65
Common Landscape Diseases	73
Protect Surface Waters and Wetlands	77
Pollution Sources	78
Making Every Raindrop Count	78
From Yard to Waterway	82
Provide for Beneficial Wildlife Habitat	83
Ideas for Attracting Wildlife	84
Controlling Undesirable Wildlife	86
Further Reading on Attracting Wildlife	88



ABOUT THE LOUISIANA YARDS & NEIGHBORHOODS (LYN) PROGRAM

The focus of this program is to encourage homeowners to create and maintain landscapes in ways that minimize environmental damage. This will include looking at water quality and conservation, reducing stormwater runoff and decreasing nonpoint source pollution of surface water, enhancing desirable wildlife habitats and creating functional, attractive landscapes.

The program, which is implemented through the parish LSU AgCenter Extension agents with the support of Louisiana Master Gardener volunteers, provides education and outreach activities in the community to help residents reduce pollution, conserve water and enhance their environment by improving home and landscape management.

This integrated approach to landscaping emphasizes seven interrelated principles:

- ➊ Right plant right place
- ➋ Watering efficiently
- ➌ Maximizing mulch and recycle yard waste
- ➍ Fertilizing appropriately
- ➎ Managing yard pests
- ➏ Protecting surface waters and wetlands
- ➐ Providing for beneficial wildlife habitat



This LYN handbook provides helpful ideas, information and techniques to create and maintain a more environmentally friendly landscape. You will learn the basics of designing a landscape using carefully selected plants suited to Louisiana growing conditions. This handbook also contains information on cost-saving, energy-efficient landscape maintenance to help you reduce water, fertilizer and pesticide use. The information provided in this handbook will be helpful to individuals designing new landscapes or making changes to existing ones while achieving an attractive, functional and environmentally responsible landscape.



HOW TO USE THIS BOOK

This handbook is organized into two sections. The first section contains background information that will help you as you make plans to create a Louisiana-Friendly Yard. The second offers detailed description of landscape ideas and practices that explain and illustrate the seven basic LYN principles.

The information contained in these pages describes the fundamentals of creating a low environmental impact landscape. More gardening and landscaping information is available through other LSU AgCenter publications. Publications are available through your local parish LSU AgCenter Extension office or online at www.lsuagcenter.com.



Photo: UF/IFAS Florida Yards and Neighborhoods Handbook

FROM YARD TO WATERWAY

It is important to remember that our yards and neighborhoods are channels to our waterways. What you do in your landscape certainly needs to take this into consideration. The health of Louisiana's **estuaries**, rivers, lakes and **aquifers** depends partly on how you maintain your yard and gardens. You don't even have to live on the water to make a big difference. Rain that falls on yards, roads and parking lots can wash into waterways or leach into ground water, carrying pollutants – including fertilizer, pesticides, animal waste, soil and petroleum products. In particular, improperly applied fertilizers and pesticides from urban and suburban residential areas can play a role in polluting Louisiana's waters.

Louisiana is rich in natural habitats that function well in preserving the quality of the environment. Unfortunately, when land is developed for residential use, land is covered by impervious surfaces, such as asphalt and concrete, and neighborhoods with landscapes that make use of few native plants and bear little resemblance to

estuary: The wide lower course of a river where it flows into the sea. Estuaries experience tidal flows and their water is a changing mixture of fresh and salt.

aquifer: An underground layer of permeable rock, sediment (usually sand or gravel), or soil that yields water. The pore spaces in aquifers are filled with water and are interconnected, so that water flows through them.



native Louisiana habitats. Expansive planting of high-maintenance lawns have formed the dominant landscape in most of our communities for years, but that may be changing. You can be a part of the movement in Louisiana to have a more environmentally friendly landscape.

Look around your neighborhood or nearby parks to see if any natural landscapes remain. Can your own landscape be redesigned to replace a piece of what has been lost?

The ideal Louisiana-Friendly Yard — the smart way to garden — should reflect the beauty of natural habitats and ecosystems in our state. To be truly effective, these landscapes must be created and sustained by landscape practices that have a low impact on the environment. What are some of these practices?

- Cooperate with pre-existing natural conditions instead of altering them or changing them to suit the desires of the gardener or needs of plants not suited for those conditions.
- Conserve water and energy – both indoors and out.
- Use more native species in your landscape. Plant native and non-native trees, shrubs, vines and ground covers that require minimal water, fertilizers and pesticides under the right growing conditions.
- Choose plants that are appropriate and attractive but also provide environmental benefits.
- Tolerate some pest damage in the landscape and focus on gardening techniques that reduce pest problems. Use pesticides only when necessary and according to label directions. Always choose the least toxic products that will do the job.

Louisiana-Friendly Yard — the smart way to garden



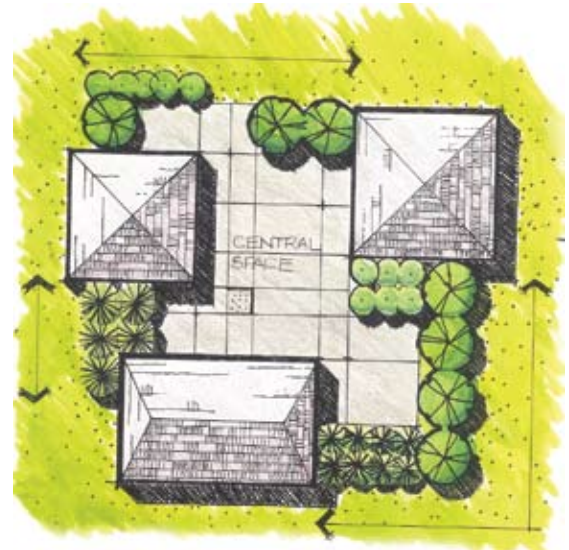
CREATING YOUR LOUISIANA-FRIENDLY YARD

A Louisiana-Friendly Yard doesn't merely offer a good-looking landscape, it also becomes an asset to the local environment, protecting natural resources and preserving our state's unique beauty. An important part in creating a Louisiana-Friendly Yard is recognizing that the home landscape is connected to and a part of a larger natural system.

Designing a landscape more in harmony with the environment requires commitment and careful planning and largely depends on what you and your family require from the landscape. You should consider:

1. Your family's needs and desires.
2. The conditions of your site.
3. Maintaining a healthy environment.

Understanding a few basic concepts will help you make environmentally appropriate decisions when planning your landscape and avoid potential problems.



Drawing: UF/IFAS/ FYN Handbook

PROPER PLANNING IS CRITICAL

A key to creating a successful landscape design is relying on a commonsense planning process. Using a step-by-step process, where the next step builds on the one before, you can develop your own plan that will create an attractive, functional and environmentally sensitive landscape.

First, think of the style you want your landscape to have. Look at other gardens and figure out what style you are most comfortable with. Gardening books, magazines and books on landscaping present photographs that can inspire you and help you make a decision. The style you choose is generally a matter of taste, but should strongly be influenced by the architecture of the house. The chosen style will guide the more aesthetic aspects of the landscape design. Styles generally fall in one of several categories, such as formal, informal, naturalistic, ethnic or ecological. Next, follow the steps outlined on the next page. For a complete list, refer to Right Plant, Right Place beginning on page 19.



1. Decide what your landscape needs to provide.

Most people focus primarily on the appearance of their landscape and how it beautifies the home and grounds. Early in the planning process, it is also important to look at what the landscape needs to provide and how it will function. Examples of needs include a play area for kids, shade, privacy, colorful flowers, growing vegetables and outdoor living. The Louisiana Yards & Neighborhoods program adds one more need — protecting the environment, which includes creating wildlife habitat and lowering maintenance — particularly, reducing water, fertilizer and pesticide use and preventing erosion.



Photo: John Wozniak, LSU AgCenter

2. Study your site. The site is what is enclosed by your property lines. Walk your property and become familiar with the grounds. Notice the compass directions. Which areas are shady or sunny, wet or dry? Soil tests will help you learn about soil characteristics on your site. Note existing features such as trees, buildings, beds, fences, walks and the like. What do you want to change, get rid of or keep? Draw up a simple sketch of the property showing the relevant features.



Drawing: UF/IFAS/FYN Handbook

3. Draw a land-use plan. Draw up a simple sketch of the property showing the relevant features (house, existing trees, beds, patio, etc.). Better yet, draw up a scale drawing. A scale drawing is much more effective when you actually start to do the design. If you have the survey completed for your mortgage, photocopy it — it is really helpful at this stage. You will be playing with various ideas, and need copies to try those ideas out. Never draw on the original.

In this step you decide how much space different activities and areas will need and where in the landscape they will be located. At this time you will see how many things in your list you will actually be able to fit into the landscape. On your scale drawing copy, draw circles or ovals to indicate where and how large areas will be. For instance, a circle would represent where and how large the vegetable garden would be, where the play area would be, where the patio would be and so forth. Try several arrangements until you find the best one.



4. Shape the spaces. Now, decide exactly what shape the areas will have. If you indicated flower beds with an oval to show where and how big they will be, at this point you decide how they will actually be shaped. Although you don't actually select the plants at this stage, you should decide on the characteristics that the plants should have (size, flower color, evergreen, etc). This is a creative stage. It will be guided by the previous steps as well as the style you have decided for the garden.

5. Select the materials. At this point, you select the components that will be chosen to create the landscape. If, for instance, in step 1 you listed privacy, in step 2 you decided what view needed to be blocked; in step 3 you chose the location of the privacy screen; in step 4 you determined the size of the screen (how tall, how wide), and also decided the composition of the screen. You may choose to plant a hedge or build a lattice fence or a brick wall. Go through the rough plan selecting what plants will be used, surfacing materials, etc. Cost is a factor that enters into which materials you select. When choosing plants, consider the limitations of your site, maintenance requirements and wildlife value.



Drawing: UF/IFAS/ FYN Handbook



Photo: Johnny Morgan, LSU AgCenter



Site Analysis

To choose the right plants for your landscape it is important to determine your site characteristics. Remember, conditions may differ at various points in your yard. Some characteristics to consider include:

Soil

- texture
- pH
- fertility

Drainage

- well-drained
- poorly drained

Light

- full sun (8 hours or more of direct sun)
- part sun (around 6 hours of direct sun or a western exposure)
- part shade (around 4 hours of direct sun or an eastern exposure)
- shade (around two hours of direct morning sun or dappled light through the day)
- full shade (no direct sun)

Temperature

- exposure to freezing temperatures
- exposure to extreme heat

Structural Limitations

- power lines
- underground utilities
- septic tank,
- roof overhangs
- paved surfaces

Other

- exposure to strong winds
- exposure to wet/dry seasonal extremes



SOIL – THE FOUNDATION OF HEALTHY PLANTS

A wide variety of soil types are in Louisiana. Talk to your parish county agent about what the soil is like where you live. A soil test, available through your parish LSU AgCenter Extension office, will tell you a lot about the type of soil(s) your site has.

Improving the Soil

It is best to use plants that are compatible with the soil you have on your site. To grow some types of plants, such as bedding plants or vegetables, you will need to add **organic matter**, such as compost, to the bed each time you prepare it for planting. Organic matter retains moisture, improves drainage, provides nutrients and attracts beneficial organisms like earthworms. Other sources of organic matter include aged or composted manure, leaf mold (partially decayed leaves), peat moss, composted finely ground pine bark and soil conditioner.

Add organic matter to a prepare a bed for planting by spreading a layer 2 to 4 inches thick over the bed, and then mixing it into the upper 8 inches using a tiller, shovel or digging fork.

In beds with permanent plantings, such as shrubs, apply organic matter as mulch 2 to 3 inches deep around existing shrubs in spring. Check the mulch in late summer/fall, and replenish as necessary to keep the recommended depth (see Maximize Mulch and Recycle Yard Waste starting on page 39 for more information on mulching). As mulch decays, it will be gradually incorporated into the soil of the bed by the action of earthworms.

Soil pH

The pH of the soil indicates how acid or alkaline the soil in your garden is. The pH of the soil has a strong influence on how readily available mineral nutrients in the soil are to plants.

You can determine the pH of your soil by having it tested through your local LSU AgCenter Extension office. Home soil test kits are available as well, but you must use them carefully to get accurate results.

organic matter consists of plant and animal material that is in the process of decomposing.

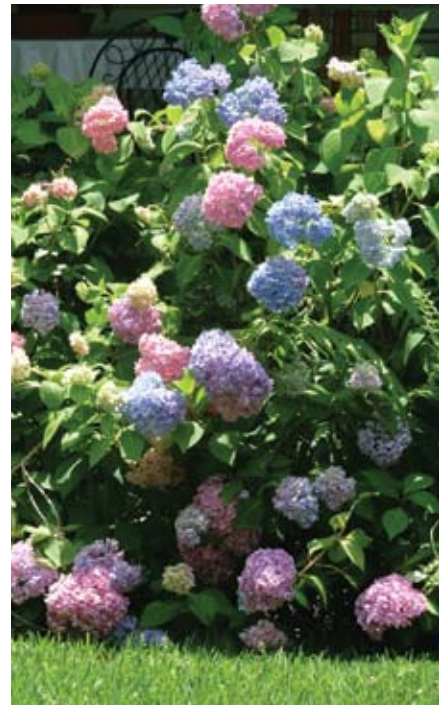


Photo: Mark Claesgens, LSU AgCenter



Knowing your soil's pH also will help you make better use of plant reference guides, which often utilize this information along with other requirements for plants listed. Most plants are adaptable and actually will tolerate a wide range of pH levels. They will do best, however, when planted into their preferred soil pH. The soil pH can be modified, but this is really only a temporary solution, so it is best to choose plants that are adapted to the native pH of your soil.

Compacted Soil

Many new homes are built on a raised platform of compacted fill dirt brought in by construction companies. Such compacted soils don't provide a healthy environment for plant roots and may limit healthy growth. To deal with this situation, loosen the soil to a depth of at least 8 inches and incorporate generous amounts of organic matter to landscape beds before installing the plants.

DECIDING WHICH PLANTS TO KEEP

If you decide that you want to change your landscape, it is important not to simply remove everything that is there. In established landscapes, retaining trees, shrubs, perennials and other plants will save money – and it also preserves established wildlife habitats. Larger, older plants also create a feeling of maturity that newly planted landscapes lack. The trick is knowing which plants to keep. Following these simple guidelines will help you make decisions in determining what plants to retain and which ones to remove.

- Keep healthy plants that show good form and are growing in appropriate locations. Consider pruning healthy, overgrown shrubs or trees if the only reason they are on your remove-list is due to appearance. Pruning is less costly than replacement, especially when dealing with mature plants.
- Retain trees with long life spans. Some examples are live oaks (*Quercus virginiana*), Southern magnolia (*Magnolia grandiflora*) and baldcypress (*Taxodium distichum*). Mature short-lived trees are less desirable, including water oak (*Quercus nigra*), silver maple (*Acer saccharinum*) and flowering pear (*Prunus calleryana*).
- When developing wooded lots, save clusters of trees and the plants growing beneath them rather than individual trees. Trees growing close together in forests often grow tall and narrow. When the site is cleared, an isolated tree becomes vulnerable to wind damage and could snap during high winds. For this reason, it is best to leave trees in clusters. The cluster should include the trees along with any ground covers or native shrubs growing beneath them. Such a grouping is more resistant to high winds (and generally looks more attractive).



Photo: Mark Claesgens, LSU AgCenter



To determine which plants to remove, consider this checklist:

- ✓ Unhealthy and invasive plants are not worth saving. Read more about invasive plants on pages 65-66.
- ✓ Foundation plants located too close to walls block air currents and prevent access for home maintenance.
- ✓ Discard tightly spaced plants. Over time, tight spacing fosters moisture problems, which can lead to **disease** problems and stress the plants.
- ✓ Plants under eaves often prove problematic; they may not receive adequate rainfall or may be damaged by the force of rainwater dripping from a gutter. Consider carefully before keeping these plants.

Once you know which plants you intend to save, ensure that roots are not damaged through construction activities or soil compaction, which slows growth. Avoid disturbing the root zone of these plants in any way. This includes driving over them with heavy vehicles, digging into the root zone area or mounding soil against the base of plants. To protect trees, construct barricades at the edge of the canopy drip line to prevent construction equipment from driving over roots. Even though this does not protect the entire root system, it will improve your trees' odds for survival.

Trees particularly sensitive to soil compaction include beech (*Fagus spp.*), dogwood (*Cornus spp.*), sassafras (*Sassafras spp.*), tupelo (*Nyssa spp.*), pine (*Pinus spp.*), white oak (*Quercus alba*), black oak (*Quercus velutina*) and most nut trees, such as black walnut (*Juglans nigra*), hickory (*Carya spp.*) and pecan (*Carya illinoensis*).

Disease: an interaction between an organism and its environment that results in an abnormal condition; can be caused by living organisms (fungus, bacteria, nematode, virus) or nonliving factors (cold, chemical injury, nutrient deficiencies, soil pH).



LANDSCAPE DESIGN

Landscape design combines art and science to create functional, aesthetically pleasing and ecologically sound surroundings that complement a home or other structure. Many elements of art — including color, form, line and texture — interact within a landscape to produce the design principles of unity, balance, simplicity and focus.

In a landscape, plants fulfill dual roles: they form eye-pleasing scenes and are a key to reducing energy use and protecting our natural resources. For example, landscape designers often recommend grouping plants into masses to unify the design of plant beds. Groups of three, five or seven plants are visually pleasing to the eye — but this design technique provides environmental benefits as well. Trees planted in groups provide more atmospheric cooling than the same number of evenly spaced, isolated trees. And, as already noted, trees planted with accompanying shrubs and groundcovers beneath them form effective windbreaks.

For an overview of the artistic elements of landscape design, search for appropriate articles on the LSU AgCenter Web site (<http://www.lsuagcenter.com>), or consult a professional landscape architect.

Louisiana Yard Tip:

Choose two or three colors that complement each other, and repeat this color combination throughout the landscape. This creates a scene that's visually attractive, and the repetition of color draws your eye through the planting beds so that you take in the entire scene and not just one small piece of it.

Photo: John Wozniak, LSU AgCenter



PROPER TREE PLANTING

Once you determine which plants you want to add to your Louisiana-Friendly Yard, it is time to break ground and start planting. Begin your landscape renewal by putting hardscape, such as walkways, irrigation systems or patios into place first; then plant trees. Because trees are a more permanent addition to the landscape, site selection and proper planting techniques are essential. (This section is adapted from Dr. Ed Gilman's Web site, <http://hort.ifas.ufl.edu/woody/planting> reprinted with permission.)

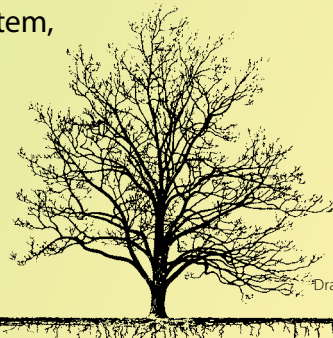
- 1. Look up.** If a nearby wire, security light or building could interfere with the tree as it grows, find a new planting site.
- 2. Dig a shallow hole that is as wide as possible.** Shallow is better than deep! Many people plant trees too deep. Dig a hole that is 1½ to 3 times the width of the root ball. Use even wider holes for compacted soil and wet site. Make sure the depth of the hole is slightly LESS than the height of the root ball, especially in compacted or wet soil. If you inadvertently dig the hole too deep, add soil to the bottom of the hole.

Break up compacted soil around a newly planted tree to give emerging roots room to expand into loose soil. This will hasten root growth and encourage **establishment**.

Drip line: the circle that forms at the ends of branches of a tree where water drips off the leaves onto the ground.

Establishment: acclimating a new plant to the environmental conditions of the planting site.

A tree resembles a wine glass placed on a dinner plate. Consider the base of the wine glass as the part of the trunk where major roots flare outward. The dinner plate represents the rest of the root system, which extends far beyond the **drip line** — up to five times the canopy's diameter, depending on the species. Vertically speaking, most tree roots are located in the top 2 inches of the soil, where oxygen is available through exchange between the soil surface and atmosphere.



Drawing: UF/IFAS FYN Handbook



- 3. Find the point where the topmost root emerges from the trunk.** This point is called trunk flare, root flare or root crown and should be within 2 inches of the soil surface. If the topmost root is buried within the root ball, remove enough soil from the top of the root ball so the point where the topmost root emerges from the trunk will be within 2 inches of the soil.

Loosen circling roots, especially in the top half of the root ball. Selectively remove small roots that are kinked or circling. If many roots circle the bottom or sides of the root ball, slice the root ball about 1-inch deep in four places (like at the points of a compass) from top to bottom before planting. This reduces the likelihood of roots causing problems later. If you cut large roots, the tree might go into shock and die.



Photo: UF/IFAS FYN Handbook

Rootbound (or "pot-bound") plant — thick roots encircle the rootball.

The way to avoid having to slice roots is to buy plants that are not root bound. For plants that are not too large to handle, slip them out of the pots at the nursery and inspect the roots. If plants are too heavy to lift, tilt the pot and inspect the roots as much as possible through drainage holes. Sometimes you will be able to see circling roots through the drainage holes.

- 4. Slide tree carefully into the planting hole.** To avoid damaging the tree when placing it in the hole, lift it with straps or rope around the root ball, not by the trunk. Use special strapping mechanisms constructed for carefully lifting trees out of large containers.
- 5. Position the trunk flare** (where the topmost root emerges from the trunk) slightly above the surface of the landscape soil. Most horticulturists agree it is better to plant the tree a little high than to plant it too deep. If the tree is a little too deep, tip it to one side and slide some soil under it; then tip it back the other way and slide some more soil under the root ball. Once the tree is at the appropriate depth, place a small amount of soil around the root ball to stabilize it. Soil amendments are usually of no benefit. The soil removed from the hole usually makes the best backfill, unless it is substandard or contaminated.

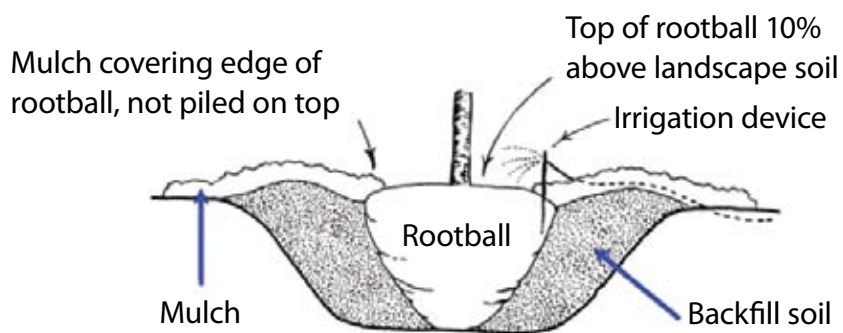
6. **Straighten the tree in the hole.** Before you begin filling the hole with soil, have someone view the tree from two directions perpendicular to each other to confirm that it is straight. Fill in with some more backfill soil to secure the tree in the upright position. Once you add large amounts of soil, it is difficult to reposition the tree.
7. **At planting time, remove all synthetic materials** from around the trunk and root ball. This includes string, rope, synthetic burlap, strapping, plastic and other materials that won't decompose in the soil.
8. **Fill the planting hole with backfill soil.** As you add the soil, slice a shovel down into it 20 to 30 times, all around the tree. Break up clay soil clumps as much as possible. Do NOT step firmly on the backfill soil. This could compact it, restricting root growth, especially in the clay soil. When the planting hole is filled with soil, the root ball should rest 1 inch (small trees) to 3 inches (larger trees) above the backfill soil.
9. **Add 10 to 20 gallons of water to the root ball.** Fill any air pockets with soil.
10. **Cover the backfill soil with mulch.** Apply mulch to a minimum 8-foot diameter circle around the tree, if possible. Do not construct a **berm** from soil, since this soil could end up over the root ball several months later. Water the mulch well after spreading.
11. **Stake the tree, if necessary.** Staking holds the root ball firmly in the soil. If the tree moves in the wind, the root ball may shift, and emerging roots could break or the plant could fall over. Young trees might require staking until enough trunk strength develops. Remove staking materials after the tree becomes established. If not removed, ties and stakes can **girdle** a tree, which can kill it.

Berm: a raised earthen area.

Girdle: to constrict or destroy the bark in a ring around the trunk or branch of a plant, cutting off flow of nutrients and water through the bark; ultimately the plant dies.



12. Water trees frequently so roots fully establish. Light, frequent irrigation fosters the quickest establishment for trees. Following the initial few months of frequent irrigation, water weekly until plants are fully established. At each watering, apply about 1-2 gallons of water per inch of trunk diameter (i.e., 2-4 gallons for a 2-inch tree). Never water if the root ball is saturated. In Louisiana, trees typically require about three months per inch of trunk diameter to become established, but could take longer depending on climate, watering schedule and species. Fertilizing during the establishment period doesn't improve survival rates.



Watering Schedule

To establish a 1-gallon size plant with average water requirements:

Week 1water daily
 Weeks 2-3water every two days
 Weeks 4-6 water twice per week
 Weeks 7-12 water once per week



HIRE REPUTABLE PROFESSIONALS

This handbook forms a solid resource for do-it-yourselfers, but what if you lack the time, desire or ability to tackle your own landscape work? Landscaping companies offer varying types of maintenance services. In Louisiana, the green industry is regulated, and professionals must carry a license from the Louisiana Department of Agriculture and Forestry. Professionals who do landscape maintenance must have a Horticulture License, those installing landscapes must have a Landscape Contractor License and those drawing up Landscape Designs must have a Landscape Architect License.

Types of Maintenance Services

Fertilizer and Pest Control Companies. Some homeowners look for a company to provide all fertilization and pesticide spraying services to their lawn and landscape. These services are provided by pest control companies, who do structural and outdoor pest control. Any business that applies pesticides to lawns and ornamentals in Louisiana must be licensed by the Louisiana Department of Agriculture and Forestry (LDAF). Pest control companies generally have one or more Certified Pest Control Operators, plus technicians who operate under their license. These companies will typically be on your property every other month, but may not always need to apply fertilizer or pesticides. They will have you sign a contract stating exactly what they will provide. In addition to this, they should do the following:

Follow fertilization guidelines as developed by the LSU AgCenter's **Best Management Practices** program. These guidelines cover fertilizer rates, sources and application timings. Fertilizers containing **insecticide** or herbicide (**weed** killer) should be avoided.

Best Management Practices: methods that have been determined to be the most effective, practical means of preventing or reducing pollution.

Insecticide: a pesticide that kills insects and other arthropods.

Weed: a plant out of place; weeds are troublesome because they compete with desirable plants for water, minerals and light; sometimes weeds can harbor insect pests or diseases.



Follow an **Integrated Pest Management** (IPM) program where pest scouting and monitoring is common and **pesticides** are applied when other options will not control the pest. See descriptions of these options beginning on page 52. If pesticides are used, they should be applied at labeled rates, and a sign should be posted to alert you that they have applied a pesticide. When pesticides are necessary, least toxic products should be chosen.

Landscape Maintenance Services. These companies perform a variety of services, from mowing and edging to fertilizer applications, planting, renovating, etc. They must have a LDAF Horticulture License. **If a landscape maintenance service company does not hold a Commercial Pesticide Applicators license, they may not apply any pesticide, even a product you purchased, to your lawn.** They should follow the fertilization guidelines as described above. They should leave grass clippings on the lawn and properly dispose of any other yard waste, whether it is used on-site as mulch or compost or is removed from the yard.

Integrated Pest Management: a sustainable approach to managing pests by combining biological, cultural, physical and chemical tools in a way that minimizes economic, health and environmental risks.

Pesticide: a chemical or other substance used to prevent, destroy or repel pests.



1

*Right Plant,
Right Place*



PLANNING YOUR LOUISIANA LANDSCAPE

When it comes to home landscaping, many gardeners remain confused about how to create what they want. Efforts at landscaping can be disappointing despite spending a substantial amount of money. The important thing to remember is that developing an attractive, properly functioning landscape is best done using a process.

You might want to consider two general gardening styles – **formal and informal**.

The **formal** style is characterized by bilateral symmetry, clipped plantings, geometrically shaped plants and beds, orderly rows of plants regularly spaced, traditional garden accents (classical statues for example), a central decorative feature such as fountain, “crisp” building materials (smooth painted wood, cut stone, brick) and everything neatly manicured. This style can be very effective, but can also appear stiff, lifeless and boring. It is a style that requires relatively high maintenance.

In the **informal style** of landscape, plants are allowed to develop their natural forms (pruned but not regularly sheared), and they are arranged more irregularly in a way that resembles nature. The lines in the landscape and the shape of the beds tend to be curved and flowing. There are few straight edges and no geometric shapes. Building materials are more relaxed and may even be rustic. This style of landscape design is generally less demanding when it comes to maintenance. Get a feel for what suits your taste and the style of your home, and use it.

Think about your budget. Although it would be nice to garden with unlimited funds, the available money for the project must be considered. Don’t forget that once the plan is drawn up, it can be installed in sections over time, allowing the cost to be broken up into more manageable installments. The next part details the process to develop a landscape design. These steps help you organize your thoughts and efforts so you end up with is what you want and need.



Photo: John Wozniak, LSU AgCenter



Step 1. List your needs. Think about yourself and your family, and decide what your landscape needs to include. Write the list down on paper. It might include such features as privacy, outdoor living area (patio, deck, courtyard, etc.), shade, flower beds, vegetable garden, swimming pool, greenhouse, children's play area and storage — basically, all the things the landscape needs to provide and include. Be thorough.

Step 2. Study your site. Become familiar with the grounds. Notice the compass directions. Which areas are shady or sunny, wet or dry? Note existing features such as trees, buildings, beds, fences, walks and the like. Draw up a simple sketch of the property showing the relevant features. Better yet, do a scale drawing. A scale drawing is much more effective when you actually start to do the design. Any inexpensive book on landscaping has directions on how to do a scale drawing. Once the drawing is done, make copies of it to draw on. You will be playing with various ideas and need copies to try those ideas out. Never draw on the original.

Step 3. Diagram space needs. In this step you decide how much space different activities and areas will need and where in the landscape they will be located. At this time you will see how many things in your list you will actually be able to fit into the landscape. On your scale drawing copy, draw circles or ovals to indicate where and how large areas will be. For instance, a circle would represent where and how large the vegetable garden would be, where the play area would be, where the patio would be and so forth. Try several arrangements until you find the best one.

Step 4. Shape the spaces. Now, decide exactly what shape the areas will have. If you indicated flower beds with an oval to indicate where and how big they will be, at this point you decide how they will actually be shaped. Although you don't actually select the plants at this stage, you should decide on the characteristics that the plants should have (size, flowering, color, evergreen, etc). This is a creative stage. It will be guided by the previous steps as well as the style you have decided for the garden.

Step 5. Select the materials. At this point, you select the components that will be chosen to create the landscape. If, for instance, in step 1 privacy was listed, in step 2 it was decided what view needed to be blocked, in step 3 the location of the privacy screen is determined, in step 4 the size of the screen is determined (how tall, how wide) and in this step what the screen will be composed of is decided. You may choose to plant a holly hedge or build a lattice fence or a brick wall. Go through the rough plan selecting what plants will be used, what surfacing materials, etc. Cost is a factor that enters into which materials are selected.



SITE ANALYSIS

To match plants with the correct location, it is very important to first determine the site characteristics. Remember that these may differ greatly at various sites throughout a yard. Here is a list of site characteristics to consider prior to getting started with your landscape efforts.

SOIL

- Sand
- Silt
- Clay
- pH
- Nutrients present
- Compaction/hardpans

DRAINAGE

- Well-drained
- Moderately drained
- Poorly drained

LIGHT

- Full sun
- Partial sun
- Partial shade
- Shade
- Morning sun
- Afternoon sun

TEMPERATURE

- Exposure to freezing temperatures
- Exposure to extreme heat

STRUCTURAL LIMITATIONS

- Power lines
- Underground utilities
- Septic tanks
- Roof overhangs
- Paved areas
- Security lights

OTHER

- Exposure to poor quality water
- Exposure to windy conditions
- Exposure to wet/dry seasonal extremes
- Irrigation limitations



LOUISIANA ONE CALL

Being aware of underground utilities is an important item to consider in development of a new landscape planting. How many of us have ever thought about the location of underground utilities prior to digging? Many landscape projects involves soil excavation. This brings about the possibility that utility lines could be unknowingly damaged. Prior to soil excavation, call Louisiana One Call at 1-800-272-3020 at least 48 hours in advance (excluding weekends and holidays). Provide the following information:

- Name and telephone number of the excavator
- Name and telephone number of the company
- Date and time work is scheduled to begin
- Specific location address
- Specific description of the work site
- Nearest intersecting roadway to the work site
- Distance and direction of the work site from the nearest intersection
- Advise the One Call operator if explosives will be used

Maintain the local request number provided by the one call operator. It is your proof of the call and may be requested by an enforcement agency.

If digging activity comes within 18 inches of a utility line or pipeline, exercise extreme caution. Hand digging is recommended to expose the buried line.

Markings for underground utilities are considered valid as long as they are visible up to 10 calendar days from the "mark by" time. "Mark by" time is provided by the one call operator and excludes holidays and weekends.

For larger projects, call in only the work that will be accomplished within a 10-day period. If damage occurs during excavation, notify the utility operator or pipeline company directly. If there is an emergency situation, take steps to safeguard health and property. Wherever possible, use white paint, stakes or flags to designate the area of the proposed excavation. Please remember that not all utilities participate in the "Louisiana One Call" program. Call nonmember utilities directly to request marking of their lines.

Is It Safe to Dig?

In Louisiana, you need to contact Louisiana One Call and "Call before you dig." wait 48 to 96 hours for the site to be marked. Observe the marks, and dig with care.

Louisiana One Call
1-800-272-3020 or 811

Call 48 hours in advance,
excluding weekends and holidays,
before digging is scheduled to
begin.



SOIL, SOIL AMENDMENTS, BED PREPARATION

Optimum soil pH is critical for success with your landscape plants. The ideal soil pH for most ornamental plants growing in Louisiana is 5.5-6.5. A simple definition of soil pH is a measurement of the acidity or alkalinity. A pH value of 7 is neutral, a pH value less than 7 is acidic and a pH value greater than 7 is alkaline or basic. Soil pH is raised by using lime (normally dolomite lime) and is lowered by using sulfur. Always adjust pH based on the results of a soil test. Acid-loving plants are those that prefer a soil pH in the 5.0-5.5 range. Examples include blueberries, camellias, azaleas, centipede grass, periwinkle, petunias and pansies.

Several factors need to be considered carefully when you develop landscape beds for ornamental plants. Proper soil pH, as previously mentioned, and internal drainage are very important. This can be accomplished by amending some of our existing soils, but more intensive work may be needed in our more poorly drained soil types.

French drains remove water by providing subsurface drainage. Select a point lower than the landscape site for the water to drain toward. Dig a trench, fill it partially with gravel and lay pipes to carry water away from the planting site.

Raised beds are almost essential for successful landscape plant establishment and resulting growth (if French drains or “pitcher’s mounds” are not used). Make a raised bed at least 12 inches deep. A raised bed can be enclosed with decorative bricks, concrete edging, landscape timbers, railroad ties or 4-foot by 4-foot wood. Chemically treated wood is safe for use around ornamental plants.

A **“pitcher’s mound” or berm** is recommended when planting an individual tree or shrub. A berm accomplishes the same thing as a raised bed, but it’s done on an individual basis. The berm should be 1 foot tall and needs to come out from the center gradually and slope down to the surrounding soil level. When planting directly in a heavy clay soil, incorporate a 3-inch layer of new soil to form a transition layer between the existing soil and any soil that is added. A sudden change in soil texture disrupts the flow of water through the soil. This causes a stagnant area beneath the new soil. It is highly likely that roots of a newly planted tree or shrub will not move out of the planting hole if you don’t follow proper planting procedures.



Photo: LSU AgCenter

Soil Sampling



Photo: UF/IFAS, FYN Handbook

Mulch that is too deep or touching the trunk is applied improperly. This is commonly referred to as “volcano mulching.”



PLANT MATERIAL

Annual and Perennial Flowers: Planting Procedures and Plant Recommendations

A good way to begin planting annual and perennial flowers is to create islands of flowers in an open lawn, but because such beds are easily viewed from many sides, they often require high maintenance to keep them attractive.

Border plantings along a wall, fence or hedge can soften the transition of landscape structures into the rest of the landscape or can create alleys of color. Rectangular beds lend themselves to a border planting where space is restricted. When planting a perennial border against a hedge, fence or wall, leave a little space between it and its backdrop. This spacing allows for better air circulation, more light penetration and ease of maintenance from the rear of the bed. Perennial borders often are 6- to 8-feet wide, allowing adequate space for at least a combination of six or more species, front to back, yielding a continual bloom.

To prevent turfgrass from growing into the perennial bed and becoming unsightly, use some form of broad edging or separating strip. Bricks laid flat, flagstone, bare ground or a heavy layer of mulch such as pine straw or pine bark will help keep out grass.

Annual and perennial flowers may be grouped according to color, intermixing plants that bloom at different intervals for a continual display. Plant height is a major consideration also. In border plantings, the tallest plants are usually placed toward the rear to serve as a backdrop with a few moved forward to prevent monotony in the design. In island plantings, they are placed toward the center. Fall-blooming perennials are usually the tallest, making them the best backdrop or accent plants. Most of the middle height perennial plants are summer bloomers and may occupy the majority of the middle space. Spring-blooming perennials are primarily short plants; place them toward the front.



Photo: Mark Claesgens, LSU AgCenter



Emerging foliage and flowers of later blooming plants can help hide the fading foliage of earlier flowers. Narrow beds with excessively tall plants are usually not effective displays. Whether for borders or island beds, keep the width of a planting about twice the height of the tallest plant.

More than 80 percent of bedding plants sold for landscape use in Louisiana are classified as warm-season annuals. Major warm-season bedding plants include ageratum, begonias, cockscomb (celosia), coleus, impatiens, marigolds, periwinkle (vinca), petunia, portulaca, purslane, salvia and zinnia. Some other warm-season bedding plants, such as sunflowers, torenia (wishbone flower), geraniums, gomphrena and melampodium are available, too.



Photo: Mark Claesgens, LSU AgCenter

Pansies dominate the cool-season bedding plant market in Louisiana. Other major cool-season bedding plants include dianthus, snapdragons, viola and ornamental kale/cabbage. Alyssum and stock are two cool-season bedding plants growing in popularity.

Probably the key best management practice that should be used in Louisiana regarding annual flowers in landscapes is the proper use based on the purpose and site location.

Shady Locations

- Begonia
- Coleus
- Impatiens
- Torenia
- Caladiums

Hot and Dry Locations

- Periwinkle
- Melampodium
- Cockscomb
- Zinnia
- Purslane
- Portulaca

Container Plantings

- Begonias
- Periwinkle
- Petunias
- Coleus
- Pansy
- Viola
- French Marigolds
- Torenia

Edging Borders

- Ageratum
- Cockscomb
- Alyssum
- Begonia
- Dianthus
- Dusty Miller
- French Marigolds
- Pansy
- Petunia
- Portulaca

Hanging Baskets

- Alyssum
- Impatiens
- Petunias
- Purslane
- Portulaca

Fragrant Flowers

- Alyssum
- Flowering Tobacco
- Petunia
- Stock
- Dianthus



Flowering perennials are plants that live for several years and often require two or more years from seed to flower. There is a renewed interest in herbaceous perennials because they need less maintenance, less water and fewer pesticides than annuals. Many gardeners include flowering bulbs and ornamental grasses in this category. Once prominent in many landscapes, these enduring plants are being rediscovered for their dependable seasonal effects. Unlike trees and woody shrubs, which are also perennials, herbaceous or flowering perennials are those that appear to die down part of the year, only to emerge again the following season from underground roots, stems, bulbs or rhizomes. The simple term “perennial” is commonly used when referring to herbaceous perennials.

Perennials are easily used as ground covers, mixed with annuals, grown in containers and used as accents or specimen plants. Many perennials are short bloomers and are best mixed with others that bloom at different times or included with other landscape plants as part of an overall design.

Consider the site before selecting your plants. Although many perennials, such as ferns, tolerate heavy shade, most perennial plants require abundant sunshine. Air circulation is important for avoiding diseases; stagnant, warm and humid air creates ideal conditions for diseases. Perennial plants also require properly prepared soil, and a few have specific drainage and fertility requirements.

Though most perennials may take a couple of years to flower from seed, many are as easily started as annuals. The quickest way to have blooming plants, however, is by vegetative propagation, such as by dividing old plants or rooting stem cuttings. Plants produced vegetatively have all of the traits of the “mother” plant. Propagation by division may seem difficult at first, but most gardeners find that dividing crowns and roots and separating bulbs takes very little experience and can be mastered quickly. Try dividing monkey grass for experience, then move on to daylilies, and, before long, you will have the hang of it.

Perennial plants with shallow roots are easily pulled apart by hand. Long, fibrous roots can be pulled apart with a hand fork. Thickly intertwined roots may need more forceful separation or cutting with digging forks. Replant only those segments with strong roots and a few intact leaves or crowns.

In general, it is best to divide perennials during their dormant or “off” season; divide



Photo: John Wozniak, LSU AgCenter



spring bloomers in the fall and fall bloomers in spring. Some perennials may need dividing every three or four years, or they will slowly crowd themselves into clumps of nonflowering leaves and roots.

Many perennials may be propagated from stem cuttings, which does not disturb the plants' roots. Take stem cuttings during the spring or early summer, choosing stems that are mature and firm but not yet hardened and woody. Cut off 4- to 6-inch segments using a sharp knife or shears, and pinch off the succulent tip and any flower buds to force the cuttings to concentrate their energy on producing roots. Remove the lower leaves that will be below the surface of the rooting medium, but leave a few leaves to provide a source of energy for root initiation and growth.

Perennial flowers for Louisiana include lantana, perennial verbena, butterfly bush, perennial salvias, cannas, purple coneflower, shasta daisy, rudbeckia, daylilies and Louisiana iris.

GROUND COVERS: PLANTING PROCEDURES AND PLANT RECOMMENDATIONS

When planting ground covers, the first step is to remove all existing unwanted vegetation such as lawn grass or weeds from the area. Removal can be done physically or by using a herbicide such as glyphosate, but do a thorough job. It will be far more difficult to control problem weeds after the ground cover has been planted. Next, till the soil to loosen it. If you are working under a tree, use a turning fork to minimize damage to the tree's roots, and avoid severing roots larger than 1 inch in diameter whenever possible.

After the soil is broken up, spread 2 inches of organic matter (compost, peat moss or rotted manure) over the surface and work it in. If necessary, 2-3 inches of additional blended soil mix (generally called topsoil or garden soil) may be added at this point. Finally, sprinkle 15-5-10 fertilizer at the rate of ½ cup per 30 square feet over the area, and thoroughly blend everything together. Now you are ready to plant.

Plant the ground cover at the proper spacing. This varies with the type chosen, so check with the staff at the nursery or your parish LSU AgCenter extension office. Planting at the closest recommended spacing will provide quicker coverage, but it will cost you more money. Generally, decide on a budget for the project, purchase as many plants as you can with the money and evenly space them in the area to be planted. If more are needed, purchase them as more funds become available and plant them among the existing plants. Fall planting is best. Ideally, a new ground cover area should completely cover the desired area within one year after planting.



The term ground cover is applied to low-growing plants, other than turf grass, used to cover areas of the landscape. Perennial, evergreen plants having a sprawling, or spreading, habit are most often used. The plants used for ground covers generally are 1 foot or less in height, but taller plants also are used appropriately in certain landscapes.

In addition to the beauty they provide, ground covers have lots of practical uses. They provide barriers to foot traffic and can guide traffic movement through a site. Some ground covers are effective in erosion control. Because they

don't have to be mowed, ground covers reduce landscape maintenance and are especially useful in problem areas such as on steep slopes, under low-branched trees and shrubs, where the roots of large trees protrude and in confined areas where mowing is difficult. They also are the best solution to areas under trees that have become too shady for grass to grow.

You must carefully consider the characteristics you would like the ground cover to have (height, texture, color and so forth) when making your selection. You also need to think about the growing conditions where it will be planted – such as sunny or shady, dry or moist. Then look at the size of the area to be planted. Only the most reliable, fast-spreading and reasonably priced ground covers should be considered for large areas.

Monkey or mondo grass, creeping lily turf (liriope) and Japanese ardisia are good choices for shade to part shade. Asiatic jasmine is excellent for sun to part-shade. Whatever type of ground cover you choose, proper preparation of the planting area will help ensure good establishment and faster growth.



Photo by: UF/IFAS, FYN Handbook

Lilyturf groundcover (Liriope muscari) growing underneath a shade tree borders a self-mulching area along a footpath.

Ground covers provide the following functions in the home landscape:

- Erosion control on slopes.
- Vegetative growth where grass is difficult to grow.
- Reduced temperature and glare.
- Less lawn maintenance.
- Filling in of narrow or oddly shaped areas in the landscape where mowing is difficult.



Give careful consideration when selecting ground covers. Selection will depend on the location where it will be used. Consider the amount of sunlight present, irrigation availability, desired height and growth habit and desired growth rate.

SHRUBS AND TREES: PLANTING PROCEDURES AND PLANT RECOMMENDATIONS

Shrubs have definite growth habits in height, spread and form. Choose plants that will ultimately meet the design requirement. If you have the space for a 3- by 3-foot shrub, but plant one that will mature at 15 feet in all directions, chances are soon you will be dissatisfied with your selection. Do not attempt to artificially manipulate plant form and size to conform to unnatural shapes. Instead, choose specimens that have the forms needed for design specifications.

Shrubs (and trees also) are divided into two groups based on their leaf retaining characteristics. Those that drop all of their leaves at one time of the year and are bare of leaves for a period are called deciduous plants. Evergreen plants drop their foliage throughout the year, never going through a period where they have no leaves. Some plants do not fall into a specific category since leaf retention can be determined by environmental conditions. These groups may be classified as semi-evergreen or semi-deciduous.



Photo: John Wozniak, LSU AgCenter

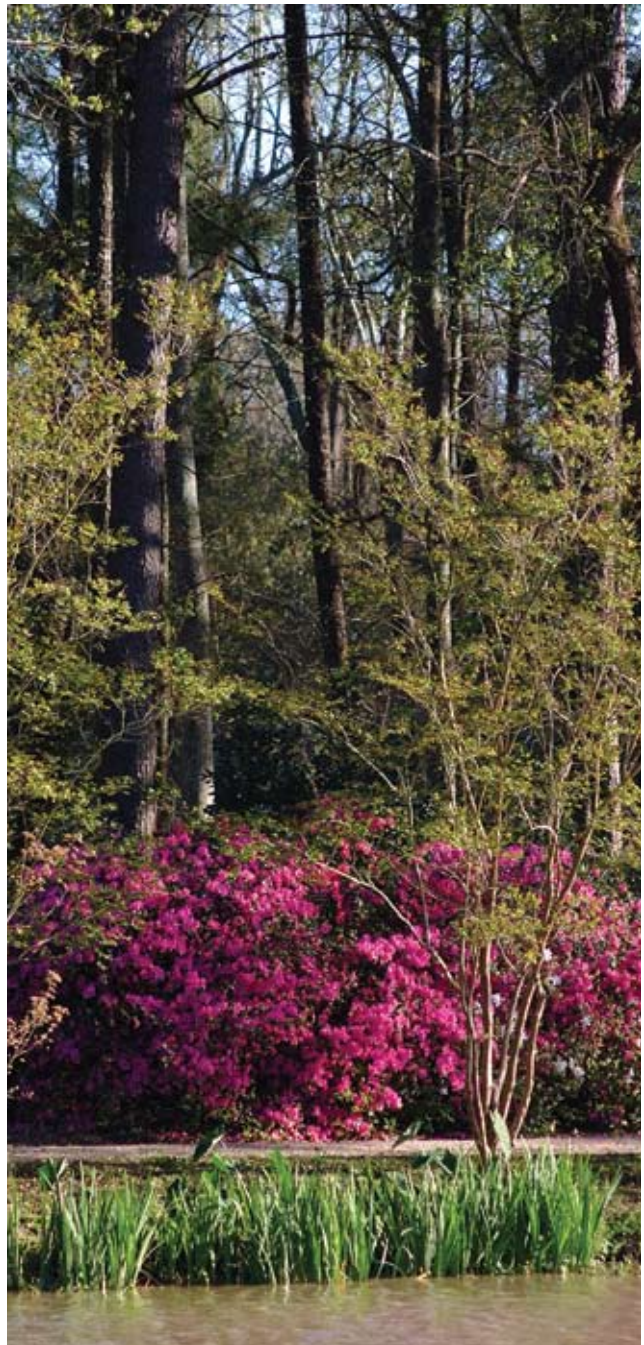


The well-designed landscape most often contains both deciduous and evergreen plants. Seasonal change is accented by using both types. Greater contrasts in plant form, texture and color are achieved with a variety of plant types. Using best management practices to properly place deciduous and evergreen plants in a landscape improves energy conservation in the summer and winter months.

Popular shrubs planted in Louisiana landscapes include azaleas, camellias, sasanqua, hydrangeas, Indian hawthorn, cleyera, ligustrum and dwarf yaupon, holly and gardenias.

Fall is the ideal time to plant new trees and shrubs. When planting an individual tree or shrub outside of an existing landscape bed, follow these procedures for optimal establishment. For container-grown and ball-and-burlapped trees and shrubs, begin by digging a hole at least twice as wide and the same depth as the root ball. After digging, ensure that about 1-2 inches of the root ball is raised above the surrounding soil. For container-grown plants, loosen with your hands or a knife any roots that have been matted while growing in the container. Also, cut through any circling roots. During the planting procedure, return to the planting hole the same soil that was removed from the planting hole. Do not amend the backfill. Water in the plant to release any air pockets and use any remaining soil to build a berm around the hole to create a watering basin. If you have a ball-and-burlapped plant, be sure to untie or cut the burlap from the top one-third to one-half of the root ball.

Photo: John Wozniak, LSU AgCenter



Trees are one of the most valuable assets in a home landscape. Energy conservation and many other environmental benefits are achieved when trees are properly used in a landscape.

Small Flowering Trees

Dogwood
Mayhaw
Grancy Greybeard
Silverbell
Crape Myrtle
Eastern Redbud
Parsley Hawthorn

Medium to Large Flowering Trees

Swamp Red Maple
Southern Magnolia
Tulip Tree (Tulip Poplar)
Oriental Magnolia

Trees Tolerating Wet Soils

Willows
Mayhaw
Swamp Red Maple
Nuttall Oak
Baldcypress
Tupelo Gum
River Birch
Wax Myrtle

Drought Tolerant Trees

Yaupon
Vitex or Lilac Chaste Tree
Chinese Pistachio
Crape Myrtle
Green Ash

Fast Growing Shade Trees

Chinese Elm
Baldcypress
Cherrybark Oak
Green Ash
Southern Red Oak
Nuttall Oak
Sawtooth Oak
Tulip Tree (Tulip Poplar)
Sycamore
River Birch

Trees to Attract Wildlife

Sawtooth Oak
Mayhaw
Yaupon
Wax Myrtle
Silverbell
Pawpaw
Pecan
Eastern Red Cedar
Parsley Hawthorn



Photo: Mark Claesgens, LSU AgCenter



2

*Water
Efficiently*



EFFICIENCY FACTORS

Adequate soil moisture is essential for a thriving landscape. It can mean the loss of newly planted grass or increased diseases. In Louisiana, we do not receive an even distribution of rainfall through the year. Providing uniform moisture is critical for most plants to prevent drought stress during dry periods.

Irrigation should be set to run in the early hours. Morning water pressure is usually better; foliage will have time to dry before the evening dew or afternoon showers set in. This dry evening segment will reduce the infectious period of diseases and help reduce that problem.

Check head output and uniformity with water collectors such as tuna fish cans. Place several collectors around, and check coverage and inches-per-hour output. One approach to irrigation management is to set the timer for what you guess the zone may need; then watch the results. If your needs are just to protect from general plant loss, an on-call approach or weekly irrigation can do.

For best water management, the irrigation factors should be incorporated into your program. They are soil type, current drought conditions, sunlight, plants, slope and wind. Soil types have a lot to do with irrigation cycles. Clayey soils require several short, back-to-back cycles because those soils need more water at any one time, but can only infiltrate slowly. When well-watered, clay lawns have the capacity to supply moisture longer. Sandy lawns take in water easily, but have a lower capacity to hold much water. They need more frequent and shorter cycle applications. Head output should complement the soil's infiltration rate and be a factor in the original design, but you can still best manage whatever equipment you have.



Photo: LSU AgCenter

Best time to water is in the early morning.



Photo: UF/IFAS FYN Handbook

Micro-spray jets directly deliver small volumes of water.



The plant materials in the landscape also regulate irrigation. Some materials have deep roots and drought resistance. These materials need not be watered as often as shallow-rooted species. It would be best to plant similar materials together and allow for more appropriate irrigation in zones instead of all zones getting the same dose.

When in droughty periods during the hot season, water more frequently. Instead of once or twice a week, you may need a third watering. Poorly designed systems will suffer more in drought and will definitely need more irrigation time to make up for their lack of effectiveness.

If you have slopes, it is important to zone the higher areas different from those lower. High spots will need more frequent watering and low spots or down slope will collect water from upslope and need less irrigation to avoid disease and root loss. You may adjust run times or the frequency and timing of their cycles to get the appropriate dose for the site.

Shady areas usually do not need as much water, but that depends on the type of plant materials. Contractors should consider this in their designs. You should base these zone needs on the site conditions and plant material needs.

Wind changes everything. It changes the spray patterns and thus the uniformity of coverage. It also accelerates the evapotranspiration, which causes the soil to dry out more and plants to lose more water. Many areas have the reverse of this problem and have dead air space because of walls and larger shrubs, etc. Consider this aspect of the site when allowing for irrigation programming.

Full automation is far from foolproof. Irrigation needs and cycles should be re-evaluated monthly to locate problems and adjust for changing needs. A properly designed and operated irrigation system will ensure that the critical factor of soil moisture will be there to sustain healthy plant growth.



Photo: UF/IFAS FYN Handbook

Sprinkler water misdirected toward the pavement is more likely to run off the impervious surface and be wasted.

Wilting: the drooping of plant parts, especially the leaves, generally because of lack of water.



Moisture Measurement

If the soil in your yard appears dry, that does not mean the root zone is dry. A soil-coring tool like the one shown pulls up a soil sample that allows you to see and feel the moisture in a plant's root zone. A soil core also reveals whether you are watering so much that water is wasted below the root zone. Using a soil corer can help you judge when to turn off an automatic watering system. Look for coring tools at most irrigation and some garden supply stores.



Photo: UF/IFAS FYN Handbook

WATERING TIPS

- Reduce the need for watering by choosing water-efficient and drought-tolerant plants, including those native to your site, and plant them in the right place. If you group plants according to their water (and light) needs, you can simplify watering methods and systems. For example, separate turf irrigation zones from tree and shrub zones.
- If you have an automatic sprinkler system, install a rain shutoff device or sensor that will override the system when it rains. Set this device to shut off your system when $\frac{1}{2}$ inch of rain has fallen. Your parish LSU AgCenter Extension office, the USDA Natural Resources Conservation Service (NRCS) or a certified irrigation professional can provide technical assistance.
- Water in the early morning (4–7 a.m.). This is the most efficient time because temperature and wind speeds are at their lowest, which reduces evaporation. Also, grasses are less susceptible to fungus if water is applied at the time that dew normally forms.
- Avoid watering between 10 a.m. and 4 p.m. Temperature and wind speeds are at their highest during this time — so evaporative losses are more likely.

Follow this simple watering schedule for grass:

- Apply $\frac{1}{2}$ inch to $\frac{3}{4}$ inch of water when grass shows signs of distress (bluish-gray color/folded leaf blades).
- Do not water again until symptoms reappear.
- If rain is predicted within the next 24 hours, don't irrigate.



- Use a rain gauge to measure rainfall volume.
- Experiment with gradual reductions in irrigation to see if plants can tolerate less water. Some people use no irrigation, but have healthy plants.
- Water less in cooler months (November–March). Turn off automatic watering systems in summer if rainfall is consistent and in winter months when little water evaporates.
- Make sure your sprinkler system is applying uniform coverage and operating properly. This single action proves to be one of the best ways to conserve water.
- Check your system periodically for broken heads or leaks.

Irrigation Systems

You are probably familiar with sprinklers that are part of an automated system. In some landscapes, such as a lawn or annual flower bed, those kinds of sprinklers can be the best watering method. For other landscape areas, learn about water-conserving micro-irrigation systems.

- Micro-irrigation systems deliver small volumes of water directly to the root zone through low-flow-rate emitters, such as micro-spray jets, bubblers or drip tubes.
- Although micro-irrigation equipment releases small amounts of water, it does not prevent overwatering. Nutrient **leaching** can occur if the system runs for excessively long time periods and waterlogs soil. Sandy soils permit water to distribute laterally to a limited degree only; this can also cause overwatering by microirrigation systems.
- Drip or micro-spray fittings can clog and may require that you filter the water source. Inspect fittings regularly and possibly clean them. Insects and rodents can damage drip tape or tubing.
- If you already have an irrigation system, your options for retrofitting to micro-irrigation may be limited. Sometimes low-pressure emitters, such as bubblers, can be adapted to existing sprinkler heads. This may require an attachment at the source to reduce water pressure.

Leaching: the downward movement of water (and any particles dissolved in it, such as nutrients or pollutants) through soil.



Calibrating Irrigation Systems

Follow these steps to determine how much water your irrigation system is applying:

- Set several similar, flat-bottomed, straight-sided cans (all must be of equal size) in various places within one watering zone. Tuna cans work well for this.
- Turn on sprinklers for 15 minutes.
- Pour the water from all containers into one container. Measure the depth of the water to the nearest 1/8 inch.
- Divide the measurement by the number of containers to determine the average amount of water applied in that zone in 15 minutes.
- In the future, water the area only as long as it takes to apply $\frac{1}{2}$ - $\frac{3}{4}$ inch of water.



Photo: UF/IFAS FYN Handbook

Water-Wise Advice

Get practical advice on state-of-the-art irrigation systems from several sources:

- If you are changing areas of your landscape from turf to trees or planted beds, consult with your parish's LSU AgCenter Extension office or with the Natural Resources Conservation Service regarding watering options.
- If you are in the market for a new irrigation system, find a reputable certified irrigation contractor who has experience with these systems.



3

*Maximize
Mulch and
Recycle Yard
Waste*



SIMPLE FACTS ABOUT MULCH

A mulch layer around trees, shrubs, planted beds and covering bare ground provides many benefits. In areas that are difficult to mow, irrigate or otherwise maintain, use mulch to replace turf or groundcovers. Also consider placing mulch in shady areas where plants don't grow well.

- Organic mulch materials improve soil fertility as they decompose.
- Mulch buffers soil temperature, keeping soils warmer in winter and cooler in summer.
- Mulch helps maintain soil moisture by reducing evaporation. A layer of mulch also minimizes water needs for established plants.
- Fresh mulch inhibits weed germination and growth.
- Over time, many types of mulch improve soil aeration, structure and drainage.
- A mulch layer can inhibit certain plant diseases.
- Mulch around trees and shrubs (not against the trunk) eases maintenance and reduces the likelihood of damage from string trimmers.
- Mulch gives planting beds a neat and uniform appearance, adding a contrast of color and texture that complements plantings.

Guidelines for Using Mulch

Follow these tips when adding mulch to your landscape:

- For well-drained sites, apply a 2- to 3-inch layer (after settling) of mulch around trees, shrubs and bedding plants. If there are drainage problems, use a thinner layer. Coarse materials, such as pine nuggets, may be applied to a depth of 4 inches, but don't allow mulch to accumulate to a greater depth. If mulch is already present, check the depth. Do not add mulch if there is a sufficient layer in place (2-3 inches).
- "Volcano mulching," or mulch applied too deeply, hinders oxygen exchange to roots, which stresses the plant and causes root rot. Do not place mulch on top of a tree's root ball or against the trunk. More than about 1 inch of mulch on the root ball of newly planted trees and shrubs can stress plants because mulch can intercept water meant for the roots.



How Much Mulch?

Bulk quantities of mulch are sold in cubic yards. To calculate the amount of mulch you need, first measure the area to be mulched, in square feet. Next convert the desired depth to a fraction of a foot. For example, 3 inches divided by 12 inches equals $\frac{1}{4}$ foot or 0.25 foot. Multiply this fraction by the square foot measurement of the area to be covered (.25 foot x 100 square feet = 25 cubic feet). Convert cubic feet to cubic yards by dividing cubic feet by 27 ($25/27 = .926$). To cover a 100-square-foot area to a depth of 3 inches, you will need .926 cubic yards of mulch.

- If mulch is piled against the trunk, pull it back several inches to uncover the base of the trunk and the root flare. Mulch piled against tree trunks holds moisture against the trunk, and stems and trunks that remain constantly wet are prone to root rot. Mulch piled high against the trunks of young trees may also create habitats for rodents that chew the bark and can girdle the trees.
- Mulch out to a tree's drip line or beyond, at least an 8-foot diameter around the tree. Remember that in a forest environment, a tree's entire root system (which usually extends well beyond the drip line) would be mulched.
- Thick blankets of fine mulch can become matted and may prevent water and air from seeping through, or become like potting soil and may support weed growth. Rake old mulch to break up any matted layers and to refresh the appearance.
- Organic mulches may require weeding and replenishment once or twice a year to maintain a total depth of 2–3 inches.
- Shell, crushed stone or pebbles can be used as mulch but they won't contribute to the soil's nutrient and organic content or water-holding capacity. Limestone and shell both raise soil pH. They also reflect heat, increasing the water needs of plants.

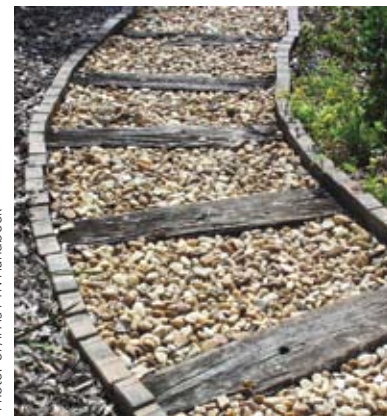


Photo: UF/IFAS FYN Handbook

Recycled railroad ties, bricks and gravel make a unique footpath capable of absorbing rainwater.



RECYCLE YARD WASTE

Landscape maintenance activities — mowing, pruning, raking — generate yard waste that you can return to the soil, recycling valuable nutrients. It is easy to recycle yard waste. Try a few of these simple ideas to get started.

- Leaves and pine needles provide a source of mulch that is a real asset in the landscape, and it is virtually free! If your yard generates more leaf mulch than you can use, compost the material or share some with a neighbor.
- After pruning trees and shrubs, toss small cuttings into a compost pile or behind a shrub.
- Never dump grass clippings or other yard waste into storm drains or waterways. Such activities are illegal and can pollute water systems and clog drains. Grass clippings are a significant source of nitrogen, so keep them on the lawn and out of the water.
- Compost or mulch with yard wastes to reduce the amount of solid waste to be hauled away. For complete composting how-tos, refer to LSU AgCenter publications on the Web at www.lsuagcenter.com.



Photo: UF/IFAS FYN Handbook

Compost bins with several compartments aid in turning the material.

Recycled Mulch

Search locally for sources of recycled mulch. Sometimes you can even acquire mulch for free! Here are some tips on obtaining recycled mulch products:

- Use mulch that originates in your own landscape, such as leaves, pine needles, grass and shrub clippings.
- Local power companies, municipal solid waste departments and tree services may supply free or low-cost utility mulch and may sometimes deliver bulk quantities. Try to get only mulch from trimming. It is generally more disease-free than mulch from other sources, such as roots.
- Team up with other homeowners and have bulk quantities delivered to your neighborhood.
- Check the phone book for commercial suppliers of mulch made from recycled materials.
- If you need lots of mulch for a new landscape, place an ad in the local newspaper so suppliers come to you.



Recycle While You Mow

Following a few simple tips is all it takes to cultivate a lush lawn:

- Leave clippings on the lawn to decompose and return nitrogen to the soil. Research indicates this practice improves soil fertility over time, gradually reducing the need for nitrogen fertilization up to 50 percent without a decrease in turfgrass quality. For more information go to www.lsuagcenter.com and read “Don’t Bag It Lawn Care” in the publication section.
- Never remove more than one-third of an individual grass leaf blade at one time.
- For procrastinators who don’t mow regularly, mulching mowers cut grass into smaller pieces, speeding decomposition.
- If grass grows too tall between mowings, spread clippings behind shrubs or add them to a compost pile to avoid unsightly buildup.
- Sharpen mower blades monthly to protect against pathogen invasion.
- If your yard isn’t turf intensive, you’ll mow less, saving time, energy and money. Where grass doesn’t serve a function, opt for low-maintenance groundcovers instead of grass, or underplant trees with shrubs and groundcovers.



Photo: LSU AgCenter

Always leave grass clippings on the lawn.





4

*Fertilize
Effectively*



MAINTAINING THE ENVIRONMENT

Fertilizers provide mineral elements needed for plant health. Did you know that you can choose fertilizers that can direct your plants' growth in specific ways? Different types of fertilizers encourage plants to develop:

- **More or larger blooms**
- **Greener leaves**
- **Faster growth**
- **More fruit**

Fertilizing can be done by applying composted organic material, packaged fertilizer or a specific mineral, such as iron. Different types of plants benefit from different fertilizers, so we'll discuss fertilizing lawns, woody landscape plants in separate sections.

Grass that receives appropriate levels of fertilizer — not too little and not too much — produces a dense root and shoot system. A healthy grass cover conserves water and soil and rejuvenates the air. Lawns can reduce summer temperatures around the house by 15 to 30 degrees compared to bare soil. Thus the absorptive, filtering, protective and moderating quality of a lawn are well worth the inputs to keep it thick and healthy.

Many soils lack good fertility and need our help in maintaining an adequate and balanced level of nutrients. However, over-application of fertilizer will result in developing lush, soft turf plants that require more mowing, are more prone to diseases and insects and are more sensitive to environmental stresses. In addition, when people use too much fertilizer on their landscapes, it can seep through the ground past the root zones of grass, plants or trees and end up in the aquifer. It also can be washed off by rainfall directly into surface water or via stormwater systems. The way you fertilize your lawn influences how much fertilizer is taken up by grass — and how much might be lost to leaching or runoff. Several factors determine pollution potential from lawn fertilizing. Among these are:

- **Type of fertilizer**
- **How much you apply**
- **How you apply it**
- **When you fertilize**
- **How much irrigation you apply afterwards**
- **Overall health of the lawn**

Before you apply fertilizer, it is very important that you read and understand the label. If you find the directions difficult to follow, consider hiring a lawn service professional.



WHEN TO APPLY

If lime is recommended, apply as directed anytime during the cool months. Lime takes several months to reduce acidity.

Fertilize warm-season grasses when they are growing and will use the nutrients. This is a couple of weeks after spring green up and until early fall. Fertilization other than this time frame is either wasteful or harmful to the turf and environment. Centipedegrass is fertilized lightly 2 or 3 times per season and carpetgrass is fertilized only once in spring. St. Augustine grass and zoysiagrass are fertilized not more than 3 times each season while bermudagrass gets four applications. Avoid fertilizing in fall to avoid brown patch disease and freeze damage.

SELECTING A FERTILIZER

You will need a product that fulfills what's lacking in your soil, supplies nitrogen and is right for your type of grass. Some soils may be too acid for good growth and nutrient availability; an acid soil will need lime. A soil test every few years will determine the nutrient status of your soil and any lime requirement. Contact your LSU AgCenter local agricultural county agent and ask about a routine soil nutrient analysis for your lawn. Without a soil test, you must assume you have a moderate level of nutrients, and this may not be correct.

When selecting fertilizer, look at the three numbers on the bag. They will read something like 15-0-15 or 16-2-8. The first number represents the percentage of nitrogen in the bag, the second refers to phosphorus and the third number refers to potassium. For example, a 50 pound bag of 16-2-8 is 16% nitrogen, or 8 pounds of nitrogen; 2% phosphate(P_2O_5), or 1 pound; and 8% potash(K_2O), or 4 pounds. The remaining weight is usually composed of inert ingredients. Nitrogen and phosphates cause the most problems with regard to water pollution. An average balanced turf fertilizer will have a high first number, low second number and a mid-strength third number. Some centipedegrass fertilizers will have little or no phosphate.

Lawn Fertilizer

12-4-8 (3-1-2 ratio)

Guaranteed Analysis

Total Nitrogen	12%
6.50% Ammoniacal Nitrogen	
1.00% Nitrate Nitrogen	
0.90% Other Water-soluble Nitrogen	
3.60% Water-insoluble Nitrogen (WIN)	30%
Available Phosphate Acid (P_2O_5)	4%
Soluble Potash (K_2O)	8%
Total Available Plant Food, Not Less Than	24%
(The WIN is slow release.)	



What fertilizer is safest to buy?

Look for **slow-release fertilizers**, or fertilizers that have a high percentage of slow-release nitrogen in them. These products have less potential to leach or run off into Louisiana's waterways than quick-release, water soluble sources. Nitrogen promotes shoot growth, so if you use slow-release nitrogen, you'll have less growth surge. In lawns, that means less **thatch** accumulation and disease following fertilizer application — which ultimately means less work.

What indicates if a fertilizer is slow-release?

Look at the fertilizer sources listed on the back of the bag and find the amount of nitrogen that is water insoluble or slow-release. This slow-release N is also listed as water-insoluble, WIN, controlled release or slowly available. Not all the N will be slowly soluble. Urea, ammonium nitrate and ammonium sulfate are water soluble nitrogen forms and give a quick, short-term green up. With a blend of soluble and insoluble N, you will get some immediate greening and sustained feeding for 5 or 6 weeks. This feature is especially important in spring when soils are cool and growth sluggish. The higher the percentage of slow-release, the less chance of leaching — and less thatch and mowing!

What is the right amount of phosphorus and potassium to look for?

A soil test is necessary to determine if you need to apply phosphorus and potassium. Contact your parish extension office to get a soil test form and learn how to take one.

If you have ample phosphorus in your soil, look for a fertilizer with no more than 2% phosphorus (the second number). As for potassium, look for a fertilizer with about half as much potassium as nitrogen (16-2-8) or equal amounts of nitrogen and potassium (15-0-15), depending on the results of your soil test.

Slow-release fertilizer: a fertilizer that releases its nutrients gradually, over a period of time.

Thatch: a layer of dead and living plant matter that accumulates between soil and turf, often blocking water and nutrient movement into soil.



What is the right amount of fertilizer to apply?

How much to apply depends on three things:

1. Your desired level of maintenance.
2. The amount of nitrogen in the bag.
3. What percentage of that nitrogen is slow-release.

To get the maximum points based on LYN guidelines outlined in The LouisianaYardstick Workbook, apply the lowest of the fertilizer ranges recommended by the LSU AgCenter's Cooperative Extension Service. Understand that at times an under-fertilized lawn may be less pest- or disease-resistant and unable to perform as well in preventing erosion. On the other hand, lawns receiving more fertilizer than recommended by LYN guidelines generally require more mowing, additional irrigation and may develop more pest problems. Regardless of the level of maintenance you desire, adhere to the following guidelines.

- Apply fertilizers to a dry lawn and then lightly water it in.
- If in doubt, apply less fertilizer at any one time and reapply a little sooner.

Regardless of the total nitrogen applied over a year, even at high maintenance levels, it is the amount of nitrogen applied at any one time, the type of nitrogen and the proper application and watering-in or rain that has the greatest impact on the potential for creating pollution.

What is the right way to apply fertilizer?

Follow these simple steps:

Step 1. Determine the annual fertility needs of your grass species by referring to Table 1.

Step 2. Measure the square footage of your lawn area. Do not include landscape plants in this area calculation.

Step 3. Determine how much slow-release nitrogen is in your fertilizer.



Table 1. Fertilization Guidelines for Established Turfgrass Lawns in Two Regions of Louisiana.
(Nitrogen recommendations (lb N/1,000 sq ft/year)*

Species	North	South
Bermudagrass	3-4	4-5
Carpetgrass	0-1	1
Centipedegrass	1	1-2
St. Augustine grass	3	3-4
Zoysiagrass	2	2-3

* Homeowner preferences for lawn quality and maintenance will vary, so we recommend a range of fertility rates for each grass species and location. Also, effects within a localized region (for instance, shade, drought, soil conditions and irrigation) will require using a range of fertility rates. These recommendations assume that grass clippings are recycled.

Step 4. Refer to Table 2 to find out how much fertilizer to apply to your lawn area, based on the percentage of nitrogen in your fertilizer product. These figures are based on one-half pound of N fertilizer per 1,000 square feet. If you are using 1 pound of N, double these amounts to apply 1 pound nitrogen per 1,000 square feet.

Step 5. Apply the fertilizer over the lawn with a drop spreader for most accuracy.

One of the main steps you can do to prevent pollution is to use caution when applying fertilizers.

- A drop spreader application is more precise and even than a rotary spreader. This allows superior control of granule dispersement. Read operational instructions carefully.
- Calibrate all spreaders to get an accurate delivery of fertilizer. The fertilizer bag may have a suggested opening setting for a particular model spreader. If using this number, try one notch less until you calibrate the spreader; you can come back a little sooner with the next application if spread too light, but you can't take back an over-application.



Photo: LSU AgCenter

Drop spreader



- Fill spreaders on pavement where spills can be swept up. After prescribed application, remove extra granules from the spreader and return them to a proper container. Fill and clean liquid applicators and wash spreaders over turf where spills and water would be absorbed and not washed into the street.
- Do not spread fertilizer onto water bodies or impervious surfaces, such as driveways or sidewalks. Shut off the spreader when passing over hardscape walks, bare ground or when making a sharp turn. Particles on hard surfaces can wind up in waterways. Blow, sweep or wash sidewalk granules back into the lawn.
- Be careful using “weed-and-feed” products that contain **herbicides** and fertilizer together. These products can injure some trees and shrubs. Tree and shrub root systems can extend far beyond the visible foliage, intermingling with turf. In addition, pesticides should be applied only to affected areas, rather than broadcast over the entire yard as occurs with weed-and-feed products.
- Do not fertilize if heavy rain is forecast. This increases the potential for fertilizers to run off into storm drains or to leach through soil with the rainwater.
- In fall, when turf is slowly growing, apply an iron source instead of a nitrogen fertilizer to green the lawn without increasing growth. Use **chelated** iron or iron sulfate.

Herbicide: a chemical that kills plants or inhibits their growth: typically intended for weed control.

Chelate: a complex organic molecule that surrounds certain trace elements, such as iron, and keeps them dissolved in a solution.

How do I water-in fertilizer?

Most fertilizers need to be watered in to move fertilizer just below the soil surface to grass roots. This process requires only about ¼ inch of irrigation water. Do not over-water, or you will increase the potential to move fertilizer into the street or through the root zone and into ground water. Follow the recommendations of your local LSU AgCenter parish extension office when fertilizing lawns.



FERTILIZING COMPETING LANDSCAPE PLANTS

The roots of trees, shrubs, turfgrass and **bedding plants** intermingle and compete for water and nutrients. In fact, the roots of a single **mature tree** may extend 60 feet or more out into your lawn or flowerbeds. Fertilizer applied to one plant is often absorbed by the roots of a nearby plant. Every treatment you apply to your lawn (fertilizer and herbicide, for example) can affect your trees and shrubs. Conversely, treatments applied to a tree, such as pruning and fertilizing, can influence the appearance and health of underlying turfgrass.

In areas where tree or shrub fertilization zones overlap with lawn fertilization zones, fertilize for one or the other of the plant types, but not both. If trees and shrubs are not located near fertilized turfgrass, you can apply additional nitrogen to enhance growth of established trees and shrubs. Refer to Table 2 for specific rate recommendations.



Photo: John Wozniak, LSU AgCenter

Table 2. Fertilizer Guidelines for Established Plants.

Level of Maintenance	Amount of Nitrogen (lb N/1,000 sq ft / year)
Basic	0-1 lb
Moderate	1-2 lb
High	2-3 lb



Photo: Mark Claesgens, LSU AgCenter

Bedding Plants: herbaceous annual or perennial plants that are used in flower or vegetable gardens.

Mature tree: a tree that has reached at least 75 percent of its final height and spread.



Tables 3 and 4 contain helpful information on calculating the amount of fertilizer to apply to a given area. Broadcast fertilizer uniformly over the desired areas of the landscape. Apply water soluble fertilizers at no more than one-half pound of actual nitrogen per 1,000 square feet per application. Application rates of controlled-release fertilizers depend on release rates of the product.

Table 3. Proper Application Rates for Specific Fertilizer Products¹

Area (sq ft)	% Nitrogen in Fertilizer Bag						
	6%	10%	12%	15%	16%	23%	27%
10	1.3 oz 3 Tbsp	0.8 oz 1 ½ Tbsp	0.7 oz 1 ½ Tsp	0.5 oz 3 ½ Tbsp	0.5 oz 1 Tbsp	0.4 oz 2 ½ tsp	0.3 oz 3 ¼ tsp
50	6.6 oz 14 Tbsp	4 oz ½ C	3.3 oz 7 Tbsp	2.7 oz 6 Tbsp	2.5 oz 5 ¼ Tbsp	1.7 oz 4 ½ Tbsp	1.5 oz ¼ C
100	13.3 oz 1 ¾ C	8 oz 1 C	6.7 oz 14 Tbsp	5.3 oz ¾ C	5 oz 10½ Tbsp	3.5 oz 9 Tbsp	3 oz ½ C
1,000	8.4 lb 17 ½ C	5 lb 9 ½ C	4.2 lb 8 ¾ C	3.3 lb 7 ¼ C	3.1 lb 6 ½ C	2.2 lb 5 ½ C	1.9 lb 7 ¼ C

¹The chart explains the approximate weight of fertilizer to use for a given lawn or landscape area in pounds (first number) and also in cups (second number) to deliver ½ lb N/1,000 sq ft (the recommended rate for a single application of soluble fertilizer).

Table 4. Equal Plant Bed Areas with Differing Shapes.

Bed Area (sq ft)	Circle diameter (ft)
10	3.6
50	8.0
100	11.3
1000	35.7





5

*Manage Yard
Pests*



RESPONSIBLE PEST MANAGEMENT

Concerns about health, the environment and pests with increased **resistance to traditional pesticides** have forced people to reconsider practices they once took for granted. The regular preventive application of pesticides is one example. Most people don't realize that, in general, nature takes pretty good care of itself. Healthy plants can usually fend off pest attacks, and predatory insects and birds may suppress undesirable insects. Thus, the preventive and indiscriminate use of pesticides is not advised.

An environmentally friendly approach to pest management is called **Integrated Pest Management**. IPM emphasizes proper identification of the insect or problem. Regular scouting will help to detect problems early. Further observation is made to determine if a problem really exists or if natural enemies, like beneficial insects or other natural controls, are already present. All control options are considered, including prevention of serious pest outbreaks using pest-resistant plants and proper landscape management. If control is necessary, the safest and most effective pest management techniques are employed. The problem often can be solved creatively without the use of pesticides. Safe alternatives are always tried first, such as changing cultural practices or using barriers to block pest entry. If conventional chemical pesticides are required, the least harmful materials are selected to control them. Pesticides are used only to spot-treat affected plants and lawn, not in blanket applications.

Pesticide resistance: after repeated applications of a certain pesticide, some pests may adapt to the chemical and are not harmed by it. Individuals that survive then breed and pass the resistant genes to their offspring.

Integrated Pest Management: a sustainable approach to managing pests by combining biological, cultural, physical and chemical tools in a way that minimizes economic, health and environmental risks.

When pesticides are used, necessary precautions should be followed:

1. Read the label and follow directions.
2. Use the correct pH for the water that serves as a buffer to make the spray effective (optimum pH is between 5.5 and 6.5). This level reduces the amount of pesticide needed and the potential development of tolerance or resistance.
3. Use a spreader sticker and/or an ultra fine oil to enhance the effectiveness of the pesticide.
4. Rotate between 2 or 3 pesticides to reduce potential for resistance or tolerance development.



IDENTIFYING PEST PROBLEMS

Inspecting plants helps identify pest problems early, before they get out of hand. Common plant pests in Louisiana include aphids, scales, whiteflies, thrips, plant-feeding mites, beetles and caterpillars. Detecting small insects and mites can be difficult; their entire life cycle can be as short as one week.

To detect small pests, strike the leaves of small branches against a sheet of white paper and use a 10-power (10X) magnifying glass to search for movement or evidence of pests or use an optivisor (binocular headband magnifier) to check leaves and branches on the plant. Scales and whitefly larvae attach to the plant. Look for pests on branches and on both upper and lower surfaces of the leaves. Sooty mold on foliage often indicates an infestation of insects that pierce the plant and suck sap. "Piercing-sucking" insects often secrete a sugary substance known as honeydew, which serves as a medium for growth of the complex of several species of fungi. Sooty mold does not injure the plant directly, but blocks sunlight from the leaves, reducing photosynthesis. Ants, bees and wasps signal the potential presence of pest insects. Ants tend these insects for the honeydew vthe honeydew because of its high sugar content and food value. Bees use honeydew to produce honey, and wasps use the honeydew as well as some of the soft-bodied insects that produce it as a food source.



Photo: LSU AgCenter

Ants tending aphids.

If you observe plant damage but few pests, beneficial insects may already be at your service. These may include lady beetles (ladybugs) and their larvae, lacewings and their larvae, syrphid fly larvae, preying mantids, assassin bugs, spiders, fire ants and parasitic wasps. Try to tolerate some insect damage and leaf disease on plants. No one can maintain an insect- and disease-free landscape, and a little damage won't hurt your plants. Some pests are night feeders and are not observed during the day. When damage continues but no pests are observed during the day check after dark to find potential pests. Remember, to have the "good guys" there must be some "bad guys" as a food source. If a pest problem persists, take a sample to your local county agent for identification and suggestions on how to precede using IPM.



INTEGRATED PEST MANAGEMENT

When pests, their eggs and debris are heavily concentrated, insects and disease problems can be reduced or eliminated by removing the affected leaves or plant parts. Crush, burn or compost these infested plant parts to prevent further spread of disease or insects. Handpicking and spraying with water also effectively control some large, slow-moving pests. After you handpick, dispose of the captured insects so they do not return to feed again.

Some disposal options include:

- Dropping pests into soapy water or isopropyl alcohol.
- Placing pests in a container in the freezer overnight.
- Composting pests in the center of a hot pile.
- Crushing the pests.

Avoid using broad-spectrum pesticides. Remember, broad-spectrum pesticides are not selective; they will kill beneficial insects and insects that are not a problem. Safer alternatives to traditional pesticides include insecticidal soaps, ultra fine oil and horticultural oils to reduce populations of sucking insects. Products containing an extract of the bacterium *Bacillus thuringiensis kurstaki* or *aizawai* or *Saccharopolyspora spinosa* [spinosad] will reduce populations of caterpillars. Treat for specific pests and only treat the affected plant. Read all product labels carefully and follow them accordingly. Do not attempt to mix your own chemicals or apply homemade recipes unless you have been properly trained to do so.

Once Bacillus formulations are used on caterpillars, you can collect the infected caterpillars that are dying and becoming flaccid and store them in milk, just to cover the worms, and keep them in the refrigerator. Once you see an infestation of caterpillars start, take the solution out, add enough water to double the amount of liquid and let it set on the cabinet for 24 hours. Then blend this up well and use to spray the infestation.



Photo: LSU AgCenter

Green lacewing feeds on many soft-bodied insects.



Photo by Clemson University – USDA extension

Assassin bug feeds on many different pests.



Photo: LSU AgCenter

Caterpillar killed by pathogen.



When large populations of lady beetles are found in the fall they can be stored in ice cream cartons.

- Place a small amount of straw in the container and moisten it.
- Add the lady beetles, cover.
- Place in the refrigerator.
- When aphid or mite problems begin to develop in the spring, take lady beetles out and leave on counter overnight.
- Release the next day.

In general, it is best to apply soaps, oils and pesticides during the cooler part of the day to avoid plant injury. Some plants may be sensitive to certain products. Read the label to find out which plants are listed. To test for phytotoxicity, apply the product to a small portion of the leaf first, and check for leaf burn after an hour.

Timing of your application is critical. Treatments should be made when they are most effective on the pest. This reduces the number of sprays required to manage a problem. Formulations of the insecticide are important. One can reduce phytotoxicity by using materials that are wettable powders, soluble powders, flowables or granules. Emulsifiable concentrates have oil-based carriers like benzene or hexane and are the primary culprits of phytotoxicity. Once on the foliage, they can magnify heat and light to burn plant foliage.

The pH level is critical in the application and effectiveness of insecticides. Normally, the water from the faucet has a pH of about 8.3, which is basic. Since insecticides are acid, forming the water has to be acidified, or the water will break down the insecticide through a process called alkaline hydrolysis. The optimal range for water pH is between 5.5 and 6.5. The pH can be measured by several means, but the more accurate measure is with a digital pH pen (obtained from Ben Meadows or Forestry Supplies or other large nursery outlets). The adjustment of the water pH can be accomplished by using a buffer. Several are available on the market from various nursery outlets.



COMMON PLANT PESTS

Aphids

Aphids are winged or wingless insects with pear-shaped bodies that may be any color or even multi-colored. They are separated from other closely related insect by the pair of cornicles on the end of the abdomen. Aphids are typically found on new or tender growth. Damaged foliage may be discolored or yellow, sometimes twisted or distorted and sometimes appear as if infected by a virus. Ants and sooty mold may be present.

Natural management. Lady beetle (ladybug) adults and larvae, lacewing adults and larvae, syrphid fly larvae, parasitic wasps and some fungi.

Other management tools. Prune infested plant parts or flush with high water pressure from a hose, apply insecticidal soaps, ultra fine or horticultural oils or drench with systemic products that contain imidacloprid or acephate.



Photo: LSU AgCenter

Aphids on a rose.

Scale Insects

Scales belong to several families (see photos). They are a complex and diverse group of insects. They vary in size from $\frac{1}{16}$ to $\frac{1}{4}$ inch in diameter, and the shape, color and wax density and covering are very different between families.

The two body types are armored and soft scales. The armored scale body is hidden under a waxy shell-like covering. Some families of scales are stationary, and others move throughout their life cycle. Scales can be found on all parts of the plant depending on the kind of scale, and some are moved around by ants to protect them from predators, parasites and cold weather.

Soft scales excrete honeydew (sugary excretion) and can have varying amounts of wax secretions on the body, from the powdery wax of mealybugs to the thick heavy coverings of the magnolia and wax scales. Discoloring of the foliage as well as honeydew or sooty mold may be found on the foliage and stems of the plants. Again,



Photo: LSU AgCenter

Soft scale, family Coccidae.



Photo: LSU AgCenter

Asian cycad scale, family Diaspididae, an armored scale.

ants are protectors of the scales because they milk them for the honeydew secretions. Crawler is the term given to the live-born or recently hatched scales. This is the only stage of some families of scales that have legs. This is by far the most vulnerable stage of the scale's life cycle to manage [65].

Natural management. Natural predators include lady beetles (ladybugs), lacewings and parasitic wasps.

Other management tools. Options include sprays with ultra fine or horticultural oils, insecticidal soaps or a spray with an insecticide recommended for scale control or a drench with a product containing either acephate or imidacloprid. All scales possess a waxy protection. To manage the population requires the addition of some type of spreader sticker to assure contact with the scale when sprays are required. If not used, the water with the insecticide will bead up and roll off the scale without providing the contact necessary for management or the populations.



Photo: LSU AgCenter

Cottony cushion scale, family Margarodidae.



Photo: LSU AgCenter

Mealybugs, family Pseudococcidae.

Whiteflies

Adults look like tiny white moths on plants. They take flight when the leaves are disturbed. Whiteflies lay their eggs on the underside of the foliage. The nymphs (immatures), are oval, flat, transparent-to-greenish and are found on the underside of the foliage. In the pupal stage, eyes may be detected and are usually red. Ants and sooty mold may be present because of excretions of honeydew from the nymphs.

Natural management. Controls include fungi (most effective in humid weather), parasitic wasps and lady beetles.

Other management tools. Use sprays with ultra fine or horticultural oils, two to three times at 10-day intervals, or sprays with insecticidal soaps on the same schedule. Where necessary, sprays with a spreader sticker and an insecticide containing either imidacloprid or acephate should be applied, or they may be drenched on the roots.



Photo: LSU AgCenter

Giant whiteflies adults on ginger.



Giant whiteflies nymphal infestation on hibiscus.



Caterpillars

Caterpillars are the larval form of butterflies and moths. They eat the foliage causing skeletonized leaves, notched foliage or defoliation of the plants. Greenish fecal pellets may be observed on the foliage or under the plants infested.

Natural controls. Wasps, birds, parasites, stinkbugs, big-eyed bugs, lizards and pathogens.

Other controls. Remove by hand. Stinging caterpillars can be shaken off plants and crushed or mashed. Sprays of *Bacillus thuringiensis* kurstaki or aizawai or Spinosad are best sprayed when caterpillars are small. When needed, one of the available pyrethroids (cyfluthrin, permethrin, deltamethrin), plus liquid soap, are effective (Louisiana Insect Pest Management Guide).



Photo: D. K. Pollet, LSU AgCenter
Whitemarked Tussock Moth.

Sawflies

These foliage-feeding larva look like caterpillars but are actually sawflies. They can be separated from caterpillars by looking at the number of legs on the abdomen. Caterpillars have one to four legs on the abdomen while sawflies have one on each segment of the abdomen. Caterpillars have a series of simple eyes on each side of the head while sawflies have only one simple eye on each side.

Natural controls. Same as caterpillars.

Other controls. Any number of insecticides is an effective management tools (Louisiana Insect Pest Management Guide).

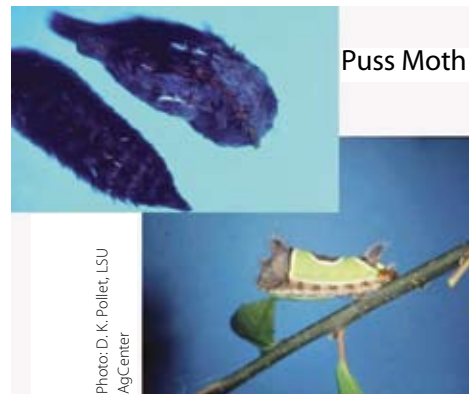


Photo: D. K. Pollet, LSU AgCenter



Photo: D. K. Pollet, LSU AgCenter

Differences between caterpillar and sawfly.



Photo: D. K. Pollet, LSU AgCenter

River birch sawfly.

Plant-feeding mites

Mites are tiny ($\frac{1}{32}$ -inch) red, yellow or greenish with oval bodies. They may have spots. Some species spin webs on the foliage of infested plants. Mites reproduce rapidly in hot, dry weather. Injury to plants looks like light-colored dots, giving the leaves a dull, gray-green, stippled appearance. This appearance is caused by their shallow feeding.

Natural controls. Lady beetles, predatory mites.

Other management tools. Flush with water, spray with soaps or ultra fine or other horticultural oils. Where populations are heavy, 2 to 3 applications at 7- to 10-day intervals may be necessary. In some situations, the use of a miticide plus horticultural oil may be required to obtain effective management.

Thrips

Thrips are tiny ($\frac{1}{32}$ -inch) winged insects that rupture the cells on leaves, buds and flower buds to lap up the exuding fluids. This injury causes browning on the flowers and poor bloom. The damage to the foliage is the same as mites producing a stippling and grayish cast on the leaves. Occasionally, leaves become distorted and curl and, on occasion, drop off.

Natural controls. None identified.

Other management tools. Apply horticultural oils, insecticidal soaps and the insecticides imidacloprid, acephate or malathion. The insecticides are best used with oils.

Mole Crickets

Mole crickets are $1\frac{1}{2}$ -inch long, velvety brown insects that feed on turf grass. Their front legs are flattened and adapted for burrowing. Mole crickets affect all grasses but prefer bahiagrass and bermudagrass. Injured turf may be spongy and thinning, with $\frac{3}{4}$ -inch tunnels running through the turf. This tunneling opens the soil and dries out the roots of the turf grass. Infestations are likely to begin in sandy areas and move out from there. To check for an infestation of mole crickets, use 2 tablespoons of lemon soap in 1 gallon of water and drench an

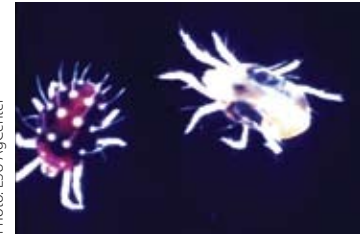


Photo: LSU AgCenter

European red and two-spotted spider mites.



Photo: LSU AgCenter

Western flower thrip.

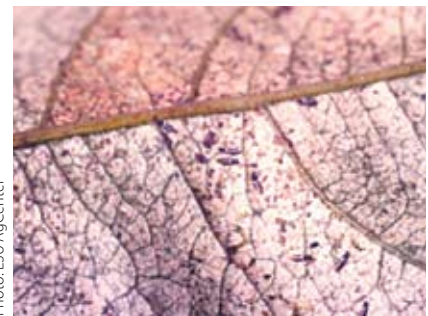


Photo: LSU AgCenter

Thrip damage on *Elaeagnus*.



Photo: D. K. Pollet, LSU AgCenter

Mole cricket flushed from tunnel.



area where tunneling is observed. This treatment will force the crickets to the surface for proper identification.

Natural controls. Parasitic wasp (*Larra bicolor*), red-eyed fly (*Ormia deplete*), insect-parasitic nematodes, fire ants and birds.

Other management tools. Baits can be made and used early in the season once initial tunneling is observed. Spot treat early infestations with materials listed in Louisiana Insect Pest Management Guide.

Chinch Bugs

Adult chinch bugs are 1/5 inch long, black with white patches on the wings. Young nymphs are smaller and reddish. Chinch bugs feed on St. Augustine grass, often in stressed areas in full sun or near pavement. Populations can develop quickly in hot, dry weather. Injured turf appears yellow.

Natural controls. Big-eyed bugs, earwigs and fire ants.

Other management tools. Avoid high fertilizer rates. Maintain St. Augustine grass at height of 3 inches in sun and 4 inches in shade. Water turf under dry conditions, which are favorable to chinch bugs. Use chinch bug-resistant varieties when possible. Spot treat infestations with insecticidal soaps or other materials labeled for chinch bugs (Louisiana Insect Pest Management Guide).



Photo: LSU AgCenter

Adult and nymph chinch bugs.

Red Imported Fire Ants

Fire ants vary in size. They can inflict a vicious sting that will form a white pustule. This will burn initially and then itch. Avoid scratching to prevent infection. Mounds in the yards can be damaging to lawn mowers, and accidentally disturbing them can be dangerous to pets, children and other wildlife. Individuals who are allergic to insect bites or stings can be seriously injured. Populations in a mound can vary from a few ants when beginning to 100,000-plus ants in an established colony.

Natural predators. The decapitating Phorid flies and the disease Thelohania.



Photo: LSU AgCenter

Fire ant mound around tree.

Other management tools. Effective fire ant management can be achieved with baits. Be sure the bait is dry and fresh. Depending on the material used, the time required for results will vary. Contact materials work quickest, growth regulators the slowest. Area-wide community programs work best with only two treatments a year. Contact your local LSU AgCenter extension agent for more information on this program. Do not apply when ground is wet or rain is eminent. Do not disturb the mound. Follow label directions according to the material used (Louisiana Insect Pest Management Guide).

Photo: LSU AgCenter



Fire ant stings.

WEED MANAGEMENT

Weeds are the No. 1 pest problem in Louisiana lawns. At soil the level, weeds are in direct competition with lawns for essential nutrients, water and light. The most undesirable characteristics of weeds, however, are their disruption of the visual uniformity and esthetic appearance of turfgrass. Weeds found in lawns are usually very aggressive and able to compete with grass and tolerate mowing. Many weeds that are problems in gardens and landscapes are not problems in lawns because they cannot adapt to frequent mowing.

Types of Weeds

Weed species may be grouped into broadleaves, grasses and sedges/rushes. Another basic division of weeds is by their life cycle into annuals and perennials.

Broadleaves. Dicotyledonous plants have two seed leaves when emerging from the soil. Mature plants have netlike veins on their leaves and flowers that are usually showy. Broadleaf weeds, as the name implies, have a relatively wide leaf compared with grasses. Some common troublesome broadleaf weeds are Virginia buttonweed (*Diodia virginiana*), white clover (*Trifolium repens*), dandelion (*Taraxacum officinale*) and lawn burweed (*Soliva pterosperma*).

Photo: LSU AgCenter



Buttonweed

Photo: LSU AgCenter



White clover

Photo: LSU AgCenter



Dandelion

Photo: LSU AgCenter



Burweed



Grasses. Monocotyledonous plants have one seed leaf, parallel leaf veins and lack showy flowers. They are particularly troublesome because most grasses can adapt to mowing, and their selective removal from lawns can be very difficult. Some grasses can be a turf in one situation and a weed in another. For instance, bermudagrass is an aggressive turf that is very useful for home lawns, athletic fields and golf courses. However, it is very invasive and difficult to remove in centipedegrass and St. Augustine grass. Some common grassy weeds that infest Louisiana lawns are crabgrass (*Digitaria sp.*), goosegrass (*Eleusine indica*), dallisgrass (*Paspalum dilatatum*) and torpedograss (*Panicum repens*).

Sedges. Sedges are grasslike plants that are common in the lawn and landscape and prefer moist conditions. Sedge stems are usually triangular and solid. Common sedges that infest turf are purple nutsedge (*Cyperus rotundus*), yellow nutsedge (*Cyperus esculentus*) and kyllinga (*Kyllinga spp.*).



Crabgrass



Torpedograss in centipede



Dallisgrass



Purple nutsedge



Kyllinga

Weed Life Cycles

Annual weeds. Annuals live for several months and die within a year. Summer and winter annuals infest turfgrass in Louisiana. Most annuals are prolific seed producers, and weed populations can increase exponentially from one growing season to the next. Crabgrass and goosegrass are common summer annuals. Annual bluegrass and lawn burweed (sticker weed) are examples of winter annuals.

Perennial weeds. Perennials live longer than two years and may reproduce several times before dying. They generally have some underground storage organ such as a deep tap root or rhizome that allows the plants to survive adverse conditions like mowing, frost and drought. Louisiana turfgrasses are perennials that go dormant in cold weather and actively grow during the spring and summer.



Most perennial grassy weeds that infest turf in Louisiana also go dormant in the winter and compete with turfgrass during the spring and summer months. As a whole, perennial grasses are considered to be the most invasive and difficult weeds to manage in turfgrass. Torpedograss, dallisgrass and bermudagrass (*Cynodon dactylon*) are common perennial grasses that are some of the most invasive weeds in Louisiana lawns. Virginia buttonweed is a mat-forming perennial broadleaf that has multiple ways to reproduce and easily overtakes thin turfgrass. This weed is so aggressive that it is considered the most troublesome weed of lawns in Louisiana.

Weed Control Options

Proper cultural practices necessary. Dense healthy lawns are less susceptible to infestations because they are able to out-compete most weeds for space. However, weak lawns with bare spots thinned by disease, insects and improper cultural practices are very prone to weed invasion. Cultural practices such as timely fertilization, mowing at the correct height and frequency and integrated pest management programs promote healthy lawns and significantly reduce the potential for weed establishment. Relatively few weeds can compete with properly managed lawns.

Indicator weeds. Chronic weed problems in lawns may indicate unfavorable soil conditions. For instance, white clover infestations in St. Augustine grass indicate low nitrogen fertility. Annual bluegrass (*Poa annua*) and goosegrass in lawns may indicate soil compaction. Kyllinga, yellow nutsedge, dollarweed (*Hydrocotyle umbellata*) and doveweed (*Murdannia nudiflora*) indicate excessively moist soil. Procedures that correct soil problems can reduce weed infestations by making growing conditions more favorable for the turfgrass.

Herbicides

The best weed control is a well managed turf. Chemical weed control using herbicides, however, can be an effective tool for weed management. Herbicides are chemicals that kill or injure susceptible plants. Two basic types of herbicides are postemergence and preemergence.

Postemergence herbicides. These herbicides kill or injure existing weeds. Generally, weeds are more easily controlled shortly after emergence while actively growing. Several categories of postemergence herbicides include contact, systemic, selective and nonselective.

Contact Herbicides. These herbicides provide quick leaf die back and are most effective on newly germinated annuals. These postemergence herbicides only affect the plant tissue contacted by the spray and have little movement inside the plant. Therefore, multiple applications are usually necessary



to control some annual and perennial weeds because these herbicides will not translocate into underground roots, rhizomes and tubers. MSMA is an example of a contact herbicide used for weed control in bermudagrass and zoysiagrass.

Systemic. These herbicides move throughout the plant's vascular system. They are the most effective for perennial plant control because the materials translocate into roots, rhizomes and tubers. Usually several days are necessary to achieve plant death. Glyphosate (Roundup) and sethoxydim (Vantage) are examples of systemic or translocating herbicides.

Nonselective. These herbicides kill or injure all plants regardless of species. Glyphosate and glufosinate (Finale) are examples of nonselective herbicides useful for turf renovation or spot application weed control.

Selective. These herbicides control certain plant species and release other plant species. They are most the useful for turfgrass weed management. Sethoxydim is useful for postemergence grass control in centipedegrass. Halosulfuron (Manage) safely removes purple nutsedge in all southern turfgrasses.

Preemergence herbicides. These herbicides kill weeds as they germinate from seed before the plants emerge from the ground; therefore, timing the application before weed seed germination is critical for success. For example, crabgrass is a summer annual grass that germinates in late winter in Louisiana when soil temperatures are approximately 55 F. This soil temperature corresponds to late February to early March in Shreveport. Crabgrass, however, may germinate in early to mid-February in New Orleans. Therefore, successful preemergence herbicide application timings will vary across the state but should occur prior to expected crabgrass germination. Preemergence herbicides are most effective on annual grasses and small seeded annual broadleaves. Several preemergence herbicides are available to homeowners in easy-to-spread granules and are unlikely to injure established lawns when applied as directed.

Using Herbicides in Lawns

The first step in weed management with herbicides is identification of the weed species. Basic identification starts with determining if the weed is a broadleaf, grass or sedge. This skill is very important in choosing the correct herbicide because certain materials like 2,4-D only target broadleaf weeds infesting lawns. Halosulfuron (Manage) specifically kills sedges (grasslike weeds) but will not control weedy grasses like dallisgrass. Even though sedges are grasslike in appearance, sethoxydim (Vantage) only kills grasses and will control crabgrass infesting centipedegrass but has no activity on purple nutsedge.



The next step in using herbicides is to read and understand the product label. The label provides the necessary information concerning product rates, weeds controlled, application techniques and safety precautions. Accurate herbicide applications are essential to reduce opportunities for off-target drift and runoff.

Granular vs. Liquid Herbicides

Both granular and liquid herbicides have advantages. Granular herbicides are easily applied with drop or centrifugal spreaders and are probably the preferred formulation for ease of application. Several preemergence herbicides are formulated as granules and provide excellent control of many annual grasses and small seeded broadleaves in lawns. Granular preemergence herbicides, however, are really only as good as the uniformity of their application. To insure accurate and uniform application of the granules, follow the suggestions for the herbicide application on the product label. Most preemergence herbicides require irrigation or rainfall 7 to 10 days after application.

Although granular postemergence herbicides are available, liquid formulations are usually more effective on emerged weeds. Most liquid concentrate herbicides are mixed with water and applied with a pump-up or hose end sprayer. For pump-up sprayer applications, 1 gallon of spray solution should cover approximately 1,000 sq. ft. Accuracy is important, so good calibration is a must.

Herbicides are safe and effective weed management tools when used correctly. The following table is suggested herbicide options for troublesome weeds infesting home lawns. Consult product labels for specific uses and application information.



Photo: LSU AgCenter



Photo: LSU AgCenter



Control Options for Troublesome Weeds in Home Lawns

Winter Weed Management			
Weed (s)	Herbicide (s)	Trade Name (s)	Comments
Preemergence annual bluegrass, chickweed, henbit control for all established southern lawns.	trifluralin and benefin; dithiopyr; pendimethalin	Greenlight Crabgrass Preventer; Sta-Green Crab-ex ,Hi-Yield Dimension or Greenlight Crabgrass Preventer 2; Scott's Halts	Apply herbicides in late September to early-October prior to annual bluegrass germination. Granular products applied with rotary or drop spreaders. See label for correct spreader settings.
Preemergence winter broadleaf weeds control including lawn burweed. Safe for all established southern grasses.	isoxaben	Greenlight Portrait	Apply Portrait (granular herbicide) in late September to early-October before winter broadleaf weeds germinate. Provides no grass control. Safely applied under most established trees when used as directed. See label for correct spreader settings.
Preemergence and early postemergence annual bluegrass, lawn burweed and many winter broadleaves in centipedegrass, St. Augustinegrass, zoysia, and dormant Bermuda.	liquid atrazine	Various atrazine sources including Southern Ag and Hi-Yield	Apply spray in November. Do not apply under the dripline of trees and shrubs. Consider reapplication in February.
Postemergence control of most winter broadleaf weeds including lawn burweed in all southern lawns.	2,4-D + mecoprop + dicamba or 2,4-D + mecoprop + dicamba + carfentrazone	Bayer Advanced Southern Broadleaf Weed Killer, Ortho Weed B Gon, SpectricideWeed Stop 2x, or Ferti-lome Weedfree Zone	Apply spray to young emerged weeds from November to March. Better activity at temperatures above 60 F. Reapplication may be necessary. Observe label precautions.
Summer Weed Management			
Summer Grasses			
Preemergence crabgrass and goosegrass control for all established southern lawns	trifluralin and benefin; dithiopyr; pendimethalin	Greenlight Crabgrass Preventer; Sta-Green Crab-ex, Greenlight Crabgrass Preventer 2, Hi-Yield Dimension; Scott's Halts	Apply herbicides in late February in north LA and mid-February in south LA prior to crabgrass germination. Granular products applied with rotary or drop spreaders. See label for correct spreader settings.
Postemergence bahiagrass control in bermuda, centipede, St. Augustine, and zoysia	metsulfuron	Manor, Blade	Product is very effective on Pensacola bahiagrass. Product is not widely available. Consider internet sources.
Postemergence crabgrass, bahiagrass, dallisgrass control in bermudagrass and zoysiagrass	MSMA	MSMA	Contact type herbicide that usually requires a follow-up application within 10 days.
Early postemergence crabgrass control in St. Augustinegrass	dithiopyr	Sta-Green Crab-ex, Hi-Yield Dimension, Greenlight Crabgrass Preventer 2 – products with dithiopyr	Effective when applied before crabgrass tillers or up to 2 - 3 weeks after germination. Apply February to late March.



Summer Grasses			
Postemergence control of annual grasses, bahiagrass, bermudagrass and dallisgrass in centipedegrass.	sethoxydim	Vantage	Reapplication may be necessary. Will not control annual bluegrass or torpedograss. Use only in centipedegrass.
Non-selective spot treatment of dallisgrass in St. Augustinegrass	glyphosate	Roundup, Hi-Yield, Eraser, Greenlight Complete, Eliminator etc. - all 41% glyphosate products	No other dallisgrass control option for homeowners with St. Augustinegrass. Spot treatment of dallisgrass clumps. All contacted St. Augustinegrass will be killed. Consider wiping treatments for more precise applications.
Non-selective spot treatment of torpedograss in centipedegrass	glyphosate	Roundup, Hi-Yield, Eraser, Greenlight Complete, Eliminator etc. - all 41% glyphosate products	No other torpedograss control option for homeowners with centipedegrass. Spot application to torpedograss. All contacted centipedegrass will be killed. Consider wiping treatments for more precise applications.
Broadleaves			
Postemergence dollarweed and dichondra control in all southern lawns	2,4-D + mecoprop + dicamba + carfentrazone	Ferti-lome Weedfree Zone	Reapplication may be necessary within 2 weeks. Observe temperature precautions concerning St. Augustinegrass and centipedegrass.
Postemergence dollarweed and dichondra control in centipedegrass, St. Augustinegrass, and zoysiagrass	atrazine	Southern Ag, Hi-Yield or Scott's Weed & Feed and various brands	Use either liquid atrazine or weed & feed containing atrazine. Reapplication may be necessary. Observe all label precautions. Do not apply to actively growing bermudagrass.
Postemergence control of lespedeza, clover, spurge, wild strawberry in all southern lawns.	2,4-D + mecoprop + dicamba or 2,4-D + mecoprop + dicamba + carfentrazone	Bayer Advanced Southern Broadleaf Weed Killer, Ortho Weed B Gon, SpectricideWeed Stop 2, or Ferti-lome Weedfree Zone	Observe temperature precautions concerning St. Augustinegrass and centipedegrass. Reapplication may be necessary in 2 to 4 weeks.
Postemergence suppression of Virginia buttonweed in all southern lawns.	Metsulfuron	Manor	Metsulfuron provides good control with less turf injury than 2,4-D containing products. Professional product that may not be readily available. Consider internet sources.
Postemergence suppression of Virginia buttonweed in all southern lawns.	2,4-D + mecoprop + dicamba + carfentrazone	Ferti-lome Weedfree Zone	Reapplication may be necessary within 2-3 weeks. Observe temperature precautions.
Sedges			
Postemergence control of purple and yellow nutsedge in all southern lawns.	halosulfuron; imazaquin	Manage; Image	Effective herbicides for nutsedge control. Safe on lawns when applied as directed.



The following tables are herbicide rates for the herbicides mentioned previously. Please refer to product labels for specific weed spectrums, applicator settings, techniques, and precautions.

Herbicide	Herbicide Rates for the Most Common Lawn Species in Louisiana			
	<i>Bermudagrass</i>	<i>Centipedegrass</i>	<i>St. Augustinegrass</i>	<i>Zoysiagrass</i>
Preemergence				
Atrazine	1.5 oz/gallon/1000 ft ² (dormant bermuda)	1.5 oz/gallon/1000 ft ²	1.5 oz/gallon/1000 ft ²	1.5 oz/gallon/1000 ft ²
Greenlight Crabgrass Preventer	2.8 lb/1000 ft ²	2.8 lb/1000 ft ²	2.8 lb/1000 ft ²	2.8 lb/1000 ft ²
Greenlight Crabgrass Preventer 2	2.4 to 4.6 lb/1000 ft ²	2.4 to 4.6 lb/1000 ft ²	2.4 to 4.6 lb/1000 ft ²	2.4 to 4.6 lb/1000 ft ²
Greenlight Portrait	4.6 to 5.7 lb/1000 ft ²	4.6 to 5.7 lb/1000 ft ²	4.6 to 5.7 lb/1000 ft ²	4.6 to 5.7 lb/1000 ft ²
Hi-Yield Dimension	4.0 lb/1000 ft ²	4.0 lb/1000 ft ²	4.0 lb/1000 ft ²	4.0 lb/1000 ft ²
Scott's Halts	2.0 lb/1000 ft ²	2.0 lb/1000 ft ²	2.0 lb/1000 ft ²	2.0 lb/1000 ft ²

	Herbicide Rates for the Most Common Lawn Species in Louisiana			
	<i>Bermudagrass</i>	<i>Centipedegrass</i>	<i>St. Augustinegrass</i>	<i>Zoysiagrass</i>
Postemergence				
Atrazine	1.5 oz/gallon/1000 ft ² (dormant bermuda)	1.5 oz/gallon/1000 ft ²	1.5 oz/gallon/1000 ft ²	1.5 oz/gallon/1000 ft ²
Bayer Advanced Southern Broadleaf Weed Killer	2.0 oz/gallon/500 ft ²	1.0 oz/gallon/500 ft ²	1.0 oz/gallon/500 ft ²	2.0 oz/gallon/500 ft ²
Image	3.75 oz/gallon/1000 ft ²	3.75 oz/gallon/1000 ft ²	3.75 oz/gallon/1000 ft ²	3.75 oz/gallon/1000 ft ²
Ortho Weed B Gon	2 oz/gallon/400 ft ²	1 oz/gallon/400 ft ²	1 oz/gallon/400 ft ²	2 oz/gallon/400 ft ²
Ortho Weed B Gon Max	1 oz/gallon/500 ft ²	Do not use	Do not use	1 oz/gallon/500 ft ²
Ferti-lome Weedfree Zone	2 oz/gallon/1000 ft ²	1.5 oz/gallon/1000 ft ²	1.5 oz/gallon/1000 ft ²	1.5 oz/gallon/1000 ft ²
Manor	0.01 oz/gallon/1000 ft ²	0.01 oz/gallon/1000 ft ²	0.01 oz/gallon/1000 ft ²	0.01 oz/gallon/1000 ft ²
Manage	1 packet/gallon/1000 ft ²	1 packet/gallon/1000 ft ²	1 packet/gallon/1000 ft ²	1 packet/gallon/1000 ft ²
MSMA	1 oz/gallon/1000 ft ²	Do not use.	Do not use.	1 oz/gallon/1000 ft ²
Spectracide Weed Stop 2X	2 oz/gallon/1000 ft ²	2 oz/gallon/1000 ft ²	2 oz/gallon/1000 ft ²	4 oz/gallon/1000 ft ²



COMMON LANDSCAPE DISEASES

Diseases occur on landscape plants when environmental conditions are suitable for pathogens to develop on them. Some pathogens attack a wide variety of plants, whereas others are host-specific. Pathogens can attack all plant parts, although many pathogens only attack selected tissues. Prevention is the key to the management of diseases in the landscape. Although foliar diseases, such as leaf spots and mildews, are generally manageable once they are observed, root diseases generally are not. Many fungicides are available to aid in the management of diseases in the landscape, but they should be used in conjunction with cultural practices intended to modify the environment to make it less conducive to disease development.

Powdery Mildew

Powdery mildew is a type of fungal disease that commonly occurs on a variety of landscape plants, including roses, crape myrtles and dogwoods. It is visible as a grayish or whitish powdery growth on the surface of infected plant tissues. Disease develops most frequently on plants grown in shade or partial shade when temperatures are moderate and humidity is high.

Controls. Choose resistant plants and varieties or plant susceptible plants in sunny locations with good air movement. Protect the foliage with sprays of potassium bicarbonate, horticultural oils, sulfur or other fungicides.



Photo: D.M. Ferrin, LSU AgCenter

Powdery mildew on crape myrtle.

Leaf Spots and Blights

Leaf spots and blights caused by various fungi and bacteria are common in the landscape, particularly when the plants are subject to overhead watering. Many of these pathogens, particularly bacteria, are spread in splashing water, and need extended periods of leaf wetness to gain entry into the plant.

Controls. Choose resistant plants and varieties. Prevent the foliage from getting wet from overhead irrigation. Fixed copper or other fungicide sprays applied prior to the onset of rainy periods may provide some protection.



Photo: G.E. Holcomb, LSU

Entomosporium leaf spot on Indian hawthorne.



Anthracnose

Anthracnose is a group of fungal diseases that occur on leaves, shoots and twigs on various shrubs and trees. These diseases generally develop in the spring during prolonged rainy periods as the spores of the fungi that cause these diseases are dispersed primarily in splashing water. These fungi survive from year to year in cankers on infected branches.

Controls. Choose resistant plants and varieties. Fungicide sprays applied prior to the onset of rainy periods in the spring may provide some protection.



Photo: G.E. Holcomb, LSU

Discula anthracnose on velvet ash.

Fire Blight

Fire blight is a bacterial disease of flowering pears, pyracantha, loquats and certain other rosaceous (rose family) plants. The bacterium that causes the disease is spread in splashing water or by honeybees and enters the plants primarily through the flowers. Once in the plant, the bacterium moves into the new shoots, which it kills. Characteristic symptoms of this disease are dead branch tips to which the leaves are still attached.

Controls. Choose resistant plants and varieties. Prune out infected branches (6 to 8 inches below the dead portion of the branch) and protect flowers by spraying with streptomycin.



Photo: G.E. Holcomb, LSU

Fire blight on pear.

Root and Crown Rots

Root and crown rots commonly affect both annual and perennial plants in the landscape, particularly in sites with poor drainage. The first noticeable symptoms may include stunting of the plants or wilting of the leaves. Additional symptoms, such as defoliation and branch die-back over the entire plant, are often observed in the later stages of disease development.

Controls. Choose resistant plants and varieties. Visibly check the condition of the roots prior to purchasing plants. Choose a well-drained planting site. Water regularly, but avoid overwatering.



Photo: G.E. Holcomb, LSU

Phytophthora root rot on azalea.



Viruses

Viruses can affect many types of plants. Typical virus symptoms include mosaic, mottle, ring spot or line patterns on the foliage or flowers. They are spread primarily by various insects of which aphids, whiteflies and thrips are the most common, but many also can be transmitted mechanically in sap on pruning shears or even hands. Once infected with a virus, a plant cannot be cured.

Controls. Choose resistant plants or varieties when possible. Do not introduce virus-infected plants into the landscape. Prevent their spread by controlling insects and regularly cleaning pruning shears.



Photo: G.E. Holcomb, LSU

Rose mosaic virus.

Turfgrass Patch Diseases

Many diseases of turfgrasses occur as circular or irregular patches of affected plants. These may range in size from a few inches to several feet, depending upon the disease. Many of these diseases occur on turf that is stressed from environmental factors such as drought or on turf that has been overfertilized.

Control. Follow the BMPs for growing and maintaining each type of turfgrass to prevent stresses that predispose turf to infection. Several fungicides are available to homeowners to aid in the control of these diseases, but they should be used in conjunction with cultural practices used to modify the environment and make it less conducive to disease development.



Photo: G.E. Holcomb, LSU

Brown patch caused by Rhizoctonia solani.



Fairy Rings

Fairy rings are generally caused by the group of fungi that produce mushrooms or “toadstools.” These fungi live on organic matter in the soil, such as construction materials, wood debris, tree roots, etc. As these fungi grow through the soil, they may kill the grass, cause it to be a darker shade of green or produce no symptoms at all until the mushrooms are produced. Mats of fungal tissue produced in the soil can interfere with the penetration of water into the soil resulting in localized dry spots.

Control. Fairy rings can be quite difficult to control. If the source of the nutrition (i.e., buried wood or tree roots) can be removed, their growth can be halted. Otherwise, steps must be taken to break up the hydrophobic layer and rewet the soil. Fungicide applications may help, but the fungicide must penetrate deep enough into the soil so that it comes in contact with the fungus.



Photo: G.E. Holcomb, LSU

Fairy ring resulting in death of the turf.

Environmental Factors

Many environmental factors can cause disorders of plants. These include drought, excess water, soil compaction, nutrient deficiencies or toxicities, heat or cold damage, herbicides and improper soil pH. They can generally be recognized because they do not spread from plant to plant.

Control. Remedial action will depend upon the cause of the disorder.



Photo: D.M. Ferrin, LSU AgCenter

Nutrient deficiency in hydrangea.



6

*Protect
Surface Waters
and
Wetlands*



POLLUTION SOURCES

Since the formation of the Environmental Protection Agency and the passage of the Clean Water Act, great strides have been made toward maintaining and restoring water quality throughout the United States. This has been accomplished through regulating **point sources** of pollution, such as smokestacks and sewage discharge. But a more diffuse source of pollution — **nonpoint source (NPS) pollution** — threatens Louisiana’s ecosystems.

Many of Louisiana’s water resources are especially susceptible to pollution because of our unique geology and climate. Louisiana residents obtain much of their drinking water from ground water supplies. Ground water often lies near the surface, covered by porous limestone and sandy soils, both of which allow water to infiltrate rapidly. Dissolved pollutants reach ground water through a process called leaching. These impurities affect the quality of our drinking water. Heavy rainfall, typical during Louisiana’s rainy season, is a major cause of leaching and **stormwater runoff**. Surface waters in Louisiana such as lakes, streams, rivers and estuaries are very sensitive to even small amounts of pollution.

MAKING EVERY RAINDROP COUNT

One of the basic concepts of a Louisiana-Friendly Yard is that rain that falls in your yard should soak into your yard. After all, rainfall is an excellent water source for your landscape, and reducing runoff protects waterways. Retaining rainfall long enough for it to percolate through soil is challenging in neighborhoods built on compacted fill soils. Consider these practical tips for reducing the amount of rainfall that runs off your yard.

- **Downspouts.** If your roof has rain gutters, aim the downspouts at a porous surface so water can soak into soil. Be sure water doesn’t pool next to buildings.

Helpful hint. If you decide to landscape the area where downspouts drain, choose plants adapted to wet/dry extremes.



Point source pollution: water pollution that results from water discharges into receiving waters from easily identifiable points; common point sources of pollution are discharges from factories and municipal sewage treatment plants.

Nonpoint source pollution: NPS pollution cannot be pinpointed to a single source. Over time, pollutants from our everyday activities accumulate on the land. Examples of NPS pollutants include gasoline, fertilizer, pesticides and even soil. NPS pollution is a problem when rainfall or heavy irrigation carries sediments and dissolved chemicals to waterways in stormwater runoff and by leaching or percolating through soil.

Stormwater runoff: water that runs off impervious or watersaturated surfaces, transporting sediments and dissolved chemicals into nearby waters. A healthy, properly maintained lawn absorbs stormwater runoff, protecting Louisiana’s natural waters. If stormwater runoff is not absorbed and contains unused nitrogen and phosphorus from fertilizers, when these chemicals enter natural waterways, they can fuel abundant algal blooms that smother natural vegetation, deplete oxygen and possibly kill fish. These nutrients, if applied improperly, can cause invasive weeds to flourish, changing Louisiana’s natural plant communities. More alarming, potentially harmful substances, such as common household pesticides and fertilizers, are leaching into our water supply. These materials damage aquatic life and harm people, too. These substances that are washed from and through soil in stormwater runoff form NPS pollution.

Following LY & N landscaping guidelines will reduce nonpoint sources of pollution. A properly designed and managed landscape can help slow down and filter stormwater runoff.

- **Earth shaping.** Incorporate attractive, functional earth shaping into your landscape. Swales (small dips in the ground) and berms (raised earthen areas) can help divert runoff that would otherwise rush from your yard. A densely growing turfgrass or groundcover proves especially useful to capture rainwater, filter nutrients, recharge ground water and reduce soil erosion.

In a waterfront yard with a seawall, use a berm and swale combination to reduce stormwater runoff. Add a maintenance-free zone of native wetland plants to a berm or swale to make your yard more waterfront-friendly.

Helpful hint. Minor alterations to the lay of the land won’t require permits or engineers, but any major earthwork should have a professional touch and will require regulatory review.



- **Rain barrels and cisterns.** These ancient technologies are making a comeback as water shortages prompt homeowners to save and use rain that falls on their properties. Large plastic rain barrels are now available at some home and garden stores. The barrel has a hole in the top where a roof downspout can fit snugly. A valve near the bottom allows you to fill a watering can or connect a hose.

Barrels are great for hand watering, and they are not mosquito breeding grounds if the downspout fits tightly. If your barrel is open at the top, use *Bacillus huringiensis* (Bt) products (often sold in a donut form) to kill mosquito larvae in an environmentally safe way. If you happen to have algae take root in your rain barrel, treat the water with submersible bacterial packets sold in pond supply stores. A rain barrel is not unsightly, but a 4-foot shrub easily shields it from view.

A cistern also catches rain, but requires more engineering and greater storage capacity than a rain barrel. Water from a roof is collected, filtered and stored in a container made of concrete, metal, wood, fiberglass or plastic. Water travels from the cistern upon demand by either gravity feed or pump action.

Helpful hint. Currently in Louisiana, water obtained from a cistern is only for nonpotable uses, such as landscape watering. In other words: Do not drink it! Before building a cistern, check with local authorities to make sure that it is not against the law in your area.

- **Porous surfaces.** Whenever possible, use bricks, gravel, turf block, mulch, pervious concrete or other porous materials for walkways, driveways or patios. These materials allow rainwater to seep into the ground, helping to filter pollutants and reducing the amount of runoff from your yard. In some cases these porous materials may even cost less to install than typical paving materials.

Helpful hint. A cost comparison of some pervious surfaces can be found in Table 1.



Photo: UF/IFAS FYN Handbook

Rain barrels reduce water pollution by reducing stormwater runoff.



Photo: UF/IFAS FYN Handbook

Cistern collects rain for nonpotable uses.



Photo: UF/IFAS FYN Handbook

Recycled railroad ties, bricks and gravel make a unique footpath capable of absorbing rainwater.



Table 1. Comparison of Surfaces for a 15-ft x 30-ft Driveway (450 sq ft).

Material	Depth	Relative Cost
Municipal waste mulch	2"	\$
Recycled yard waste	2"	FREE
Compost	2"	\$
Washed shell	2"	\$\$
Gravel	2"	\$\$
Recycled tire mulch	1.5"	\$\$
Red mulch	2"	\$
Lime rock	2"	\$
Pine bark	2"	\$
Concrete (plain)	4"	\$\$\$\$
Concrete (stamped)	4"	\$\$\$\$\$
Asphalt	1.5"	\$\$\$-\$\$\$\$



FROM YARD TO WATERWAY

The future of Louisiana’s water resources begins in your yard. The decisions you make — from developing a homesite, to landscaping your yard, to fertilizing your lawn actually influence the health of Louisiana’s natural waterways and bayous. It is important to remember that nature does not recognize property lines.

A rainstorm can wash bare soil, landscape debris, oil, gas, fertilizers or pesticides from one yard to another. A butterfly attracted to one person’s wildflowers can flit across a property line into another landscape.

Landscapes do not just connect people to the outdoors, they connect one person’s property to the next forming neighborhoods. These neighborhoods and yards are connected to our waterways and bayous. This connection may be immediate if you are directly linked to a waterway or bayou or gradual, through the flow of storm drains, ditches, creeks, rivers, bayous and ground water.



Photo: John Wozniak, LSU AgCenter



7

*Provide for
Beneficial
Wildlife
Habitat*



Louisiana has some of the most diverse wildlife populations of any state. But rapidly growing urban development, particularly in coastal communities, is destroying native wildlife habitat. As our communities expand, we lament the loss of birds and other wildlife, but often our own yards are partly to blame.

Your Louisiana Yard and Garden can provide habitat for wildlife in two major ways:

1. By increasing biodiversity, in part by using a variety of plants in your yard's design.
2. By creating landscaped islands and natural corridors of plants that connect bordering properties. Animals use these corridors to travel from one natural area to another, which in turn fosters and benefits wildlife on a larger neighborhood scale.

As you create a new landscape or improve your existing one, add a few features for wildlife, and you will bring your yard to life with birds, butterflies and beneficial insects. Just remember that food, water and cover attract wildlife, but providing habitat is not enough. You also need to maintain your yard so the impact it has on the environment is minimal.



IDEAS FOR ATTRACTING WILDLIFE

Food. Provide food in the form of plants that bear seed, fruit, foliage or flowers that you're willing to have eaten by birds, larval butterflies (caterpillars) or adult butterflies. Berries, fleshy fruits, nuts and acorns are all treats for wildlife. Wildlife find meadow grasses especially attractive, and the grasses add a graceful feature to any landscape.



Running water. The sound of running water will attract wildlife to your yard. This sound could come from a natural feature, such as a pond, creek or other body of fresh water. A fountain will also beckon wildlife. Even a simple birdbath that captures rainwater can suffice. Empty and clean your birdbath every few days. Do not clean it with soap or bleach; just physically scrub all surfaces with a brush or scouring-type sponge. Changing water regularly prevents mosquito breeding and bacterial contamination.



Photo: John Wozniak, LSU AgCenter

Birds. To attract birds, design planted areas that include a tree canopy, smaller understory trees and shrubs, and grasses or flowers. Allow grasses and flowers to go to seed on occasion—this is a real draw for birds.

Butterflies. A combination of both larval (caterpillar) and nectar plants will attract a variety of butterflies to your yard. Nectar plants are those that unfurl flowers, and profuse bloomers are even better. See the resource list on page 88 or consult your LSU AgCenter parish extension office for examples of plants that attract butterflies.



Photo: John Wozniak, LSU AgCenter

Caterpillars. These are the larvae of butterflies and moths. Each butterfly species lays its eggs on a preferred host plant, which may differ from the adults' preferred nectar source. The caterpillars of butterflies must eat to grow large enough to form a **chrysalis**, so they often strip larval plants of leaves. If you want to attract butterflies to your yard, expect a certain level of damage. One way to keep outdoor living areas attractive and to cultivate a crop of butterflies is to intersperse larval and nectar plants in a bed. Or devote an entire planting area that is out of view to larval plants.

Chrysalis: the pupa (last stage before adult) of a butterfly.

Snags. Leave dead trees in place if they do not create a hazard. Many birds use snags for perching, nesting and feeding.

Manage pets. If you permit pets to harass wildlife, you will only frustrate any efforts you make toward attracting wildlife. This is especially true for house cats allowed to roam in yards. If you permit your cat to wander in your yard, it is better not to try to attract birds and other animals whose lives would be in danger.



Reduce insecticide use. Each time you apply an insecticide to your landscape, you reduce insect populations, which form an important food source for birds. Some chemicals also can poison birds and other animals that feed on affected insects.

Reduce the amount of mowed lawn area. Over time, unmowed areas contain more plant species than mowed areas. Reduce the mowed area around your house, especially in low-traffic areas, such as corners of the yard. In other spots, trade turf for diverse plant species that will create shelter and food for many animal species. Plant diversity attracts more wildlife species.

Increase vertical layering. Plant a variety of plants in different sizes and heights. This provides more cover and feeding opportunities for wildlife species.

CONTROLLING UNDESIRABLE WILDLIFE

As you strive to attract wildlife to your yards and gardens, remember the conditions you develop may also attract some species you would rather not encounter.

1. Moles. The eastern mole (*Scalopus aquaticus*) is an insectivores animal closely related to shrews and bats. Although they remove many damaging insects and grubs from lawns and gardens, their burrowing habits in search of this food, disfigure lawns, destroy flower beds and small garden plots and tear up the roots of grasses. Traps and poisons are considered to be the most effective methods for controlling moles.

2. Armadillos. The burrowing and rooting activities of the nine-banded armadillo (*Dasypus novemcinctus*) aggravate landowners. The majority of the digging activity is done while searching for food. Almost 90% of the armadillo diet consists of insects and larvae that are often more numerous in well-maintained landscapes. Armadillos are classified as outlaw quadrupeds, which makes lethal control legal year-round during daylight hours. Where local ordinances are permissive, shooting is the recommended method of lethal control. Live trapping and relocation is also a control option.

3. Tree squirrels. The eastern gray squirrel (*Sciurus carolinensis*) and the fox squirrel (*Sciurus niger*) are the two species found in Louisiana. Any timbered habitat maintained for wildlife in a landscape is sure to attract these animals that cause a greater array of problems than any other wildlife species. Squirrels damage trees by chewing bark from branches and trunks, and their voracious diet for nuts, fruits, vegetables, flowers and buds, wreak havoc in yards and gardens. Their habits of gnawing on wires, wood siding, and lead vent pipes cause additional problems to homeowners, along with the raiding of



bird feeders. The close association of these animals with our forested urban environment, along with their game status has created a management dilemma in our landscapes. As game animals, squirrels are protected within specific hunting season dates and bag limits. Even with this option, local firearm ordinances often make it illegal to discharge a firearm at any time within city limits. Outside of legally hunting squirrels during the established open season, lethal control is an option in only two instances: (1) when squirrels enter a residence or other building, homeowners have the option of using lethal control to deal with the problem, and (2) commercial pecan growers may obtain a 30-day permit to use lethal control on squirrels damaging their crops. Although many repellents are labeled for squirrel control, most are not developed for use on food crops. Like all repellents, their usefulness is limited by time and weather conditions. Trying to exclude squirrels from an area is a hard task when dealing with such a nimble critter, making live-trapping and relocation the best control measure.

4. Snakes. Snakes are a natural and essential part of the ecosystem and are beneficial to any wildlife habitat. Most people, however, do not enjoy strolling around the yard or garden and encountering these species. Remember many of the same conditions and plant species that attract birds and other desirable wildlife can also attract snakes. Several snake repellants are often touted as effective deterrents for snakes. There is no research that supports these claims! The most effective deterrent for snakes is to minimize ground cover and food availability. Doing one or both of these things may also reduce the attractiveness of your yard or garden to other wildlife species. Remember, most species of snakes are nonpoisonous. Only 6 species of poisonous snakes are known to inhabit Louisiana within a species list that numbers around 40. All snakes want to be left alone and, if encountered, will quickly try to get out of your way. If you encounter a snake, the best policy is to back away and let it move away from you. Also, wearing shoes or boots, and gloves when working in the garden is a good idea. If bitten by any snake, seek medical attention. If you truly want a garden that is attractive to a diverse wildlife population, snakes may occasionally be part of the deal.

5. Spiders. All species of spiders have venom and can bite. Most bites only produce mild irritation and minimal pain, if any, and usually have no complications. Two relatively common species, the Brown Recluse and the Black Widow can bite and inject venom that can cause more serious complications. Bites are seldom fatal but can cause severe pain and tissue necrosis if left untreated. Both of these spiders like dry, dark places. Avoid reaching into these areas with unprotected hands. As with snakes, wearing gloves is a good idea, and long sleeves when temperatures permit is also advised.



Photo: LSU AgCenter



FURTHER READING ON ATTRACTING WILDLIFE

Trees for Louisiana Landscapes-A Handbook. LSU AgCenter # 1622 (online only).

Gardening for Butterflies in Louisiana. Gary Ross. LDWF.

Louisiana Backyard Wildlife Management. Bill Vermillion. Louisiana Department of Wildlife and Fisheries.

Economy Bat House Plans. <http://www.batcon.org/bhra/economyhouse.html>

Backyard Bird Feeding. U.S. Fish and Wildlife Service. http://library.fws.gov/Bird_Publications/feed.html

Homes for Birds. U.S. Fish and Wildlife Service. http://library.fws.gov/Bird_Publications/house.html





FOR ADDITIONAL INFORMATION

For additional information on the Louisiana Yards and Neighborhoods program, go to **www.lsuagcenter.com/lyn**.

Partial funding provided in part by Texas A&M (Cooperative Extension Service) through the Southern Region Water Quality Program subgrant TCE 450031.

Thanks to the University of Florida IFAS, Florida Yards and Neighborhoods program for their cooperation and support of this project.



The ideal Louisiana-Friendly Yard—the smart way to garden—should reflect the beauty of natural habitats and ecosystems in our state. A Louisiana-Friendly Yard doesn't merely offer a good-looking landscape, it becomes an asset to the local environment, protecting natural resources and preserving our state's unique beauty. An important part in creating a Louisiana-Friendly Yard is recognizing that the home landscape is connected to and a part of a larger natural system.

Visit our Web site:
www.lsuagcenter.com/lyn

LSU AgCenter Authors: Bill Branch, Bill Carney, Carrie Castille, Denyse Cummins, Don Ferrin, Bobby Fletcher Jr., Stuart Gauthier, Dan Gill, Henry Harrison, Jessica Kastler, Tom Koske, Brian LeBlanc, Allen Owings, Dale Pollet, Don Reed, Rene Schmit, Jay Stevens and Ron Strahan

Louisiana State University Agriculture Center

William B. Richardson, Chancellor

Louisiana Agricultural Experiment Station

David J. Boethel, Vice Chancellor and Director

Louisiana Cooperative Extension Service

Paul D. Coreil, Vice Chancellor and Director

Pub.# 2993 (1.5M) 8/07

Issued in furtherance of Cooperative Extension work. Acts of Congress of May 8 and June 30, 1914, in cooperation with the United States Department of Agriculture. The Louisiana Cooperative Extension Service provides equal opportunities in programs and employment.