A Guide to Florida-Friendly Landscaping

Florida Yards & Neighborhoods Handbook

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About the Florida Yards & Neighborhoods (FYN) Program

The Florida Yards & Neighborhoods (FYN) program is a partnership of the University of Florida/Institute of Food and Agricultural Sciences (UF/IFAS), Florida's water management districts, the Florida Department of Environmental Protection (FDEP), the National Estuary Program, the Florida Sea Grant College Program, concerned citizens, members of private industry and numerous other nongovernmental agencies. FYN addresses the serious problems of pollution in stormwater runoff, water shortages and disappearing habitats by enlisting Floridians in the battle to save our natural resources. The program, which is implemented through the counties' UF/IFAS Cooperative Extension Service, 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 nine interrelated principles:

1. **Right plant, right place**
2. **Water efficiently**
3. **Fertilize appropriately**
4. **Mulch**
5. **Attract wildlife**
6. **Manage yard pests responsibly**
7. **Recycle yard waste**
8. **Reduce stormwater runoff**
9. **Protect the waterfront**

Photo by: Michael Andreas

FYN teaches Floridians to create and maintain Florida-friendly landscapes.

FYN is an educational program and not a regulatory agency; however, the FDEP, the U.S. Environmental Protection Agency (EPA), the U.S. Department of Agriculture (USDA) and local governments strongly support the program. The best part is that practicing these principles benefits both the environment and you — saving you valuable time and money.

This FYN handbook provides helpful concepts, tools and techniques for creating your own Florida-Friendly Yard — a yard that is beautiful and environmentally friendly. In these pages you will learn the basics of designing a landscape that features carefully selected plants suited to your climate, soil and wildlife. Tips on cost-saving, energy-efficient landscape maintenance are also included to help you reduce water, fertilizer and pesticide use. Waterfront property owners will find helpful information about shoreline management. Whether starting from scratch with a new landscape or considering changes to an existing one, this book will help you create your own beautiful Florida-Friendly Yard.

How to Use This Book

This handbook is arranged in two sections. The first section contains background information that will help you as you make plans to create a Florida-Friendly Yard. The second section offers detailed descriptions of landscape ideas and practices that explain and illustrate the nine FYN principles. To locate a principle quickly, refer to the color-coded tab at the outer edge of each page.

Throughout the book, you will discover glossary boxes that define words that might be new to you, and those words are highlighted when they first appear in the text. Other tip boxes feature Florida Yard Tips — handy, practical tips that explain concepts and share ideas central to creating or maintaining a Florida-Friendly Yard.

Photo by: UF/IFAS

The practices discussed in this book can help you do your part to protect our natural resources while maintaining a healthy and attractive landscape.

The information contained within these pages describes the fundamentals of creating a low-impact landscape, but your preferences may vary. Refer to updated versions of other UF/IFAS publications, such as the *Florida Lawn Handbook,* to obtain a broader range of recommendations specific to each region of Florida. The *Florida Lawn Handbook* can be purchased from the IFAS Extension Bookstore, 1-800-226-1764, or can be viewed at all county UF/IFAS Extension offices or online at **http://edis.ifas.ufl.edu**. The FYN handbook is also available on-line at **http://fyn.ifas.ufl.edu/** (where you will find sources for the information in this book and updated references to web sites listed throughout the book).

Photo by: Teresa Watkins, Orange/Lake/Seminole County FYN

Florida-friendly landscapes are being installed in single family homes as well as multiple-unit residential properties and commercial properties.

Other relevant UF/IFAS publications are available online or in printed form. Visit UF/IFAS Extension's Electronic Data Information Source (EDIS) online at **http://edis.ifas.ufl.edu** and UF/IFAS Extension at **http://solutionsforyourlife.ufl.edu**. You can search for authors, titles, keywords or publication numbers. Publications in PDF format print best. For printed copies or further assistance, contact the UF/IFAS Extension office in your county and ask about the Florida Yards & Neighborhoods program.

Florida Neighborhoods: Connecting Our Yards to Florida's Water

Our yards and neighborhoods are channels to our waterways. Your yard is the first line of defense for preserving Florida's fragile environment. The health of Florida's estuaries, rivers, lakes, springs and aquifers depends partly on how you landscape and maintain your yard. 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 fertilizers, pesticides, animal waste, soil and petroleum products. Improperly applied fertilizers and pesticides from residential areas pose a serious threat to the health of Florida's waters.

Photo by: UF/IFAS

We are all connected to our water resources, and what we do in our yards can have great effects on the quality of our water.

For decades, Florida landscaping has been portrayed as picture postcards of lavish resorts, tourist destinations and tropical gardens. But the pictures of natural Florida are quite different. The Florida Natural Areas Inventory identifies 82 different natural ecological communities in Florida, from wetlands to **xeric uplands**. Unfortunately, much of the state's original rich diversity has been

FYN Glossary Box

Xeric uplands: very dry, well-drained, high areas of sand with plants adapted to dry conditions; xeric uplands are home to many threatened and endangered species

Impervious: resistant to penetration by fluids, such as rain or irrigation water, or by roots

http://sofia.usgs.gov/publications/reports/floridawaters/

replaced with **impervious** surfaces, such as asphalt and concrete, and housing developments with standardized yards that bear little resemblance to native Florida. Expanses of high-maintenance lawns have formed the dominant landscape in most of our communities for years, but that is changing. You can be a part of the movement in Florida 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 changed to replace a piece of what has been lost?

The ideal Florida-Friendly Yard — the smart way to grow — should boast natural beauty that reflects the native landscapes of our state. But this beauty must be created and sustained by environmentally safe landscape practices. What are some of those practices?

- Cooperate with pre-existing natural conditions — instead of working against nature.
- Conserve water and energy — both indoors and out.
- Landscape with native and suitable non-native trees, shrubs and **groundcovers** that will require minimal maintenance when planted under appropriate conditions.
- Choose plants that blend beauty with environmental benefits.
- Use pesticides only when necessary and according to label instructions. Choose least-toxic products and focus on preventing pests.

FYN Glossary Box

Groundcovers: low-growing plants used for erosion control, to replace grass or simply for aesthetic reasons

Creating Your Florida-Friendly Yard

A Florida-Friendly Yard doesn't merely offer good-looking landscapes; it also becomes an asset to the environment, protecting natural resources and preserving the state's unique beauty. Recognizing that the home landscape is part of a larger natural system will help in creating a Florida-Friendly Yard. Designing an aesthetically pleasing Florida-Friendly Yard begins with good decisions based on what you and your landscape require:

Drawing by Carol Keiper-Bennett

1. Your needs and desires

2. Knowing your site's conditions

3. Maintaining a healthy environment

Whether you are designing on a shoestring budget or hiring a professional landscape architect, understanding a few basic concepts will help you make environmentally appropriate decisions and avoid problems down the road.

Plan First, Plant Last

The secret to creating a successful landscape design is using a logical planning process. Follow the steps outlined below to develop your own landscape plan.

Tip: You might want to read this section in conjunction with *The Florida Yardstick Workbook*, which you can get from your county's UF/IFAS Extension office.

1. **Decide why you want to landscape.** Most homeowners think of landscaping as a way to add beauty to their home or to improve the resale value. Other reasons to landscape might prove more problem-oriented, such as trying to reduce noise, create a microclimate or lure wildlife to a yard. The FYN program adds one more idea to the palette of reasons to landscape: to protect the environment. Appropriate landscaping stabilizes soil, prevents erosion, filters pollutants and reduces harmful **runoff** — all of which contribute to preserving Florida's unique natural resources.

Photo by: Jim Phillips

Planning the uses of your landscape is an important part of creating a Florida-Friendly Yard that will meet your needs.

2. **Set goals for use and maintenance.** Determine how you will use your property. Do you need a play area for your children, or perhaps you would like to focus on entertaining family and friends outdoors? Your passion may be raising vegetables or simply savoring a waterfront view. Decide how much time you want to spend in your yard. You may want to create a low-maintenance yard to save time and money.

FYN Glossary Box

Runoff: the portion of rain or irrigation water on an area that is discharged through stream channels; the water that is lost without entering the soil is called surface runoff

3. **Analyze the existing site.** Walk around your property, noting conditions that make your yard unique. Does your site demand plants that are tolerant of cold, wind, full sun, shade, drought, occasional flooding or salt spray? Do you know your soil's pH and nutrient content? Not sure what kinds of information to note as you walk your yard? See page 14 for a list of ideas to get started.

   Look at existing plants and decide which ones you want to keep. Plants that always seem to have one problem or another throughout the year are good candidates for removal. For other tips on deciding which plants to keep or remove, see page 18.

Photo by: Jim Phillips

Creating a yard that meets your goals requires careful plant choice.

   Soil plays a big part in any landscape project, determining the success of your efforts and influencing what plants will thrive in your yard. Before beginning any landscape project, take a soil sample to your county's UF/IFAS Extension office for testing. Read more about soil on page 16.

4. **Draw a land-use plan.** Don't be nervous — you do not have to be an artist to tackle this step! Round up the tools you will need: a pencil, ruler and graph paper. If you have the survey completed for your mortgage, photocopy it — it is really helpful at this stage. On the graph paper, draw your house, penciling in existing trees and shrubs you want to keep. If your yard includes a septic tank, underground utilities or overhead power lines, include these on your

drawing. If you have a sprinkler system, be sure to note the spray coverage. Once the yard's "bones" are on your drawing, sketch where various activities will take place. Consider views: Is there a view from indoors that you want to enhance with plants that attract birds or butterflies? Is there scenery you would like to hide?

If you live on the water, place *intensively* maintained plantings, such as turfgrass and vegetable gardens, away from the water's edge to reduce the potential for polluted runoff to reach surface waters. In many circumstances, a "no fertilizer, no pesticide" zone of at least 10 feet along the shoreline significantly reduces pollution from upland areas. Never allow fertilizers or pesticides to enter water directly.

Photo by: UF/IFAS

Waterfront yards present special challenges and responsibilities.

5. **Add the landscape plan to the sketch.** Determine the types of plants you want in different locations. Do not worry about specific plant identification yet — just draw in where you want trees, shrubs, groundcovers or flowering plants. Keep plants away from buildings to give them room to grow and to make building maintenance easier. Note the ultimate plant height you desire in each area. Group plants according to their water needs. This makes watering more efficient and keeps plants healthier.

6. **Incorporate an irrigation plan.** In-ground irrigation systems are not necessary in every landscape, especially if you use drought-resistant plants. Research your irrigation needs and determine which type of system, if any, you want to install. Consider this tip: While plants are becoming established in your yard, you may want a temporary watering system. It is convenient and usually worth the effort. Add any new irrigation plans to your drawing. Read more about irrigation techniques and water conservation strategies on pp. 41–45.

7. **Select landscape materials.** When choosing plants, consider the limitations of your site, maintenance requirements and wildlife value. Consult gardening books and plant lists specific to Florida (start with the plant list at the back of this book). It's wise to write both the common and scientific name (**genus** and **species**) into your plan; common names can cause confusion when it is time to buy plants.

Photo by: Holly Johnson Shiralipour, UF/IFAS

Microirrigation systems conserve water when used properly.

FYN Glossary Box

Genus (plural, genera): a group of similar organisms representing a category within a family; a genus consists of one or more species

Species: a group of plants, animals or other organisms that resemble each other and interbreed freely

http://www.dep.state.fl.us/water/nonpoint/urban1.htm

Don't forget to list other landscaping materials you may need for walkways, mulch or borders. Read more about selecting plants beginning on page 30.

8. **Buy quality plants.** Choose the healthiest plants you can find. Slip plants out of pots to inspect roots. Healthy roots are white and smell like damp soil; diseased roots are brown to black and often have a sour or rotting odor. Roots that are growing in a circle inside the bottom of the pot indicate a rootbound plant. Purchase another plant, if possible.

   For trees, purchase the largest size you can afford. However, shrubs, perennials, groundcovers, annuals and smaller size plants will grow just as quickly as their pricier counterparts in larger pots. Take care to space and plant things properly. Allow enough space for each plant to grow to maturity. For tips on planting trees, see page 22.

Photo by: Angela Polo, Sarasota/Manatee/Charlotte FYN

Consider how large plants will grow when deciding how far apart to plant them.

9. **Maintain.** Maintenance includes proper watering, fertilizing, composting, pruning, mowing, mulching and pest management. The more thorough you are with steps 1–8 above, the less you will have to worry about maintenance. It is possible to maintain an established landscape with minimal amounts of pesticide, fertilizers and supplemental water. Watering *efficiently*, fertilizing *appropriately* and managing yard pests *responsibly* are all part of proper landscape maintenance.

10. Enjoy! Photograph the evolution of your Florida-Friendly Yard, and share pictures with the horticulture agent or FYN program coordinator at your county's UF/IFAS Extension office. Let us learn from your experience and share your knowledge with others. "Before" and "after" shots with captions are particularly useful to illustrate your success.

Photo by: UF/IFAS

Elementary students select plants for their butterfly garden.

Photo by: UF/IFAS

Learning how to plant a Florida-Friendly Yard can start at a young age.

Florida Yard Tip:

Site Analysis

To choose the right plants for your yard, determine your site characteristics, remembering that conditions may differ at various points throughout your yard. This site characteristics listing isn't complete. Use it as a springboard to begin your yard's site analysis.

SOIL

- r **Texture** (% of sand, silt and clay)
- r **pH**
- r Nutrients present
- r Compaction

DRAINAGE

- r Well-drained
- r Poorly drained

LIGHT

- r Full sun
- r Partial sun
- r Shade

TEMPERATURE

- r Exposure to freezing temperatures
- r Exposure to extreme heat

STRUCTURAL LIMITATIONS

- r Power lines
- r Underground utilities
- r Septic tank
- r Roof overhangs
- r Paved surfaces
- r Security lights

OTHER

- r Exposure to salt spray or salty well water
- r Exposure to strong wind
- r Exposure to wet/dry seasonal extremes

FYN Glossary Box

Soil Texture: the relative proportions of sand, silt and clay in a soil; clay is the smallest particle size, and clay soils tend to hold water and nutrients well and drain poorly; conversely, soils containing a large proportion of sand, the largest particle size, tend to drain well and do not hold water and nutrients well

Soil pH: the degree of acidity or alkalinity of soil

Florida Yard Tip:

Is It Safe to Dig?

Do you know where your underground utilities are?

Digging without knowing where it is safe to dig can cause tremendous damage, interrupting your electric, telephone, cable television, water, sewer and gas service, even causing injury or loss of life! If you are doing any digging in Florida, state law requires you to notify the Sunshine State One Call of Florida two full business days before you dig. The toll free number is 1-800-432-4770. Underground facility owners will locate any underground utilities in the area you wish to dig. The service is free. If you don't follow this procedure and underground lines are damaged, you could be fined. This can be a substantial amount if a fiber optics cable is cut. For more information, visit the website **http://www.callsunshine.com**.

Soil Know -How

In much of Florida, "soil" and "sand" are almost synonymous. The exceptions to the sand-soil situation occur in three main locations:

1. In Miami-Dade County the soils are clays; drainage is slow.
2. In the Keys there is really no soil at all — it is rock.
3. In parts of the Panhandle the soil is reddish clay.

For the rest of the state, where the soil is essentially sand, water and nutrients move downward quickly. As a result, sandy Florida soils usually dry out rapidly and are not compatible with plants having high water and nutritional needs. Sandy soils are also more likely to allow pollutants to leach into groundwater and waterways.

n **Improving soil.** The simplest way to avoid problems in your landscape is to use plants compatible with your site. To grow roses or vegetables, you will need to amend the planting bed frequently by adding organic matter, such as compost. Organic matter retains moisture, provides nutrients and attracts beneficial organisms like earthworms. On average — in a typical Florida sandy soil — add organic matter to annual flower and vegetable gardens just before planting.

The easiest way to add organic matter to a planting bed is to put down a layer 2–3 inches thick, then mix it into the soil using a tiller, a shovel or a digging fork. In established planting areas, such as a rose bed, add organic matter as **mulch** around established plantings each spring, before the rainy season. Daily rains will help to work the material down into the soil. Add organic matter to soil each time you plant a shrub, perennial or annual.

FYN Glossary Box

Mulch: a material on the soil surface to conserve soil moisture, influence soil temperature and control weeds

- **Soil pH.** Test your soil's pH (acidity/alkalinity). In general, sandy coastal areas are usually alkaline (high pH), while inland areas are acidic (low pH). But different areas on the same property may have vastly different soils, so site-specific pH testing is a good idea. For instance, you might want to test the pH in each bed where you will grow a different kind of plant.

  Concrete slab foundations, brick, mortar, plaster and other building materials are strongly alkaline. These materials leach into surrounding soil, drastically changing the pH over time. For this reason, azaleas *(Rhododendron)*, flowering dogwoods *(Cornus)*, flame-of-the-woods *(Ixora coccinea)* and other acid-loving plants should not be planted near the concrete foundation of a home.

Photo by: UF/IFAS

Roses (Rosa spp.) planted in a bed.

  Knowing your soil's pH will also help you make better use of plant reference guides, which often provide this information along with other requirements for plants listed. Although many plants tolerate a wide pH range, they do best when planted in the right soil. Modifying soil pH is only a temporary solution and not recommended. Contact your county's UF/IFAS Extension office for information on soil testing services in your area.

- **Compacted soil.** Many new homes are built on a raised platform of compacted "fill dirt" imported by construction companies. Such compacted soils don't absorb water readily and restrict plants' healthy growth. If you have a landscape that has compacted soil, amend the soil with organic matter as you add planting beds.

- **Hardpan.** Some soils have a sub-layer of hardpan, rock or shell, which limits root penetration, essentially establishing a barrier to plant roots. Always examine your soil to a depth of about 18 inches before making final plant selections. If you intend to plant deeply rooted trees that will grow large, examine soil to a depth beyond 18 inches. Your county extension agent can guide you on how deep to check soil.

http://soils.usda.gov/education/

Plant Sorting: To Keep or Not to Keep

Once you decide that you want to change your landscape, it is wise to keep some of the plants you already have. In an established landscape, retaining trees, shrubs, perennials and other plants will save you money — and it also preserves established wildlife habitat. If you are dealing with new home construction, leaving plants in place will help reduce erosion. The trick is knowing which plants to keep. Follow these simple guidelines to sift through your botanical choices:

Photo by: UF/IFAS

Soil mounded against the base of this tree could result in slow decline and eventual death, even years after the problem is corrected.

- **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 discard list is due to appearance. Pruning is less costly than replacement, especially when you are dealing with a mature plant.

- **Retain individual trees with long lifespans.** Some examples are live oak *(Quercus virginiana)*, sweetgum *(Liquidambar styraciflua)* and bald cypress *(Taxodium distichum)*. Mature laurel oak *(Quercus laurifolia)*, water oak *(Quercus nigra)*, silver maple *(Acer saccharinum)*, cherry laurel *(Prunus caroliniana)* and wild black cherry *(Prunus serotina)* are less desirable trees because of their relatively short lifespans.

- **Save clusters of trees and the plants growing beneath them.** Trees growing in groups or shady forests often grow very tall and narrow. If the site is cleared, an isolated tree becomes vulnerable to wind damage and could snap during a windstorm or hurricane. For this reason, it is best to leave trees in clusters. The cluster should include the trees along with any groundcovers or native shrubs growing beneath them. This botanical trio of trees, shrubs and groundcovers buffers wind.

To determine which plants to remove, consider this checklist:

- **Unhealthy and invasive plants** are not worth saving. Read more about invasive plants on page 32. Also, don't think twice about removing plants that are ill-suited for your site. A plant that requires tender loving care to survive may not prove worth the effort in the long run.
- **Foundation plants** located too closely to walls block air currents and prevent access for home maintenance. Mark these plants for removal.
- **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 dripline 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 illinoinensis*).

FYN Glossary Box

Disease: an interaction between an organism and its environment that results in an abnormal condition; can be biotic or abiotic

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 a more thorough overview of the artistic elements of landscape design, search for appropriate articles on the EDIS website (**http://edis.ifas.ufl.edu**), or consult a professional landscape architect.

Florida Yard Tip:

Color in the Landscape

Choose two or three colors that complement each other and repeat this color combination throughout the landscaped area. 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.

Florida Yard Tip:

Where Are Tree Roots?

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 two inches of soil, where oxygen is available through exchange between the soil surface and atmosphere.

illustration by: Morton Arboretum

FYN Glossary Box

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

Proper Tree Planting

Once you determine which plants you want to add to your Florida-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 website, **http://hort.ifas.ufl.edu/woody/planting**, reprinted with permission.)

1. **Look up.** If there is a wire, security light or building nearby that 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 sites. 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**.

FYN Glossary Box

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

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 two inches of the soil surface. If the topmost root is buried within the rootball, remove enough soil from the top of the rootball so the point where the topmost root emerges from the trunk will be within the top two inches of soil.

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

Photo by: Ed Gilman, UF/IFAS

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 rootbound. For plants that are not too large to handle, slip them out of 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 the 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 rootball, 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 more soil under the root ball. Once the tree is at the appropriate depth, place a small amount of soil around the rootball 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.

Photo by: Flagler County Master Gardener Program

Planting a tree at the proper height is important to its healthy establishment — remember not to plant too deeply.

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 clay soil. When the planting hole is filled with soil, the rootball should rest one inch (small trees) to three inches (larger trees) above the backfill soil.

9. **Add 10 to 20 gallons of water to the rootball.** 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 rootball firmly in the soil. If the tree moves in the wind, the rootball 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.

FYN Glossary Box

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

http://hort.ifas.ufl.edu/shrubs/TAXON.HTM

SAMPLE

Watering Schedule

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

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

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 two-inch tree). Never water if the rootball is saturated. In Florida, 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.

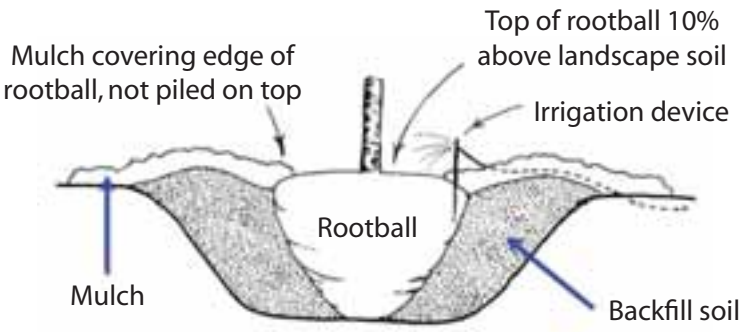

illustration by: Ed Gilman, University of Florida

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? There are many landscaping companies throughout the state that offer varying types of maintenance services. Select a company that has been trained in use of the Green Industries **Best Management Practices** to produce a visually pleasing and environmentally safe yard. Companies whose employees have earned a certificate for completion of training in "Florida Green Industries: Best Management Practices for Protection of Water Resources in Florida" from UF/IFAS Extension are familiar with Florida-friendly maintenance practices. You will find a listing of these companies at **http://turf.ufl.edu/bmp.htm**.

Types of Maintenance Services

Fertilizer and Pest Control Companies: Some homeowners are looking 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 Florida must be licensed by the Florida Department of Agriculture and Consumer Services (FDACS). Pest control companies 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 University of Florida Best Management Practices program. These guidelines cover fertilizer rates, sources and application timings. Fertilizers containing herbicide (**weed** killer) or **insecticide** should be avoided.

FYN Glossary Box

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

- Follow an **Integrated Pest Management** (IPM) program where pest scouting and monitoring is common and pesticides should only be applied when other options will not control the pest. See descriptions of these options beginning on page 68. 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. A commercial landscape maintenance worker who holds a Limited Commercial Landscape Maintenance Certification from FDACS can apply herbicides in plant beds or certain pesticides in an IPM program [**only** those with the signal word "caution," insecticidal soaps, horticultural oils, and *Bacillus thuringiensis* (Bt)]. **If landscape maintenance service employees do not hold a pesticide license, they may not apply any pesticide, even a weed and feed product, to your lawn.** For descriptions of all categories of turf and ornamental pesticide licenses in Florida, see **http://pested.ifas.ufl.edu/licencing.html**). Landscape maintenance companies should also be trained in the Green Industries Best Management Practices and 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.

FYN Glossary Box

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

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

http://www.floridagardening.org/

RIGHT PLANT, RIGHT PLACE

Have you ever bought a plant that looked great at the nursery or garden center, only to have it die once you planted it? One way to avoid this heartbreaking scenario is by putting the right plant in the right place — matching the plant to the site conditions. This encompasses far more than simply putting sun-worshiping plants in your yard's sunny spots. You also need to consider things like maintenance and water needs. Our checklist will help you review some basic guidelines for getting the right plant in the right place in your Florida-Friendly Yard.

- **Wet vs. dry.** Many **drought-tolerant** plants thrive on elevated dry spots or in windy areas, but they can quickly succumb to root diseases and pest problems if you plant them in low-lying areas where water tends to pool after heavy rains. Drought-favoring plants also do well in exposed areas, on berms and along the unshaded southern or western walls of buildings.

  Position plants adapted to wet soils in low spots, waterways and areas with poor drainage. The bottom line when placing plants in your landscape is not to waste time, energy and money caring for a plant that is not adapted to the spot you have set aside for it.

- **Wind-wise plantings.** In Florida, winter's prevailing winds hail from the north or northwest. A solid fence or a row of **evergreens** situated on the north side of a house forms a barrier against cold winter winds and reduces evaporative water loss. Winds from the south, southeast and southwest predominate during summer months, when welcome air circulation cools outdoor living spaces and reduces moisture buildup on foliage.

- **Made in the shade.** Position trees and shrubs strategically to improve your home's heating and cooling capacity. Tree shade, for instance, can reduce air conditioning costs by an estimated 50 percent. Plant **deciduous** shade trees on the south, east and west sides of a house to cast shade in summer and let warming light enter windows in winter.

FYN Glossary Box

Drought tolerant: describes plants that require less water because they are adapted to regions with frequent drought or to soils with low water-holding capacity

An air-conditioning system's outdoor compressor/condenser unit uses less energy when it is shaded from direct sun during the day — but be careful not to block the unit's airflow. If the warm discharge air cannot escape, the intake air temperature rises, causing the unit to operate less efficiently.

Photo by: UF/IFAS

Live oak (Quercus virginiana) provides shade on the western side of this home.

- **Plant matchmaking.** A common landscape "plan" scatters woody plants across an expanse of lawn, with no clear design pattern. While this may look the "norm," the truth is that turf and woody ornamentals have different water, fertilizer and maintenance needs. All it takes is one misplaced shrub to disrupt mowing and irrigation patterns. Reduce maintenance and conserve water in the landscape by grouping plants in beds according to water requirements and maintenance needs.

- **The lowdown on grass.** For sunny recreational areas, turfgrass makes an excellent choice — but most types do not grow well in dense shade. In shady spots, if you want to cultivate a green carpet underfoot, plant groundcovers.

FYN Glossary Box

Evergreen: a plant that retains at least some of its leaves year-round

Deciduous: a plant that sheds all of its leaves at one time each year

Plant Selection

Choosing plants is the fun part of landscaping! Florida's climate supports countless varieties of plants — many of which are grown by local nurseries. The plants you choose determine how much maintenance your Florida-Friendly Yard will require and also how long your landscape will last. For example, fast-growing trees often have a shorter life span than slow-growing trees.

How can you be sure you are making the best plant choices? Begin the process by completing a site analysis of your yard (see pages 8–14). With that information in hand, use these steps as a guide to selecting the right plants for the right places in your Florida-Friendly Yard.

Photo by: UF/IFAS

Bromeliads are remarkably drought tolerant. Use them in mass plantings beneath palm trees or along patios, paths or walkways.

- **Focus first on low maintenance plants** suitable to your site. Once these plants are established in the right location, most require little, if any, supplemental water, fertilizers or pesticides.
- **Don't want to water?** Select drought-tolerant plants suited to your soil. Once they are established, your watering chores will be done.
- **Welcome wildlife.** Provide flowering and fruiting plants to bring birds and butterflies into your yard. Florida is a stopover for many migrating and wintering butterflies and birds — design a landscape that caters to these colorful, winged creatures.
- **Plant for impact.** Limit the number of plants with high water and maintenance requirements, placing them where they will have the greatest visual impact.
- **Avoid invasives.** Do not plant noxious, invasive species. The State of Florida prohibits planting of Brazilian pepper *(Schinus terebinthifolius),* Australian

pine *(Casuarina equisetifolia)*, melaleuca *(Melaleuca quinquenervia)*, carrotwood *(Cupaniopsis anacardioides)*, Chinese tallow *(Sapium sebiferum)* and many others. If these plants are present in your yard, remove them. They crowd out native plants and seriously threaten Florida's ecosystems and wildlife.

Several other common landscape plants can become invasive in parts of Florida and should be avoided. The UF/IFAS Invasive Plants Working Group evaluates the invasive properties of plants and provides recommendations on their use. For a copy of the most recent recommendations from the IFAS Assessment of Non-Native Plants in Florida's Natural Areas, see your county's UF/IFAS Extension office or visit **http://plants.ifas.ufl.edu/assessment.html**. For more information on invasive plants, see the website of the Center for Aquatic and Invasive Plants at **http://aquat1.ifas.ufl.edu**.

- **Aim for diversity.** Create a mosaic of trees, shrubs, groundcovers, native grasses and wildflowers. Monocultures — large expanses of the same plant species — are prone to disease and insect infestation and aren't as sustainable as a diverse plant community.

- **Keep grass useful.** Plan turf areas to be functional and design them for easy maintenance. Define planting bed edges and shapes to accommodate your mower without tricky maneuvering.

- **Cope with a slope.** Use groundcovers on slopes where grass may not thrive but the potential for runoff exists. Count on groundcovers to fill in shady areas where turf won't survive.

- **Beg off quick fixes.** Do not be fooled by the quick-fix appeal of fast-growing plants. Such plants require frequent pruning, which creates more clippings and yard waste. Also, fast growth yields lots of lush, green shoots — which can attract certain pests. Slow-growing plants may take longer to fill in your landscape, but they'll ultimately last longer and create less work.

- **Upkeep tips.** Do not overlook maintenance needs when designing your landscape. It's hard to mow grass on sloped or in extremely wet areas, so avoid planting turf where you can't easily cut it. Place hedges where you can access them easily from all sides — or trimming chores will quickly become nightmares.

Florida Yard Tip:

Know Your Zone!

The USDA and American Horticultural Society (AHS) describe plants in terms of the lowest and highest temperatures where they can be grown.

To use this information, you need to know:

- Your zones for heat tolerance and cold hardiness. Discover that information at these links:

  For cold: **http://www.usna.usda.gov/Hardzone/hzm-se1.html**

  For heat: **http://www.ahs.org/publications/heat_zone_finder.htm**

- The zones for plants you want to grow. Unearth that information on plant tags, in reference books or on the EDIS website at **http://edis.ifas.ufl.edu** or the FYN website at **http://fyn.ifas.ufl.edu**.

Match the plants you want to grow with your growing zones and you will improve your odds of gardening success.

Florida Yard Tip:

Plant Selection Savvy

As you choose plants for your Florida-Friendly Yard, remember that plants do more than just look good. Many types pull double duty in the landscape, adding beauty and also fulfilling some other function — like providing privacy, attracting butterflies or bearing tasty fruit. Consider these plant characteristics as you design your landscape:

Plant traits that reduce maintenance and prevent runoff pollution

- Drought resistance
- Pest resistance
- Non-invasiveness
- Slow growth
- Wind resistance
- Low nutritional requirements

Plant traits that attract wildlife

- Cover and habitat
- Seeds and nuts
- Fleshy fruits and berries
- Nectar and larval food for butterflies
- Red tubular flowers for hummingbirds

Plant traits that affect humans

- Shade
- Scent
- Allergies
- Thorns
- Screen for privacy
- Attractive flowers or foliage
- Edible fruits, flowers, leaves or roots
- Deciduous or evergreen

Florida Yard Tip:

Plant Know-How

Throughout Florida, experts who can assist you in your plant choices abound. Try these services, most of which are free, for advice on putting the right plant in the right place:

- UF/IFAS Extension Service
- Florida Master Gardeners
- Florida Certified Horticultural Professionals
- Florida Native Plant Society
- Florida Division of Forestry
- Water Management Districts
- USDA Natural Resources Conservation Service
- Libraries

For More Information on Natives

While it may be rare to encounter a native Floridian, plants native to Florida prove easy to find in some areas. Some Florida **native plants** are widely available at local garden centers, and others are becoming more available as demand for them grows. Want to learn more about native plants suitable for your yard? Try these tips to get started:

- Visit parks, wildlife preserves, botanical gardens, FYN demonstration landscapes and nurseries to view native plants. Some plant nurseries specialize in Florida native plants.

FYN Glossary Box

Native plants: plants that were present at the time of first European contact in Florida (about 1500 A.D.); a plant that occurs naturally in a particular region, state, ecosystem and habitat without direct or indirect human actions

- Visit the library or bookstores (particularly those at botanical gardens) to find good reference books on Florida native plants.
- Search the web for information on native plants. For some sources, see the references at **http://fyn.ifas.ufl.edu** under the link for the FYN Handbook.
- Consider hiring a landscape architect/contractor or designer who is knowledgeable about native plants. For a consulting fee, you can ask a native plant expert simply to survey your yard and make suggestions — and you can still do the planting yourself.
- Consult the plant list in the back of this book (native plants are identified).

Remember: Just because a plant is native does not guarantee its success in your landscape. Always put the right plant in the right place.

Florida Yard Tip:

Trees Can Help

Not sure where to start? Plant trees. Establishing a tree canopy is a great way to begin your Florida-Friendly Yard. Trees not only provide shade and wildlife habitat, but they also help to reduce stormwater runoff. Trees significantly increase the value of a home and lot.

Photo by: UF/IFAS

Members of a 4-H club planting a tulip tree (Liriodendron tulipifera) on Arbor Day.

According to the American Forestry Association, trees have other significant monetary benefits. Each year, a single tree provides $73 worth of air conditioning savings, $75 worth of erosion control, $75 worth of wildlife shelter and $50 worth of air pollution reduction. Compounding this total of $273 annually for 50 years at 5% interest results in a tree value of $57,151. The overall benefits far outweigh the initial cost of each tree.

Florida Yard Tip:

Soaker Hoses

After you invest your hard-earned cash in plants, count on an inexpensive solution to help establish them in the landscape — soaker hoses. These hoses seep or leak water along their length, delivering it to the soil around plantings. Lay the hose on top of the soil, or bury it slightly in soil or mulch. Landscape staple pins work great to hold the hose in place. Use the soaker hose until the plant is established and showing new growth, then store the hose for future use.

WATER EFFICIENTLY

2

LANDSCAPING PRINCIPLES FOR FLORIDA-FRIENDLY YARDS

http://solutionsforyourlife.ufl.edu

WATER EFFICIENTLY

Even though watering restrictions are commonplace throughout Florida, many homeowners still overwater. Overwatering does more than deplete the water supply, it also makes plants prone to pests and adds to stormwater runoff, which pollutes our water systems. By choosing and operating a watering system correctly, you can reduce water bills, insect and disease problems, and maintenance requirements. For example, the more you water your lawn, the faster it grows and the more it needs to be mowed.

Photo by: Jim Phillips

Micro-spray jets directly delivery small volumes of water.

Most watering restrictions limit irrigation to certain days and times. But realize that even if it is your assigned day to irrigate, that does not mean you *must* irrigate. Scheduled watering can waste time, money and resources. Don't let the calendar tell you when to water — look to your plants for telltale signs of water needs. Water lawns when 50 percent of the lawn shows signs of wilt: leaf blades folded in half, blue-gray color and footprints remain on the lawn. Water established bedding plants and shrubs when you see early signs of **wilting**.

FYN Glossary Box

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

Watering Tips

Photo by: Jim Phillips

Do not water when it is raining — use a working rain sensor on your irrigation system to shut it off automatically.

- 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 half an inch of rain has fallen. Florida law requires rain shutoff devices on all automatic sprinkler systems installed since 1991. Your county's UF/IFAS 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 ½" to ¾" 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.

To Sprinkle or Not to Sprinkle

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.

Florida Yard Tip:

Soil Moisture

Photo by: Dan Culbert, Okeechobee Ext.

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.

- 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 micro-irrigation 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.

Photo by: UF/IFAS

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

- 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.

FYN Glossary Box

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

Water-Wise Advice

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

- The water management districts (**http://www.dep.state.fl.us/secretary/watman/**) and Florida Irrigation Society (**http://www.fisstate.org/**) provide information on irrigation system selection, maintenance and appropriate watering practices.
- If you are changing areas of your landscape from turf to trees or planted beds, consult with your county's UF/IFAS 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.
- A free inspection of irrigation system efficiency is available in some areas through the Natural Resources Conservation Service and water management districts' Mobile Irrigation Labs. For contact information in the south Florida area, please visit: **http://www.sfwmd.gov/images/pdfs/splash/spl_mobile_irrig.pdf**

Florida Yard Tip:

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".
- 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 ½" to ¾" of water.

http://www.tampabaywater.org/conservation/residentialoutdoor.aspx

FERTILIZE APPROPRIATELY

3

LANDSCAPING PRINCIPLES FOR FLORIDA-FRIENDLY YARDS

http://lakewatch.ifas.ufl.edu/

FERTILIZE APPROPRIATELY

At the most basic level, fertilizers feed plants, helping them to grow better. 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
- Faster growth
- Greener leaves
- 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 and palms in separate sections.

Fertilizing Lawns

Grass that receives appropriate levels of fertilizer — not too little and not too much — produces a dense root and shoot system capable of filtering out impurities or other components of leachate or runoff.

A properly fertilized lawn absorbs nonpoint source pollutants, helps stabilize soil, reduces ambient air temperatures and promotes a healthy ecosystem of its own. Since it grows more vigorously, a properly fertilizered lawn might also require fewer cultural or chemical controls for weeds, insects or diseases.

Overfertilizing can aggravate pest problems, stimulate excessive growth and require frequent watering. In addition, when people use too much fertilizer on their landscapes, it can seep through the ground, past the root zone of the grass, plants or trees and into the aquifer. It can also 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 do not feel confident in your ability to comprehend and follow label instructions, consider hiring a lawn service professional.

Selecting a Fertilizer

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 lb. bag of 16-2-8 is 16% nitrogen, or eight pounds of nitrogen, 2% phosphorus, or one pound, and 8% potassium, or four pounds. The remaining weight is usually comprised of inert ingredients. Nitrogen and phosphorus cause the most problems with regard to water pollution.

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 Florida's waterways than quick-release 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 following fertilizer application — which ultimately means less mowing.

How do you know 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 "slow-release." The higher the percentage of slow-release, the less chance of leaching — and less thatch and mowing!

FYN Glossary Box

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

http://turf.ufl.edu/residential/fertilize.htm

How much phosphorus and potassium should I look for in a fertilizer?

Many Florida soils are naturally high in phosphorus, so you should use a soil test to determine if you even need to apply this nutrient. Contact your county's UF/IFAS 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. As for potassium, look for a fertilizer with at least 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.

How much fertilizer should I apply to a lawn?

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 FYN guidelines outlined in *The Florida Yardstick Workbook*, apply the lowest of the fertilizer ranges recommended by the UF Turfgrass Science program. Understand that at times an underfertilized 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 FYN 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.

- If you are applying a fertilizer with less than 30% of its nitrogen in a slow-release form, only apply ½ pound of nitrogen per 1,000 square feet of lawn per application.
- If it has at least 30% slow-release nitrogen, you may apply up to 1 pound of nitrogen per 1,000 square feet of lawn per application.

For more help calculating the amount of fertilizer to apply to your lawn, see Tables 1 and 2 (pages 51 and 52).

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 and the proper application and watering-in that has the greatest impact on the potential for creating pollution.

How should I apply fertilizer to a lawn?

Follow these simple steps:

1. Determine the annual fertility needs of your grass species by referring to Table 1 below.
2. Measure the square footage of your lawn area. Do not include landscape plants in this area calculation.
3. Determine how much slow-release nitrogen is in your fertilizer.

Table 1. Fertilization Guidelines for Established Turfgrass Lawns in Three Regions of Florida

	Nitrogen recommendations (lbs N/1000 ft^2/year)*		
Species	**North**	**Central**	**South**
Bahiagrass	2-3	2-4	2-4
Bermudagrass	3-5	4-6	5-7
Centipedegrass	1-2	2-3	2-3
St. Augustinegrass	2-4	2-5	4-6
Zoysiagrass	3-5	3-6	4-6

* 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.

4. Refer to Table 2 (below) 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 ½ pound of soluble fertilizer per 1,000 square feet. If you are using a product with over 30% of nitrogen in slow-release form, double these amounts to apply 1 pound nitrogen per 1,000 square feet.

5. Broadcast the fertilizer over the lawn with a drop spreader.

Table 2. Proper Application Rates for Specific Fertilizer Products[1]

Area (sq ft)	% Nitrogen in Fertilizer Bag						
	6%	10%	12%	15%	16%	23%	27%
10	1.3 oz 3 TB	0.8 oz 1½ TB	0.7 oz 1½ TB	0.5 oz 3½ tsp	0.5 oz 1 TB	0.4 oz 2½ tsp	0.3 oz 2¼ tsp
50	6.6 oz 14 TB	4 oz ½ c.	3.3 oz 7 TB	2.7 oz 6 TB	2.5 oz 5¼ TB	1.7 oz 4½ TB	1.5 oz ¼ c.
100	13.3 oz 1¾ c.	8 oz 1 c.	6.7 oz 14 TB	5.3 oz ¾ c.	5 oz 10½ TB	3.5 oz 9 TB	3 oz ½ c.
1000	8.4 lbs 17½ c.	5 lbs 9½ c.	4.2 lbs 8¾ c.	3.3 lbs 7¼ c.	3.1 lbs 6½ c.	2.2 lbs 5½ c.	1.9 lbs 4 ¾ c.
1500	13 lbs 26¼ c.	7.5 lbs 14¼ c.	6.5 lbs 13 c.	4.9 lbs 11 c.	4.8 lbs 9¾ c.	3.3 lbs 8¼ c.	2.9 lbs 7¼ c.
3000	25.2 lbs 52¼ c.	15 lbs 28½ c.	12.6 lbs 26 c.	9.8 lbs 21¾ c.	9.4 lbs 19½ c.	6.6 lbs 16½ c.	5.8 lbs 14½ c.
5000	42.0 lbs 87¼ c.	25 lbs 47½ c.	21 lbs 43½ c.	16.4 lbs 36½ c.	15.8 lbs 32½ c.	11 lbs 27½ c.	9.8 lbs 24½ c.

[1] The 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/1000 sq. ft. (the recommended rate for a single application of soluble fertilizer).

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

- Do not spill fertilizer granules. If you do have an accident, sweep the granules up. Rinsing fertilizer off with a hose could send it down the storm drain.
- Do not spread fertilizer onto water bodies or impervious surfaces, such as driveways or sidewalks. Particles on hard surfaces can wind up in waterways.
- Use a drop spreader, which puts particles down directly beneath the spreader, rather than a rotary spreader, which flings particles a farther distance.
- Avoid 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 a weed and feed product.
- 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 summer, when turf is actively growing, apply an iron source instead of a nitrogen fertilizer to green the lawn without increasing growth. Use **chelated** iron or iron sulfate.

When should I apply fertilizer to a lawn?

Some parts of Florida have year-round growing seasons; other parts have dormant lawns for parts of the year. Apply fertilizer when grass is actively growing, not when it is dormant. Do not apply too much nitrogen at one time in summer months when grass is already growing rapidly. Consult your county UF/IFAS Extension office with questions.

FYN Glossary Box

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

http://turf.ufl.edu/BMPmanual.pdf

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" of irrigation water. To find out how long it takes your sprinkler system to deliver this much water, read the Florida Yard Tip, "Calibrating Irrigation Systems," on page 45. Do not over-water or you increase the potential to move fertilizer past the root zone and into ground water. When fertilizing lawns, follow recommendations in the *Florida Lawn Handbook*, available for viewing at all county UF/IFAS Extension offices.

Fertilizing Woody Landscape Plants

In the soil, 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 impact your trees and shrubs. Conversely, treatments applied to a tree, such as pruning and fertilizing, can influence the appearance and health of underlying turfgrass.

Table 3. Fertilization Guidelines for Established Landscape Plants

Level of Maintenance	Amount of Nitrogen (lbs N/1000 ft^2/year)
Basic	0-2 lbs
Moderate	2-4 lbs
High	4-6 lbs

FYN Glossary Box

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

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 3 (see page 54) for specific rate recommendations.

Tables 2 (page 52) and 4 (below) 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 ½ pound of actual nitrogen per 1,000 square feet per application. Application rates of controlled-release fertilizers depend on release rates of the product.

Photo by: UF/IFAS

Magnesium deficiency is quite common on some species of palms in Florida, including this Canary Isalnd Date Palm (Phoenix canariensis). Magnesium deficiency of palms and cycads usually appears as broad yellow bands along the margins of the oldest leaves with a green midrib. Later leaves become completely yellow with tip necrosis.

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

Fertilizing Palms

Palms have different nutritional requirements than other landscape plants. Fertilize landscaped areas within 30 feet of large established palms with a 4-1-6-2 Mg (N-P_2O_5-$K_2$0-Mg) ratio fertilizer (an 8-2-12-4 Mg is an example of a fertilizer using this ratio). Nitrogen, potassium and magnesium should have equivalent percentages of each nutrient in controlled-release form. If you use a fertilizer with a ratio other than specified, you may bring about or intensify nutrient deficiencies in palms.

Base fertilization rates on Table 3 (see page 54). Palms are highly prone to several potentially fatal micronutrient deficiencies, so any fertilizer you apply to them should contain 1%–2% iron (Fe) and manganese (Mn), plus trace amounts of zinc (Zn), copper (Cu) and boron (B).

Florida Yard Tip:

Turf Fertilizer

Apply granular grass fertilizer (bottom left) and slow-release fertilizer (bottom right) with a drop spreader. Both of these fertilizer forms are recommended for use on turf. Soluble powders (top), such as the kind used on houseplants, are dissolved in solution. This form is not recommended for lawns.

MORE INFORMATION

For more detailed information on how to properly maintain your lawn, including fertilizer schedules, disease and pest management, please refer to the *Florida Lawn Handbook*, available for viewing at all county UF/IFAS Extension offices.

MULCH

LANDSCAPING PRINCIPLES FOR FLORIDA-FRIENDLY YARDS

http://edis.ifas.ufl.edu/EP052

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.

Here are a few simple facts about mulch:

- 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:

Photo by: Ed Gilman, University of Florida.

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

- For well-drained sites, apply a 2–3 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", 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").
- "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 rootball or against the trunk. More than about an inch of mulch on the rootball of newly planted trees and shrubs can stress plants because mulch can intercept water meant for the roots.
- 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".
- Do not use cypress mulch because harvesting from the wild depletes wetlands.
- 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.

Florida Yard Tip:

How Much Mulch?

Bulk quantities of mulch are sold in cubic yard volumes. 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" divided by 12" equals ¼ ft. or 0.25 ft. Multiply this fraction by the square foot measurement of the area to be covered (.25 feet 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", you will need .926 cubic yards of mulch.

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 phonebook 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.

Photo by: UF/IFAS

Photo by: UF/IFAS

Recycled mulch products made from the invasive plant melalueca are an excellent alternative to cypress mulch. Melaleuca mulch should be made entirely of bark and wood (right) and heat composted to kill any stray seeds (left).

http://www.epa.gov/epaoswer/non-hw/green/pubs/brochure.htm

ATTRACT WILDLIFE

Photo purchased from iStock Photo

Florida has the third most diverse wildlife population 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 Florida-Friendly Yard 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.

Try a few of these ideas for luring wildlife to your yard:

- **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 they 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 by: UF/IFAS

There are many ways to provide water for wildlife, such as this small pond.

- **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 plant list at the back of this handbook or consult your county's UF/IFAS Extension office for examples of plants that attract butterflies.

- **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

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

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.

- **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.

- **Extension's Urban Wildlife Program** — For more information on wildlife in Florida and help in creating a wildlife-friendly landscape, visit the Florida Wildlife Extension website: **http://www.wec.ufl.edu/extension/landscaping.htm**. Your yard could be recognized as a Florida Backyard Landscape for Wildlife.

MANAGE YARD PESTS RESPONSIBLY

LANDSCAPING PRINCIPLES FOR FLORIDA-FRIENDLY YARDS

http://www.nwf.org/backyardwildlifehabitat/createhabitat.cfm

MANAGE YARD PESTS RESPONSIBLY

Due to concerns about health, the environment, and **pesticide resistance,** pest control practices once taken for granted are now under scrutiny. Regular preventive pesticide applications are still common for some pests but are often unnecessary. Healthy plants can usually defend against or tolerate pest attacks, while beneficial insects, birds and other natural controls often suppress undesirable insects — which makes the preventive and indiscriminate use of pesticides ill-advised.

Photo by: UF/IFAS

Weeding by hand is an environmentally friendly pest management practice.

A better approach to managing pests — **Integrated Pest Management** (IPM) — emphasizes using a combination of environmentally friendly methods that focus on preventing pest problems. What are the basic building blocks of IPM?

- IPM begins at planting time, with pest-free and pest-resistant plants and a landscape design that encourages natural controls.

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Pesticide Resistance: after repeated applications of a certain pesticide, some pests may adapt to the chemical and are not harmed by it — those individuals that survive then breed and pass the resistance 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

- Keeping your plants healthy is the best defense against pests.
- Regular scouting, or keeping an eye on your yard's plants, helps detect pest problems early, before significant damage occurs.
- Plants with aesthetic damage don't necessarily need to be treated. Consider the amount of aesthetic damage you are willing to accept.
- If you see a pest outbreak, determine if a problem really exists or if natural enemies are already present and are working on your behalf.
- If pest control proves necessary, try the safest alternatives first, such as handpicking insects or pruning infected parts of a plant. If pesticides become necessary, choose the least harmful materials. The "softest" insecticides on beneficials and other non-target organisms (people, pets and wildlife) include insecticidal soap, horticultural oil, and microbials (e.g., spinosad, abamectin, *Bacillus thuringiensis* 'Kurstaki').
- Use pesticides only to **spot-treat** affected plants or lawn, not in blanket applications.

FYN Glossary Box

Spot-treatment: application of a pesticide to the problem plant or area, rather than a blanket application or "wall-to-wall" coverage

Avoiding Pest Problems

The way that you design and maintain your yard either establishes a barrier against pests — or throws out the welcome mat for them.

Follow these tips to prevent pests:

- Think before you plant. Each time you place a plant in a spot that's not ideal, you will likely have to protect it from pests. Plants in unfavorable growing conditions (compacted soil, inappropriate pH or light, competition with weeds, etc.) are targets for pests! Choose plants that can tolerate the conditions in your yard.
- Choose insect- and disease-resistant plant varieties.
- Go easy on water and fertilizer. Too much can cause excessive growth, making plants vulnerable to some insects and diseases. Encourage healthy growth by applying fertilizer and water only when needed and in moderate amounts.
- Mowing grass too short and severely pruning trees and shrubs weakens them, inviting pests. Mow to the proper height and prune selectively.
- Use barriers to block pest entry.

Photo by: Clemson University, www.insectimages.org

The assassin bug feeds on many different plant pests.

Photo by: UF/IFAS

Caterpillar killed with Bacillus thuringiensis "Kurstaki."

Photo by: UF/IFAS

Ants tending plant hoppers.

- Encourage beneficial insects by choosing some plants that provide the nectar needed by adults and by minimizing the use of broad-spectrum pesticides.

Identifying Pest Problems

Inspecting plants helps identify pest problems early, before they get out of hand. You can give plants the once-over anytime you water by hand, mow or are tending to other outdoor chores. If you are not in your yard until the weekend, you will need to set aside a time twice or more each week to walk through the yard and look at plants. Some small insects complete their life cycles in one week, so a weekly wander through the yard may not be frequent enough.

Photo by: J. Castner, UF Entomology/Nematology.

This person is scouting for pests by tapping branches over a white sheet of paper.

Common plant pests in Florida include aphids, mealybugs, scales, whiteflies, thrips, plant-feeding mites and caterpillars. Often you will spot evidence of a pest's activity before you see the insect itself. If you see curled, rolled or deformed leaves, mold on leaves or stems, many ants scurrying up and down plant stems or discolored "trails" on leaves, you are likely to find a pest lurking somewhere.

Detecting small insects and mites can be difficult. One method that works well is to flick the leaves of small branches against a sheet of white paper. Use a ten-power (10X) magnifying glass to search for movement or evidence of pests.

For pests that attach to the plant, such as scales and whitefly nymphs, look on the branches and on both the upper and undersides of leaves. Sooty mold on leaves is a telltale clue to an infestation by what are known as piercing-sucking insects. Aphids are one example. These pests pierce the plant with sharp mouthparts and suck the sap. Some piercing-sucking insects secrete a sugary substance called honeydew, on which the black-colored sooty mold fungus feeds and grows. Sooty mold doesn't injure a plant directly, but it does block sunlight from leaves,

reducing **photosynthesis**. Ants also signal the potential presence of pests. Ants feed on honeydew and often protect the insects that produce it.

If you see plant damage but few pests, beneficial insects may already be working on your behalf. These may include lady beetles (commonly called ladybugs) and their larvae, lacewings and their larvae, assassin bugs, spiders, parasitic wasps and parasitic flies (syrphid or hoverfly larvae and tachinid flies).

Photo by: Bradley Higbee, Paramount Farming, www.insectimages.org

The big-eyed bug is a beneficial insect often mistaken for a chinch bug.

Tolerate some insect damage and leaf disease on plants. No one can maintain an insect- and disease-free landscape, and a little damage will not hurt your plants. Remember, in order to have the "good guys," such as ladybugs, there must be some "bad guys," or pests, for them to feed on. If a pest problem persists, take a sample of the damaged plant and pest to your Extension office for identification and suggestions on how to proceed using IPM techniques.

Treating Pest Problems

What do you do when you have a pest infestation or a disease outbreak? IPM focuses on using chemicals as a last resort. IPM methods form a first line of defense to deal with problems.

- When pests are heavily concentrated on a plant, you can often reduce or eliminate the problem simply by removing the affected leaves or plant parts. Crush, burn or compost these infested plant parts to prevent the disease or insect from spreading.

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Photosynthesis: the process that turns light energy into chemical energy in green plants

- For large, slow-moving pests, picking insects off by hand can often defeat the problem. Dispose of any captured insects so they do not return to feed again. Try one of these disposal methods:

  - Drop pests into soapy water or isopropyl alcohol.
  - Place pests in the freezer overnight.
  - Crush them and put them in your household trash.

- Avoid using broad-spectrum pesticides. They are not selective — they also kill beneficial insects and insects that aren't problematic. Safe alternatives to traditional pesticides include insecticidal soaps and horticultural oils, both of which work to reduce populations of sucking insects. Products containing an extract of the bacterium *Bacillus thuringiensis* 'Kurstaki' take care of caterpillars.

- Always treat for specific pests, and only treat the affected plant.

- Read all product labels carefully and follow them accordingly. Remember that the label is the law! Do not attempt to mix your own chemicals or apply homemade recipes unless you have been properly trained to do so.

- It is usually best to apply soaps, oils and other pesticides during the cooler part of the day to avoid injuring plants. Always read the label to find out if any plants are listed as being sensitive to the product. To determine if the product will hurt your plants, apply it to a small portion of a leaf first, and check for leaf burn after 1–2 days. **Phytotoxicity** often looks like a burn on the edge of leaves.

FYN Glossary Box

Phytotoxicity: degree to which a chemical is toxic to (injures) plants; plant sensitivity to a particular chemical, application rate and environmental conditions influence degree of damage that may result from chemical treatment

Common Landscape Pests and Their Management

Ants: Three body segments. Range in size from 1/16"–1/2", depending on species. Most species are not harmful. In the landscape, they do not affect plants but the bite and sting of fire ants and carpenter ants affects people. When ants are present, you may observe mounds, ants in trails and on plants.

Photo by: J.F. Butler, Entomology and Nematology, UF.

Imported fire ants sting and bite, but only the sting causes the painful white pustule.

Natural enemies: Phorid flies (decapitate fire ants), *Thelohania* fire ant disease.

Other controls: Bait effectively controls fire ants. Be sure material is dry/fresh. Apply in late afternoon or evening around edges of mound. Do not apply when ground or grass is wet. Do not disturb mound. Store baits in a cool environment.

Aphids: Winged or wingless pear-shaped bodies may be green, yellow, black, red or multi-colored. Typically found on new growth. Damaged leaves appear yellow, twisted or distorted; ants or sooty mold may also be present.

Photo by: Anne W. Gideon, www.insectimages.org

Oleander aphid with lady beetle larvae predators.

Natural enemies: Lady beetle (ladybug) adults and larvae, lacewing larvae, syrphid fly larvae, parasitic wasps.

Other controls: Prune infested plant parts. Apply insecticidal soaps or horticultural oils. Soil drench with product containing imidacloprid.

Caterpillars: Larvae of butterflies and moths. Chew on foliage, which creates skeletonized or notched leaves. Watch for greenish fecal pellets on leaves or below plants.

Natural enemies: Wasps, predatory stink bugs, big-eyed bugs, birds, lizards.

Other controls: Remove by hand (use pliers to remove stinging caterpillars), apply *Bacillus thuringiensis* 'Kurstaki' (most effective when caterpillars are small).

Chinch bugs: Adults 1/5" long, black with white patches on wings. Young nymphs are smaller, reddish and have a white stripe across their backs. Chinch bugs feed on St. Augustinegrass, often in stressed areas in full sun or near pavement. Injured turf yellows and dies.

Photo by: J. Castner, Entomology and Nematology, UF.

Chinch bug and damage to turfgrass.

Natural enemies: Big-eyed bugs, earwigs, a parasitic wasp.

Other controls: Avoid high fertilizer rates. Maintain St. Augustinegrass at height of 3" in sun and 4" in shade. Use chinch bug-resistant grass varieties when available. Spot-treat infestations with insecticides labeled for chinch bugs.

Mealybugs: Soft-bodied insects 1/16"–1/8" long with well-developed legs. Bodies and egg masses covered by powdery white wax. Attack leaves, twigs and roots and leave behind white, mealy wax deposits. Sooty mold or ants may also be present.

Photo by: J. Castner, Entomology and Nematology, UF.

Longtailed mealybugs feeding on the underside of leaves.

Natural enemies: Lady beetles, lacewing larvae.

Other controls: Spray with horticultural oil or insecticidal soap. If that fails, apply a systemic insecticide (i.e., imidacloprid) to the root system. Soil systemics may take several weeks to work. Choose a product that affects only pests that feed on plant sap.

Mole crickets: Velvety brown, 1½" long, feed on turfgrass and vegetable roots. Flattened front legs adapted for burrowing. Mole crickets affect all grasses, but prefer bahiagrass and bermudagrass. Injured turf may be spongy and thinning, with ¾"-round holes that are signs of tunneling. Infestation usually occurs in same area each year. Test for infestation by flushing area with soapy water (1–2 tablespoons soap in a gallon of water). Crickets will surface within 3–5 minutes if present.

Natural enemies: Parasitic wasp *(Larra bicolor)*, red-eyed fly *(Ormia depleta)*, insect-parasitic nematodes *(Steinernema scapterisci)* and birds.

Other controls: For chronic infestation, consider replacing turf with trees, shrubs or groundcovers. If necessary, spot-treat infestations in May or June with insecticides labeled for mole cricket control.

Plant-feeding mites: Tiny (1/32") red, yellow or green with oval bodies. May have spots. Some spin loose webs on foliage. Mites reproduce rapidly in hot weather. Injuries to plants look like light-colored dots, giving leaves a dull, gray-green, speckled appearance.

Natural enemies: Lady beetles, predatory mites.

Other controls: Flush with water, then alternate with soap and oils if necessary.

Scales: Vary in size, shape and color; approximately 1/8" in diameter. Soft scales and armored scales are the most common. Soft scales produce

Photo by: Ken Gray, Oregon State University

Hemispherical scale immatures (green) and adults (brown).

honeydew (sugary secretion). The armored scale body is hidden under a waxy scale covering. Mature scales are stationary and feed on leaves, twigs, stems and fruit. Watch for yellow spots (feeding damage) on top of leaves with scale underneath. Ants or sooty mold may be present. "Crawlers" (the immature, mobile stage) are the most vulnerable life stage and, therefore, easiest to control.

Natural enemies: Lady beetles, parasitic wasps.

Other controls: Scrape scales off plant tissue. See other controls for mealybugs.

Thrips: Tiny (1/32") winged insects that scar leaves, buds and flower petals to drink sap from wounds. Injured plant may be dull gray with curling, distorted leaves.

Natural enemies: Predaceous thrips, predatory mites.

Other controls: Apply horticultural oils, insecticidal soaps, spinosad spray.

Whiteflies: Adults look like tiny white moths on plants. They take flight when leaves are disturbed. Eggs are on leaf undersides. Nymphs are oval, flat, transparent-to-greenish in color and may look like scales. They are stationary and are located on undersides of leaves. Dead nymphs are dull white; pupae have red eyes. Ants or sooty mold may be present.

Natural enemies: Fungi (most effective in humid weather), parasitic wasps, lady beetles.

Other controls: Spray with insecticidal soap. Follow with horticultural oils, if necessary. Be aware that several species are resistant to insecticides.

Photo by:Scott Bauer, USDA ARS, www.insectimages.org

Silverleaf whiteflies.

What About Plant Diseases?

Photo by: Robert McGovern, UF/IFAS

Fungal disease on petunia.

Many organisms, including viruses, fungi and bacteria, can cause diseases in plants. Diseases can be quite specific in the plant species they commonly attack, but identifying diseases can still be extremely difficult. Often, home gardeners mistake environmental or maintenance problems for diseases. For example, Spanish moss, lichens and ball moss are not parasites that should be killed or removed; they are merely plants themselves. Another common misdiagnosis in coastal areas is mistaking saltwater damage for disease. Irrigating plants with salty well water can cause yellowing around the edges of leaves and leaf-drop starting from the bottom part of the plant's canopy.

When a plant does have a disease, the problem may be merely cosmetic rather than truly damaging to the plant. Examples are minor leaf spots or other damage to select leaves. Such minor aesthetic concerns are no cause for alarm or treatment. There are serious diseases, however, that can damage or kill plants they affect. Examples are mushroom root rot on woody ornamentals, fire blight on loquat and brown patch on turf. Such diseases can seriously damage the plant's appearance or yield.

Because diseases are difficult to identify, do not assume a disease is in the works just because of a plant's appearance. Use a magnifying glass to look for insect pests that may be causing the damage. Also analyze maintenance practices for causes related to visible symptoms. If you still suspect a disease, contact your county's UF/IFAS Extension office for advice on how to collect and submit plant samples for disease diagnosis and recommendations on the least-toxic methods of treatment.

RECYCLE

7

LANDSCAPING PRINCIPLES FOR FLORIDA-FRIENDLY YARDS

http://spdn.ifas.ufl.edu/

RECYCLE

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.

- Compost or mulch with yard wastes to reduce the amount of solid waste to be hauled away. Florida Statutes prohibits disposing of yard trash in landfills.

- 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.

Photo by: UF UF/IFAS

Materials generated by the plants in your own yard are a free and easy source for mulch or compost.

- 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.

Recycle While You Mow

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

Photo purchased from iStock Photo

Always leave grass clippings on the 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.
- 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.

http://www.dep.state.fl.us/waste/categories/recycling/default.htm

Florida Yard Tip:

Ideal Grass Height

Each turfgrass grows best when it is mowed to a specific height. Turf cut shorter than the recommended height will be stressed and more susceptible to pests and diseases.

- St. Augustinegrass *(Stenotaphrum secundatum)* and bahiagrass *(Paspalum notatum)*: Keep at a minimum height of 3"–4", except for dwarf varieties, which can be cut shorter.
- Centipedegrass *(Eremochloa ophiuroides)*: When actively growing, mow every 7 to 14 days to 1 ½"–2".
- Bermudagrass *(Cynodon dactylon)*: Cut at a height of ¾"–1 ½". This may require mowing one to three times per week.
- Seashore paspalum *(Paspalum vaginatum)*: Cut at a height of 1"–2".

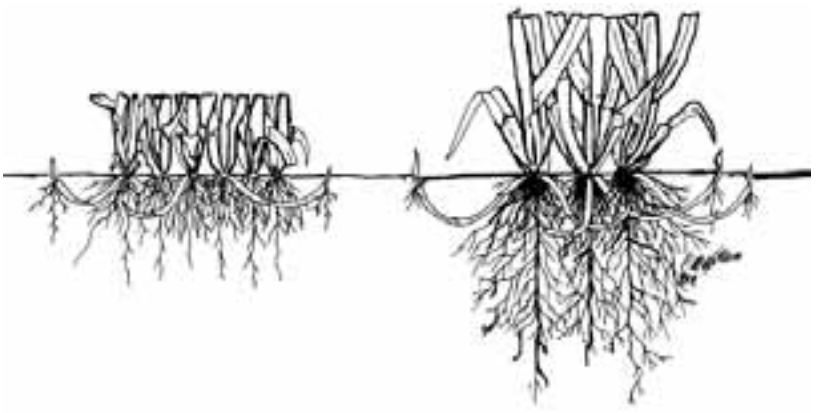


illustration by: Morton Arboretum

Closer mowed turfgrass (left) is finer textured and denser, but has less underground growth of roots and rhizomes. A deeper root system develops in response to taller mowing heights (pictured right).

Pruning

Pruning is selectively removing parts of a plant to improve plant health, control growth or enhance fruiting, flowering or appearance. Most often pruning removes shoots and branches.

Photo by: Ed Gilman, UF/IFAS

Proper pruning can prevent property damage.

Prune using one of three techniques: thinning, heading back or hedging.

Thinning

What is thinning? Completely removing side branches. In trees, cut side branches back to lateral branches or the main trunk. In shrubs, remove them to the ground.

What does thinning do? Gives a plant an open appearance. Where growth was dense before pruning, afterwards you can see daylight. Thinning encourages new growth inside the plant crown and increases light penetration and air circulation inside the crown. It also results in fewer branches that grow thicker, developing stronger resistance to wind damage.

Heading back

What is heading back? Selectively cutting the tips of twigs or young branches back to a **bud**.

FYN Glossary Box

Bud: an undeveloped or compressed stem

http://hort.ifas.ufl.edu/woody/stormprep.htm

What does heading back do? Produces a denser tree or shrub because it usually increases the number of shoots and leaves. Place pruning cuts so they aren't visible by locating them inside the plant, covered up by remaining foliage. Use heading back on annuals at planting time to create more flowering stems.

Hedging

What is hedging? Removing shoots or branches from a shrub to maintain a dense row of plants that creates a barrier. Formal hedges feature neatly clipped shrubs; informal hedges let shrubs grow to their natural shape. Formal hedges must be clipped frequently during the growing season; informal hedges can be trimmed annually, enough to keep growth from overwhelming nearby walkways or structures or from shading lawns.

What does hedging do? Establishes and maintains a barrier that can provide privacy or form a windbreak. Correct hedging cuts help a hedge to remain healthy and grow actively from top to bottom. The way to accomplish this is to cut your hedge so that the top is narrower than the bottom. This ensures that light can reach each part of the hedge — which keeps the entire barrier healthy and growing. Make cuts during the growing season when growth is green and tender.

Basic Pruning

Use these simple steps as a guideline for every pruning job you tackle:

- Remove all dead, diseased or injured branches.
- Dip pruning shears and saws in a weak alcohol solution (one part alcohol to nine parts water) to prevent spreading diseases between plants.
- Remove branches that cross or touch each other and any that look out of place.
- If a shrub is too tall, heading and thinning may both be necessary. Don't use hedge shears, but cut each branch individually to different lengths with hand pruners. This maintains a neat informal shrub with a natural shape.

Calling the Professionals

If you are unsure about proper pruning techniques, consider hiring a **Certified Arborist** to prune your trees. An arborist is a specialist in the care of individual trees. Certified Arborists are knowledgeable about the needs of trees and are trained and equipped through continuing education administered by the International Society of Arboriculture to provide proper care.

To find a Certified Arborist in your area, check out the International Society of Arboriculture's website, **http://www.floridaisa.org** and search by ZIP code.

Pruning trees can be a technical, detailed and dangerous process. Learn more about it online at **http://hort.ufl.edu/woody/pruning**.

FYN Glossary Box

Certified Arborist: an arborist who has passed an exam and receives, on a regular basis, continuing education administered by the International Society of Arboriculture or another certifying agency

Florida Yard Tip:

Reduce Your Pruning Load

Keep pruning chores to a minimum by doing things the environmentally friendly way.

1. Select slow-growing plants.

2. Place plants far enough from walkways, driveways or buildings to allow them to reach maturity without encountering obstructions that require hauling out the pruners.

Photo by: Holly Johnson Shiralipour, UF/IFAS

When pruning trees and shrubs, put small cuttings into a compost pile or use as mulch.

3. Forget the clipped, formal look. Soft, flowing, natural lines are attractive and easy to maintain.

Raking

Photo by: UF/IFAS

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

Deciduous trees reduce energy costs by shading a house in summer and, after leaves fall, by allowing sunshine to heat a house in winter. Many new Floridians avoid having deciduous trees in their yards because they believe that fallen leaves require raking. If you desire high-quality turf under trees, then you should rake leaves to improve light penetration to the turf.

If you do not want turf, permit leaves to remain under trees to form a self-mulching area. Leaves add nutrients to soil as they decompose. If aesthetics are an issue, plant shrubs under trees to avoid raking. They will benefit from decomposing plant litter and help to hold leaves in place so they won't clutter the landscape.

Composting

Composted organic matter is dark in color.

A common misconception about plant care is that plants require fertilizer. Plants need nutrients, but they might not need added fertilizer. That is because as organic matter decomposes, nutrients are released into the soil in a form that plants can take up. Some key nutrients for plants include nitrogen, phosphorus, potassium, magnesium, calcium, zinc, iron and manganese.

A great way to supply some of these key nutrients to plants while recycling yard waste is by adding **compost**, which you can make from yard or kitchen waste. As compost decomposes in soil, it releases essential nutrients. Add generous amounts of composted material frequently to soil and it can create the perfect medium for sustained plant health.

Compost can be made in a pile.

Adding compost to soil can:

- Improve soil structure, texture and aeration.
- Increase the water-holding capacity of soil.
- Help loosen compacted soils.
- Promote soil fertility and stimulate root development.
- Create a favorable environment for microorganisms, earthworms and insects that are nature's "soil builders."

Composting can be as simple as placing leaves, grass clippings and small cuttings behind shrubs or in a hidden corner of the yard and letting nature take its course. Homemade or manufactured compost bins allow you to easily incorporate kitchen waste, such as vegetable and fruit scraps, eggshells and coffee grounds. Numerous types of compost bins are commercially available; many are attractive. Gardening magazines, catalogs and garden centers are good sources for composting products. For more information, visit Florida's Online Composting Center at **http://compostinfo.com**.

FYN Glossary Box

Composting: the process of converting plant and animal waste into useful soil additives

EPA Composting Site:

A compost pile needs adequate moisture, oxygen, nitrogen and carbon sources to generate the right conditions for decomposition. The more closely you monitor and manipulate these factors, the faster decomposition can occur — and the sooner you will have rich compost for fertilizing plants and amending soil.

Follow these tips for successful composting:

- Bins are not necessary, but they help keep piles neat, retain heat and moisture and prevent complaints from neighbors. The minimum recommended size is one cubic yard (three feet square by three feet high).

- Composting can take as little as four to six weeks or as long as one to two years, depending on the size and type of material in the pile and the amount of attention you give it.

- Proper moisture is necessary for microorganisms to decompose the material. Covering the pile retains moisture and prevents the decomposing material from getting too soggy when it rains. You should not be able to squeeze water from the material produced at the bottom of the pile.

- Heat is important in composting, so a sunny location is better than a shady one.

- Combining different materials in the pile, such as grass clippings and leaves, will achieve the right proportions of carbon and nitrogen for effective composting.

Photo by: UF/IFAS

Compost bins with several compartments aid in turning the material.

Photo by: UF/IFAS

Compost can also be made in a manufactured bin.

- Always bury kitchen waste inside the pile to discourage pests and to prevent odor from rotting fruit and vegetables.

- Generally, for fastest composting, turn the pile with a pitchfork or stir it on a weekly basis in warm weather. Stabbing the pile with a length of pipe or rake handle will help aerate and mix the material.

- Never place meat, animal fat or dairy products in a compost pile.

Florida Yard Tip:

The Squeeze Test

To find out if your compost pile is getting too much water, try this test. Grab a handful of compost from the bottom of the pile. Squeeze it. You shouldn't be able to squeeze drops of water from the composted material.

Squeeze test illustrating adequate moisture (above) and excessive moisture (below).

http://www.epa.gov/watertrain/

REDUCE STORMWATER RUNOFF

Since the formation of the EPA 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 Florida's ecosystems.

Many of Florida's water resources are especially susceptible to pollution because of our unique geology and climate. Floridians obtain most 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 Florida's rainy season, is a major cause of leaching and **stormwater runoff**. Surface waters in Florida such as lakes, streams, rivers and estuaries are very sensitive to even small amounts of pollution.

FYN Glossary Box

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 (NPS) 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 water-saturated surfaces, transporting sediments and dissolved chemicals into nearby waters

DEP NPS Page:

A healthy, properly maintained lawn absorbs stormwater runoff, protecting Florida'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 Florida'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 FYN landscaping guidelines will reduce nonpoint sources of pollution. A properly designed and managed landscape can help slow down and filter stormwater runoff.

Making Every Raindrop Count

One of the basic concepts of a Florida-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.

purchased iStock photo image

Downspout directed into the 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.

- 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. Also, check with your local Florida DEP office before making any changes to shorelines.

Photo by: Chris Claus

Connect a rainbarrel to a swimming pool to replace water.

n 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. FYN also offers rain barrel workshops in some counties where you can learn to build your own. 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 thuringiensis* (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

Photo by: Jim Phillips

Rain barrels reduce water pollution by reducing stormwater runoff.

EPA NPS Page:

barrel is not unsightly, but a four 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 Florida, water obtained from a cistern is only for non-potable 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.

n 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 5 (see page 96).

Photo by: Mark Shelby

Cistern collects rain for nonpotable uses.

Photo by: UF/IFAS

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

Photo by: UF/IFAS

The combination of turf growing between flagstone withstands foot traffic and absorbs rainwater.

Table 5. Comparison of Surfaces for a 15'x30' Driveway (450 sq. ft)

Material	Depth	Relative Cost*
Melaleuca Mulch	2"	$
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"	$
River Rock	2"	$$
Pine Bark	2"	$
Concrete (plain)	4"	$$$$
Concrete (stamped)	4"	$$$$$
Asphalt	1.5"	$$$-$$$$

* $=<$200 total cost; $$=$200-499; $$$=$500-999; $$$$=$1000-2999; $$$$$=>$3000

PROTECT THE WATERFRONT

LANDSCAPING PRINCIPLES FOR FLORIDA-FRIENDLY YARDS

http://www.dep.state.fl.us/secretary/watman/

PROTECT THE WATERFRONT

Waterfront property owners have firsthand knowledge of the special contribution lakes, ponds, rivers, streams and lagoons make to Florida's quality of life. Florida-Friendly Yards located on a waterfront must address certain challenges and responsibilities. As next-door neighbor to these natural resource treasures, you must make it your mission to practice good environmental stewardship.

To design and maintain a landscape that borders a waterfront of any sort requires a strong focus on the natural environment, as well as on environmental impact. If you presently live on the waterfront or are considering moving to a waterfront location, review these points to make the most of your landscape — to create a yard that is beautifully functional for you and environmentally safe for the natural resources of our state.

Photo by: Jim Phillips

Homeowners are encouraged to leave a minimum of a 10-foot low impact zone along the waterfront to protect the water from pollutants.

Saltwater Considerations

Naturally sloping shorelines, particularly when buffered by a fringe of mangroves or marsh grass, help smooth out waves and reduce cloudiness in the water. In addition, mangroves and other shoreline plants contribute to the food web, attract wildlife such as wading birds, and help prevent erosion at the water's edge.

The area in which shoreline plants grow is known as the **littoral zone**, the boundary between land and water. Unfortunately, seawalls have traditionally been placed directly in this intertidal, littoral zone. If you desire to restore a natural shoreline with natural vegetation, you face a complex decision. Begin

by inquiring about your city and county ordinances to determine whether removal is an option.

If you can legally replace a shoreline protection structure with a natural littoral zone along your property, your options will be limited by several factors:

1. Depth of your lot
2. Distance from the waterline to upland structures
3. Wave impact against your shore
4. Your budget
5. Shoreline condition of neighboring properties

Photo by: UF/IFAS

Container garden along a seawall of the intracoastal waterway.

Shoreline protection alternatives comprise very site-specific considerations, and you need expert advice. The Florida Sea Grant Marine Extension agent in your county, natural resources employees of local governments and the Florida Department of Environmental Protection are good places to find help and information. Keep in mind that submerged land is probably not your property, but belongs to the State of Florida. For information on permitting requirements, contact the Florida Department of Environmental Protection office in your area.

FYN Glossary Box

Littoral zone: the area between high and low tide in coastal waters, or the shoreline of a freshwater lake

Those Marvelous Mangroves

Beauty, wildlife value and erosion protection make mangroves an asset to a Florida-Friendly Yard. Florida has four native mangrove species:

- Red mangroves (*Rhizophora mangle*) usually live closest to open water. They have arching red prop roots, and their seeds look like green cigars.
- Black mangroves (*Avicennia germinans*) typically grow further upland than red mangroves. Taller than their red and white cousins, black mangroves are the most cold tolerant of the mangrove species found in Florida. Black mangroves send up nobby projections called pneumatophores, which provide oxygen to the tree's roots.
- White mangroves (*Laguncularia racemosa*) are usually found at higher elevations, interspersed with black mangroves.
- Buttonwood (*Conocarpus erectus*) is not considered a true mangrove by some scientists. It grows most landward of the mangrove species. Once established, it is quite drought resistant and can also withstand flooding, making it an ideal landscape plant for coastal areas.

Some mangrove pruning requires a permit, and the rules are periodically

Photo by: Greg Ira, FDEP

Mangrove seedlings.

Photo by: Greg Ira, FDEP

Pneumataphores are sometimes called knees.

revised. Homeowners and the individuals they hire to trim their mangroves are jointly responsible for trimming mangroves appropriately. The booklet *Mangrove Trimming Guidelines for Homeowners* is available at FDEP's district offices throughout the state. You can read these materials online at **http://www.dep.state.fl.us/water/wetlands/mangroves/mangrove.htm**.

If you have mangroves, contact the following organizations for information on properly managing these fascinating plants: Florida Sea Grant Extension Program, Florida Department of Environmental Protection and your local government's natural resources department.

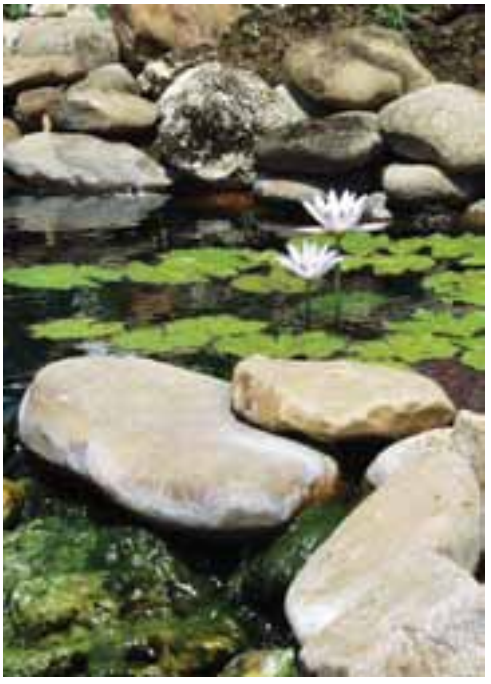
Freshwater Considerations

Lakes, rivers, streams and ponds also have littoral zones, which offer many benefits. Littoral zones:

- Slow the velocity of runoff
- Filter nutrients and sediments from runoff
- Hold soil in place

To protect a freshwater resource from nutrient and pesticide runoff, designate a "maintenance-free zone" of at least 10 feet between your lawn or landscape and the water body. Don't mow, fertilize or apply pesticides to the littoral zone.

Enhance natural wetland vegetation with additional plantings. The FDEP's book, *Florida Wetland Plants: An Identification Manual*, is an excellent reference source for information on plant materials.



Fragrant white water-lilies (Nymphaea ordorata) growing in a man-made stream.

Man -Made Lakes and Ponds

If your property does not border or contain a natural waterway, consider

building one. A pond is relatively easy to maintain, and it can add value, beauty and ecological soundness to your Florida-Friendly Yard. It does not matter whether your pond measures in square feet or acres, it will contribute significantly to wildlife in your area.

Selecting a good pond site requires evaluating many factors, including slope, soil type, water table, septic tank and house foundation setbacks, and utility easements. When planning, try to strike a balance between what your permit allows and what would fit most naturally into the landscape.

In nature, Florida lakes and ponds feature some common characteristics:

1. They are usually located at the lowest elevation in a landscape.
2. They have a high edge-to-depth ratio — that means that they are wide and shallow.
3. A shallow depth increases the amount of littoral shelf area — the area receiving maximum sunlight penetration. The shelf area provides a place for plants to root and quickly becomes a beehive of pond life activity. Florida ponds less than four feet deep often exhibit complete plant coverage. (It takes 6–10 foot depths to maintain open water.)

Stormwater Control Ponds (Retention Ponds)

If you live on a waterfront, evaluate stormwater runoff patterns to determine if you are inadvertently "dumping" runoff from your landscape directly into the natural waterway. One way to filter runoff is by installing a series of swales and channels, followed by a small pond as a final collection point for runoff.

A pond provides a natural filter for potential waterway pollutants. Vegetation and filter traps act as active filtration systems for pollutants, and the settling action in the pond itself serves as another way to remove pollutants. A well-built pond that supports plant life can significantly improve the quality of water draining into Florida's waterways.

Another advantage these systems offer is extending the "soak time" of stormwater, or increasing the amount of water allowed to percolate. Water that percolates through soil recharges ground water directly, as opposed to water that empties into waterways.

If you find yourself managing one of these natural stormwater filtration systems, follow our do's and don'ts checklist to maintain them properly:

Shallow ponds, typical in Florida, allow sunlight to penetrate the bottom.

POND MANAGEMENT DO's

- DO plant appropriate aquatic, emergent and upland vegetation — they stabilize soil greatly.
- DO use pond water for non-potable irrigation needs.
- DO fertilize surrounding areas with the least amount of fertilizer possible, always using a slow-release type.
- DO use organic compost in lieu of fertilizer.
- DO use mulch around plants to retain moisture.
- DO keep pet wastes out of water bodies.

POND MANAGEMENT DON'TS

- DON'T allow livestock to graze pond bank sides.
- DON'T swim in or eat fish caught in stormwater ponds.
- DON'T allow invasive plants to clog waterways.
- DON'T direct grass clippings into stormwater ponds.

Seasonal Ponds

A common pond type — and perhaps the easiest to imitate as a yard feature — is a shallow "seasonal" pond, typically 2'–5' deep and 25'–150' across. Variations in seasonal rainfall cause fluctuations in water level, appearance and function.

In winter, standing water recedes, often drying down completely, depending on the pond's water depth, soil type and the local water table. But even in this "dry-down" condition, a seasonal pond offers moisture sources, the damp habitats required by many amphibians, reptiles, birds and small mammals.

If you wish to construct a pond to replicate these important habitats, choose an area that:

- accommodates the shallow and wide profile
- already contains suitable plant life and soil types
- provides access for wildlife

Conclusions: Connecting Our Yards to Florida's Waterways

The future of Florida's treasured water resources begins in your yard. The decisions you make — from developing a home site, to landscaping your yard, to fertilizing your lawn — actually influence the health of Florida's natural waterways. Nature doesn't recognize property lines. A rainstorm can wash bare soil, landscape debris, gas, oil, 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 also connect one person's property to the next, forming neighborhoods. Ultimately, yards and neighborhoods are connected to water resources. This connection may be immediate, as in a waterfront community, or gradual, through the flow of storm drains, ditches, streams, rivers and ground water.

For more information on Florida-friendly landscaping, contact the FYN Coordinator at your county's UF/IFAS Extension office (find contact information at **http://solutionsforyourlife.ufl.edu**) or visit the state FYN website at **http://fyn.ifas.ufl.edu**.

EPA, Locate Your Watershed: http://cfpub.epa.gov/surf/locate/index.cfm

For Additional Information:

For references on the information contained in this book and links to additional resources on each of the nine Florida-friendly landscaping principles, including many articles on the EDIS website (Electronic Data Information Source of UF/IFAS Extension), go to **http://fyn.ifas.ufl.edu** and follow the link to the FYN Handbook. You can also visit **http://FloridaYards.org** for more information on Florida-friendly landscaping, or contact your county's UF/IFAS Extension office and ask for the Florida Yards & Neighborhoods program. See **http://solutionsforyourlife.ufl.edu/offices.html** or check the government pages in your phone book to find your county's Extension office.

Create a Florida-Friendly Yard

Yards and landscapes can be a positive asset to Florida. You can design and maintain your own Florida-Friendly Yard by following the simple, common sense practices in this book. You will learn the basics of designing a landscape featuring carefully selected plants suited to Florida's unique climate, natural conditions and wildlife.

We offer you cost-saving tips that, if implemented properly, will help you reduce water, fertilizer and pesticide use. There is also a helpful section for waterfront homeowners that addresses the special concerns of shoreline landscape management.

Whether you are starting from scratch with a new landscape or considering changes to an existing yard, the Florida Yards & Neighborhoods Handbook offers helpful concepts, tools and techniques for creating your own Florida-Friendly Yard. We hope you enjoy the publication and we look forward to assisting you in creating an aesthetically pleasing landscape that will also help to protect Florida's natural resources.

UNIVERSITY OF FLORIDA IFAS EXTENSION

Florida Yards & Neighborhoods

http://fyn.ifas.ufl.edu

FloridaYards.org

Southwest Florida Water Management District

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