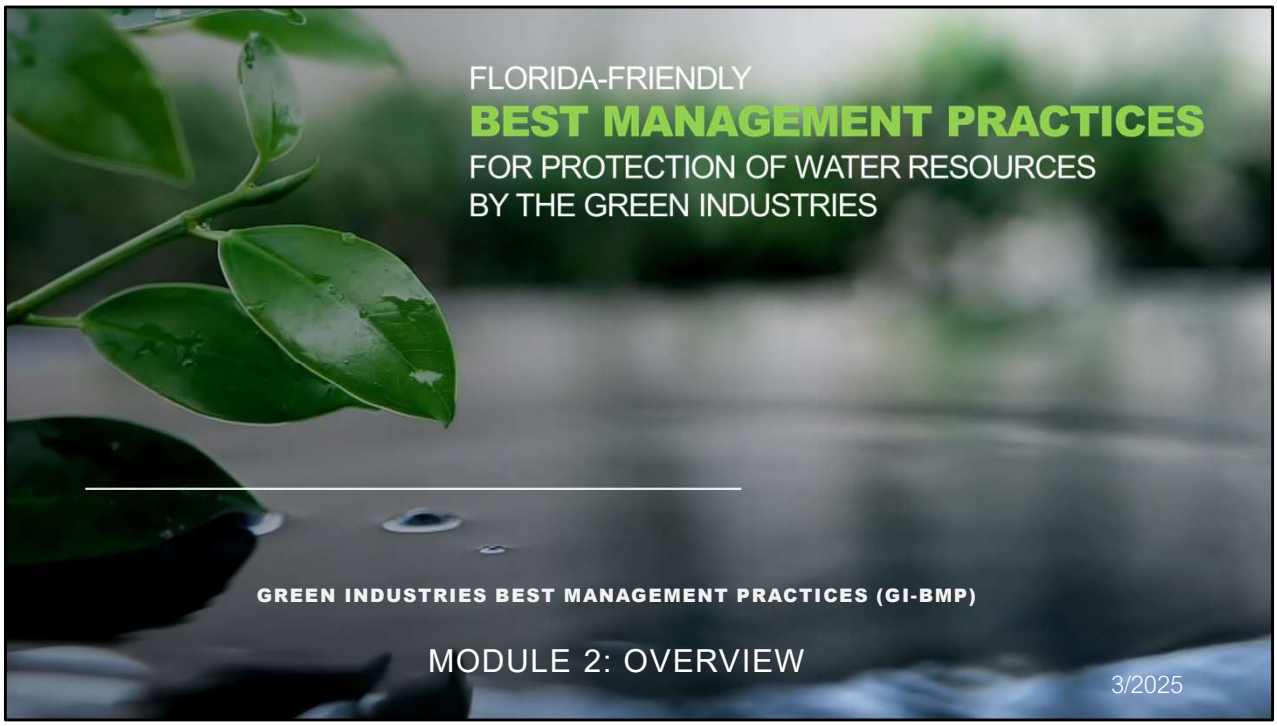


Module 2 – Overview. This module consists of a brief discussion of laws affecting landscape practices; and definitions and understanding of nonpoint source pollution and Florida-Friendly Landscaping Principles. This module is intended to give you the base knowledge required to understand the next four core BMP presentations.

At the end of this module, you will be able to:

- Describe how GI-BMPs address environmental issues according to federal, state and local laws.
- Define nonpoint source pollution and its negative impacts on the environment.
- Explain how urban stormwater systems function
- Describe landscaping principles that protect Florida's water resources

Nonpoint Source Pollution

One of the key learning concepts of the GI-BMP training program is understanding nonpoint source pollution. Next, we will discuss Nonpoint source pollution and its connection to you and water quality.

What is Nonpoint Source Pollution?

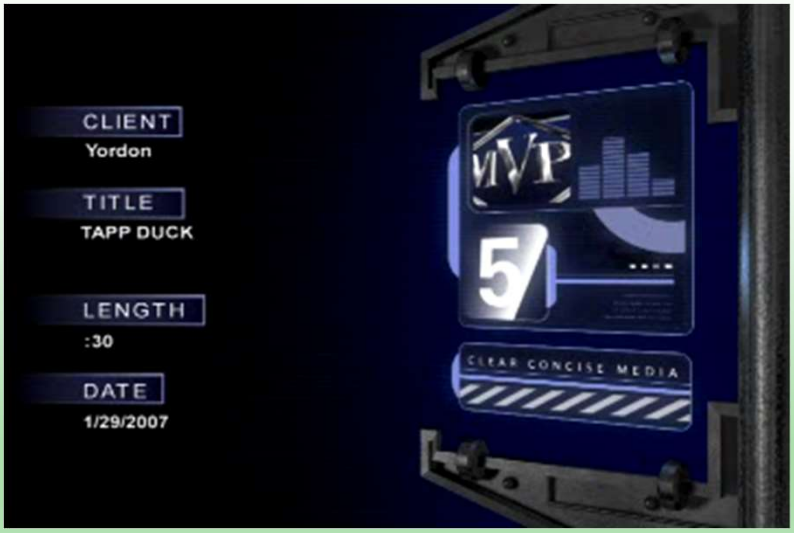
Water pollution that cannot be traced to its specific origin or starting point.

Commonly associated:

- Impervious surfaces
- Stormwater runoff and leaching

Nonpoint source pollution comes from diffuse sources and is associated with the long-term effects of everyday activities. It is carried primarily by rainfall and irrigation water, which cause pollutants that have accumulated on the land surface to run off into surface waters or to leach into ground water.

Water is the primary mechanism for the transport of dissolved chemicals through the soil. Nonpoint source pollution may not be obvious until a rainfall event occurs, leading to stormwater runoff from roads, parking lots, suburban areas, and farms. As Florida's population has soared, this type of pollution has become an increasingly important issue in the state.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CLEAR CONCISE MEDIA

Where does nonpoint source pollution come from? In a play on words, Nonpoint Source Pollution is often called "Pointless Personal Pollution" because we all produce it, and so much of it can be reduced just by paying attention to the little things we often do not think about.

The effects of nonpoint source pollution are cumulative. Each of us only contributes a small amount but collectively it adds up, creating large pollution problems in water bodies.

In the same way, all the little things we do individually to prevent pollution can add up to make a big difference. We all need to be “part of the solution to pointless personal pollution”.

What Does NPS Pollution Affect?

Water quality is important:

- Drinking
- Recreation
- Fisheries
- Wildlife

Nonpoint source pollution directly affects water quality. We depend on a high standard of water quality for a number of uses in Florida. How do you prioritize your needs? Reducing nonpoint source pollution protects water quality for good reasons.

NPS Water Quality Impacts

Turbidity
- low visibility

Lower dissolved oxygen
- fish kills

Higher nutrients
- algal blooms

Heavy metals
- toxicity

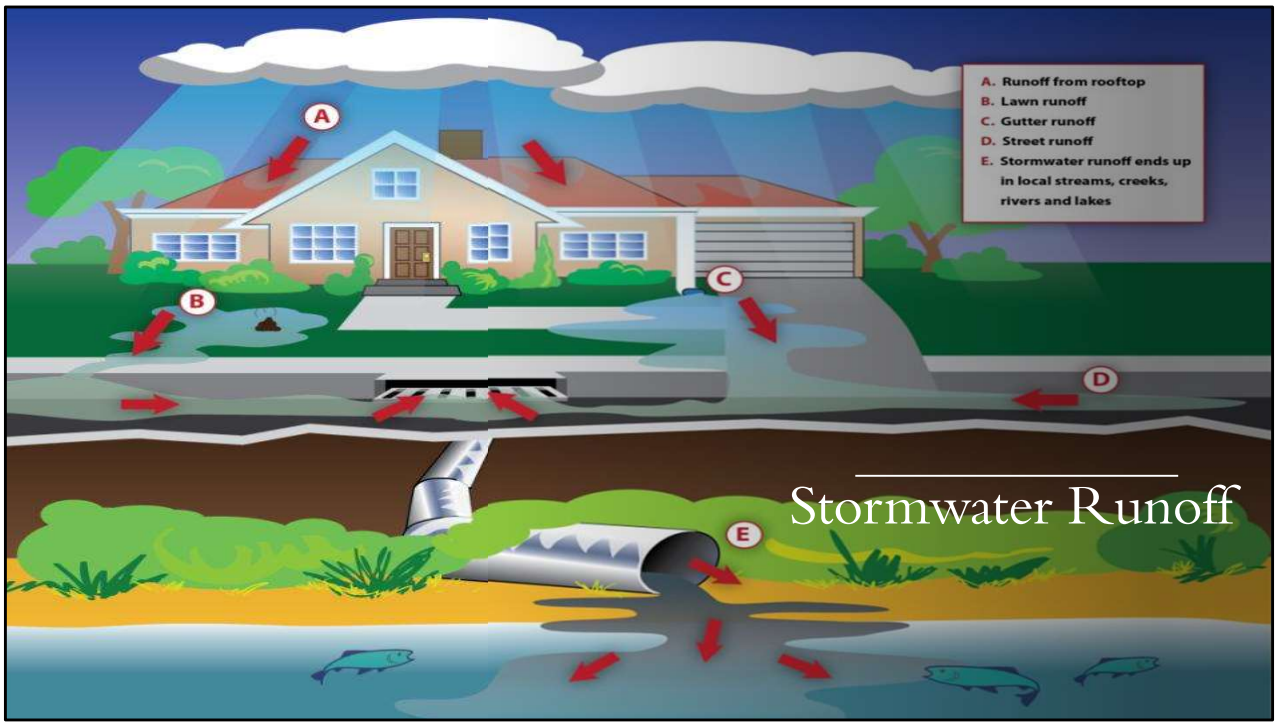
Fecal coliform bacteria
- health risks

Activities associated with construction, landscape installation and maintenance can cause reduced turbidity, lower dissolved oxygen, higher nutrient content, heavy metals and fecal coli form bacteria.

According to IFAS, an impervious surface is a hard surface that doesn't absorb water and prevents water from naturally flowing into the soil. Examples of impervious surfaces include Buildings, Decks, Driveways, Parking lots, Sidewalks, and Roofs.

Think about this picture; imagine water flowing on the surface. Where does it come from, where does it go?
For the most part, urban landscapes are surrounded by impervious surfaces such as sidewalks, driveway, streets and rooftops. An impervious surface that drains to a water body or the stormwater system is called a Directly Connected Impervious Area (DCIA).

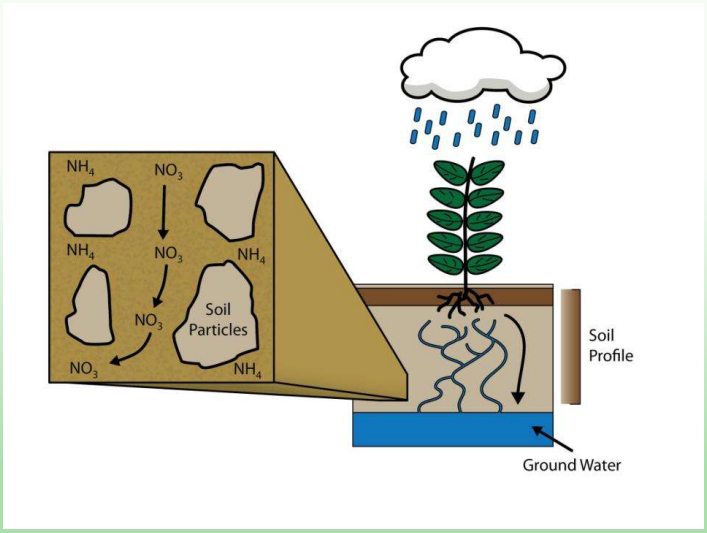
This is a BMP learning point: Fertilizer inadvertently applied on these surfaces has ready access to our water resources through storm drains. This is why it is so important to keep fertilizer off impervious surfaces and to remove any that is spilled on them and deposit it back into the landscape.



Stormwater runoff is the water flow which occurs when soil is infiltrated to full capacity, heavily compacted, or covered with impervious surfaces that do not percolate into the ground. Stormwater is excess water from irrigation, rain, snowmelt, or other sources. When runoff flows along the ground, it can pick up soil contaminants such as petroleum, pesticides, or fertilizers that become nonpoint source pollution.

A land area which produces runoff draining to a common point is called a watershed. Urban watersheds are comprised of storm sewers that transfer stormwater from impervious surfaces to lakes and rivers. Ultimately, all watersheds are connected to each other and to the underground aquifer that supplies most of Florida's drinking water.

Therefore, it is important to implement landscape cultural practices within the urban landscape that protect and conserve water quality. Remember, as a landscape professional it is your responsibility to educate your customers on appropriate cultural practices and why they are important to follow.



Leaching Conditions

NITRATE NITROGEN, NO3 WILL LEACH IN SANDY SOIL TYPES.

Leaching often refers to the loss of water-soluble plant nutrients and other landscape chemicals from the soil, due to excessive rain and irrigation. Leaching is an environmental concern when it contributes to groundwater contamination.

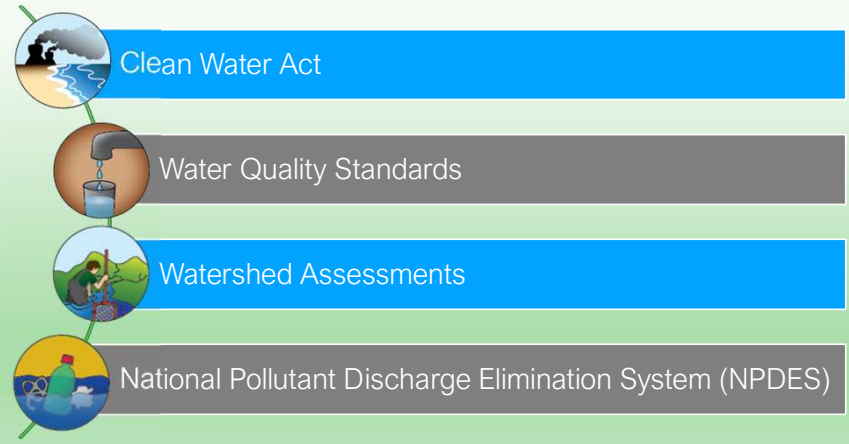
As water from excessive irrigation, rain, flooding, or other sources seeps into the ground, it can dissolve chemicals and carry them into the underground water supply. Of particular concern are hazardous waste dumps, landfills, and excess fertilizer and improperly stored animal manure.

Nitrate nitrogen, NO_3 can leach in sandy soil types under certain conditions. Therefore, soil texture, cover selection, type and application rates of fertilizers all should be considered to avoid excessive nutrient loss.

Let’s begin by discussing the Federal, state and local laws affecting water quality and landscape management.
Federal legislation regarding water quality began with the “Clean Water Act”.

Since the passage of the Clean Water Act and the formation of the U.S. Environmental Protection Agency, tremendous strides have been made in cleaning up our air and water. Most of this cleanup has been accomplished through permitting and the regulation of point sources of pollution such as factory smokestacks and sewage discharges.

FEDERAL LEGISLATION



The Clean Water Act began in 1948 as the Federal Water Pollution Control Act. This act was revised in 1972 and amended again in 1977. The act authorized the EPA to implement pollution control programs.

Water Quality Standards are either numeric or narrative standards for a water body that will permit that water body to maintain its designated use.

Watershed Assessments are required if waters are impaired and are reported to EPA and National Pollutant Discharge Elimination System (NPDES).

NPDES permits control the discharge of point sources into waters of the United States.

Impaired Waters/TMDLs

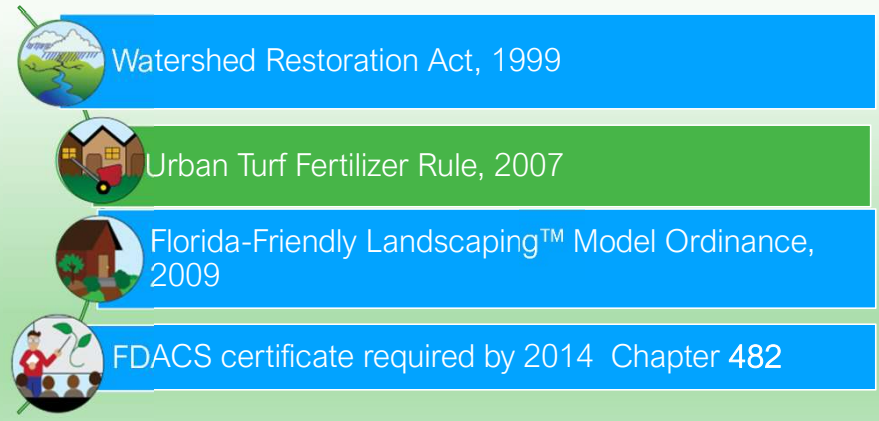
- Impaired waters are those not meeting water quality standards and designated uses of a water body.
- Total Maximum Daily Loads (TMDLs) are the maximum amount of pollutant loading that a water body can receive and be healthy.
- Watershed pollutant loads must be reduced to meet the TMDL.

Directed by the Clean Water Act, EPA requires states to monitor and report on water quality using standards agreed upon by federal, state and local regulators. Designation of an impaired waterbody directly affects the landscape practices you perform in the designated area.

Waterbodies that do not meet water quality standards are identified as "impaired" for the particular pollutants of concern such as nutrients, bacteria, mercury, etc. In order to clean up the impaired waterbody, it requires an analysis and a management plan. The process begins by determining the Total Maximum Daily Loads (TMDLs) for the impaired waterbody.

TMDLs are based on a scientific determination of the maximum amount of a given pollutant that surface water can absorb and still meet the water quality standards.

State Legislation Timeline



Surface waters in Florida have become very sensitive to even small additions of pollution, which have caused widespread ecosystem changes in our sensitive estuaries, lakes, rivers, and the Everglades. As a result, state legislation and local codes were enacted.

In the following slides, we will highlight these rules and regulations, and follow with more detailed discussion in later modules:

- The Florida Watershed Restoration Act of 1999
- The Florida Urban Turf Fertilizer Rule of 2007
- Florida-Friendly Landscaping™ Model Ordinance, 2009

Last, we will discuss the law requiring all commercial fertilizer applicators to acquire the Limited Commercial Fertilizer Applicator Certificate (LCFAC), issued by Florida Department of Agriculture and Consumer Services.

Florida Watershed Restoration Act

Established:

- **Total Maximum Daily Load (TMDL) program for state ground and surface waters required by the Clean Water Act.**
- **A process to identify and list state impaired waters, including point and nonpoint sources.**

The Florida Legislature enacted the Florida Watershed Restoration Act (FWRA) in 1999 to protect Florida's waters through the Total Maximum Daily Load (TMDL) program for state ground and surface waters as required by the Clean Water Act (CWA). By definition, a TMDL is the total amount of pollution discharge from all sources that a water body can assimilate and still meet water quality standards. Furthermore, TMDL can also refer to a document that describes the discharge allocations. An implementation plan must be developed describing how to handle the point and nonpoint sources of pollution. A plan must be formulated by the community to meet their discharge allocations. This implementation plan is referred to as Basin Management Action Plan, or BMAP.

FDACS: Urban Turf Fertilizer Rule

- **Regulate nitrogen and phosphorus content.**
- **Local governments may require applicators to follow label instructions.**
- **Defined "specialty turf fertilizer".**

In 2007, the Florida Department of Agriculture and Consumer Services adopted rule 5E-1.003(2), labeling requirements for urban turf fertilizers. It is important to note that the 2007 Urban turf rule is an administrative Rule, not legislation.

This rule regulates how much nitrogen and phosphorus the bag may contain. It also directs the manufacturer to recommend the use of BMPs for professional applicators and golf course or athletic field managers. While this rule only applies to the manufacturer's label for fertilizer, many local government ordinances, and future state requirements, may require that applicators abide by the recommendations on the label. In addition, weed and feed products are legally pesticides. For pesticide – fertilizer combination products the label recommendation carries the full force of state and federal law.

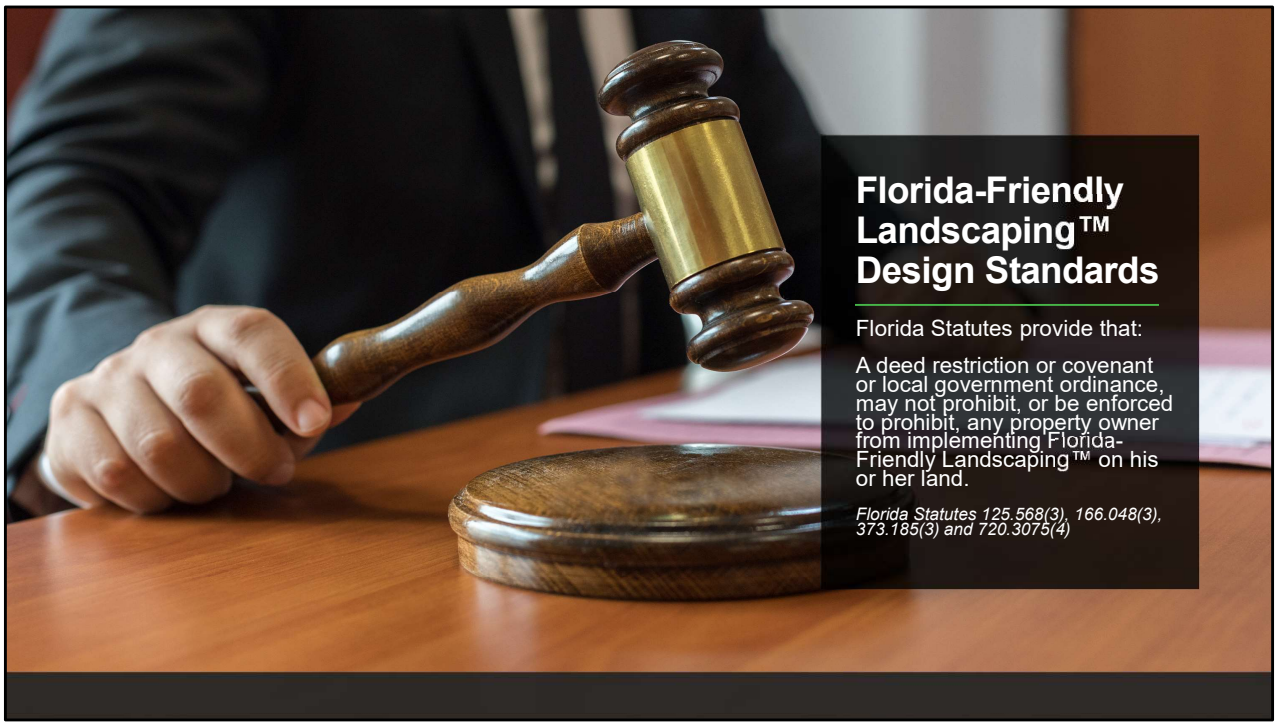
Model Ordinance for Florida-Friendly Fertilizer Practice

- Minimum requirement for local ordinances within a watershed with impaired water bodies
- Implementation of local control of water use and nonpoint source pollution issues
- Local government may adopt more stringent standards

Excessive nutrient loading to Florida's surface and ground waters is one of the biggest water quality issues facing our state. It is far easier and less expensive to minimize the amount of nutrients that get into our waters than it is to treat stormwater and other nonpoint sources of pollution to remove nutrients.

In early 2009, a fertilizer-only model ordinance and a revised general ordinance were published. That year, the legislature passed Florida Statute 403.9337, which made the Model Ordinance for Florida-Friendly Fertilizer Use on Urban Landscapes a minimum requirement for each county and municipal government located within the watershed of a water body or water segment that is listed as impaired.

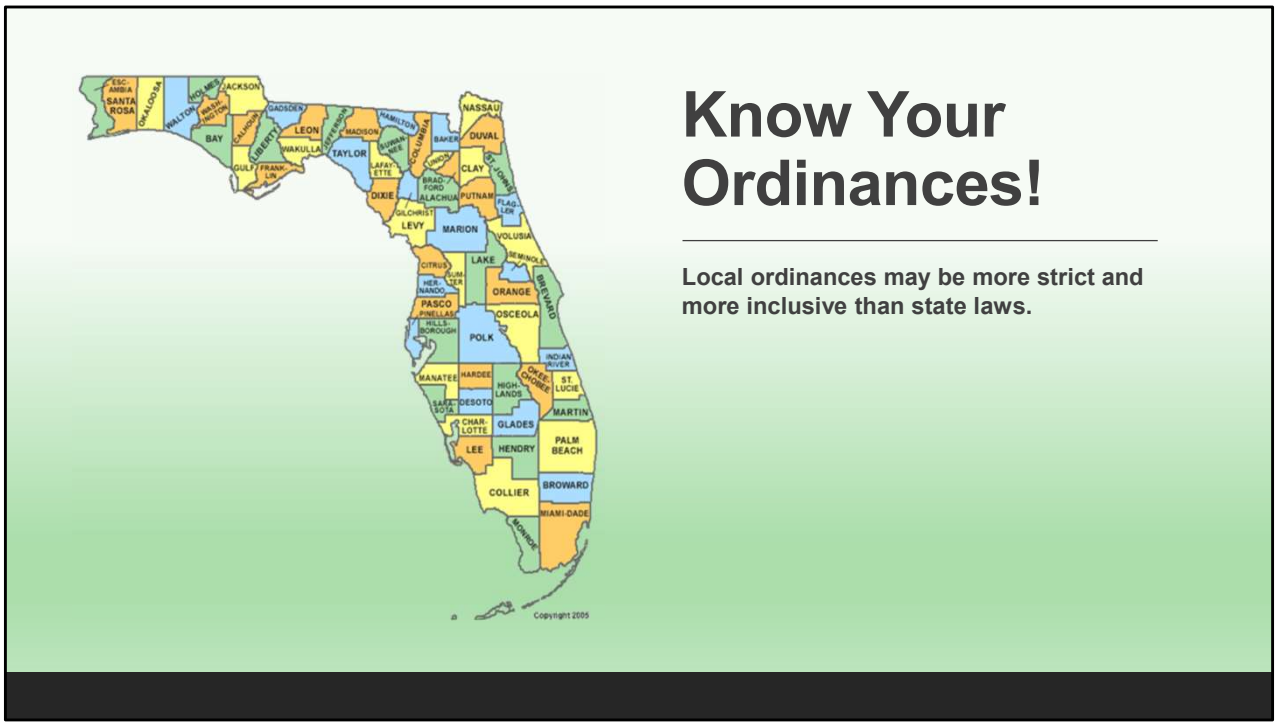
A local government may adopt additional or more stringent standards than the model ordinance as described in the Florida Statutes.



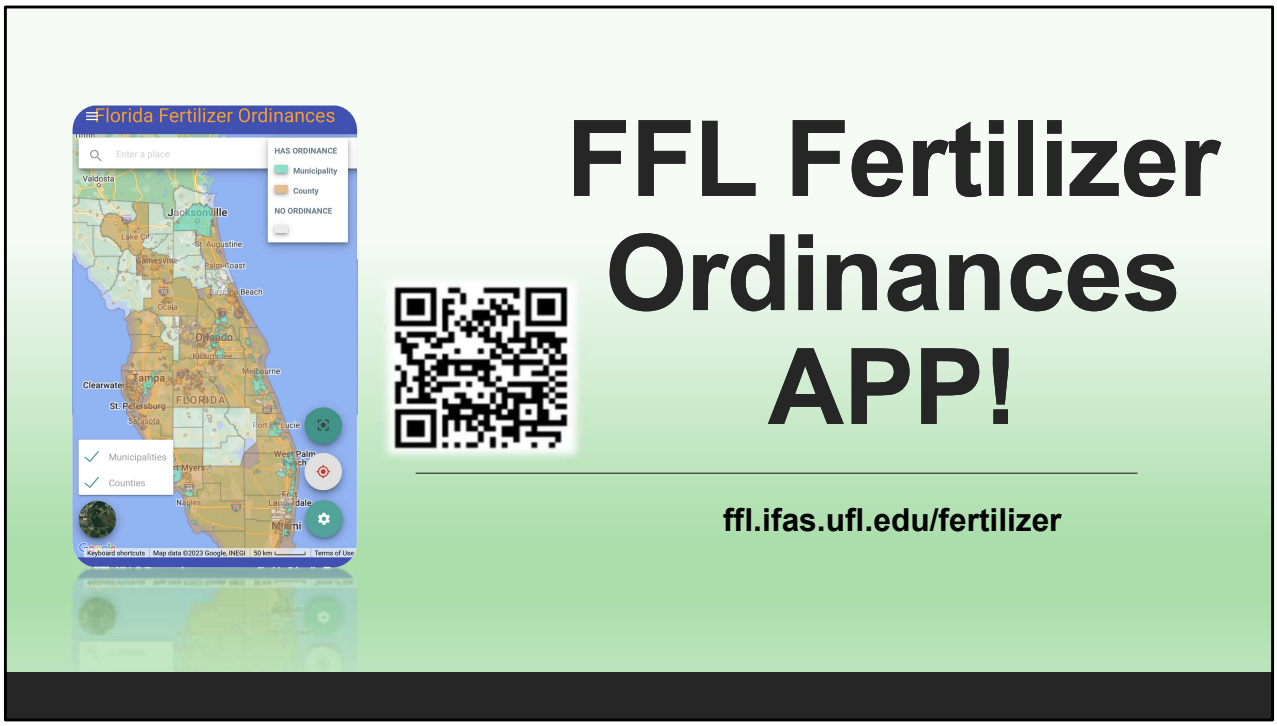
In 2009 the legislature revised Florida statute 373.185 to prohibit local, even private, prohibitions on implementation of FFL. It also recognized FFL as the official state landscaping program and a partnership between FDEP and UF/IFAS and directed Water Management Districts to use the FFL publications and programs, while allowing them to continue to address local needs with additional materials.

The law also redefined the nine principles of Florida-Friendly Landscaping and components of Florida-Friendly Landscaping include planning and design, soil analysis, the use of solid waste compost, practical use of turf, and proper maintenance.

This Legislation does not invalidate your local architectural review board.



The Florida Legislature identified a model ordinance as a minimum to be followed for local ordinances. Know the ordinances regulating fertilizer or landscape practices in your area. Local ordinances may be stricter and more inclusive than state laws.



The Florida Fertilizer Ordinances mobile web application provides a quick and convenient reference to the state's many local fertilizer ordinances.

FEATURES

- Search map to find ordinance details for specific address, city, county, or current location.
- View a summary of key restrictions and requirements.
- Customize map display.
- Link to the full ordinance text.
- Uses Google Maps features with full detail for street view or satellite view.
- Use on any device with browser and internet access.

This free web app is designed for mobile devices but can be used on a computer, too. Nothing to download. Internet connection required.

Florida Legislation Requires

All commercial fertilizer applicators must have the Limited Commercial Fertilizer Applicator Certificate (LCFAC).

- **Florida Department of Agriculture and Consumer Services (FDACS)**
- **Application fee is $25**
- **Must be renewed every 4 years (Requires 4 CEU's)**

For More Information:

Telephone: 850-617-7997

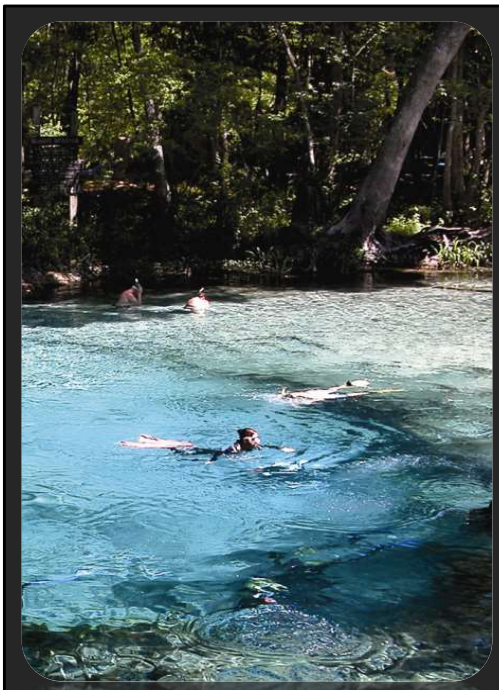
To Apply: https://aesecomm.fdacs.gov

Bureau of Licensing and Enforcement

Website: https://www.fdacs.gov/Business-Services/Pest-Control/Licensing-and-Certification

"Commercial Fertilizer Applicator", as defined in Florida Statute 482.021(6) , means any person who applies fertilizer for payment or other consideration to property not owned by the person or firm applying the fertilizer or the employer of the applicator.

In 2009, new laws were passed that will require all commercial urban landscape fertilizer applicators to obtain and maintain a Limited Commercial Fertilizer Applicator Certificate (LCFAC) From the Department of Agriculture and Consumer Services by January 1, 2014. An application fee of $25 is required.

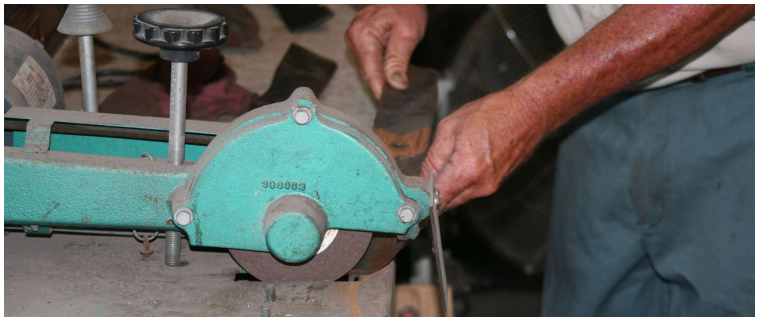


Best Management Practices

A practice or combination of practices determined by the coordinating agencies, based on research, field-testing, and expert review, to be the most effective and practicable on-location means, including economic and technological considerations, for improving water quality in agricultural and urban discharge.

Chapter 373.4595 Florida Statutes

Per Florida Statute, c*hapter 373.4595 Florida Statutes:* "Best management practice" is defined as a practice or combination of practices determined by the coordinating agencies, based on research, field-testing, and expert review, to be the most effective and practicable on-location means, including economic and technological considerations, for improving water quality in agricultural and urban discharge. Simply put, BMPs are the best ideas of the best companies, coupled with science, and applied with judgment and common sense.



What Are Cultural Practices?

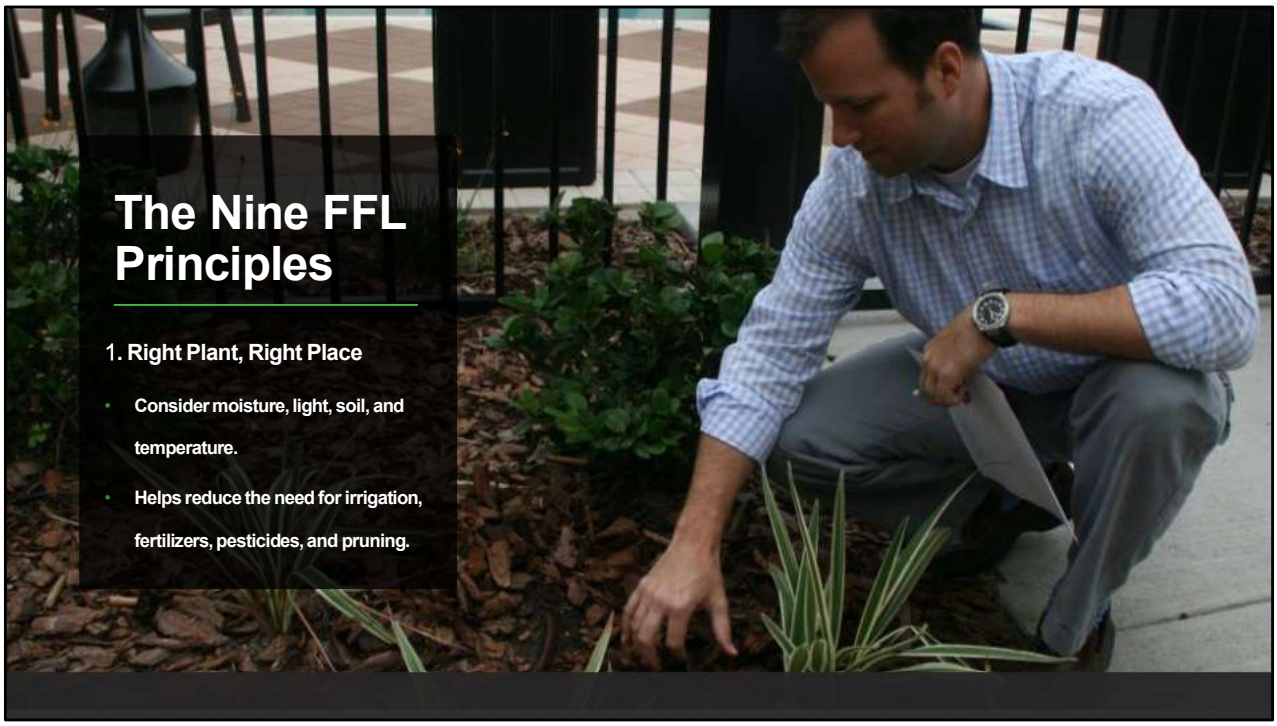
Using appropriate cultural practices correlates directly to the amount of fertilizers, pesticides, and water used in a landscape. Today's training recommendations are based on the Florida-Friendly Landscaping™ principles that provide a healthy landscape with minimum negative effects on the environment.

Adopting appropriate cultural practices is essential to reducing nonpoint source pollution associated with urban landscape maintenance. Nonpoint source pollution can be reduced simply by adopting recommended cultural landscape practices, for example appropriate irrigation, fertilization, mowing and pruning procedures. When each of these is performed properly, the need for pesticides is reduced because plants and turfgrasses are healthier and tend to have fewer pest problems Get the picture?

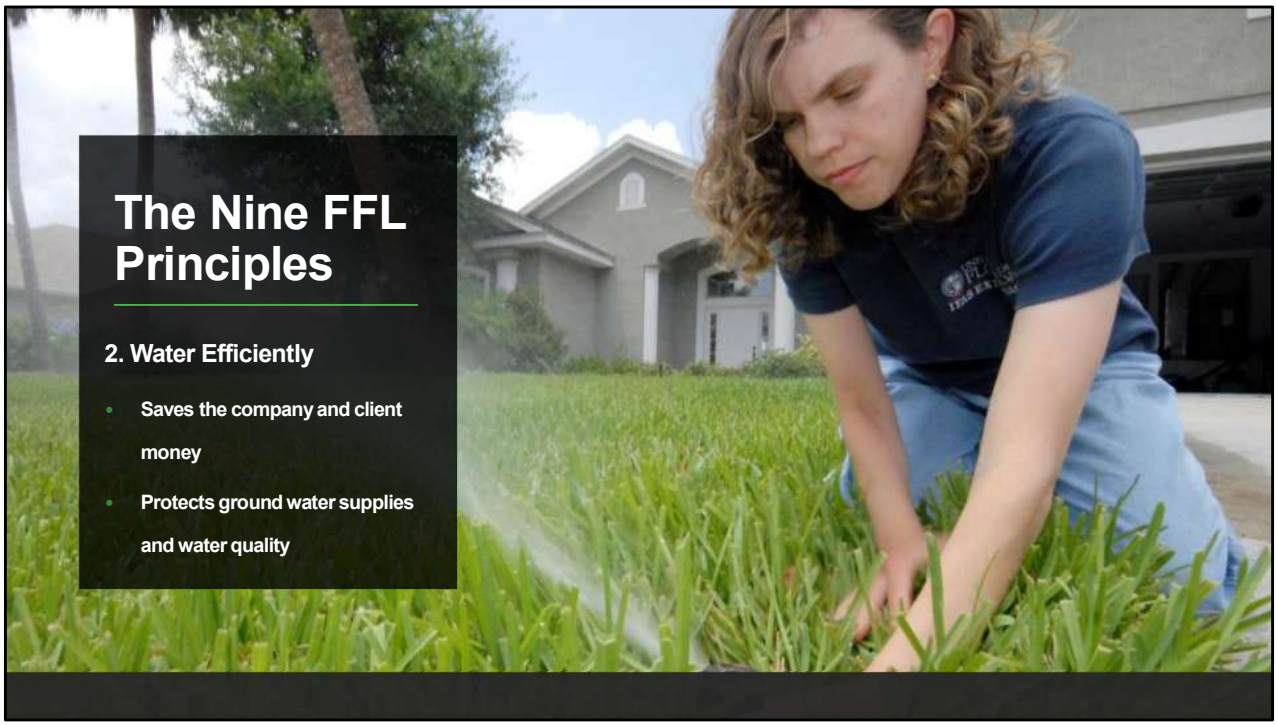
Florida-Friendly Landscaping™ (FFL) is defined as a quality landscape that is designed, installed, and maintained according to science-based FFL principles that conserve and protect FL's water and natural resources by reducing nonpoint source pollution.

The FFL PROGRAM teaches Floridians (homeowners, builders, developers, landscape maintenance professionals, and other Florida citizens) how to implement SCIENCE-BASED environmentally sound design and maintenance techniques in landscapes.

The Florida-Friendly Landscaping™ program delivers science-based education to Green Industry professionals, homeowners, homebuilders, developers, and other audiences. The program is a partnership between the Florida Department of Environmental Protection, Florida Department of Agriculture and Consumer Services, water management districts, and the UF/IFAS Environmental Horticulture Department in association with the Center for Land Use Efficiency (CLUE).



The first Florida-Friendly Principle is Right plant, right place. Because many of the plants used in Florida vary widely in their adaptation, consideration should be given to choosing grasses and other plants that are suited to their particular environment. Selecting the Right plant, right place considers moisture, light, soil, temperature and other characteristics of the planting site.

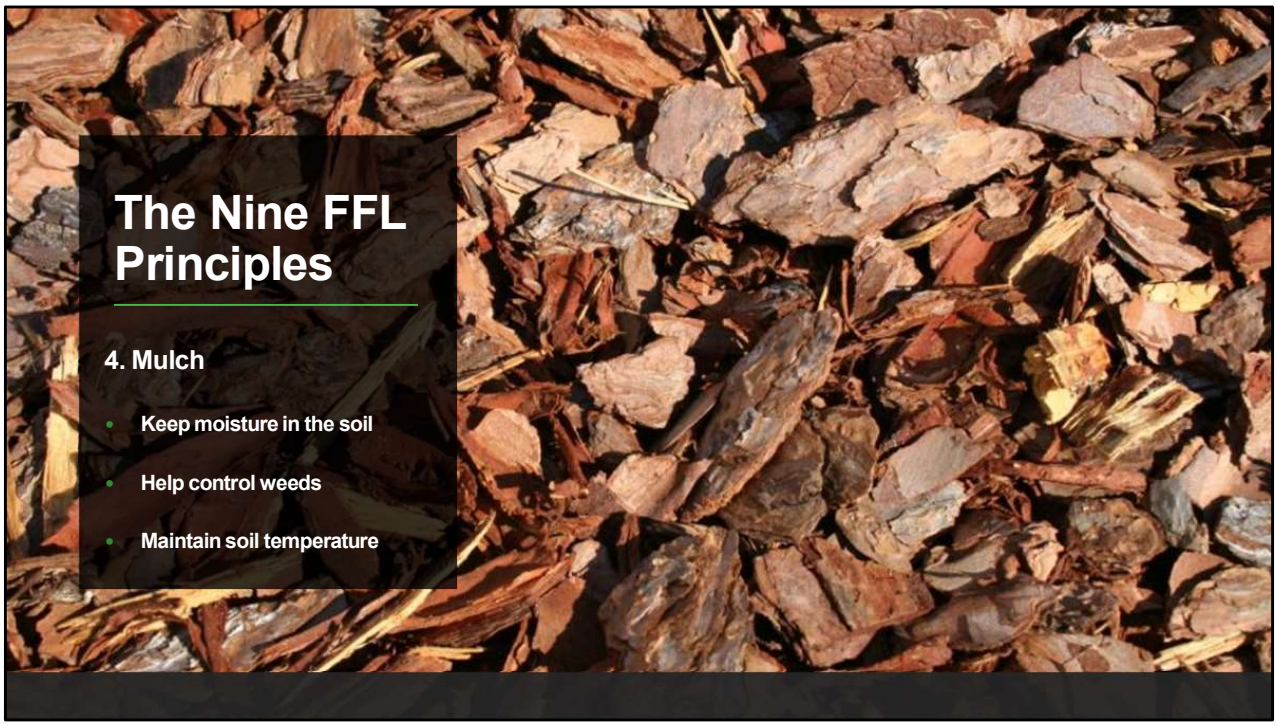


Principle number 2 - Water Efficiently

Saves the company and client money and protects ground water supplies and water quality.
We all know water is a limited resource and should be used wisely, but we often overwater our landscapes unintentionally. Irrigation management, knowing when and how much to irrigate is the cornerstone of water conservation and reducing nonpoint source pollution.
By choosing and operating a watering system correctly, you can reduce water bills, decrease plant problems, and lower maintenance requirements.

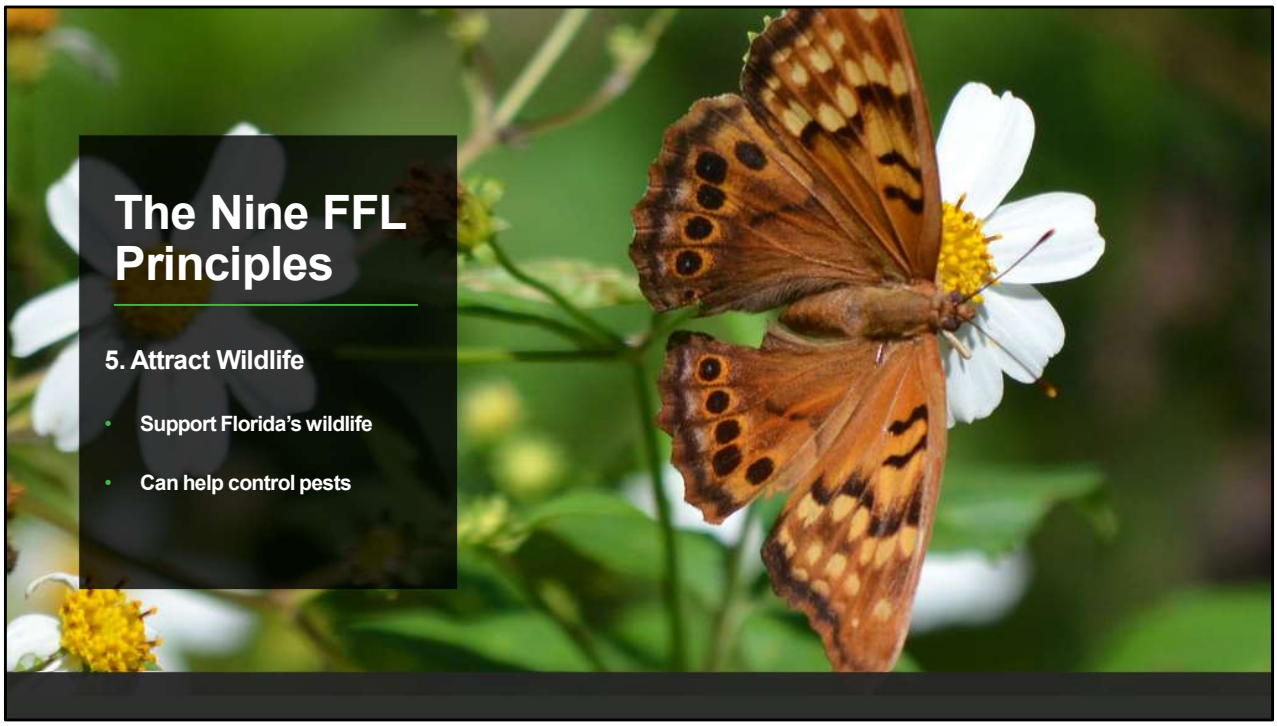
Principle Number 3. Fertilize appropriately to prevent pollution and maximize plant health.

Time fertilizer applications to maximize the plant's use of the nutrients and minimize adverse environmental impacts. Plants use the most nitrogen during periods of high growth, and less when dormant. Too much fertilizer can weaken a plant promote disease incidences and increase pest problems. In addition, mistimed or over-applied fertilizer wastes money and harms the environment. It may also mean more pruning and mowing. So consider your plants' needs carefully before applying any fertilizer.



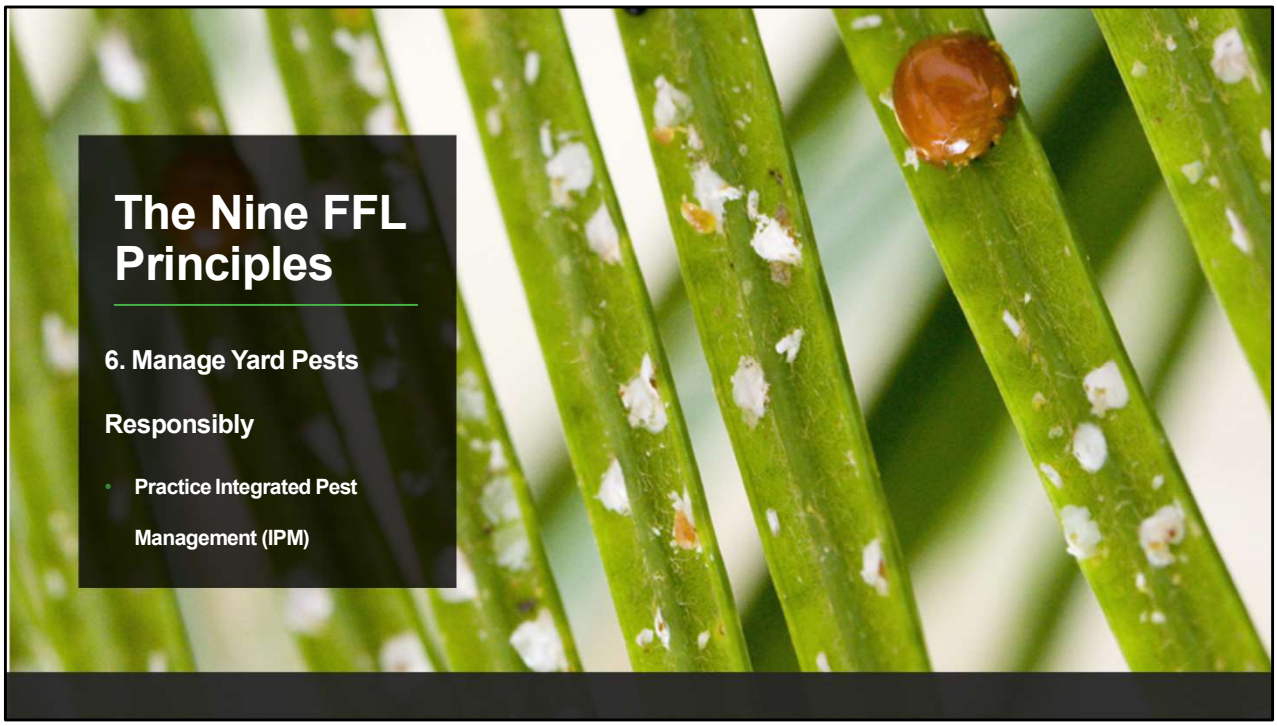
Principle Number 4. Apply Mulch

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



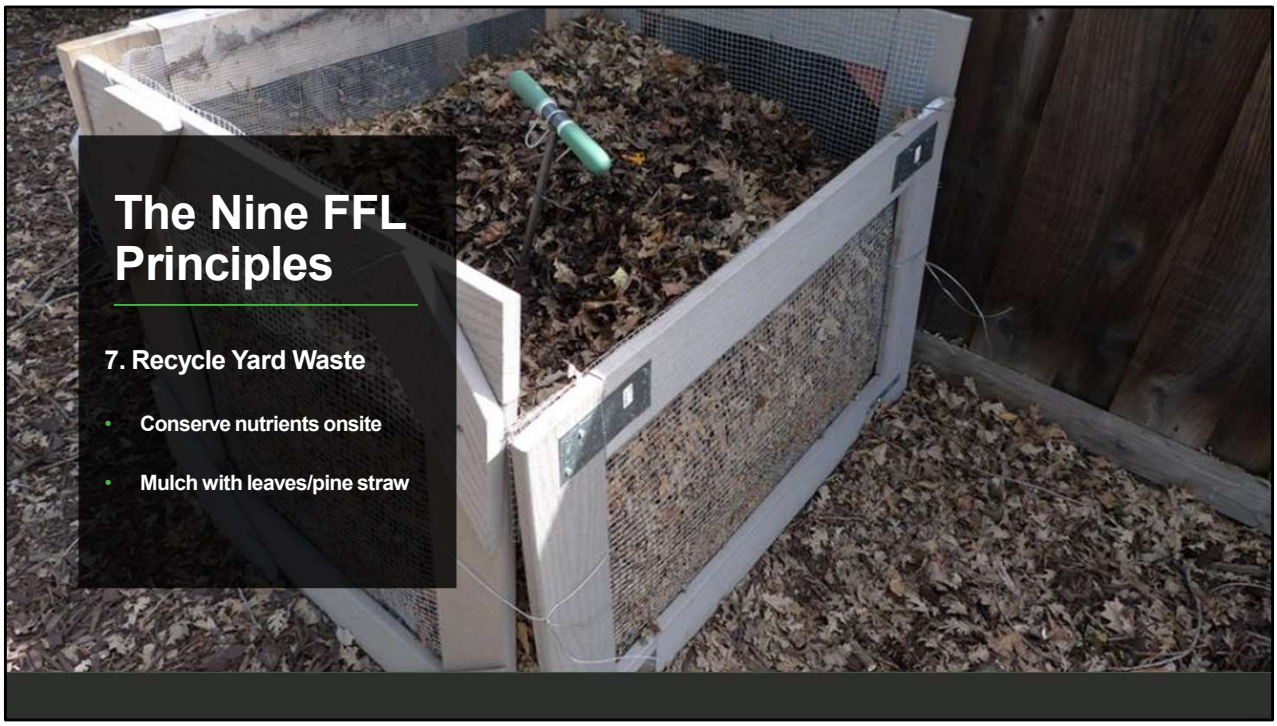
Principle Number 5. Attract wildlife.

Animals have trouble living in today's heavily urbanized landscape. By providing food, water, and shelter for birds, butterflies, bats, and others, you can help these displaced Floridians while bringing beauty and benefits to your home landscape. Select a variety of plants arranged in layers that provide seeds, fruit, foliage, flowers, or berries that animals can eat. Supply water, such as a rain garden or bird bath. Leave snags (dead trees), if they do not create a hazard, for birds to perch and nest in.



Principle Number 6. Manage yard pests responsibly.

Concerns for human and environmental health have led scientists to recommend Integrated Pest Management (IPM), a strategy that helps manage pests with as few chemicals as possible.

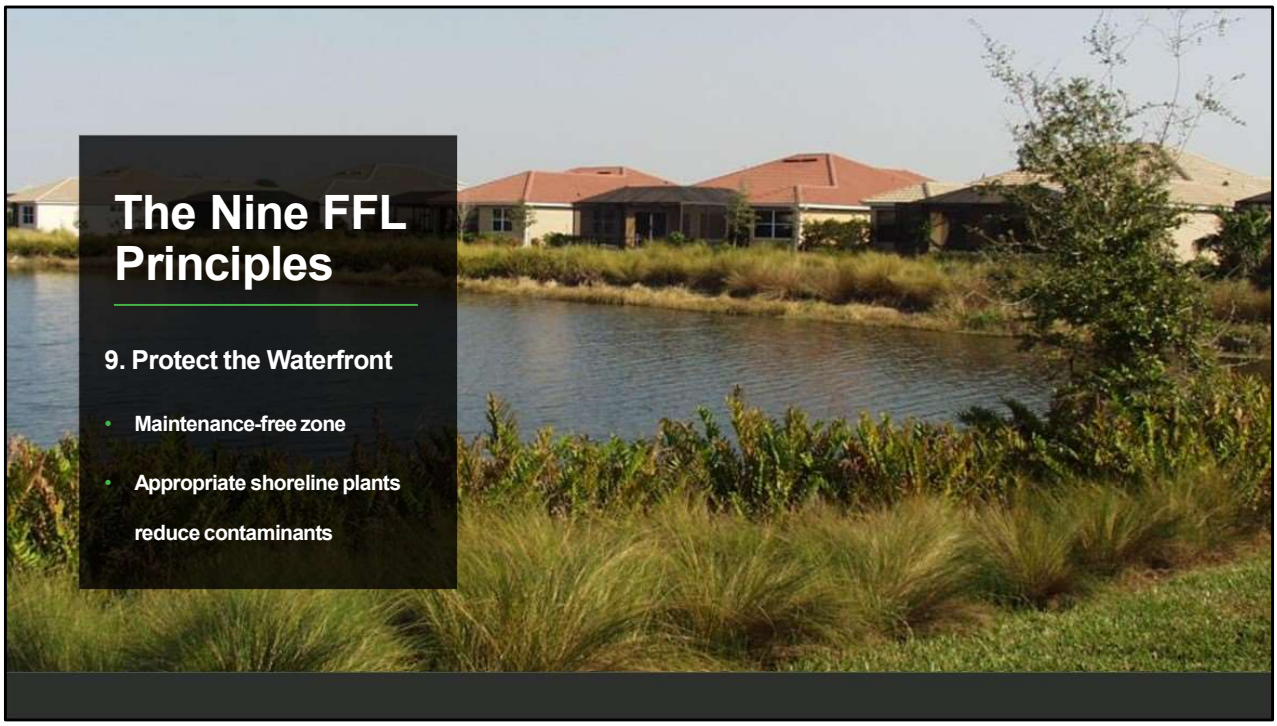


Principle Number 7. Recycle yard waste.

Landscape maintenance activities like pruning generate yard waste that you can recycle to save money. Encourage clients to recycle leaves, pruned branches and small clippings. Once decomposed, the organic matter can be returned to their landscapes, releasing nutrients back to the soil in a form that plants can easily use.

Principle Number 8. Reduce stormwater runoff.

Reduce stormwater runoff. Because Florida's groundwater is so close to the surface, the health of our groundwater is directly linked to the health of our visible water bodies, and the ways we maintain our landscapes can have a powerful impact on both groundwater and surface waters. Stormwater runoff occurs when a rainstorm washes exposed soil, landscape debris, oil, fertilizers, and pesticides off your landscape and into surface water bodies. A healthy, properly maintained lawn and landscape can absorb and/or filter stormwater runoff, helping to protect Florida's waters.



Principle Number 9. Protect the waterfront.

The last principle, but extremely important, is protect the waterfront. Florida boasts over 10,000 miles of rivers and streams, about 7,800 lakes, more than 700 freshwater springs, and the U.S.'s second-longest coastline. Even if you don't perform maintenance directly on one of these water bodies, you do work in what's known as a watershed (a drainage area). What you do in the landscape has much farther-reaching consequences than you might think. One of the most important steps you can take to protect any water body is maintaining a 10-foot "maintenance-free zone" around it. Do not mow, fertilize, or use pesticides in this zone. Don't let any grass clippings or pet wastes get into the water, as these carry nutrients and harmful bacteria.

Now that you have reviewed the overview module, you should be able to:

- Describe how GI-BMPs address environmental issues according to federal, state and local laws.
- Define nonpoint source pollution and its negative impacts on the environment.
- Explain how urban stormwater systems function.
- Describe landscaping principles that protect Florida's water resources.

This concludes the overview module.