

## Green Industries Best Management Practices for Turfgrass Managers






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## Objectives

- Understand why we need to protect our water resources in terms of conservation & quality
- Understand your role as a Green Industries professional
- Learn who needs to be GI-BMP certified
- Learn how to become GI-BMP certified
- Know what the ordinances cover
- Understand fertilizer basics




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Water is one of Florida's Most Valued Resources

## Water Facts

- 54,836 miles of rivers & streams (1,700 rivers & streams)
- 49,128 miles of canals & ditches
- 1.8 million acres of lakes, reservoirs & ponds
- 1,000 springs
- 11 million acres of wetlands
- 1,350 miles coastal shoreline, largest in 48 contiguous states
- Underlying aquifers supply freshwater needs
- Renewable but finite


## Water Facts



For at least the past 20 years, surface waters in Florida have become very sensitive to small additions of pollutants.

This causes widespread ecosystem changes in estuaries, lakes, rivers & the Everglades.

## Water Facts



Population growth increases water needs

1990 - 12,937,926	2011 - 19,057,542
Tampa/St Pete/Clearwater - 2,824,724	
Population Rank - 4th in U.S. behind California, Texas & New York	

**W H Y C O N S E R V E W A T E R**

Florida population estimated to increase at least 25% by 2020 to 21.8 million

- Worldwide increase 1 billion by 2030, 2 billion by 2050
- How to feed increasing population
- How climate change affects resources & production

Florida will need 26.4% more water – 9.1 billion gallons of fresh water every day

Water supply needs already exceed capacity in some areas

- Water accessibility
- Competition between urban, agricultural & recreational uses
- Purposeful landscapes

**W H Y P R O T E C T Q U A L I T Y**

2012 Integrated Water Quality Assessment Report of Florida impaired surface waters

- Pathogens: 19.5% impaired  
44.6% cannot attain designated use
- Nutrients: 13.1% impaired  
62.3% cannot attain designated use
- 91.8% impaired by mercury

Groundwater

- Localized nitrate impacts
- Increasing saltwater intrusion in coastal areas

Balancing economic growth & development with protecting water resources

**Reactive & Proactive Efforts**

**Numeric Nutrient Criteria**

The maximum nitrogen &/or phosphorous concentration in a water body that will maintain it's designated use.

**Total Maximum Daily Loads**

The maximum amount of a pollutant that a body of water can receive (assimilate) while still meeting water quality standards. Alternatively, an allocation of that water pollutant (discharge) deemed acceptable to the subject receiving waters.

**Reactive & Proactive Efforts**

**Basin Management Action Plan (BMAP)**

- The "blueprint" for restoring impaired waters by reducing pollutant loadings to meet the allowable loadings established in a (TMDL).
- Represents a comprehensive set of strategies
  - Permit limits on wastewater facilities
  - Urban & agricultural **Best Management Practices**
  - Conservation programs
  - Financial assistance & revenue generating activities
- Hillsborough Tributaries Adopted & Tampa Bay Restoration Activities

**Reactive & Proactive Efforts**

**Florida Urban Turf Fertilizer Rule**

- Regulates how much nitrogen & phosphorous fertilizer may contain
- Manufacturer must recommend the use of BMPs

**Florida Friendly Landscaping™ Model Ordinance**

- Minimum standards to be followed for local ordinances

**Local Ordinances**


- Stricter & more inclusive than model ordinance
- Vary from municipality to municipality

**Reactive & Proactive Efforts**

**Green Industries Best Management Practices**

- FDEP & UF/IFAS Extension Florida Friendly Landscaping™ Program
- Intended to enhance your professional knowledge & role in protecting Florida's water & resources
- Designing, mowing, pruning, planting, weeding, fertilizing, watering, pest management & educating your customers

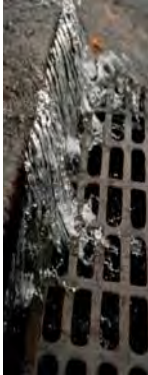
### Practicing GI-BMPs Reduces Pollutant Inputs



- Non-point source (NPS) pollution is air and water pollution from diffuse sources.
- Diffuse sources means that pollutants come from large spread out areas and so a single source point cannot be identified.
- Although the pollution has original sources, the ability for the pollutants to move long distances, combined with multiple sources of the pollution, make it NPS pollution.

NON POINT SOURCE


### Attention is being focused on stormwater pollution related to urbanization



- Urbanization produces a wide variety of pollutants and large amounts of runoff.
- As little as 10 percent impervious cover in a watershed can result in water body degradation.
- Did you know that a typical city block contributes greater than five times more runoff than a woodland area of the same size?


RUNOFF & LEACHING

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



RUNOFF & LEACHING

## 9 FFL Principles

1. Right plant, right place 
1. Water efficiently 
1. Fertilize Appropriately 

## 9 FFL Principles

4. Apply mulch 
4. Attract Wildlife 
4. Manage pests responsibly 

## 9 FFL Principles

7. Recycle yard waste 
7. Reduce stormwater runoff 
8. Protect the waterfront 

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**Who Should be Certified?**

- Everyone who maintains landscapes

**Who Is Required to be Certified?**

- Anyone who applies fertilizer for hire
- Anyone who supervises the application of fertilizer

## What Do You Need To Do?

1. Become GI-BMP Certified
  - Attend a GI-BMP training class
  - Score minimum 70% on the test
2. Display the county issued Fertilizer Use and Landscape Management vehicle decal on all work vehicles.
  - Download Hillsborough application at: <http://www.epchc.org>

## What Do You Need To Do?

3. Get the FDACS Limited Urban Fertilizer Certification before January 1, 2014
  - Download the application at: <http://www.freshfromflorida.com/onestopn/forms/13677.pdf>
  - Mail copy of GI-BMP Certification and \$25 with application.

## What Do You Need To Do?

4. Implement the Fertilizer & Landscape Management Rules and Green Industries Best Management Practices in your business
5. Educate your clients about Landscape Best Management Practices & what they can do to reduce water pollution.

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- GI-BMP Certification does not expire
- FDACS Limited Urban Fertilizer Certification renews every 4 years with 4 CEUs
- Renewal application & CEUs must be submitted at least 90 prior to certification expiration
- FDACS has not released CEU information yet

## Fertilizer Use Rules

- Do not fertilize when heavy rainfall is expected
- Sweep up spills
- Store properly
- Ring of responsibility
  - Use a deflector shield near water
  - Leave at least 3' untreated buffer
  - Without deflector shield leave 10' ring
  - Ordinances may vary, follow required fertilizer-free conservation easements and stormwater treatment buffers



## Fertilizer Use Rules

- **Fertilizer content & application rates restricted**
  - No more than 1 lb. N/1000 sq. ft./application if slow release
  - No more than 0.5 lb. N/1000 sq. ft./application if quick release
  - No phosphorous unless soil test indicates need
  - N/P ratio no higher than 4:1 ratio or calculate for P at 0.5 lb P/1000 sq.ft.
  - No fertilizer applications to newly established turf (30-60 days)
  - Black out periods from June - September
- **No fertilizer deposits on impervious surfaces**
  - Sweep up spills
  - Deflector shields may be required
- **Fertilizer free zones (Ring of Responsibility)**
  - Vary from 3' to 10'

## Fertilizer Use Rules

- **Manage fertilizer, grass clippings, other vegetation**
  - Do not wash, blow, sweep or cause clippings, leaves or other vegetative material to be deposited in storm drains, ditches, drainage conveyances, sewer systems, surface waters, or roadways
- **All commercial applicators shall successfully complete the DEP UF/IFAS Green Industries Best Management Practices training**
  - May include supervisors
  - May include government & institutional applicators
  - Need vehicle decals issued by County
- **Enforced by law enforcement agencies as directed by State or Counties**

## Is This a GI-BMP?



## Is This a GI-BMP?

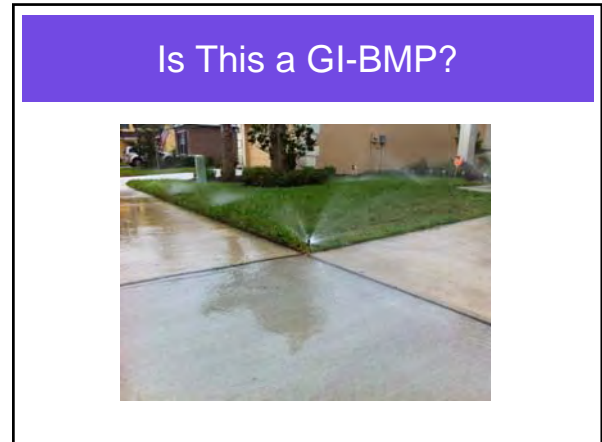


## Is This a GI-BMP?



## Is This a GI-BMP?





### Fertilizer Objectives

- Understand why we fertilize
- What you need to know before fertilizing
- Interpret a fertilizer label
- Calculate the amount of fertilizer to apply
- Apply correctly
- Main components of Fertilizer Use & Landscape Management Rule

- Contains one or more recognized plant nutrients
- Promotes plant growth
- Controls soil acidity or alkalinity
- Provides other soil enrichment
- Provides other corrective measures to the soil

Fertilizer Defined

### Why Do We Fertilize?

Natural sites grow without fertilizer, so why supplement the urban landscape?

- Increase plant growth
- Enhance color
- Correct deficiencies
- Establish plants

### Before Fertilizing

- Know the needs of the plant
- Know the form(s) of Nitrogen in the bag
- Know your location in the state for soil type & climate conditions & soil pH
- Know proper application methods
- Calculate the rate of application
- Know proper fertilization handling: spreader calibration, loading, storage, disposal

## Plants Require Various Nutrient Types

**From Environment:**


- Carbon
- Hydrogen
- Oxygen

**Macronutrients:**

- Nitrogen
- Phosphorus
- Potassium
- Calcium
- Magnesium
- Sulfur


**Micronutrients:**

- Iron
- Manganese
- Boron
- Copper
- Molybdenum
- Zinc
- Nickel



## Soil pH Affects Nutrient Availability

- Soil pH is a measure of the acidity or alkalinity of the soil
- A value of 7 is neutral, pH values less than 7 are acidic, & pH values greater than 7 are alkaline
- pH ultimately affects growth & quality of landscape plants by influencing the chemical form of elements in the soil & soil microbial processes
- Landscape plants exhibit nutrient deficiency or toxicity as a result of soil pH
- Many landscape plants do fine in Florida soils with pH in the 5.0 to 6.8 range
- Test for & know your soil pH before developing fertilization plan



## Fertilizer Label

**Fertilizer**

**15- 0-15**

- Contains NutriSphere-N®
- Contains iron for improved turf color

**Guaranteed Analysis**

Total Nitrogen (N) .....	15.00%	Urea Nitrogen*
Soluble Potash (K <sub>2</sub> O).....	15.00%	
Iron (Fe).....	5.00%	

Plant nutrients derived from urea, potassium chloride and ferric oxide.

Chlorine (Cl).....

Max.....12.67%

\*7.5% nitrogen stabilized with maleic-itaconic co-polymer.

➔ **Ratio**


100%  
Macro Nutrients  
Micro Nutrients  
Inert Dust  
Polymers or Coatings

➔ **Analysis**

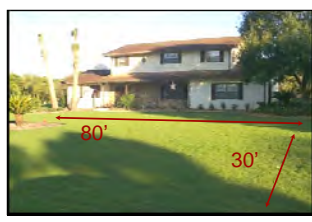
➔ **Slow Release Component**

## Applying Fertilizer

1. Measure the area
2. Calculate the slow release percent
  - Minimum 30%, higher percent is better
3. Calculate the pounds of fertilizer needed to apply the desired amount on Nitrogen for the area
  - No more than 1 lb. N/1000 sq. ft. if slow release
  - No more than 0.5 lb. N/1000 sq. ft. if quick release or water soluble
4. Calibrate your spreader prior to application
5. Water in fertilizer with 1/4 inch of water



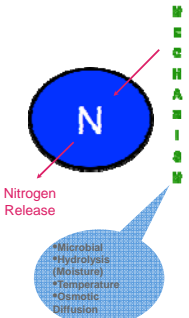
## Measure the Area in Square Feet



80' X 30' = 2400 sq. ft. turfgrass

## Calculate the Slow Release %

- Slow Release aka controlled release (CR) or water insoluble (WIN)
  - No more than 1 lb. N/1000 sq. ft./ application
- Quick Release aka readily available or water soluble
  - No more than 0.5 lb. N/1000 sq. ft./ application
- 15% Nitrogen and 7.5% as slow release
- $0.075/0.15 = 0.5 \times 100 = 50\%$  SR
- Can apply up to 1 lb. N/1000 sq. ft



## Slow vs. Quick Release



The potential for runoff due to heavy rain several weeks after application may be greater with slow release sources



The potential for leaching due to misapplication or overwatering is greater with soluble sources.



The potential for leaching due to heavy rain after applying is greater with soluble sources

## Calculate the lbs. of Fertilizer

**15-0-15 Fertilizer with 50% SR N Component**

How much fertilizer do you need to apply 1 lb. of N/1000 sq. ft. for the 2400 sq. ft. lawn?

- $100/15 = 6.7$  lbs. of 15-0-15 delivers 1 lb. N/1000 sq.ft.
- $2400/1000 = 2.4$
- $6.7 \text{ lbs. } 15-0-15 \times 2.4 = 16 \text{ lbs. fertilizer needed}$

## Calculate the lbs. of Fertilizer

**15-0-15 Fertilizer with 50% SR N Component**

How much fertilizer do you need to apply 0.5 lb. of N/1000 sq. ft. for the 2400 sq. ft. lawn?

- $100/15 = 6.7$  lbs. of 15-0-15 delivers 1 lb. N/1000 sq.ft.
- $6.7/2 = 3.3$  lbs. of 15-0-15 delivers 0.5 lb. N/1000 sq.ft.
- $2400/1000 = 2.4$
- $3.3 \text{ lbs. } 15-0-15 \times 2.4 = 8 \text{ lbs. fertilizer needed}$

## Calculate the lbs. of Fertilizer

**18-2-18 Fertilizer with 30% SR N Component**

How much fertilizer do you need to apply 1 lb. of N/1000 sq. ft. for the 2400 sq. ft. lawn?

- $100/18 = 5.6$  lbs. of 18-2-18 delivers 1 lb. N/1000 sq.ft.
- $2400/1000 = 2.4$
- $5.6 \text{ lbs. } 18-2-18 \times 2.4 = 13.4 \text{ lbs. fertilizer needed}$

## Calculate the lbs. of Fertilizer

6% N (Low)	➔	Larger amounts of fertilizer
15% N (Medium)	➔	Medium amounts of fertilizer
46% N (High)	➔	Very low amounts of fertilizer

## Calibrate Your Spreader

- Every spreader delivers at a different rate
- Swath width/turn radius
- Spreader parts wear over time resulting in different delivery rates
- Fertilizer granular size differs by manufacturer
- People walk at different speeds
- Time of day makes a difference
- Weight of material in hopper makes a difference





## Apply Correctly

Use the right kind of spreader & spreading techniques




The collage consists of four photographs. The top-left photo shows a green spreader on a dirt path. The top-right photo shows a green spreader on a lawn. The bottom-left photo shows a lawn with distinct stripes from a lawnmower. The bottom-right photo shows a person pushing a green spreader on a lawn.

## Apply Water



**~1/4 Inch**

- Apply just enough water to move fertilizer granules off leaf blades
- Helps to prevent fertilizer burn



The photograph shows a sprinkler system watering a green lawn. The water is being sprayed in a fan shape, creating a misty effect over the grass.

## Questions



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