

Trends in Turf Nutrition: *Balancing Environmental Protection and Turf Performance*

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Overview

- Fertilizer License Requirement
- Urban Turf Rule Revision
- Sticking to the UF/IFAS Recommendations
- Does the Soil Test Lie?
- Fertilizing Damaged Turf



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The axe has fallen. . .

- Beginning January 2014, ALL commercial fertilizer applicators MUST BE certified by FDACS in order to make ANY TYPE of fertilizer application to:
 - Commercial turf or ornamental areas;
 - Turf or ornamental areas of parks or fields (other than agricultural areas);
 - Turf or ornamental area of any residential property.
- Prior to issuance of this certification, the applicator MUST PROVIDE proof of having received training in "Green Industry Best Management Practices" taught by UF/IFAS.



The axe has fallen. . .

This is a form for the Florida Department of Agriculture and Consumer Services (FDACS) to apply for a Fertilizer Application License. It includes sections for applicant information, training details, and a declaration of compliance with the law.

"You must enclose a certificate of completion of training issued by the University of Florida (IFAS) and/or Department of Environmental Protection (DEP) with this application."



GI-BMP Training Options



Green Industries Best Management Practices

Home Training Schedule Online Training DVD Training Help Contact Us

Statewide Training Schedule and Registration

Basic Search [Go to Advanced Search](#)

To list only the classroom trainings that meet your needs, make your choices below, then click the Search button.

Where do you want to attend training? Select up to three counties below.
(The county list only includes the counties with classes scheduled. Refresh county list.)

Starts On or After this Date: 6/30/2013
(MM/DD/YYYY) Search from today's date if blank

Training Language: All
Public or Private? Public

[Show All Public Trainings](#)

Below are all classes matching the search choices. To register, click Details for more information.

Date	Location	Language
12/17/2015	UF/IFAS Extension - Orange County, Orlando, FL	English

[Register](#) [Details](#)

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BMPs are a Starting Point

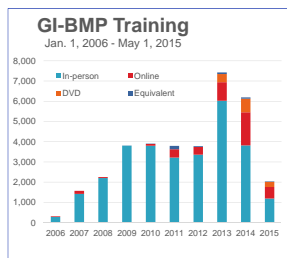
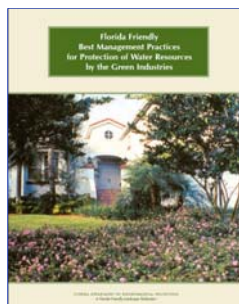
Employment Classification*	2011	2012	2013	2014
Pesticide: Handlers, Sprayers, and Applicators, Vegetation	3,070	3,280	2,630	3,190
**Landscaping and Groundskeeping Workers	69,040	70,540	70,750	74,200
Grounds Maintenance Workers and All Other	1,030	1,140	1,110	1,050
Total	73,140	74,960	74,490	78,440

*Estimates are based on Standard Occupational Classification Codes.

<http://www.floridalabs.org/labor-market-information/data-center/statistical-programs/occupational-employment-statistics-and-wages>

**Landscape or maintain grounds of property using hand or power tools or equipment. Workers typically perform a variety of tasks, which may include any combination of the following: sod laying, mowing, trimming, planting, watering, fertilizing, digging, raking, sprinkler installation, and installation of mortared segmental concrete masonry wall units. Exclude "Farmworkers and Laborers, Crop, Nursery, and Greenhouse" (45-2092).

BMPs are a Starting Point



35,107 since 2006

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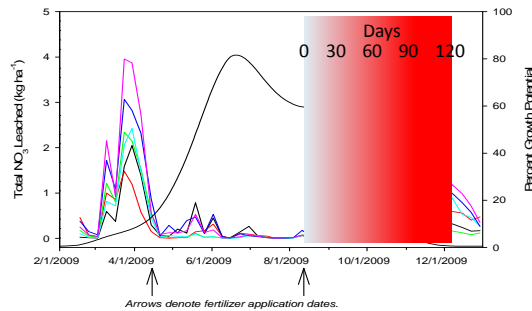
2015 Statewide Fertilizer Rule (a.k.a Urban Turf Rule)

- "Actively Growing" means turf that needs mowing at least every two weeks.
- Nitrogen shall not be applied at an application rate greater than 0.7 lbs of readily available nitrogen, per 1000 sq. ft. per application at any one time based on the soluble fraction of formulated fertilizer.

2015 Statewide Fertilizer Rule (a.k.a Urban Turf Rule)

- Not more than 2 lbs. of total nitrogen per 1000 sq. ft. per application may be applied during the spring or early summer;
- Not more than 1 lb total nitrogen per 1000 sq. ft. per application may be applied during the fall or winter.

SR Nitrogen Source Study – Jay, FL

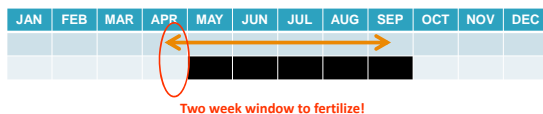


2015 Statewide Fertilizer Rule

- No major impact in north Florida!
 - UF only recommends the 2.0 lb rate in those regions of Florida that have summertime fertilizer blackout ordinances.

2015 Statewide Fertilizer Rule

- Keep a watchful eye out for those who may propose a blackout in north Florida.
 - UF Recommendation: no fertilizer prior to April 15 and none after mid-September.
 - Blackouts: May through September



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Nitrogen recommendations (lbs. N / 1000 ft² / 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	2-3	2-4	2.5-4.5

* North Florida is north of Ocala. Central Florida is defined as south of Ocala to a line extending from Vero Beach to Tampa. South Florida includes the remaining southern portion of the state.

How much nitrogen do the turfgrasses need on a monthly basis?

Bahiagrass
Bermudagrass
Centipedegrass
St. Augustinegrass
Zoysiagrass

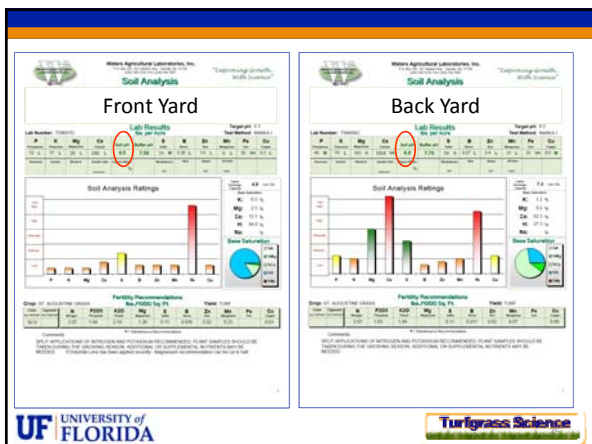
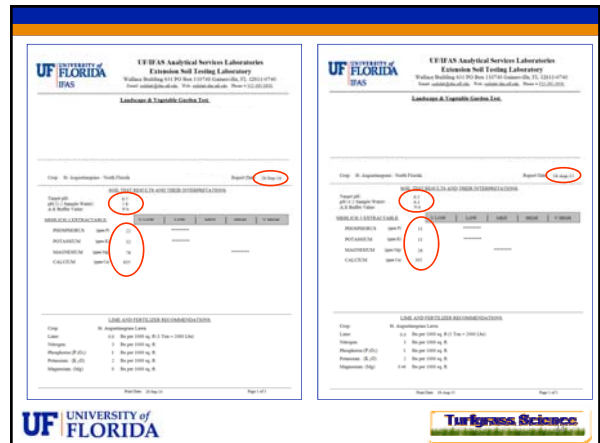
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Front Yard – Struggling to Survive



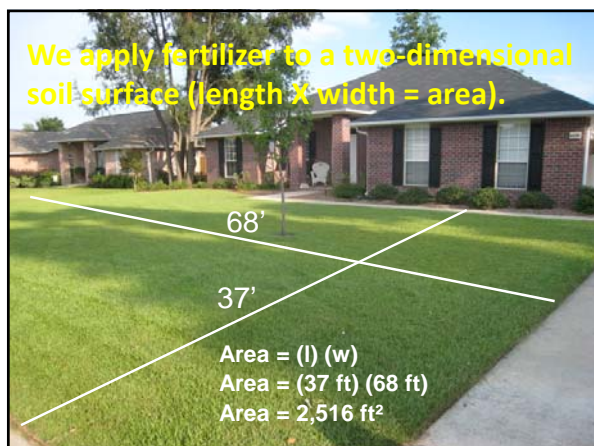
Back Yard – Not too Bad



Soil Tests (Generally) Don't Lie

- One size does not fit all!
- If the corrective actions aren't working – dig deeper.
 - Call in the guns!
- Take samples properly and report to the lab pertinent information!

We apply fertilizer to a two-dimensional soil surface (length X width = area).



Soil Sampling & Testing

- But soil tests are three dimensional (length X width X depth).
 - One pound of an element (N, P, K, etc.) spread over 1,000 ft² on the surface (two dimensional) is equivalent to:
 - 22 ppm in the root zone (three dimensional) measuring 1,000 ft² to a 6" depth.
 - 33 ppm in the root zone (three dimensional) measuring 1,000 ft² to a 4" depth.

It's early – but let's do some math!

- Acre Furrow Slice (6" depth over an acre) has 21,780 ft³ of soil (43,560 ft² X 0.5 ft).
 - AFS of soil weights ~ 2,000,000 lbs.
 - Each cubic foot of soil weighs ~ 92 lbs.
 - 1,000 ft² X 0.5 ft (6") = 500 ft³ soil.

$$500 \text{ ft}^3 \text{ soil} \times \frac{92 \text{ lbs}}{\text{ft}^3} = 46,000 \text{ lbs soil}$$

$$\frac{1 \text{ lb nutrient}}{46,000 \text{ lbs soil}} = \frac{x \text{ lbs nutrient}}{1,000,000 \text{ lbs soil}}; x = \sim 22 \text{ ppm}$$

It's early – but let's do some math!

- Acre Furrow Slice (6" depth over an acre) has 21,780 ft³ of soil (43,560 ft² X 0.5 ft).
 - AFS of soil weights ~ 2,000,000 lbs.
 - Each cubic foot of soil weighs ~ 92 lbs.
 - 1,000 ft² X 0.333 ft (4") = 333 ft³ soil.

$$333 \text{ ft}^3 \text{ soil} \times \frac{92 \text{ lbs}}{\text{ft}^3} = 30,636 \text{ lbs soil}$$

$$\frac{1 \text{ lb nutrient}}{30,636 \text{ lbs soil}} = \frac{x \text{ lbs nutrient}}{1,000,000 \text{ lbs soil}}; x = \sim 33 \text{ ppm}$$

Overview

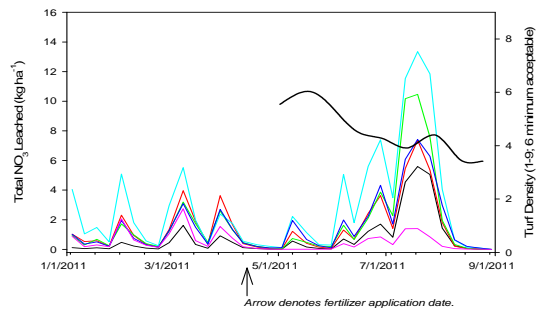
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Damaged Turf

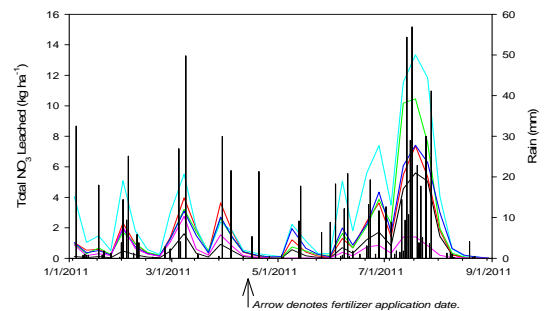
- All fertilizer recommendations are based on having a "healthy, dense turf" that is "actively growing."
 - Damaged lawns are commonplace throughout the green industry.
 - Damage can be attributed to a number of reasons.



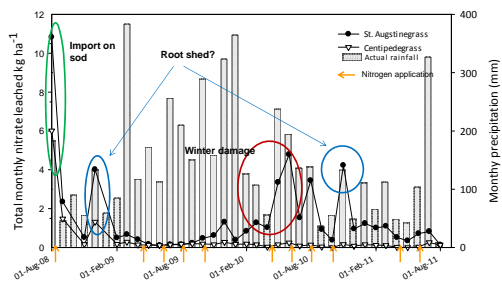
SR Nitrogen Source Study – Jay, FL



SR Nitrogen Source Study – Jay, FL



Monthly Total of NO₃-N Leached from St. Augustinegrass and Centipedegrass from 2008 – 2011



Nitrogen Rate Study – Floratam / Empire

Table 2. Nitrate-N leached from established Floratam St. Augustinegrass and Empire zoysiagrass in response to N rate in 2006 and 2007 in Citra, FL.

Annual N rate kg ha ⁻¹	St. Augustinegrass					Zoyziagrass				
	SFC1	ESFC1	LSFC1	FFC1	Annual	SFC	ESFC	LSFC	FFC	Annual
	kg ha ⁻¹									
490	2.3a8	1.6a	0.3a8	1.1a	5.3a	7.3a	6.0a	10.1	5.7a	29.1a
343	1.9a	0.3a	0.1c	0.6a	2.9a	2.9a	1.4b	5.7	3.6b	13.7b
196	0.3a	0.3a	0.2b	0.2a	0.9a	6.7a	1.4b	7.6	1.0a	16.7b
99	0.3a	0.2a	0.2b	0.1	0.9a	6.5a	2.2ab	3.7	0.3d	12.7b
490	0.2a	0.6c	0.3a	8.0a	9.1a	29.1a	75.8a	7.0a	12.5b	124.3a
343	0.3a	1.0a	0.2b	0.6b	2.1b	22.3b	40.3b	4.0ab	17.9a	84.5b
196	0.2a	0.8b	0.3b	1.6b	2.9b	6.4c	17.2c	0.6b	6.2bc	30.5c
99	0.1a	0.3d	0.2b	0.4b	1.1b	1.9b	2.4d	0.4b	1.0c	5.7c

1 SFC = spring fertilizer cycle; ESFC = early summer fertilizer cycle; LSFC = late summer fertilizer cycle; FFC = fall fertilizer cycle.
 † Values within a column by year followed by the same letter do not differ at P = 0.05.

Correct the Original Problems – first!

- Deteriorated turf?
 - Pest damage – what caused the damage?
 - Will it be prevented?
 - Weed infestation – what caused this?
 - Winter injury?
 - Old Age?

Factors Influencing Recovery

- Turfgrass Species
 - Growth rate of the grass will dictate recovery.
 - Rhizomatous grasses (with intact rhizome system) will recover more quickly.
 - Stoloniferous grasses somewhat slower.
- Extent of Existing Groundcover
 - Estimate the remaining level of groundcover.
 - How widespread is the damage?
 - How uniform is the damage?



St. Augustinegrass Winter Injury

- Estimated ~50% damage
- Uniform injury/coverage
- Recommendation: Spoon-feed every two weeks with 0.10 – 0.25 lbs N / 1,000 ft² until covered and then follow standard recommendations.

Extensive Large Patch Injury

- Estimated ~80% damage
- Uniform injury/coverage
- Recommendation: RoundUp and resod!

Large Patch Damage

- Estimated ~15% damage
- Non-uniform injury/coverage
- Recommendation:
 - Treat for the disease.
 - Avoid fertilizing damaged site.

Extensive Take-all Root Rot

- Estimated ~30% turf ground cover
- Non-uniform injury/coverage
- Recommendation: Resod the damaged area.

Take all Root Rot of
St. Augustinegrass

2.3.2001

Non-Selective Herbicide Applied to Non-Dormant Turf

- Estimated ~50% turf ground cover
- Non-uniform injury/coverage
- Recommendation: Wait for possible recovery.
 - Do NOT fertilizer until turf is completely recovered.

Selective Herbicide Injury

- Estimated ~80% turf ground cover
- Non-uniform injury/coverage
- Recommendation: Wait for possible recovery.
 - Spoon-feed every two weeks with 0.10 – 0.25 lbs N / 1,000 ft² until covered and then follow standard recommendations.

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