Turfgrass Best Management Practices

Water Conservation: half-empty or half-full?
Regional Webinar Series
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Best Management Practices for Florida’s Green Industries- Extension and Research Programs

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Green Industries BMP – an Extension Education Program

• Training began in 2003 as a voluntary program
• Local fertilizer ordinances started to require training in 2007
• Legislation passed in 2009 makes training mandatory for all commercial fertilizer applicators by 2014
BMPs for Turf Maintenance

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- Appropriate fertilization
  - Timing
  - Rates
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- Irrigation system calibration and management
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- Irrigation system calibration and management
- Integration of all cultural practices in promoting healthy turf
BMP Attendance and Certification
Pre and Post Test Scores

![Bar chart showing pre and post test scores for years 2004 to 2009. The scores range from 0 to 90, and there is an increase in scores from 2004 to 2009.]
Attendee Evaluations

Recommend BMPs
Increased knowledge
Will use BMPs
Impacts of Program

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• Use of deflector shields increased (38.2% to 72.2%)
• Increased soil testing (9.1% to 18.2%)
Nutrient Leaching Research Program

• Multi-site project
• Conducted from 2004-2012
• Completely funded by FDEP
• Looking at nitrate-N and phosphate leaching from lawn grasses under different scenarios
DEP Nutrient Leaching Study 2004-2012
Lysimeters buried in center of each plot
Lysimeters
As nitrate percolates downward through the column, it collects in reservoir filled with gravel. At bottom of lysimeter is a portal for tubing that runs to collection device aboveground. To collect leachate, a vacuum pump is attached to the tubing and water evacuated from base. A sub-sample is collected for analysis.
Research Projects

1. Nitrate Leaching from Newly Sodded Turf
2. Nitrate Leaching Due to N Rate
3. Nitrate Leaching Due to N Source
4. Nitrate Leaching in Winter Months
5. Phosphorus Leaching
6. Nitrate Leaching Due to Mowing Height
7. Nitrate Leaching Due to Clipping Management
Nitrate Leaching Due to N Rate

- 3-yr study 2005-2007
- Established Floratam and Empire
- N applied in 4 applications throughout the year at rates of 1, 4, 7, or 10 lbs N 1,000 ft$^{-2}$
- N applied as quick-release urea dissolved in water and applied through sprayer
- 2 irrigation regimes (1” @ 1x wkly, 0.5” @ 2x wkly)
Nitrogen Rate Study - Nitrate-N Leaching from Floratam

Nitrogen applied as 100% soluble urea

Trenholm et al. 2010
Nitrogen Rate Study - Percent of Applied N Leached from Floratam

Nitrogen applied as 100% soluble urea

Trenholm et al. 2010
Conclusions

- As SA matured after first year, nitrate leaching was minimized, regardless of N rate
- Zoysia more prone to increased leaching as applied N increased, BUT less N needed to maintain high quality turf
- Both grasses increase leaching when they are damaged (not full cover) at higher N rates
- Highest tendency for increased leaching occurred in spring and fall, not in summer
Nitrate Leaching Due to Nitrogen Source

- 8 nitrogen sources applied @ 1 lb N 1,000 ft$^{-2}$ 4x yr
- Established Floratam and Empire
- 1 yr left on this study

Figure 1 - Leaching columns experiment aspects
Nitrogen Source Leaching Study - Total N Leached - Gainesville 2008

Averaged over Floratam and Empire
Nitrogen Source Leaching Study- Percent of Applied N Leached -Gainesville 2008

Averaged over Floratam and Empire
Conclusions

- From 2 yr of data, there are no differences between products (except AN) when nitrogen applied at the recommended UF-IFAS rates.
- More important in nitrate leaching reduction is application (getting fertilizer to the grass, not on sidewalk), time of year, application rate, health of grass, etc.
Summary of Research and Extension Programs

- Research providing quantification of BMPs
- Extension program based on scientific data generated in multiple locations around the state
- Water quality and quantity programs are very important in Florida
- Industries have learned that their best interest is to support and adopt the BMPs
Thank you!
Any questions?
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