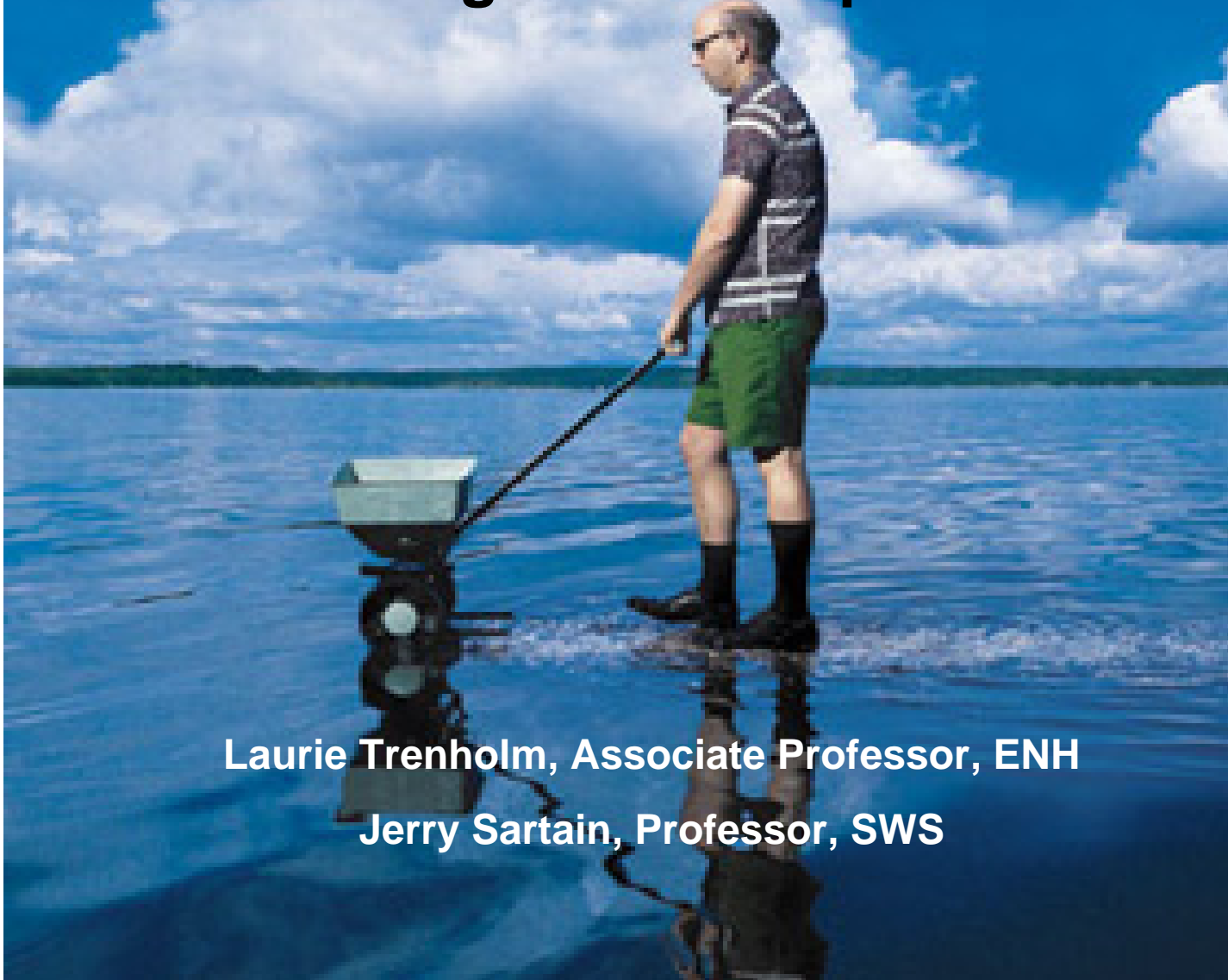


# **Turf BMP Considerations: Drought, Fertilizer Ordinances, and Negative Perceptions**



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# **BMPs For the Turfgrass Industry**

- **Green Industry BMPs published 2002 with FDEP**
- **“Certificate of Completion” Education Program began in 2003**
- **Golf Course Industry BMPs developed in 2007 with FDEP**
- **Sod BMPs developed in 2007 with FDACS**

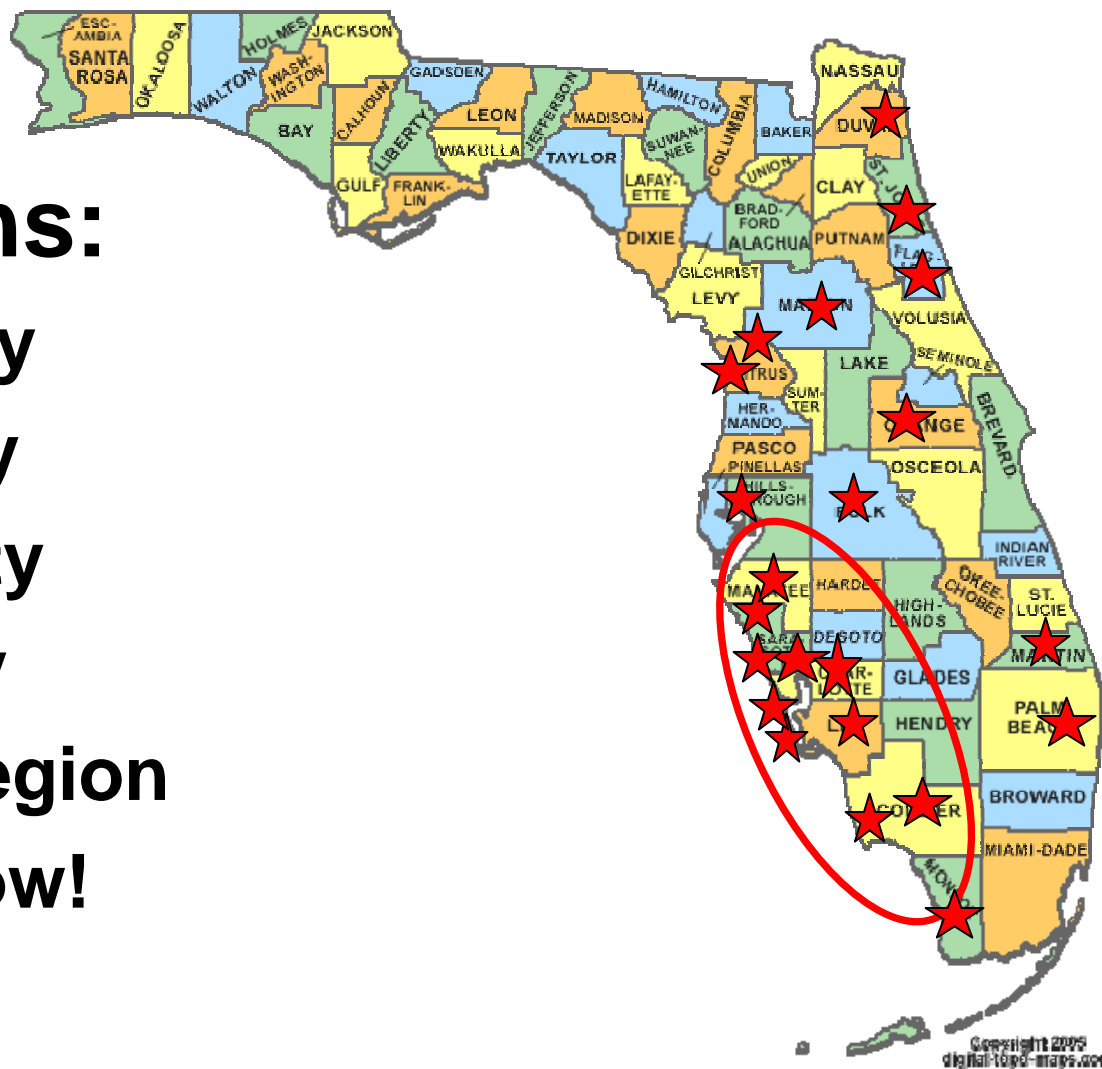
# **BMPs For the Turfgrass Industry**

- Training has been underway for lawn/landscape/pest control industry since 2003 as voluntary program**
- Have “certified” approx 4300 since 2003 as having passed post-test**
- BMPs have become model for numerous local government ordinances that require training**
- Legislative bill that did not pass in 2008 session would have required BMP certification for anyone applying fertilizer commercially**

# 2008- Local Fertilizer Ordinances

## New additions:

- Orange County
- Flagler County
- Monroe County
- Collier County
- Tampa Bay Region
- Others to follow!



# **Local Fertilizer Ordinances**

- **Vary from county to county, or between cities within counties**
- **Not typically based on sound science – agronomic or environmental**
- **Make it very difficult for professionals to remain in compliance**
- **Many counties now require “BMP Certification”**
- **Irrigation not addressed in ANY of these ordinances**

# **The Statewide Fertilizer Rule**

- **Effective Dec 31, 2007 through Department of Agriculture and Consumer Services (FDACS)**
- **Grace period to sell existing stock through July 2009**
- **Limits what fertilizers can be sold for lawns in Florida by targeting labeling of fertilizers for use on “urban turf”**
- **Requires lawn care industry to follow Green Industries BMP manual**

# The Statewide Fertilizer Rule

- Limits N to 1 lb per 1,000 ft<sup>-2</sup> for any N fertilizer or 0.7 lb per 1,000 ft<sup>-2</sup> for all quick-release N
- Limits P to 0.25 lb P<sub>2</sub>O<sub>5</sub> per 1,000 ft<sup>-2</sup> per application and 0.50 lb P<sub>2</sub>O<sub>5</sub> per 1,000 ft<sup>-2</sup> annually
- Requires professionals to follow their respective BMP manuals and IFAS guidelines for annual application rates

# Ratio of N:P

- **15-5-15 or 6-2-0 fertilizer**
- **3:1 N:P ratio in both**
- **This means if you apply 1 lb. N per 1,000 ft<sup>2</sup>, you apply 1/3 lb. P<sub>2</sub>O<sub>5</sub> per 1,000 ft<sup>2</sup>**
- **This exceeds what is allowed in the Rule**



# **BMPs For the Turfgrass Industry**

- **Nitrogen rates**
- **Nitrogen sources**
- **Fertilizing newly established turf**
- **Winter fertilization**
- **Fertilizer bans – summer**
- **Long-term release products**
- **Buffer zones**

# Nitrogen Rates

- **Florida annual recommendations vary based on species, location in state**
- **Provides a range within which good turf quality and health should be maintained**

# Nitrogen Rates

- **Rates for individual applications (IFAS and BMP manual):**
  - 1 lb N per 1,000 square feet if SRN
  - 0.5 lb N per 1,000 square feet if QRN
- **Rates for individual applications (DACS Fertilizer Rule):**
  - 1 lb N per 1,000 square feet if SRN
  - 0.7 lb N per 1,000 square feet if QRN (must have 30% SRN for this rate)
- **These rates shown to be safe environmentally in numerous studies and to maintain healthy turf**

# Nitrogen Sources

- **SRN often seen as “only” safe fertilizer**
- **Research has reached different conclusions**
- **Research has shown that *QRN applied at the recommended rates* also safe**
- **Heavy rainfall can increase leaching or runoff potential**

# Research on Nutrient Source

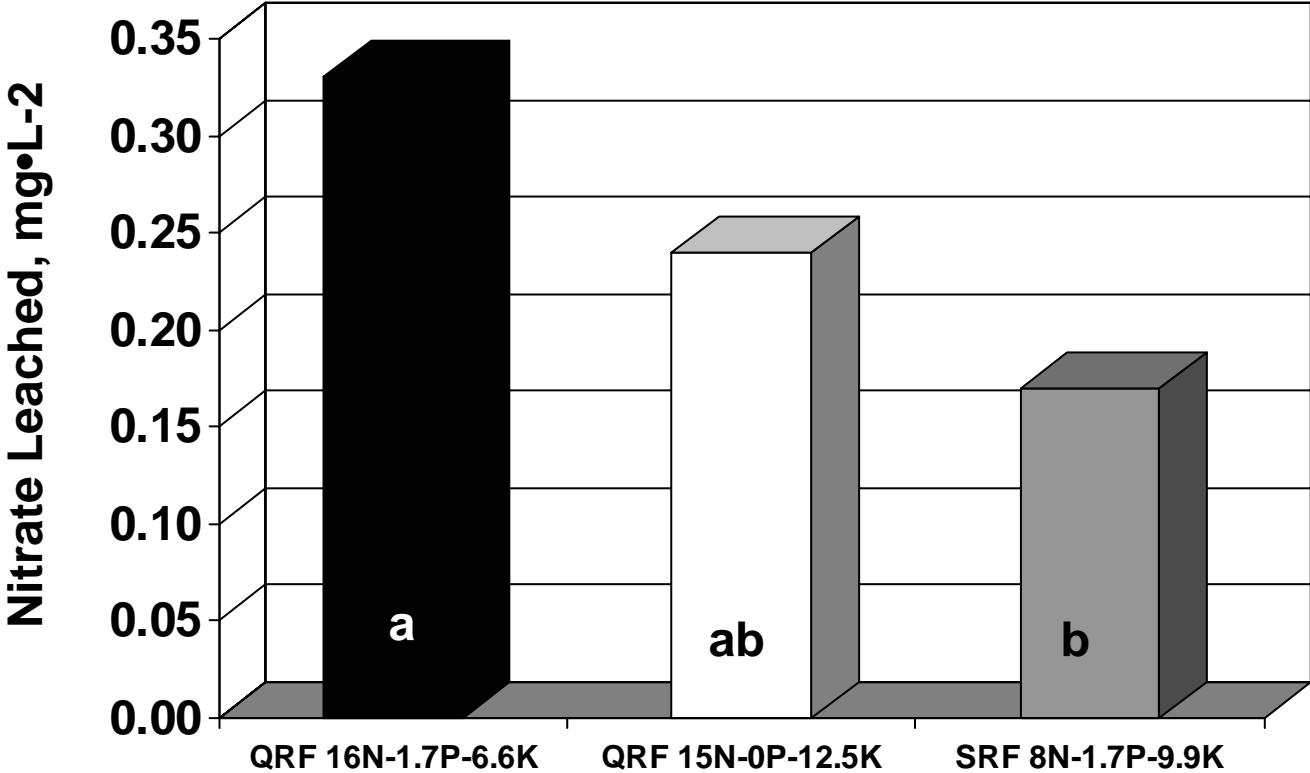
- **No difference in nitrate leaching due to N source in bentgrass (Mancino and Troll, 1990)**
- **Less nitrate leaching in QRN treated bermudagrass under long day conditions than SRN treatments, although this trend reversed under short day conditions (Quiroga-Garza et. al., 2001)**

# Research on Nutrient Source

- **Increased nitrate leached from QRN treated plots in cool season grasses (Easton and Petrovic, 2004)**
- **Similar report from Guillard and Kopp (2004) in cool season grasses**
- **Saha et. al. (2007) reported increased leaching from QRN-treated Floratam, but better quality ratings from QRN than SRN**



# Nitrate leaching from Floratam St. Augustinegrass in pot study





# **Granular vs. Liquid Fertilizer**

- **No difference in leaching in tall fescue/Kentucky bluegrass receiving urea as either granular or dissolved (Gross et. al., 1990)**

# Fertilizer Timing

- **Depends on location in state**
  - North Florida approx. 7-mo growing period
  - South Florida generally year-round growing
- **North Florida should not apply during dormant times**
- **Research for two years in Jay and Gainesville to document leaching throughout winter months**

# Fertilizer Timing

- **Many local ordinances in south Florida eliminate N and P fertilization from June – Sept.**
- **This is time of peak growth of warm-season grasses**
- **Arguments to support this include**
  - **Atmospheric deposition will supply enough N**
  - **Clippings will supply enough N**
  - **Rainfall will supply enough N**
  - **One County Commissioner informed me that she “never fertilizes her St. Augustinegrass and it looks fine”**

# Fertilizer Timing

- **Some research has demonstrated clear correlation between excess rainfall and nutrient leaching (Bowman et. al., 1998, Morton et. al., 1988, Snyder et. al., 1984)**
- **Other research points to limited leaching during times of active growth (often when we would get rainfall) and considered application timing to be critical (Quiroga-Garza et. al., 2001)**

# **Leaching Differences Between Species**

- **Best nitrate uptake in Floratam, worst in Meyer zoysia (Bowman et. al., 2002)**
- **Less N leaching in Floratam than from mixed species landscape plantings (Erickson et. al., 2001)**
- **Similar results in greenhouse tub study comparing Floratam and landscape plants (Saha et. al., 2007).**

# **Nutrient Leaching – Sod Production**

- **Current recommendations based on recommendations from Dr. Sartain on N and P requirements**
- **SL 52 – Fertility Considerations for Sod Production**
- **Tissue nutrient levels deemed most critical for nutrient needs**
- **No data to demonstrate effects of fertilizing bare ground during ribbon regrowth on nutrient leaching in Florida**
- **Barton et. al. (2006) suggests that irrigation is a more important factor than N rate in N leaching during production**

# **Other Fertilization BMP Considerations**

- **Effect of landscape fertilizer on turf quality and leaching and vice-versa: How do we fertilize the whole landscape most effectively and safely?**
- **Buffer zones and non-fertilized areas near water bodies**
- **Effects of not fertilizing during times of active growth**
- **Irrigation considerations**

# Irrigation BMPs

- **Limited documentation on precise water requirements of grasses**
- **Augustin (1983) determined irrigation requirements of St. Augustinegrass based on historic rainfall and ET data**
- **Data from Texas delineates survival prospects for numerous grasses during long-term drydowns**
- **What is #1 grass for survival in this study (it's not what you think!)?**



# San Antonio Water System



# Irrigation BMPs

- **Smart technology uses**
- **Calibration and just watching home irrigation systems run**
- **Separate zoning landscape plants and turf**
- **Limiting “green” grass on golf courses to play areas**
- **Use of recycled water**

# Future of Industry

- **Water, water, water!**
- **Increased regulations**
- **Negative perceptions of turf in urban environment**
- **New day when it comes to natural resources and managing urban turf**

# Research Gaps and Funding Needs

- **Water use/ drought tolerance of warm-season grasses**
- **Runoff of N and P (slopes, soils, etc.)**
- **Impact of summer fertilization bans over long term**
- **Buffer areas and widths (slopes, etc.)**
- **Relationship of lawn fertilizer to red tide**
- **Fertilization programs with reclaimed water**
- **Fertilization of ribbons during sod grow-in**
- **Suitability of “long-term release” fertilizers on turf**
- **Integration of all landscape components in fertilization program**

# Summary Slide

- **Separate BMPs developed for lawn care, golf and sod production**
- **Educational program with lawn care BMPs only**
- **Numerous local and some state government regulations on turf fertilization**
- **Research on nutrient leaching and water use variable in some cases – Florida specific research needed!**
- **Turf is important environmental filter and very good at scavenging nutrients – keeping fertilizer off impervious surfaces more important than N source**