Lawn Care Made Simple

Dr. Pat Williams
Turfgrass Definitions

• Grass: member of the Poaceae family
• Growing point: crown
• Stems: tiller, rhizome and stolon
• Turfgrass: specialized species adapted to regular pruning
• Turf: collection of grass plants
• Groundcover
• Groundcover benefits
• Cool, warm and transitional
• Reseeding vs. overseeding
Turfgrass Terminology

• Establishment: seed, sod, sprig and plug
• Thatch
• Complete fertilizer (analysis) 8-2-12
• Fertilizer ratio 4:1:6
• Slow Release Nitrogen (SRN)
• Nitrogen sources: nitrate, ammoniacal, ammonia, urea
• F-Series fertilizer registration
• Rotary versus reel mower
• Rotary spreader
Turfgrass Functions

• Utility: Environmental Benefits
  – Stabilizes soil
  – Prevents erosion - cover crop
  – Cooling effect
  – Absorbs pollutants

• Ornamentation
  – Enhances private and public areas
  – Aesthetic decoration
Turfgrass Functions

- Sports
  - Reduces injury - college and pros
  - Looks
  - Technological improvements
Turfgrass Functional Qualities

- Rigidity: compression and wear resistance
- Elasticity: bounce back
- Resiliency: shock absorption
- Recuperative: infectious versus noninfectious
Why Turfgrass?

- Right plant, right place
- Microclimates
- Functions
- Attributes
- Costs
  - most water
  - most chemicals
  - most fertilizer
  - most maintenance
Perfect Turfgrass

- Emerald green in color
- Fine texture
- Drought tolerant
- Adapts to different soils
- Low fertility
- Pest resistance
- Maintains height especially after mowing
- Good wearability
- Good playability
Turfgrass – Part I
Florida Lawn Grasses
Learning Objectives – Part I:

- Identify common lawn grass species.
- Know the characteristics (pros & cons) of each.
Florida Lawn Grasses

- Bahiagrass
- St. Augustinegrass
- Zoysiagrass
- Centipedegrass
- Bermudagrass
Bahiagrass
(Paspalum notatum)

• Advantages
  – Drought-tolerant
  – Low fertility requirements
  – Low maintenance
  – Establishes from seed or sod
  – Tolerant of sandy, infertile soils

EDIS publication #ENH6
• Disadvantages
  – Prolific seedheads (summer)
  – Open growth habit encourages weed competition
  – Poor wear and salt tolerance
  – Susceptible to mole crickets
  – Requires acid soil

• Varieties
  ‘Pensacola’ – finer blade, cold tolerant
  ‘Argentine’ – wider blade, not cold tolerant, produces more seedheads.
St. Augustinegrass
(Stenotaphrum secundatum)
St. Augustinegrass

• Advantages
  - Best shade tolerance (varies by cultivar)
  - Good salt tolerance
  - Tolerates wide range of soil types and pH
  - Establishes quickly from sod
  - Deep green color
St. Augustinegrass

• Disadvantages
  - Requires irrigation during dry weather
  - Chinch bugs and diseases
  - Poor wear, cold, and drought tolerance
  - Requires fertilization for color and health
  - Requires weekly mowing during summer
  - Forms excessive thatch
  - Not grown from seed
St. Augustinegrass

• Varieties
  
Zoysiagrass
(Zoysia spp.)
Zoysiagrass

- Very dense; resists weed invasion
- Adapted to wide range of soils
- Good shade, salt, and wear tolerance
- Irrigation needs similar to St. Aug.
- Most herbicides are safe to apply
- Responds to nitrogen
Zoysiagrass

• Disadvantages
  - First turf species to go off-color in fall; last to green-up in spring; N won’t help
  - Dormant during winter in central and north FL
  - Major Pests: Hunting billbugs; Large patch disease
  - Tends to form thatch.
  - Browns and goes dormant quickly without irrigation/rain
Centipede grass
(*Eremochloa ophiuroides*)
Centipedegrass

- Advantages
  - Slow growing and prostrate = less mowing
  - Low fertility requirements
  - Few pests; Cold tolerant
  - Can be grown from seed, sod, plugs
  - Fair shade and drought tolerance
  - Grows well in acidic soil

“Poor Man’s Grass”
Centipedegrass

- Disadvantages
  - Slow growing = slow to establish
  - Nematodes, ground pearls, spittlebugs
  - Iron deficiency on high pH soils
  - Poor wear, salt, and freeze tolerance
  - Can thatch
Centipede grass

- Varieties
  - ‘Common’ – established by seed, sod or plugs; slow grower
  - ‘Hammock’ – proprietary; more heat tolerant; developed for south FL; darker green
  - ‘Covington’ – proprietary; retains color in fall
  - ‘Santee’ – proprietary; robust root system
Bermudagrass

(Cynodon spp.)

• Advantages
  - Vigorous, dense turf
  - Fine-textured
  - Adapted to a wide range of soils & climates
  - Wear, drought-, & salt-tolerant
  - Rapid establishment

EDIS publication #ENH19
Bermudagrass

• Disadvantages
  - High maintenance
  - Used mostly as a sports turf
  - A few FL communities use it
  - Poor pest tolerance
  - Rapidly invades plant beds
  - Thatch
  - Poor shade tolerance
Activity 1
Case Study – Lawn Grass Selection

Recommend a lawn grass based on a new home site, its location in the state and county, and the client’s needs.
<table>
<thead>
<tr>
<th></th>
<th>Bahia</th>
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<tbody>
<tr>
<td><strong>Region</strong></td>
<td>Statewide</td>
<td>Statewide</td>
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<td>Statewide</td>
<td>Statewide (acidic soils)</td>
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<tr>
<td><strong>Maintenance</strong></td>
<td>Low</td>
<td>Medium-High</td>
<td>Medium</td>
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<td>Low</td>
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<tr>
<td><strong>Establishment Method</strong></td>
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</tr>
<tr>
<td><strong>Soil</strong></td>
<td>Acid</td>
<td>Wide range</td>
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Compiled by UF/IFAS Turf Specialists
Soil pH Ranges for Turfgrass

- Bermudagrass
- Bahiagrass
- Carpetgrass
- Centipedegrass
- Paspalum
- St. Augustinegrass
- Zoysia
- Ryegrass
- Fescue

EDIS publication #SL181
Turfgrass – Part II
Lawn Maintenance
Maintaining a Florida Lawn
Irrigation, Fertilization, and Mowing
Shade Tolerance

Most to Least
St. Augustinegrass
Zoysiagrass
Centipedegrass
Bahiagrass
Bermudagrass
Shade Tolerance of St. Augustinegrass

Shade tolerance is cultivar dependent:

Most to Least
-‘Seville’, ‘Delmar’, ‘Captiva’
-‘Bitterblue’
-‘Palmetto’
 ‘Floratam’
Managing Turf in the Shade

- Reduce shade (trim trees)
- Reduce traffic in shaded areas
- Reduce irrigation
- Reduce fertilization; promoting growth will stress turf
- Increase mowing height – more shoot tissue for photosynthesis
Overwatering

- Increased disease issues
- Root rot and stunting
- Weak turf stand
- Increased weeds
- Can occur during any season
- Occurs more often in dormant months?
Watering - How Often?

• Varies due to:
  – Location in Florida
  – Season
  – Soil type
  – Shade
  – Rooting depth
  – Pests presence (nematodes & disease)
  – Water restrictions (may dictate frequency)
Signs Your Lawn Needs Water

- Color changes to bluish-grey
- Leaf blades fold in half lengthwise
- Footprints remain
- Rootzone soil sample is dry
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Compiled by UF/IFAS Turf Specialists
Watering - How Much?

• Apply 1/2” to 3/4” when turf shows signs of wilt (?)
• Calibrate irrigation system twice a year (minimum)
• This does not vary - only frequency varies!
• Don’t water past point of run-off.
Short, frequent irrigations

Longer, less frequent irrigations
Watering – When?

• Best time to water is just before or at sunrise.
  – Less loss due to drift and evaporation
  – Better for turf health

• Evening watering leads to wet leaves overnight which can increase disease problems.
Irrigation System Efficiency

- Rain shut-off device functioning?
- Uniform coverage?
- Broken, misaligned sprinklers?
- Landscape plants blocking water?
- Soil moisture meter
- Smart irrigation systems (phone apps)
Watering – In Summary

• Fewer, but longer irrigations = deeper root system
• Each irrigation should apply ½” to ¾” of water
• Do not water in the evening
• Maintain irrigation system efficiency
Influence of mowing height on root depth (root:shoot)
Mowing Height

- St. Augustinegrass Standard Cultivars: 3.5 - 4”
  (‘Floratam’, ‘Bitter Blue’, ‘Classic’, etc.)
- St. Augustinegrass Dwarf Cultivars: 2 - 2.5”
  (‘Captiva’, ‘Delmar’, ‘Seville’)
- Bahiagrass: 3 - 4”
- Centipede grass: 1.5 - 2.5”
- Zoysiagrass: ~2”
Mowing

- Mow at highest recommended height for species
- Don’t remove more than 1/3 of the leaf blade at any one time.
- Recycle clippings on the grass (4-1-2)
- Increase mowing height under any environmental stress (shade, drought, etc.)
- Don’t mow wet grass
- Keep mower blades sharp!
Scalping

- Injures turf
- Reduces stress tolerance of lawn
- Indirectly results in weak rooting, soil loss, and weed invasion
Fertilizing
Lawn Grass Essential Nutrients

From atmosphere

Macronutrients:
- Carbon (C)
- Hydrogen (H)
- Oxygen (O)

From soil or fertilizer:

Macronutrients:
- Primary
  - Nitrogen (N)
  - Phosphorus (P)
  - Potassium (K)
- Secondary
  - Calcium (Ca)
  - Magnesium (Mg)
  - Sulfur (S)

Micronutrients:
- Iron (Fe)
- Manganese (Mn)
- Boron (B)
- Chlorine (Cl)
- Copper (Cu)
- Molybdenum (Mo)
- Zinc (Zn)
- Nickel (Ni)
Fertilizing

- Lawns need nutrients to grow and remain healthy.
- Some nutrients come from the atmosphere and soil, but some need to be applied as fertilizer.
- Nitrogen (N) and phosphorus (P) when misapplied can impair water resources.
Two Ways That Fertilizers Can Pollute

1. Leaching through soil (how N behaves in sandy soils)

2. Surface water runoff (N & P)
When to Fertilize

Fertilize only during the growing season
When to Fertilize?

• 1-4 times a year (varies with grass species):
  – Spring: when growth begins and after danger of frost
  – Summer: apply iron or low amounts of nitrogen fertilizer (may not be needed depending on soil characteristics and grass species)
  – Fall: potassium beneficial, imparts cold tolerance
  – Winter: depends on location in state. Do NOT fertilize dormant grass with nitrogen (no fertilizer mid-Oct to April in north FL; Nov to end of March in Central FL)

• South Florida may fertilize year-round

For details see: EDIS Publication SL21
When to Fertilize?

**Note:** Florida has a model fertilizer ordinance that regulates the use of fertilizer on lawns from June 1 through Sept 30 (rainy season).

Some municipalities have enacted stricter rules. Is your community one of them?
How Much Fertilizer? (per application)

STEP 1 – How many square feet are you fertilizing?
• Divide up yard (front, back, sides).
• Determine square footage of each area.

40 x 25 = 1000 sq. ft.
How Much Fertilizer? (per application)

STEP 2 – How much slow-release N is in the fertilizer?

• % Slow Release Nitrogen (SRN) (if present) appears as a footnote in Guaranteed Analysis.

• Divide % SRN by %Total N

  Ex: 15-0-15 fertilizer with 6% SRN (6 ÷ 15 = 40% SRN)

  - If the SRN is at or above 30%, the fertilizer is considered to be a slow-release product. Apply at a rate of 1 lb. of “actual N”/1000 sq. ft.
  - If the SRN is below 30%, it’s considered to be a quick-release product. Apply at a rate of 1/2 lb. of “actual N”/1000 sq. ft.
How Much Fertilizer? (per application)

STEP 3 – How much fertilizer per 1000 sq. ft?

• Divide amount of N into 100
  Ex: 15-0-15 (100 ÷ 15 = ~6½)

• You would apply ~6½ + lbs./1000 sq. ft. (since this fertilizer is a slow-release product - over 30% SRN)

• You would apply ½ that amount (~3 pounds) if fertilizer had been quick-release (less than 30% SRN)
How Much Fertilizer – per Year?*  
(Lbs. of N per 1,000 sq. ft.)

<table>
<thead>
<tr>
<th>Grass Type</th>
<th>North</th>
<th>Central</th>
<th>South</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bahiagrass</td>
<td>1-3</td>
<td>1-3</td>
<td>1-4</td>
</tr>
<tr>
<td>Centipedegrass</td>
<td>0.4-2</td>
<td>0.4-3</td>
<td>0.4-3</td>
</tr>
<tr>
<td>St. Augustinegrass</td>
<td>2-4</td>
<td>2-5</td>
<td>4-6</td>
</tr>
<tr>
<td>Zoysiagrass</td>
<td>2-3</td>
<td>2-4</td>
<td>2.4-4.5</td>
</tr>
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</table>

* Recommendations as of October, 2017
Applying Fertilizer

• To evenly apply fertilizer:
  • Ex: 15%N = 6.6 lbs. fertilizer per 1,000 square feet
  • Apply half (3.3 lbs.) fertilizer in one direction.
  • Then apply the remaining amount (3.3 lbs. in this example) in the opposite direction.
Applying Fertilizer

Keep fertilizer and grass clippings off of hard surfaces to reduce nitrogen pollution in runoff.
Fertilizer BMPs
(Best Management Practices)

• A properly fertilized (dense) lawn is the best defense against weeds and storm water runoff.
• Apply only the correct amount; more is not better!
• Maintain a buffer zone around water bodies.
• Soil test – know your pH and available nutrients.
• Use fertilizers with low (or no) P (phosphorus)!
• Fertilize turf only when it is actively growing.
• Irrigate fertilizer in with about ¼” of water.
• Do not fertilize newly planted grass for 30-60 days.
• Keep fertilizer off driveways, sidewalks, patios.
Turfgrass – Part III
Pest Management
Learning Objectives - Part III:

- Recognize common insect and disease pests of lawn grass.
- Describe how to manage weeds in lawn grass.
- Apply integrated pest management (IPM) strategies to prevent and manage lawn pests.
Two Types of Stresses

(Not every brown spot is pest-related)

- **Biotic**
  - Insect
  - Disease
  - Nematode
  - Weed

- **Abiotic**
  - Drought or over-watering
  - Excess or insufficient fertilization
  - Mowing (scalping, dull blades)
  - Soil issues (pH, compaction)
  - Temperature extremes
  - Shade
  - Traffic
  - Dog Spots
  - Standing water/submersion
  - Saline (recycled/ocean) water
Important Turf Pests

**Insects**
- Turf caterpillars
- Scarab beetles
- Chinch bugs
- Hunting billbug
- Mole crickets
- Scale & mealybugs

**Diseases**
- Gray leafspot
- Large Patch
- Take-all Root Rot
- Sugarcane Mosaic Virus

**Nematodes**

**Weeds**

EDIS Publication ENY-300
Turf Caterpillars
Attack all Grasses

Tropical Sod Webworm
_Herpetogramma phaeopteralis_
- Active year-round; peak April-Nov
- Gray-green; light brown head
- ¾ to 1 inch at maturity
- Brown spots on each segment
- Feed at night

Fall Armyworm
_Spodoptera frugiperda_
- Damage turf spring and fall in FL
- Green to brown; 1½ inches at maturity
- Develop light stripes & dark spots with age
- Inverted ‘Y’ on top of head

EDIS Publication EENY098 & EENY541
Turf Caterpillars

Tropical Sod Webworm Damage & Symptoms
Turf Caterpillars

- Attack all FL grasses, especially highly maintained ones.
- Various natural enemies suppress them.
- Bt or Conserve – selective and soft on beneficials.
Two-lined Spittlebug

*Prosapia bicincta* Say

- Occasionally an important pest
- Most abundant in north and northwest FL
- Suck plant juices through piercing-sucking mouthparts.
- Kills, withers, or reduces growth. Damaged turf blades develop purple streaks.
- Often associated with excessive thatch.
White Grubs
(Scarab Beetle Larvae)

- Sporadic problem; very damaging in coastal regions
- Grubs feed on grass roots in summer. Lawn yellows and declines.
- Feed on all lawn grass species. Females lay eggs in soil.
Southern Chinch Bug

*Blissus insularis* Barber

- Important pest of St. Augustinegrass
- Present year-round
- Suck plant sap; Grass yellows then browns in concentrated patches
Who’s Who?

Southern chinch bug (harmful)

False chinch bug (harmless)

Big-eyed bug (helpful)
Hunting Billbug
*Sphenophorus venatus vestitus* Chittenden

- Adult has a Y-shaped mark on pronotum with parentheses-like marking on each side; has a snout
- Young larvae are stem borers, and then become root feeders; all larvae are legless
- Zoysiagrass and bermudagrass are preferred hosts
Mole Crickets

*Neoscopterusiscus* spp.

- Four species in FL; three are pests
- Some *consume* plants; all *tunnel*, which damages roots.
- Bahiagrass, bermudagrass, and centipedegrass attacked most often.
- Most damage occurs summer and fall.
Mole Crickets

Three mole cricket pests in Florida – left to right: shortwinged, tawny, and southern

EDIS Publication EENY-235
Turf Scale Insects & Mealybugs

- Tuttle mealybug, *Brevennia rehi*
- Bermudagrass scale, *Odonaspis ruthae*
- Rhodesgrass mealybug, *Antonina graminis*
- Ground pearls, *Dimargarodes meridionalis*

- Primarily pests of zoysiagrass and bermudagrass
- *Piercing-sucking* pests
- Very small; hard to detect before damage appears.

EDIS publication #ENY-340
Minimize Pest Problems with IPM

- Avoid overwatering and soluble N.
- Mow at the correct height.
- Minimize thatch.
- Check every 7-10 days for pest activity.
- Monitor with soap flushes.
- When needed, spot treat with insecticides and use selective products to protect beneficials.
- Rotate pesticide MOAs to avoid resistance.
Soap Flush Time Lapse Video
(Created by Dr. Adam Dale, UF/IFAS Entomologist)
Turf Diseases

- Fungi - Most common disease pathogen

Gray Leafspot fungus symptoms on St. Augustinegrass
**Large Patch**

*Rhizoctonia solani*

- Occurs Nov – May (temperatures below 80° F)
- Rots base of leaf blade; distinct rotten smell
- Avoid excess soluble nitrogen and water
- Mowing can spread it
- All FL lawn grasses affected, especially St. Augustinegrass and Zoysiagrass
Take-all Root Rot

*Gaeumannomyces graminis var. graminis*

- All FL lawn grasses are susceptible
- Excess water and nitrogen and stress accelerates disease
- Often occurs where nematodes are a problem
Sugarcane Mosaic Virus

• Outbreaks in multiple counties
• Most affected cultivar is ‘Floratam’ which usually dies.
• More resistant: ‘Palmetto’ and ‘BitterBlue’
• No chemical treatments available
• Symptoms: Mosaic pattern on leaflets, chlorosis, browning
Managing Lawn Weeds

Weeds love...

• Too much water
• Too much fertilizer
• Thin or bare areas
• Grass mowed too short
• Lack of scouting by you
Three Types of Weeds

• Broadleaf
  - Net veins, broad leaves

• Grass
  - Parallel veins, rounded or flattened stems

• Sedge
  - Parallel veins, 3-ranked leaves, triangular stems
Herbicide Types

Preemergence herbicide
  - Use before weed seeds germinate

*Postemergence herbicide
  - Use after weeds have sprouted

*Most postemergence lawn herbicides specifically control either broadleaf weeds or sedges
Currently there are no postemergence herbicides that selectively control grassy weeds in residential lawns.
Reduce Weed Intrusion

Follow UF/IFAS recommendations:

• Proper fertilization
• Proper mowing practices
• Proper irrigation practices
• Correct turf for site
Acknowledgements

Dr. Laurie E. Trenholm, UF/IFAS Turfgrass Specialist, Env. Horticulture Dept. “How to Grow a Healthy, Happy Florida-Friendly Lawn” - MG College, 2010

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