FLORIDA MASTER GARDENER

Lawn Care Made Simple

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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

Bahiagrass

- 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*)

EDIS publication #ENH5

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
  - Standards: ‘Floratam’, ‘Bitter Blue’, ‘Palmetto’, ‘Seville’, ‘Classic’, ‘Delta Shade’, ‘Raleigh’

  - Dwarf: ‘Seville’, ‘Delmar’, ‘Sapphire’, ‘Captiva’

Zoysiagrass

(Zoysia spp.)

EDIS publication #ENH11

Zoysiagrass

- Advantages
  - 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

Centipedegrass

(Eremochloa ophiuroides)

EDIS publication #ENH8

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

Spittlebug damage

Centipedegrass

- 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

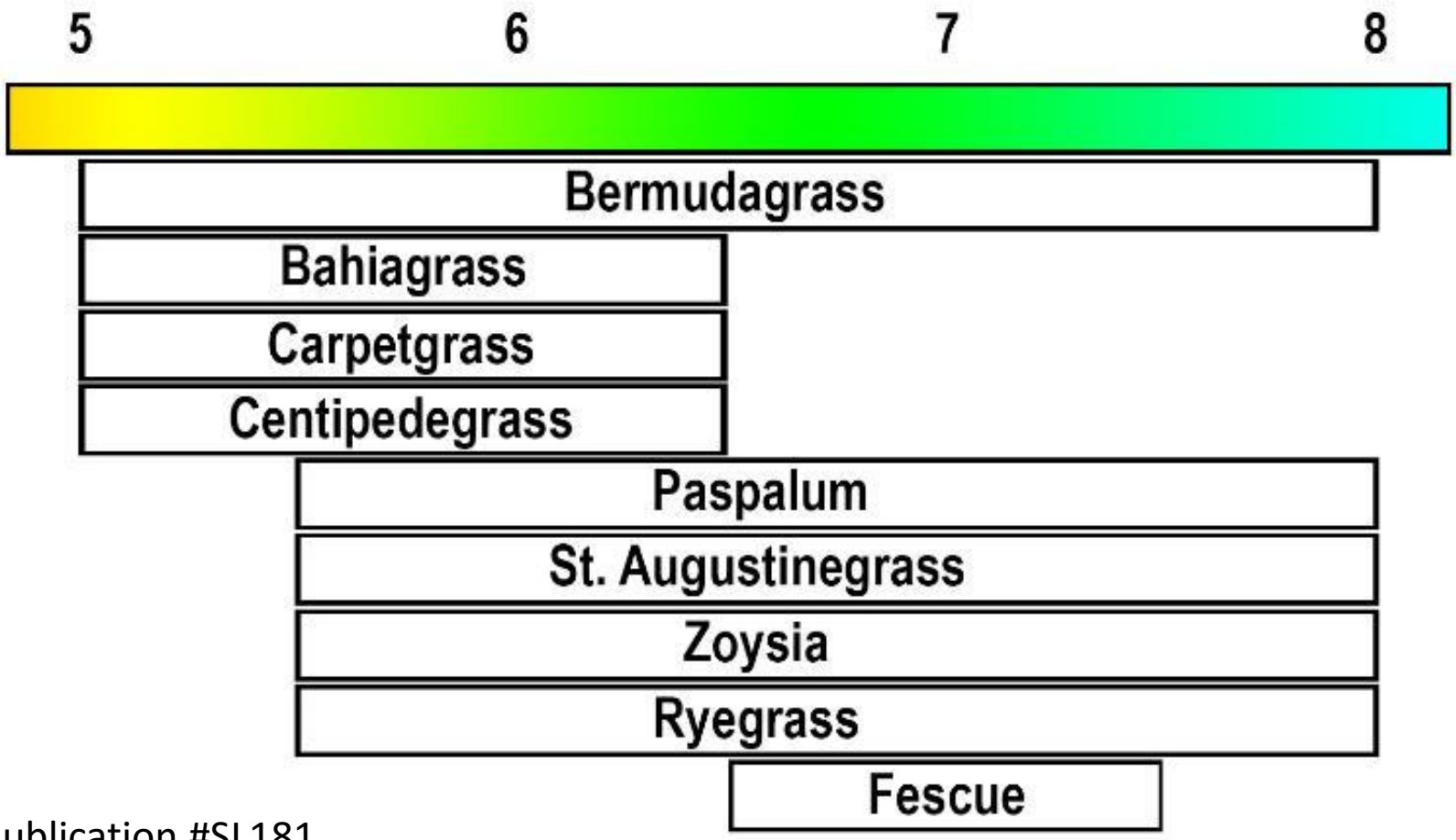
Activity 1
Case Study – Lawn Grass Selection

Recommend a lawn grass based on a new home site, its location in the state and county, and the client's needs.

	Bahia	Bermuda	St. Aug.	Zoysia	Centipede
Region	Statewide	Statewide	Statewide	Statewide	Statewide (acidic soils)
Maintenance	Low	Medium-High	Medium	Medium	Low
Establishment Method	Seed, sod	Seed, sod, sprigs, plugs	Sod, plugs	Sod, plugs, seed	Seed, sod, plugs
Wear	Poor	Excellent	Fair	Excellent	Fair
Drought	Excellent	Excellent	Good	Excellent	Good
Soil	Acid	Wide range	Wide range	Wide range	Acid
Shade	Fair	Poor	Good-excellent	Good-excellent	Fair
Nematode tolerance	Excellent	Poor	Good	Good	Poor

Compiled by UF/IFAS Turf Specialists

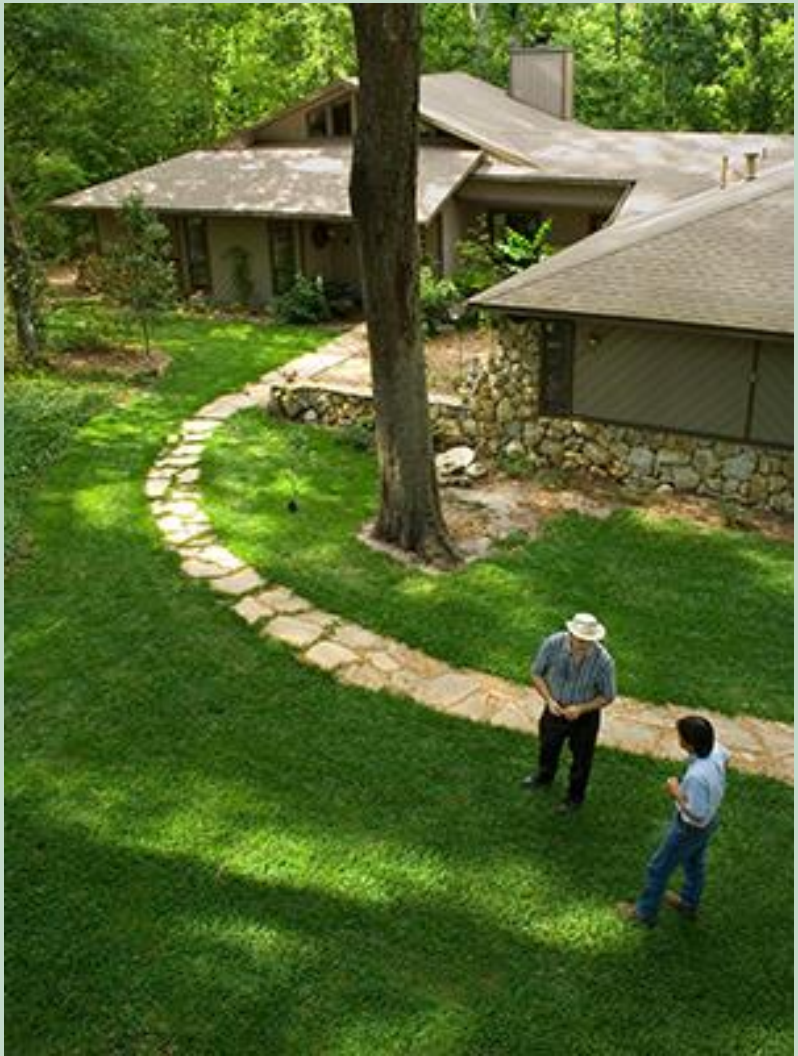
Soil pH Ranges for Turfgrass



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:

<u>Most to Least</u>

-‘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

EDIS Publication ENH151

Irrigation

EDIS Publication ENH9

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

	Bahia	Bermuda	St. Aug.	Zoysia	Centipede
Region	Statewide	Statewide	Statewide	Statewide	Statewide (acidic soils)
Maintenance	Low	Medium-High	Medium	Medium	Low
Establishment Method	Seed, sod	Seed, sod, sprigs, plugs	Sod, plugs	Sod, plugs, seed	Seed, sod, plugs
Wear	Poor	Excellent	Fair	Excellent	Fair
Drought	Excellent	Excellent	Good	Excellent	Good
Soil	Acid	Wide range	Wide range	Wide range	Acid
Shade	Fair	Poor	Good-excellent	Good-excellent	Fair
Nematode tolerance	Excellent	Poor	Good	Good	Poor

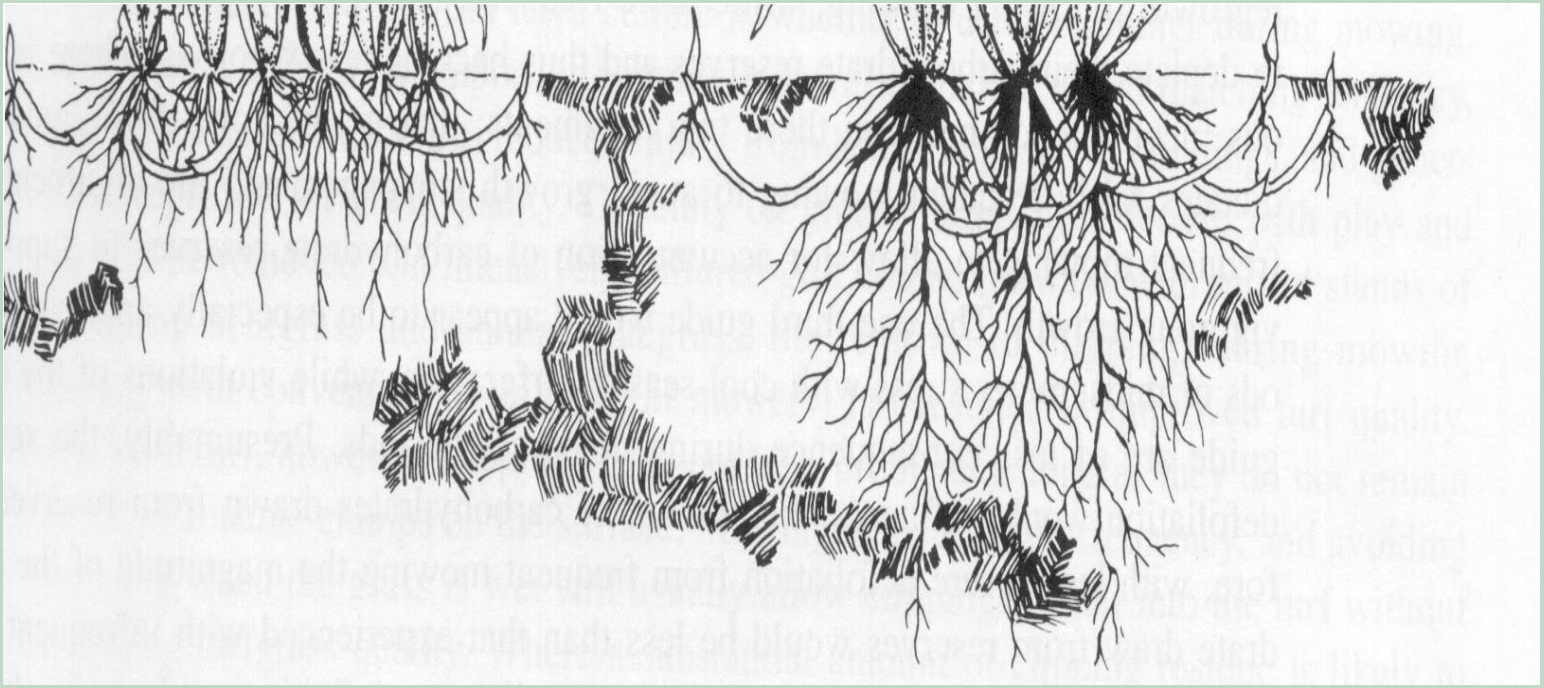
Compiled by UF/IFAS Turf Specialists

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 moister meter
- Smart irrigation systems (phone apps)

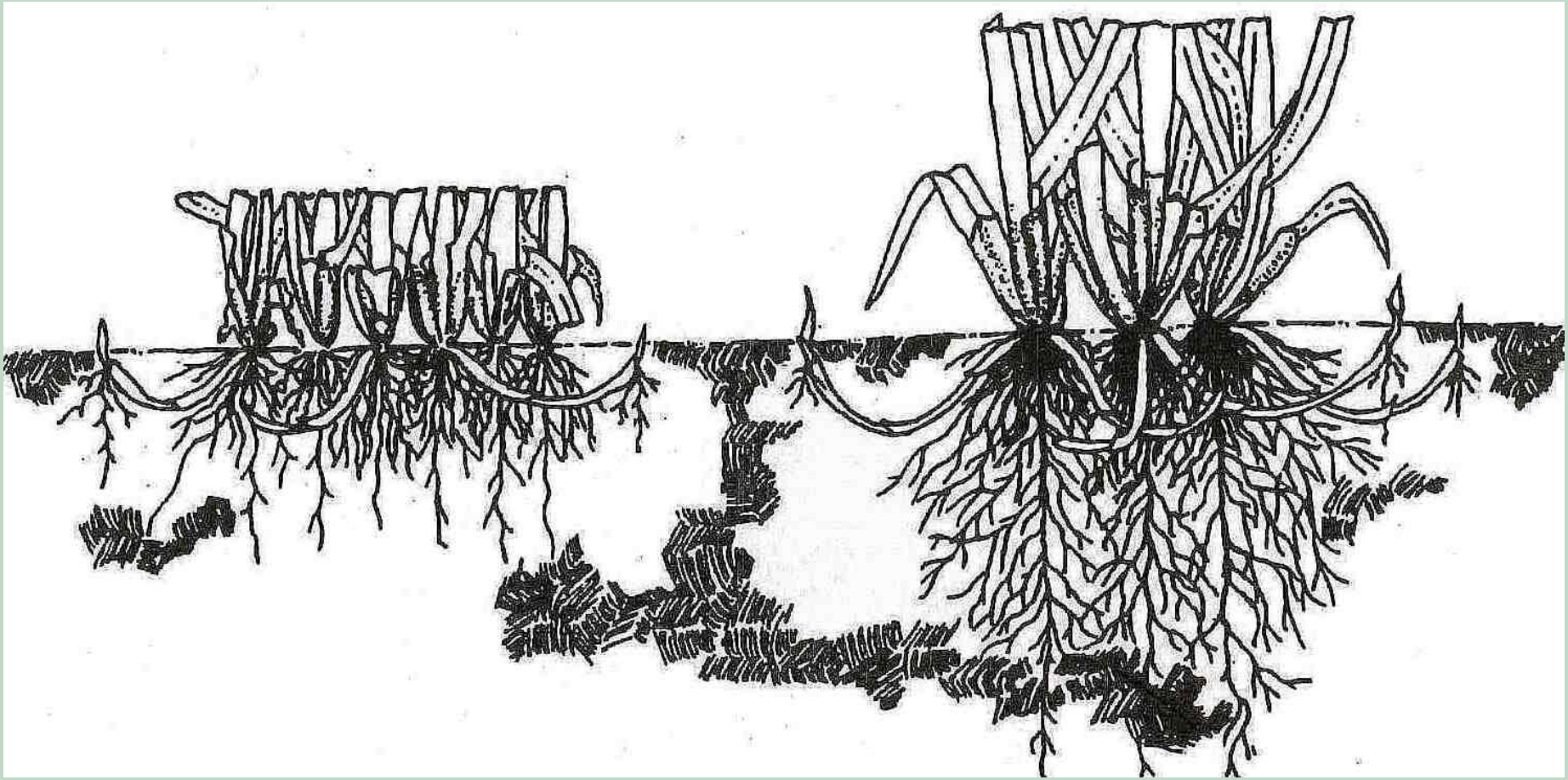
Watering – In Summary

- 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

Mowing

EDIS Publication ENH10

Influence of mowing height on root depth (root:shoot)

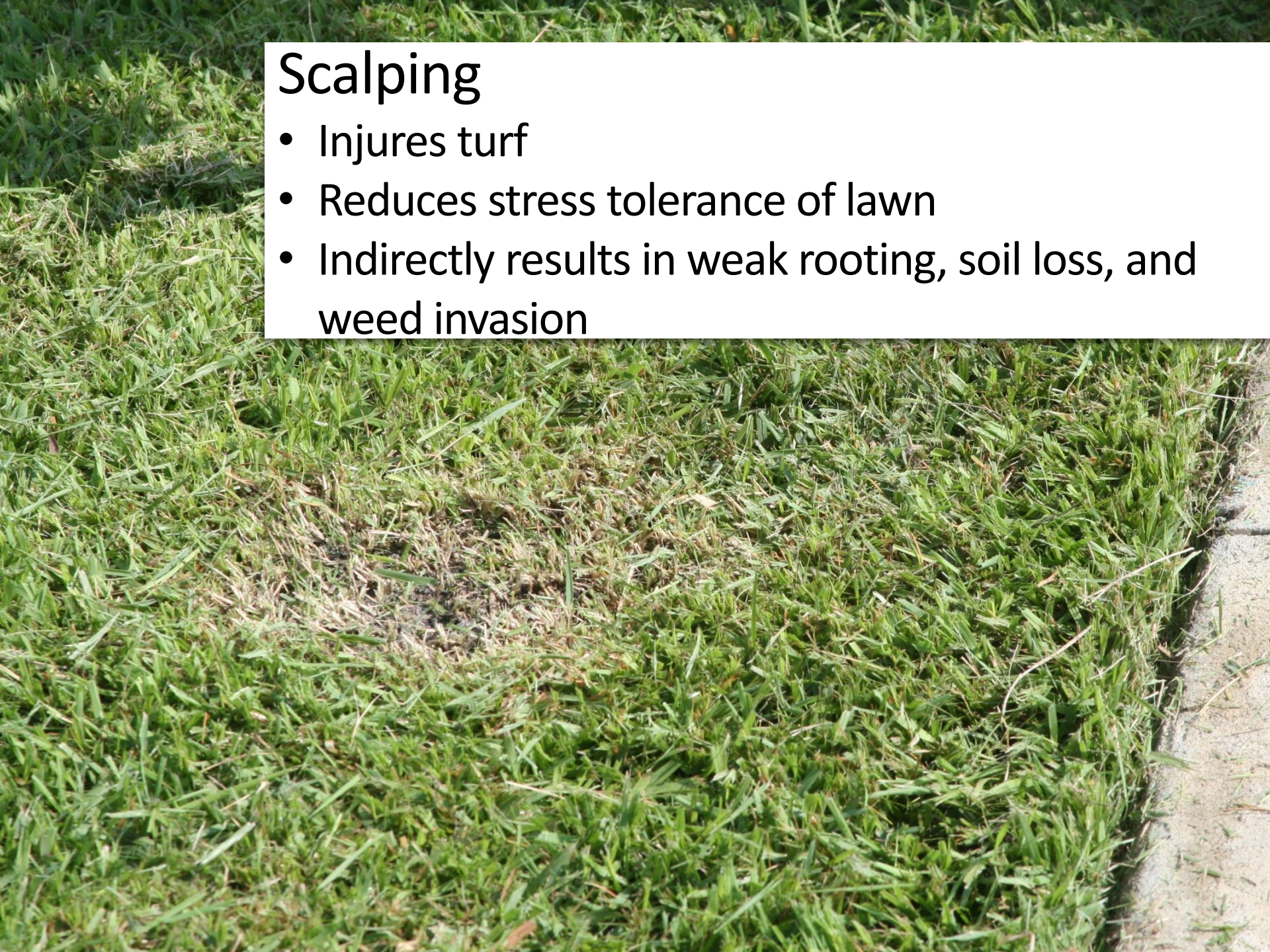


Mowing Height

- 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”
- Centipedegrass: 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

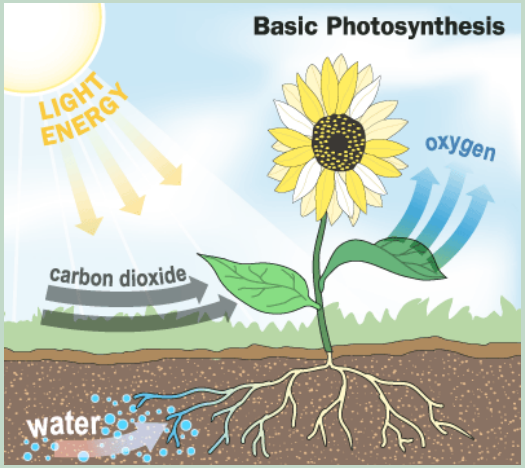
From atmosphere

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

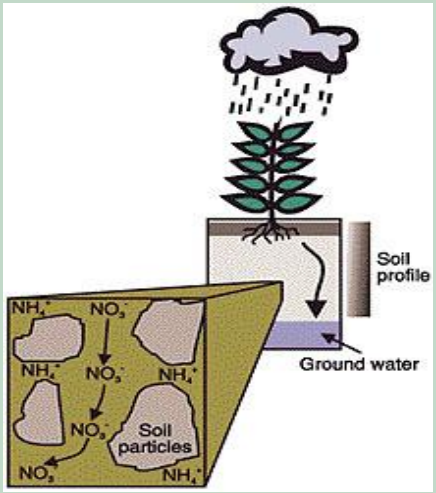
- Lawns need nutrients to grow and remain healthy.
- Some nutrients come from the atmosphere and soil, but some need to be applied as fertilizer.
- Nitrogen (N) and phosphorus (P) when misapplied can impair water resources.

EDIS Publication SL21

Two Ways That Fertilizers Can Pollute

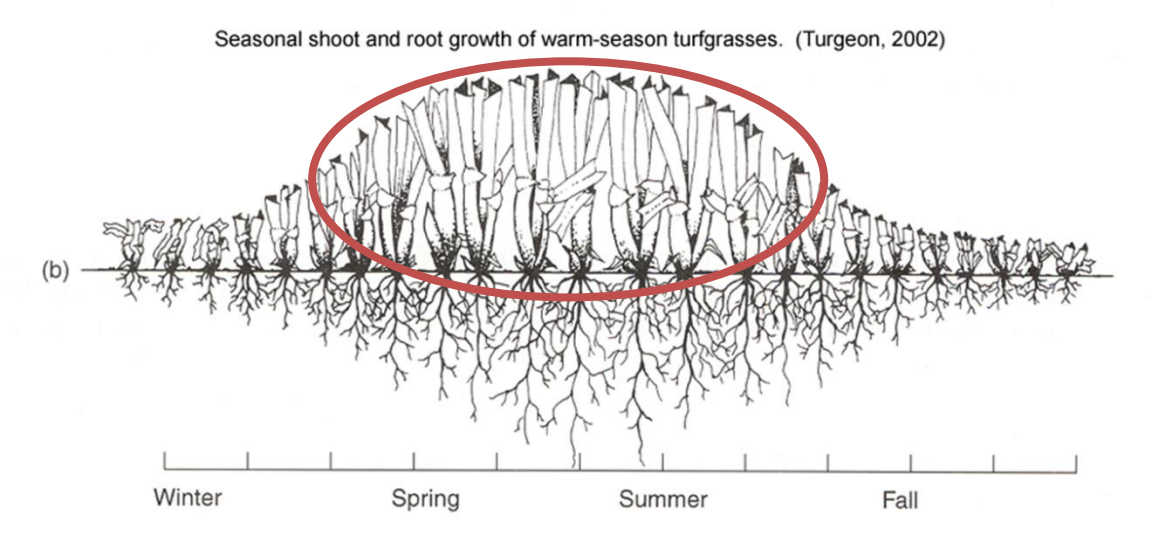
1. Leaching through soil (how N behaves in sandy soils)

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)

<u>STEP 3 – How much fertilizer per 1000 sq. ft?</u>

- 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?*

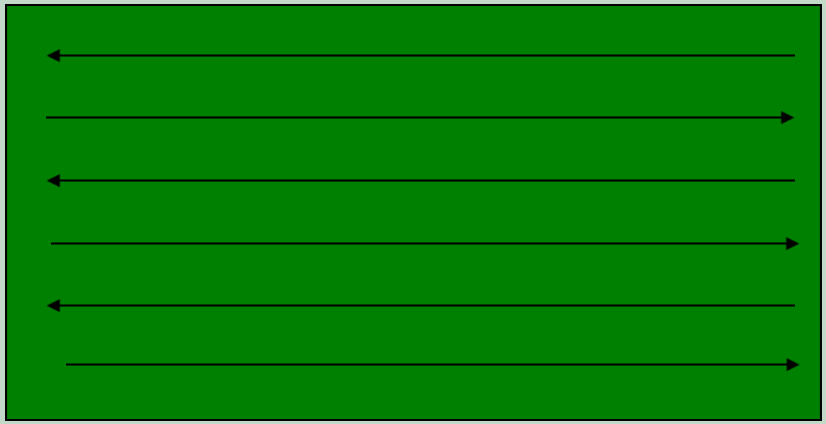
(Lbs. of N per 1,000 sq. ft.)

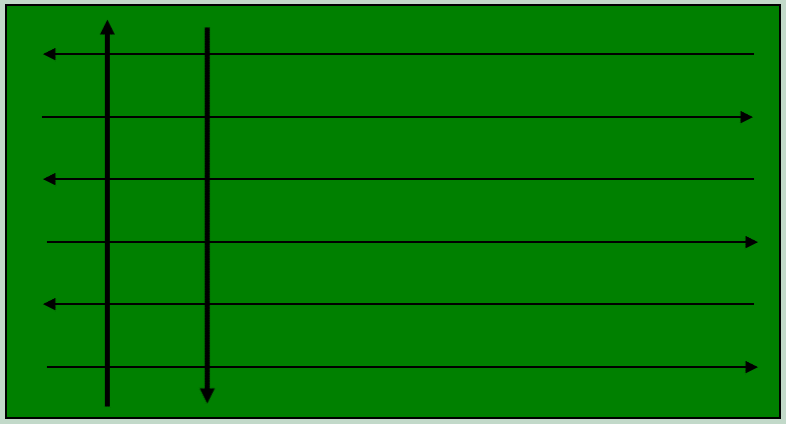
	North	Central	South
Bahiagrass:	**1-3**	**1-3**	**1-4**
Centipedegrass:	**0.4-2**	**0.4-3**	**0.4-3**
St. Augustinegrass:	**2-4**	**2-5**	**4-6**
Zoysiagrass:	**2-3**	**2-4**	**2.4-4.5**

* Recommendations as of October, 2017

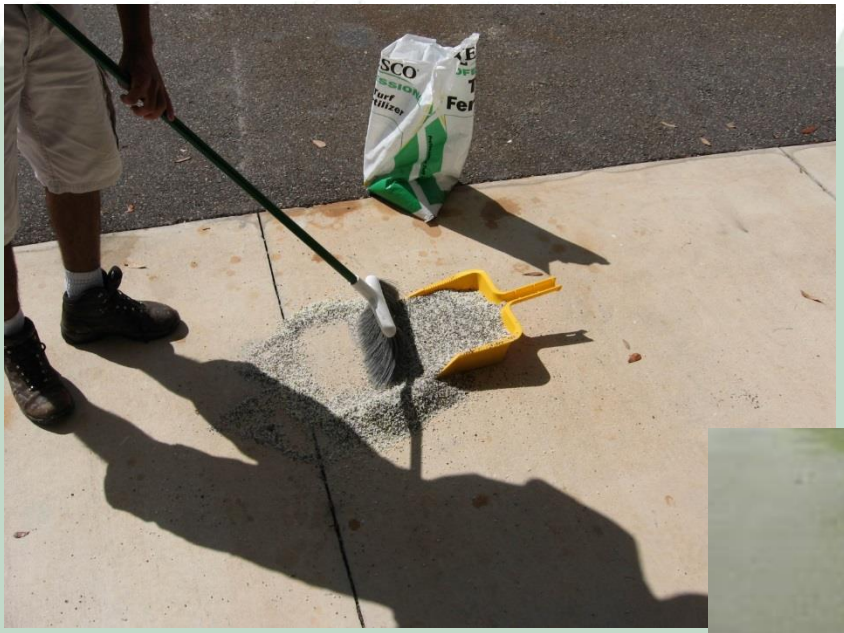
Applying Fertilizer

- 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.

EDIS Publication ENH979

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.

EDIS Publication ENY-300

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.

EDIS Publication EENY-045

Southern Chinch Bug

Blissus insularis Barber

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

EDIS Publication EENY-226

Who's Who?

Southern chinch bug (harmful)

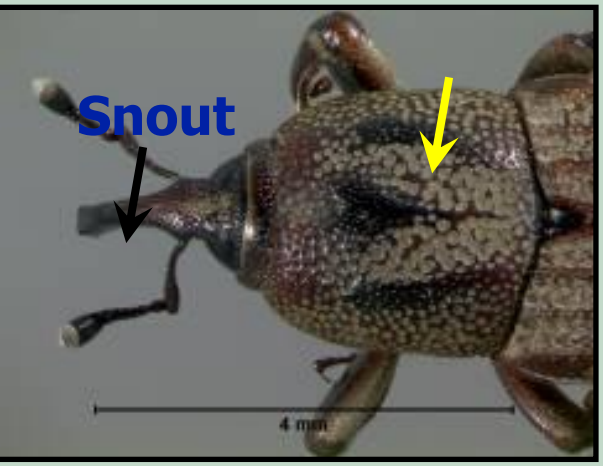
False chinch bug (harmless)

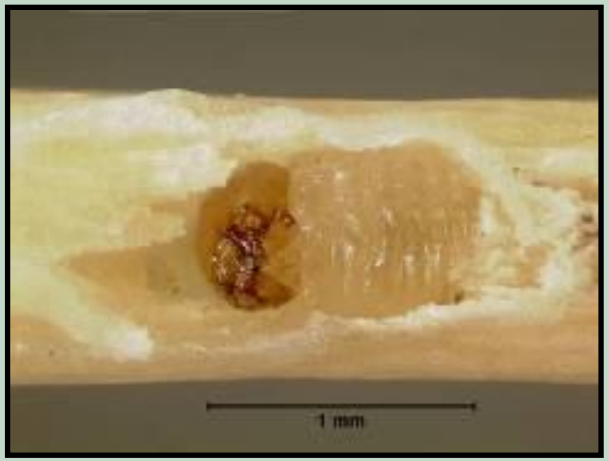
Big-eyed bug (helpful)

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





EDIS Publication EENY-207

Mole Crickets

Neoscapteriscus spp.

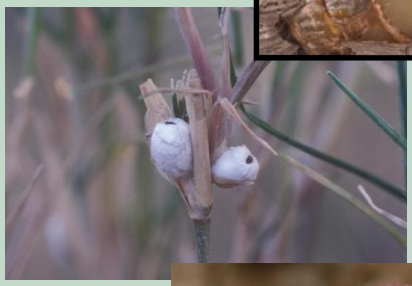
- Four species in FL; three are pests
- Some *consume* plants; all *tunnel*, which damages roots.
- Bahiagrass, bermudagrass, and centipedegrass attacked most often.
- Most damage occurs summer and fall.

Mole Crickets

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

EDIS Publication EENY-235

Turf Scale Insects & Mealybugs



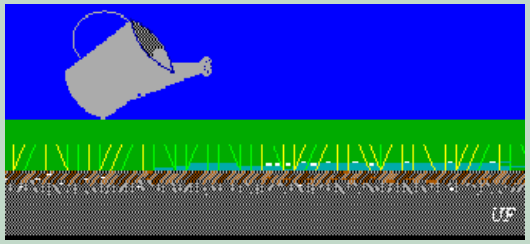
- Tuttle mealybug, *Brevennia rehi*
- Bermudagrass scale, *Odonaspis ruthae*
- Rhodesgrass mealybug, *Antonina graminis*
- Ground pearls, *Dimargarodes meridionalis*

- 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.

EDIS Publication ENY-298

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

EDIS Publication PP-204

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

EDIS Publication SS-PLP-5

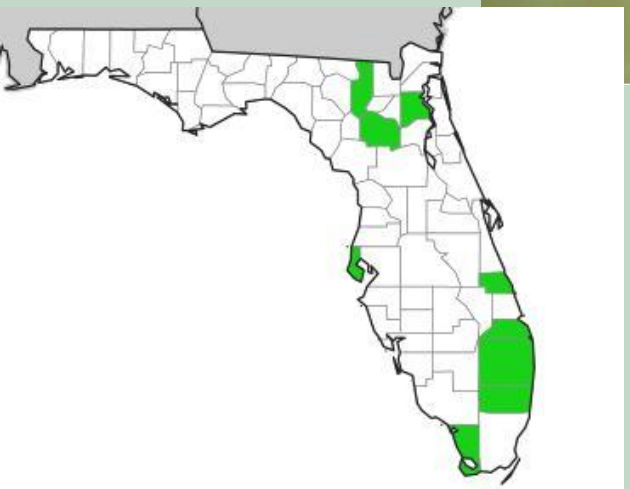
Take-all Root Rot

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

EDIS Publication SS-PLP-16

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

EDIS Publication PP313

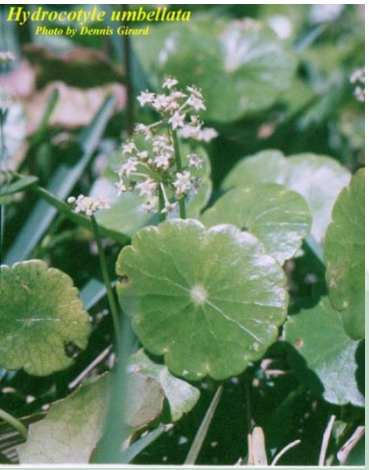
Managing Lawn Weeds

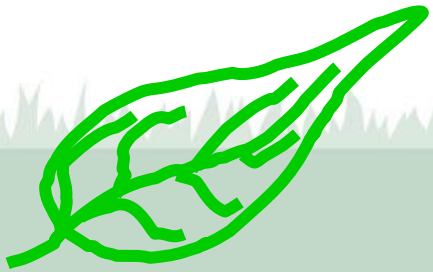
Weeds love…

- Too much water
- Too much fertilizer
- Thin or bare areas
- Grass mowed too short
- Lack of scouting by you

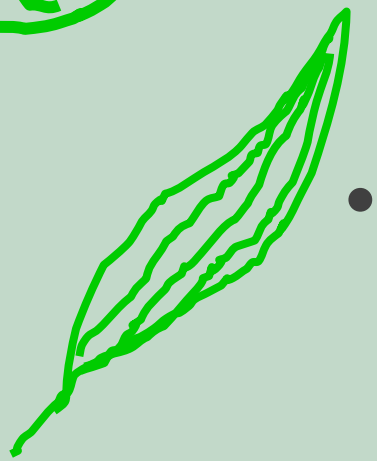
EDIS Publication ENH-884

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*

Tough Customers
(top to bottom)

- Common Bermudagrass
- Crabgrass species
- Torpedograss

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

Dr. Adam Dale, UF/IFAS Entomologist, Entomology and Nematology Dept.

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