Turfgrass Selection & Management

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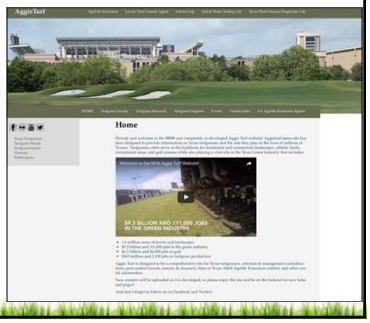
Texas A&M Turfgrass Resources

- Topics of Discussion
  - AggieTurf Website (AggieTurf.Tamu.Edu)
  - Turfgrass Management Practices
    - Species Selection
    - Mowing
    - Fertilization
    - Water Use/Irrigation
    - Weed, Insect, & Disease Control
  - Extension Publications

Texas A&M Turfgrass Resources
AggieTurf.Tamu.Edu

NEW AggieTurf Website
Launched in July 2015
- Over 130 pages of content
- Texas Turfgrasses
- Turfgrass Weeds
- Turfgrass Insects
- AgriLife Publications
- Useful Links
- Events
- Twitter & Facebook Profiles

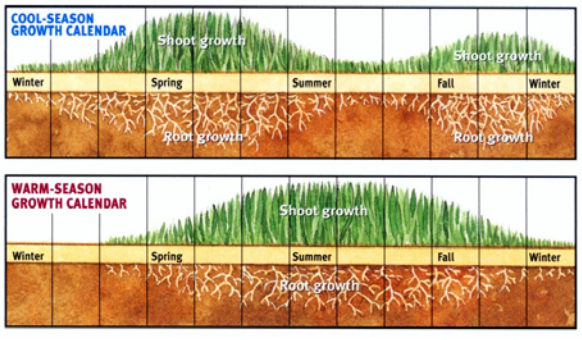


Proper Turfgrass Selection

- There are several season species available for use in Texas and proper selection is the first step to successful management.

Warm-season Species	Cool-season Species
Bahiagrass	Annual ryegrass
Bermudagrass	Creeping bentgrass
Buffalograss	Fine fescue
Centipedegrass	Kentucky bluegrass
Seashore Paspalum	Perennial ryegrass
St. Augustinegrass	Tall fescue
Zoysiagrass	

Growth Calendars for Cool and Warm-season Turfgrass Species



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Cool Season Grasses at Augusta National

Turfgrass Selection & Use

Cool-season species are not typically suited for Texas environments due to:

- Low water-use efficiency
- Low nitrogen-use efficiency
- Ideal temperature range of 60-75 °F
- High disease incidence
- Can lack rhizomatous and/or stoloniferous growth habits which allow them to recover from stresses associated with drought, pests, traffic, etc.

Turfgrass Selection & Use

- Warm-season species are typically much better suited for Texas environments due to:
  - High water-use efficiency
  - High nitrogen-use efficiency
  - Ideal temperature range of 80-95 °F
  - Drought hardiness
  - Rhizomatous and/or stoloniferous growth habits which allow them to recover from stresses associated with drought, pests, traffic, etc.

Proper Turfgrass selection

- Be sure to match the strengths of each grass to its desired area of planting and use

Warm-season Species	Strengths	Weaknesses
Bahiagrass	Rapid growth, low N use, drought	Shade, salts, mowing frequency, lack of density
Bermudagrass	Heat, drought, traffic, disease	Shade
Buffalograss	Drought, Low input	Disease, moisture, traffic, fertilization
Centipedegrass	Low input	Traffic, salts, high ph, shade
Seashore Paspalum	Salts, traffic, shade	Cold, disease
St. Augustinegrass	Shade, Cold	Traffic, cold
Zoysiagrass	Heat, drought, shade, moderate traffic, cold, low input (*Z. matrella* spp.)	Thatch, slow establishment/recovery rate

Proper Turfgrass selection

- Species and Variety Selection

Warm-season Species	Variety
Bahiagrass	Argentine, Pensacola, Tifton 9
Bermudagrass	Celebration, Common, Discovery, North Bridge, Princess, Tifton 10, TifDwarf, TifEagle, TifGrand, TifGreen, TifSport, Tifway 419
Buffalograss	Density, Prairie, Prestige
Centipedegrass	Common, Hammock, Santee, TifBlair
Seashore Paspalum	Seadwarf, Seaspray, Sea Isle
St. Augustinegrass	Captiva, Common, DelMar, Deltashade, Floratam, Palmetto, Raleigh, Sapphire
Zoysiagrass	Carrizo, Cavalier, Crowne, Diamond, El Toro, Emerald, Empire, Geo, Jamur, Meyer, Palisades, Royal, Y-2, Zeon, Zorro

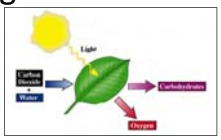
- For a complete list of warm-season species and varieties available as sod, visit www.txsod.com
- Also Aggieturf.tamu.edu

Turfgrass Selection & Use

- Warm-season species are typically much better suited for Texas environments
  - However, they also have a high sunlight requirement

Sunlight Requirement	Species
High	Bermudagrass
	Bahiagrass
	Centipedegrass
	Zoysiagrass (*Z. japonica*)
	Zoysiagrass (*Z. matrella*)
Low	St. Augustinegrass

Turfgrass Selection & Use



- ALL grasses need at least some level of sunlight to perform well. Reductions in sunlight result in decreased photosynthesis and less creation of sugars and carbohydrates needed for growth and storage
- Turfgrasses under excessive shade will ultimately result in:
  - Thinning of the turf canopy
  - Elongation (lengthening) of leaves, reduced leaf width, absence of photosynthetic tissue
  - Encroachment of weeds
  - Eventual death if light is not sufficient for survival

Bermudagrass

Zoysiagrass thriving in Filtered Shade

Zoysia

Slow growing

Turfgrass Selection & Use

- Warm-season species are typically much better suited for Texas environments

Drought Tolerance	Species
High	Bermudagrass, Buffalograss
↕	Zoysiagrass (*Z. japonica*)
↕	Bahiagrass
↕	St. Augustinegrass
↕	Zoysiagrass (*Z. matrella*)
Low	Centipedegrass

Turfgrass Selection & Use

- Intended use is an important consideration.

Traffic Tolerance	Species
High	Zoysiagrass
↕	Bermudagrass
	Bahiagrass
	St. Augustinegrass
Low	Centipedegrass

Turfgrass Selection & Use

Excessive traffic, compaction, poor soil conditions

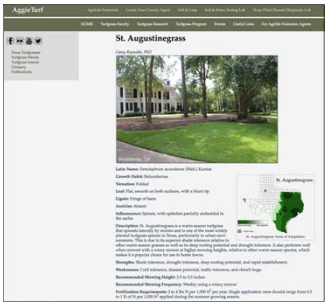
Texas A&M Turfgrass Resources

2016 Texas A&M NTEP and SCRI

Texas A&M Turfgrass Resources
AggieTurf.Tamu.Edu

12 Texas Turfgrass Pages

- Each Texas Turfgrass species has its own page with useful information on:
  - Use sites
  - Strengths & Weaknesses
  - Growth Habits
  - Texas Adaptability Maps
  - Recommended management practices such as mowing height, irrigation, etc.



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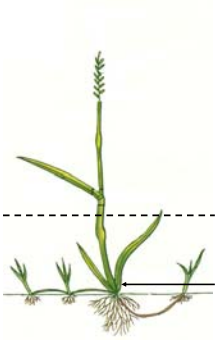
Turfgrass Mowing

Turfgrass Cultural Practices



- What is mowing?

  The process of regularly removing leaf tissue from a turfgrass plant.

Turfgrass Cultural Practices

- Impacts of Mowing
  - Increases uniformity
  - Results in finer (thinner) textured leaf blades
  - Greater plant density per unit area

Texas A&M Turfgrass Resources

Keep Mower Blades Sharp!

Turfgrass Cultural Practices

- Mowing Height

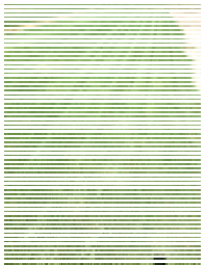
Species	Mowing Height
Bermudagrass	0.75 – 2.0 inches
Zoysiagrass	1.0 – 2.0 inches
St. Augustinegrass	2.5 – 4.0 inches
Centipedegrass	1.5 – 2.0 inches
Seashore Paspalum	1.0 – 2.0 inches
Buffalograss	2.5 – 3.0 inches
Tall fescue	2.5 – 4.0 inches
Fine fescue	2.5 – 4.0 inches
Kentucky bluegrass	1.5 – 3.0 inches

Turfgrass Cultural Practices

- Mowing Frequency
  - As often as necessary so as to not remove too much leaf tissue at one time.
  - 1/3rd rule

Species	Mowing Frequency
Bermudagrass	Daily to 7 days
Zoysiagrass	5 to 7 days
St. Augustinegrass	5 to 7 days
Centipedegrass	7 to 14 days
Seashore Paspalum	Daily to 7 days
Buffalograss	7 to 14 days, if mowed
Tall fescue	5 to 7 days
Fine fescue	7 to 14 days, if mowed
Kentucky bluegrass	5 to 7 days

Texas A&M Turfgrass Resources



Turfgrass Cultural Practices

- Fertilization

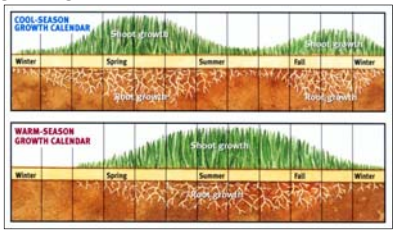
Turfgrass Cultural practices

Essential Mineral Elements for Turfgrass Nutrition
Turfgrass Management, 5th Edition. A.J. Turgeon

Amount	Element	Chemical Symbol	Available Form
MACRO	Nitrogen	N	NH_4^+, NO_3^-
Largest	Phosphorus	P	HPO_4^{2-}, $H_2PO_4^-$
quantity	Potassium	K	K^+
SECONDARY	Sulfur	S	SO_4^{2-}
Medium	Calcium	Ca	Ca^{2+}
quantity	Magnesium	Mg	Mg^{2+}
MICRO	Iron	Fe	Fe^{2+}, Fe^{3+}
Smallest	Manganese	Mn	Mn^{2+}
quantity	Boron	B	H_3BO_3
	Copper	Cu	Cu^{2+}
	Zinc	Zn	Zn^{2+}
	Molybdenum	Mo	MoO_4^{2-}
	Chlorine	Cl	Cl^-

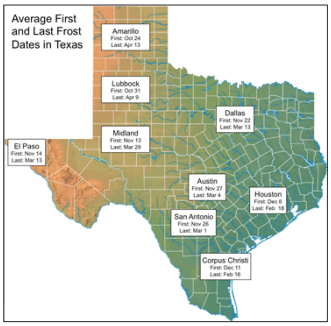
Turfgrass Cultural Practices

- When is the optimum time to fertilize?
  - Time your fertilization when the plant is actively growing.



Turfgrass Cultural Practices

- When is the optimum time to fertilize?
  - Frost dates are a good reference point
  - Also consider ideal range of temperatures
    - Warm-season: 80-95 °F
    - Cool-season: 60-75 °F



Turfgrass Cultural Practices

- Nutrient Management Programs Fertilization rates
  - The nutrients N-P-K are found in plant tissues at approximately a 3-1-2 ratio

Turfgrass Cultural Practices

- Things to consider when selecting fertilizer
  - Use rate (3-1-2)
  - Nitrogen source
  - Nutrient fate and mobility
  - Soil test!
    - soiltesting.tamu.edu

Turfgrass Cultural Practices

N Sources

- Quickly Available
  - Inorganic Salts (NH_4NO_3, Urea)
- Slowly Available
  - Slowly Soluble (SCU, PCU, UF, IBDU)
  - Organic Fertilizers (Milorganite, Manures)

Turfgrass Cultural Practices

- Quickly Available Nitrogen
  - Also referred to as Water Soluble Nitrogen
  - Very soluble
  - Tendency to burn
  - Rapid response
  - Short response
  - Cheap
  - Minimal temperature dependency
  - High leaching potential

Quick-Release Nitrogen Sources commonly used in turfgrass fertilizers

Source	Chemical formula	Fertilizer grade	Salt index*
Urea	$CO(NH_2)_2$	46-0-0	75
Diammonium phosphate	$(NH_4)_2HPO_4$	20-54-0	34
Monammonium phosphate	$NH_4H_2PO_4$	11-48-0	30
Ammonium nitrate	NH_4NO_3	33-0-0	105
Ammonium sulfate	$(NH_4)_2SO_4$	21-0-0	69
Calcium nitrate	$Ca(NO_3)_2$	16-0-0	53
Potassium nitrate	KNO_3	13-0-44	74

* Salt index is a relative measure of the salinity of fertilizers and indicates the relative burn potential of nitrogen sources (a high salt index indicates a high potential to burn turf). Sodium nitrate is the benchmark value against which all other materials are compared, with a salt index of 100. Salt indices may vary with formulation.

Slow-Release Nitrogen Sources commonly used in turfgrass fertilizers

Product	Form*	Grade	%WIN**	%CRN**
Natural organics				
Milorganite	G	6-2-0	92	—
Sustane	G	5-2-4	66	—
Nature Safe	G	8-3-5	85	—
Ringer Turf Restore	G	10-2-6	90	—
Harmony 3-6-3	G	3-6-3	60	—
Ureaform				
Nitroform	G,P	38-0-0	67	—
METH-EX 38	G	38-0-0	67	—
Urea-formaldehyde reaction products				
Nutralene	G	40-0-0	36	—
METH-EX 40	G	40-0-0	36	—
HD Super Fairway	G	35-3-7	83	—
Coron	L	28-0-0	0	70
Triazones				
Formolene Plus	L	30-0-0	0	60
N-Sure	L	28-0-0	0	72
IBDU				
Par-Ex IBDU (coarse)	G	31-0-0	90	—
Par-Ex IBDU (fine)	G	31-0-0	85	—
Sulfur-coated ureas				
Lebanon Pro	G	37-0-0	—	—
Polymer-coated nitrogen				
Polyon	G	43-0-0	—	—
Sulfur Kote II	G	41-0-0	—	—
LESCO Poly Plus Std.	G	39-0-0	—	—
Poly-S	G	40-0-0	—	—
Poly-S	G	38-0-0	—	—
Poly-X Pro	G	37-0-0	—	—

*Form refers to physical state of product, G = granular, P = powder, and L = liquid.
**%WIN is the percentage water insoluble nitrogen of the *total* nitrogen; %CRN is the percentage controlled release nitrogen of the *total* nitrogen.

Source
Turfgrass Fertilization: A Basic Guide for Professional Turfgrass Managers.

Peter Landschoot, Penn State University

Turfgrass Cultural Practices

- Yearly nitrogen requirements by species

Species	Yearly N requirement (lbs N/yr)
Bermudagrass	3 to 6
Zoysiagrass	2 to 4
St. Augustinegrass	2 to 4
Centipedegrass	1 to 2
Seashore Paspalum	2 to 4
Buffalograss	1 to 2

Turfgrass Cultural Practices

- Nutrient Management Programs (Nitrogen)
  - Application rates
  - 0.5 to 1 lb N/month during the growing season is a typical recommended range

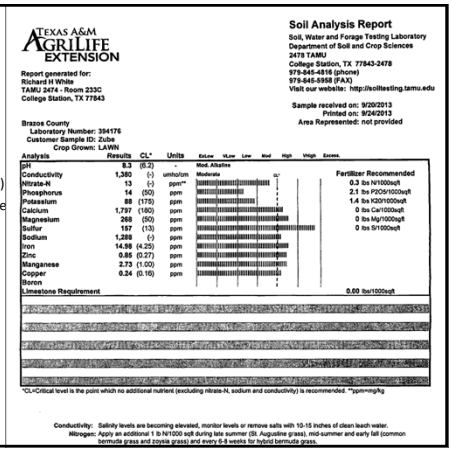
Turfgrass Cultural Practices

- Determining how much N to apply depends on several factors:
  - Species:
  - Desired outcome: High quality, pristine turf vs. utility turf
  - Maintenance: How much maintenance can you provide?
  - Use: Highly trafficked athletic turf vs. ornamental lawn

Turfgrass Cultural Practices

- Benefits of Returned Clippings
- Nutrient addition
  - Nitrogen (5%)
  - Phosphorus (0.5%)
  - Potassium (2-3%)
- Easy disposal
- Root zone modification

- Things to consider when selecting fertilizer
  - Use rate (3-1-2)
  - Nitrogen source
  - Nutrient fate and mobility
  - Soil test!



TEXAS A&M AGRILIFE EXTENSION

Soil Analysis Report

Soil, Water and Forage Testing Laboratory
Department of Soil and Crop Sciences
2478 TAMU
College Station, TX 77843-2478
979-845-4816 (phone)
979-845-5958 (FAX)
Visit our website: http://soiltesting.tamu.edu

Report generated for:
Richard H White
TAMU 2474 - Room 233C
College Station, TX 77843

Sample received on: 9/20/2013
Printed on: 9/24/2013
Area Represented: not provided

Brazos County
Laboratory Number: 394176
Customer Sample ID: Zube
Crop Grown: LAWN

Analysis	Results	CL*	Units	Fertilizer Recommended
pH	8.3	(6.2)	-	
Conductivity	1,380	(-)	umho/cm	
Nitrate-N	13	(-)	ppm**	0.3 lbs N/1000sqft
Phosphorus	14	(50)	ppm	2.1 lbs P2O5/1000sqft
Potassium	88	(170)	ppm	1.4 lbs K2O/1000sqft
Calcium	1,797	(180)	ppm	0 lbs Ca/1000sqft
Magnesium	268	(50)	ppm	0 lbs Mg/1000sqft
Sulfur	157	(13)	ppm	0 lbs S/1000sqft
Sodium	1,288	(-)	ppm	
Iron	14.98	(4.25)	ppm	
Zinc	0.85	(0.27)	ppm	
Manganese	2.73	(1.00)	ppm	
Copper	0.24	(0.10)	ppm	
Boron				
Limestone Requirement				0.00 lbs/1000sqft

*CL=Critical level is the point which no additional nutrient (excluding nitrate-N, sodium and conductivity) is recommended. **ppm=mg/kg

Conductivity: Salinity levels are becoming elevated, monitor levels or remove salts with 10-15 inches of clean leach water.
Nitrogen: Apply an additional 1 lb N/1000 sqft during late summer (St. Augustine grass), mid-summer and early fall (common bermuda grass and zoysia grass) and every 6-8 weeks for hybrid bermuda grass.

Texas A&M Turfgrass Resources

Turfgrass Water Use

Turfgrass Selection & Use

- Warm-season species are typically much better suited for Texas environments

Drought Tolerance	Species
High	Bermudagrass, Buffalograss
	Zoysiagrass (*Z. japonica*)
	Bahiagrass
	St. Augustinegrass
	Zoysiagrass (*Z. matrella*)
Low	Centipedegrass

Turfgrass Selection & Use

- Much of the drought tolerance associated with warm-season grasses is a result of drought "avoidance" through deep rooting potential.
- A study performed in San Antonio titled "Evaluation of Sixty-Day Drought Survival in San Antonio of Established Turfgrass Species and Cultivars" covers this in detail.
  - The full study can be found at:

http://itc.tamu.edu/documents/2008FinalReportSAWS&TPT_s.pdf

Turfgrass Selection & Use

Evaluation of Sixty-Day Drought Survival in San Antonio of Established Turfgrass Species and Cultivars

- Brief Overview of Research and Results
  - A drydown structure (5,000 ft²) was constructed in San Antonio
  - Two soil depths were constructed within the drydown structure
    - 4 inches and unrestricted
  - 4 species and 25 varieties were planted in each of the soil depths
    - Bermudagrass, St. Augustinegrass, Zoysiagrass, and Buffalograss
  - After establishment by sod, the plots were exposed to a 60 day drought period and a 60 day recovery period

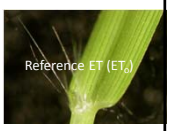
- NO grass survived 60 days of drought on 4" soil profile
- ALL grasses survived 60 days of drought on unlimited soil profile

Table 8. Percent living ground cover and recovery uniformity (scale of 1 to 9, with 9 equalling greatest recovery uniformity) at the end of the 60 day recovery period in 2006. Data in columns followed by the same letter are not significantly different at the 0.05 level.

	Nov 22, 2006	
Bermudagrass	% Living Ground Cover	Uniformity
Celebration	100 a	9.0 a
Common	99 ab	9.0 a
GN1	99 ab	9.0 a
Grimes EXP	100 a	9.0 a
Premier	58 bcdefgh	7.3 ab
Tex Turf	98 ab	9.0 a
TifSport	98 ab	9.0 a
Tifway 419	99 ab	9.0 a
St. Augustinegrass		
Amerishade	43 efghij	4.5 bc
SA Common	55 cdefghi	6.0 abc
Delmar	38 efghij	4.8 bc
Floratam	89 abdc	8.5 a
Palmetto	51 defghi	4.8 bc
Raleigh	25 ghij	4.5 bc
Sapphire	18 hij	3.0 c
Zoysiagrass		
Cavalier	28 fghij	6.8 ab
El Toro	63 abcdefg	8.5 a
Emerald	25 ghij	7.3 ab
Empire	71 abcde	8.5 a
Jamur	69 abcdef	8.3 a
Palisades	71 abcde	8.5 a
Y-2	4 j	3.0 c
Zeon	18 hij	6.8 ab
Zorro	15 ij	6.0 abc
Buffalograss		
609	95 abc	9.0 a

Turfgrass Water Use

Penman-Monteith Model



Water Budgeting

Example of Evapotranspiration Rates in Southern US

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
mm/day	1.85	2.45	3.55	4.25	5.00	4.17	4.26	3.95	3.51	3.32	2.33	1.61
in/week												

Data from the USGS Evapotranspiration Stations Home Page
http://fl.water.usgs.gov/et/etdata.html

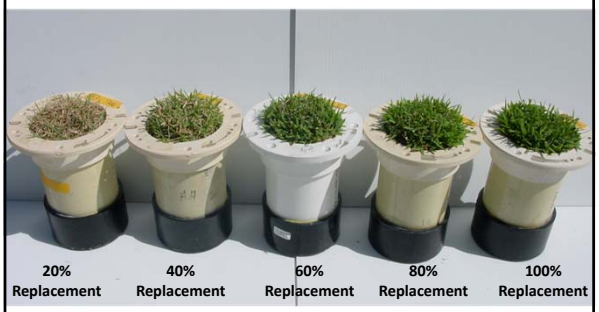
Water Budgeting

Example of Evapotranspiration Rates in Southern US

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
mm/day	1.85	2.45	3.55	4.25	5.00	4.17	4.26	3.95	3.51	3.32	2.33	1.61
in/week	0.53	0.67	0.97	1.17	1.37	1.14	1.17	1.08	0.97	0.91	0.64	0.44

- Crop coefficients (K_c)for bermudagrass have been reported to range between 0.54 to 0.79 with acceptable quality maintained at 0.60. (Bañuelos et al., 2011)
  - $Kc = ET_a/Et_o$

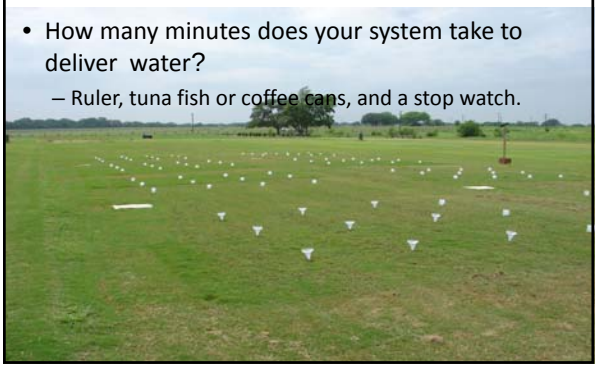
Deficit Irrigation= Intentionally irrigating to below turf's maximal water use



Daily replacement at various percentages of actual ET (ET_a)

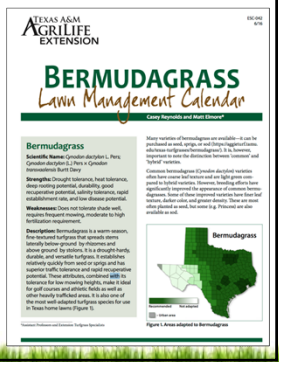
Know your system

- How many minutes does your system take to deliver water?
  - Ruler, tuna fish or coffee cans, and a stop watch.



Texas A&M Turfgrass Resources

Bermudagrass Home Lawn Management Calendar
- Monthly Guidelines for Managing Home Lawns
  - Fertilization
  - Irrigation
  - Mowing
  - Weed Control
  - And more…
- Home Lawn Management Calendars for other species are currently being produced
  - St. Augustinegrass
  - Zoysiagrass
  - Etc..



Texas A&M Turfgrass Resources

Matching Products to Pests

Weeds

- Weeds are generally placed into one of three categories based on their growth characteristics.
  - Grassy weeds
    - Monocots (one cotyledon)
    - Leaves arranged in two vertical rows
    - Stems are hollow, not solid
  - Broadleaves
    - Dicots (two cotyledons)
  - Sedges
    - Leaves arranged in three vertical rows
    - Stems are solid, not hollow
    - Triangular stems

Grasses

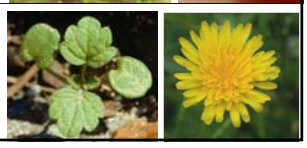
1. Monocots (one cotyledon leaf)
2. Hollow stems, not solid
3. Leaves arranged in 2 vertical rows

Sedges

1. Triangular, solid stems
2. Leaves arranged in three vertical rows

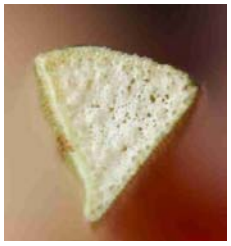
Broadleaves

1. Two seedling leaves
2. Showy flowers



Sedges

Unlike grasses, these plants have pithy, triangular stems and their leaves arranged in threes.




Matching Products to Pests

Weeds

- They are also categorized into one of three life cycles.
  - Summer annuals
    - Summer annuals germinate in the spring when soil temperatures reach about 55ºF, flower in the summer and die in the fall at the first frost.
  - Winter annuals
    - Winter annuals germinate in the fall, grow until spring and die during late spring or early summer.
  - Perennials
    - Perennial weeds are capable of living more than two years.

Matching Products to Pests

Weeds

- Annual Grassy Weeds
  - Crabgrass, Goosegrass, Sandbur, Annual bluegrass, etc.


Matching Products to Pests

Weeds

- Perennial Grassy weeds
  - Bahiagrass, Dallisgrass, Bermudagrass, Roughstalk bluegrass, etc.


Matching Products to Pests

Weeds

- Summer annual broadleaf weeds
  - Slender aster, spotted and prostrate spurge, purslane, etc.


Matching Products to Pests

Weeds

- Winter annual broadleaf weeds
  - Chickweed, Henbit, Lawn burweed, etc.



Matching Products to Pests
Weeds

- Perennial and Annual Sedges, Kyllingas

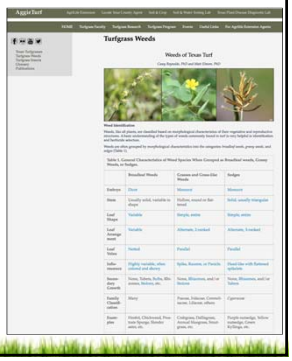


Matching Products to Pests
Weeds

- So, what are our control options given the various classifications, life cycles, species, etc. ?
  - Annual weeds
    - Pre-emergence and post-emergence options
  - Perennial weeds
    - Primarily post-emergence options

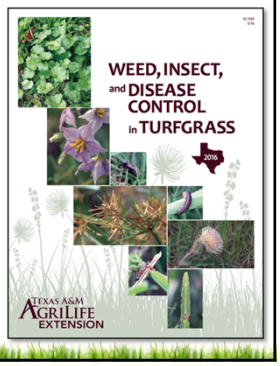
Texas A&M Turfgrass Resources
AggieTurf.Tamu.Edu

Weeds of Texas Turfgrass
- Over 100 common Texas Turfgrass Weeds
- Weed Identification Tools
- Hundreds of high-resolution digital images for help with weed identification

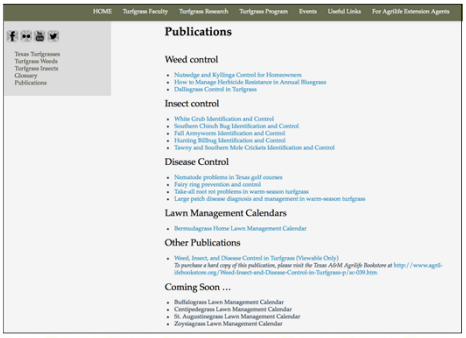


Texas A&M Turfgrass Resources

Weed, Insect, & Disease Control in Turfgrass
- Over 120 pages of herbicide, insecticide, and fungicide control options labeled for Texas Turfgrasses
- Viewable for FREE in the Publications section of AggieTurf
- Hard-copies available for purchase through the AgriLife Bookstore

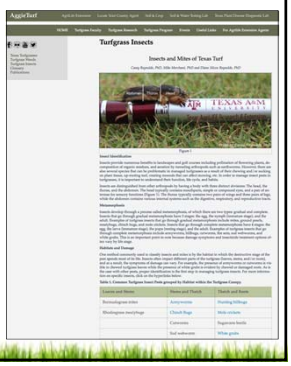


Texas A&M Turfgrass Resources



Texas A&M Turfgrass Resources

Insects & Mites of Texas Turfgrass
- Insect Identification Tools
- High-resolution digital images for help with insect identification
- Direct links to AggieTurf Insect publications on common Texas Turfgrass insects



Texas A&M Turfgrass Resources

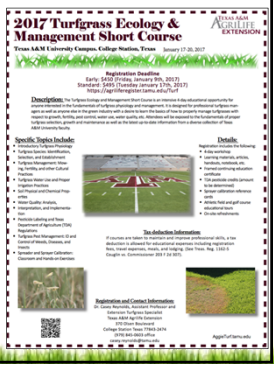
Printable Turfgrass Insect Publications with ID, Life Cycles, & Treatment Options

Texas A&M Turfgrass Resources

- Social Media
  - Twitter: @aggieturf
  - Facebook
  - YouTube: AggieTurf

Texas A&M Turfgrass Resources

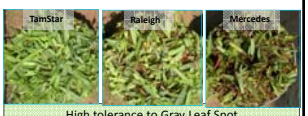
2017 Turfgrass Short Course
- January 17th -22nd, 2017
- Memorial Student Center on Texas A&M Campus in College Station, TX
- $450 for week-long workshop



St. Augustinegrass and Zoysiagrass Development Update

Ambika Chandra, PhD
Associate Professor
Texas A&M Dallas Center

'TamStar'™– First Interploid St. Augustinegrass Hybrid Tested as DALSA 0605



1. Drought Resistance
2. High tolerance to Gray Leaf Spot
3. Suppression of Southern Chinch Bugs (Antixenosis)
4. Reasonable freezing tolerance
5. Fewer seedhead production
6. Highly Sterile – little to no off-types

'Chisholm' (*Zoysia japonica*) – Tested as DALZ 0102 in 2002 NTEP

Developed and Jointly Released by Texas A&M AgriLife Research and Kansas State University

- Comparable cold hardiness to Meyer
- Superior turf quality
- Rapid rate of establishment
- Rapid recovery rate following damage
- Good shade tolerance
- Good fall color retention
- High shoot density
- Low seed-head number
- Excellent resistance to zoysiagrass mite

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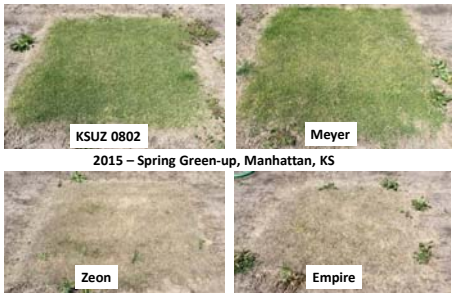
'KSUZ 0802' – *Z. matrella* x *Z. japonica Zoysia* hybrid

Developed and Jointly Released by Texas A&M AgriLife Research and Kansas State University

Finer-textured than 'Meyer' and as cold hardy as Meyer



2015 – Spring Green-up, Manhattan, KS