

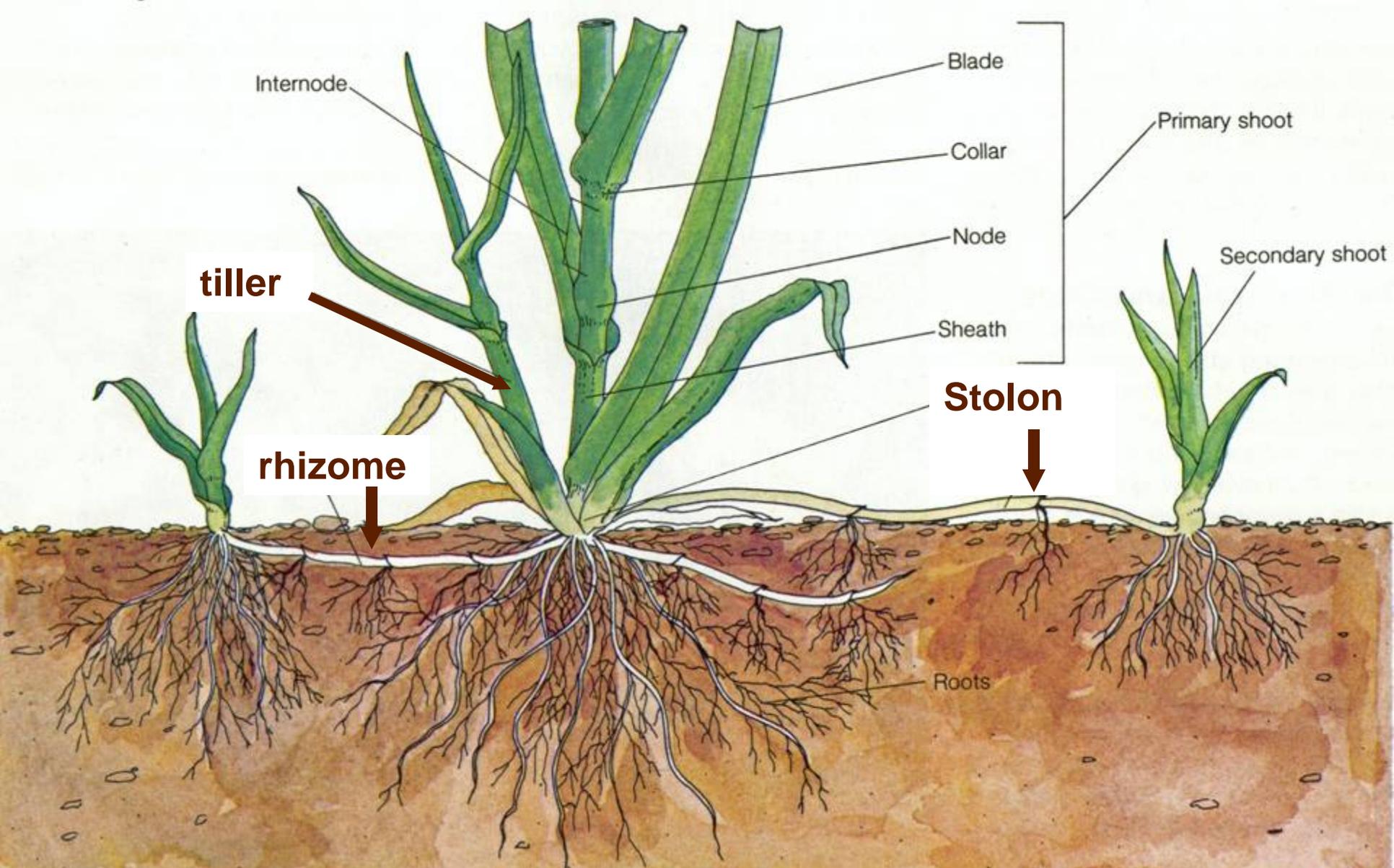
Turf Management – The basics and beyond

Mark Brown

Extension Agent Pulaski Co.

Today's Items

- Turf selection
- Fertilizing and liming
- Mowing
- Thatch
- Shade
- Irrigation
- Weed control
- Calendars
- Finding the information

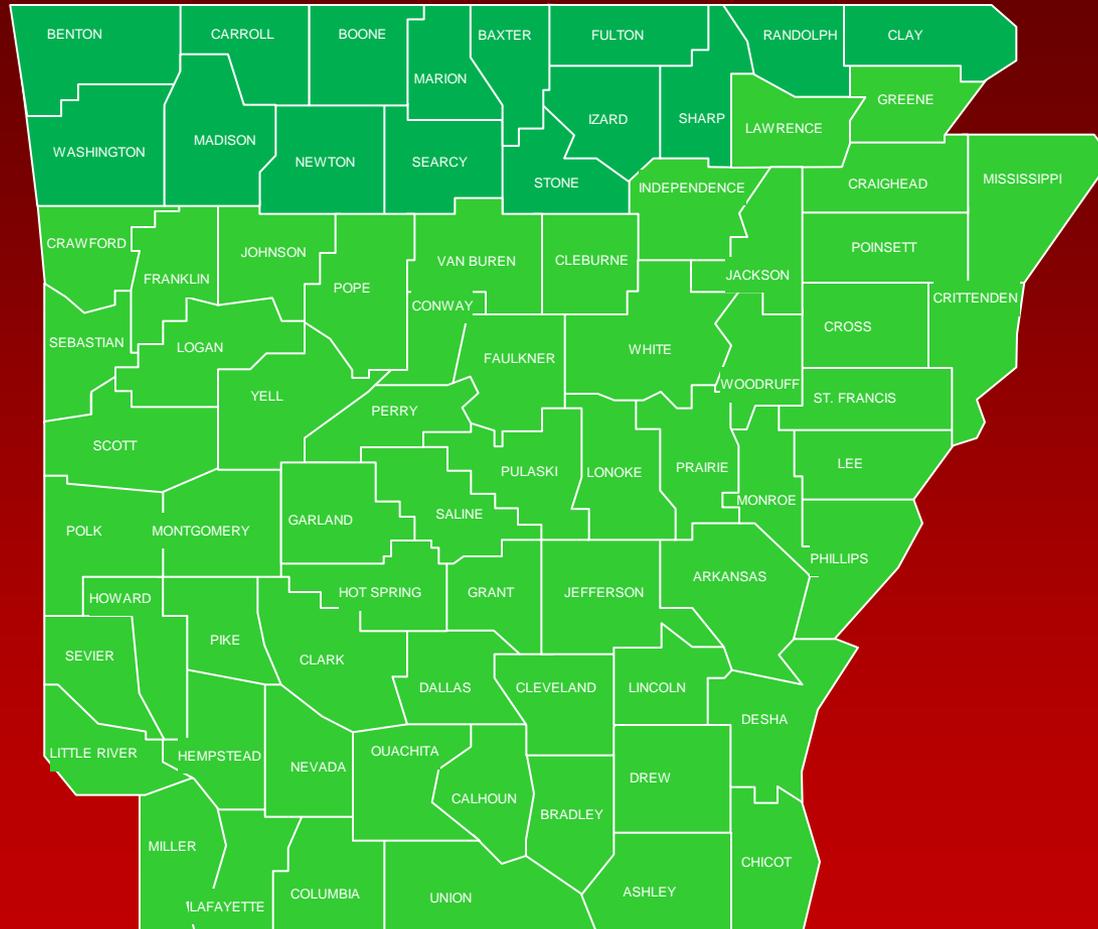


Species selection

- What are my preferences
- What is best adapted to my area
- New improved cultivars

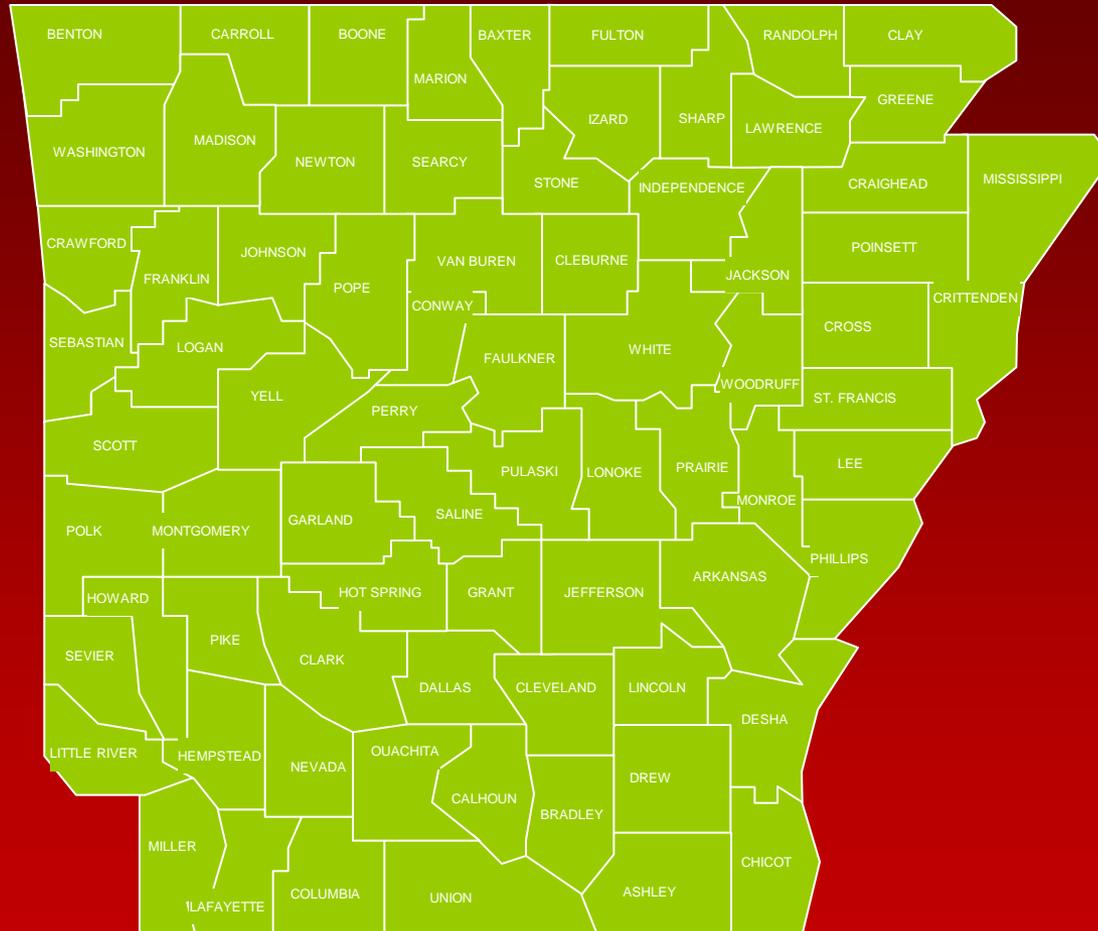


Bermudagrass



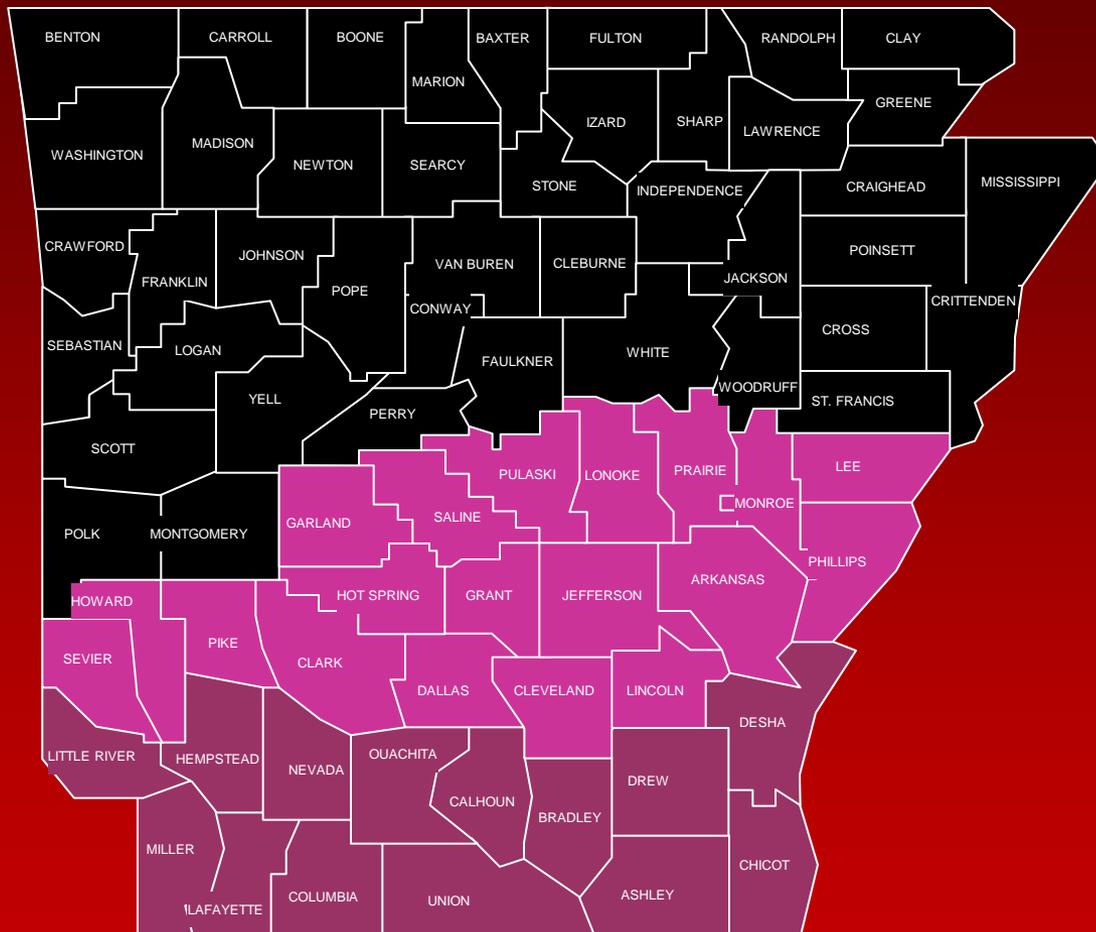
Plant hardiness zones 6+

Zoysiagrass



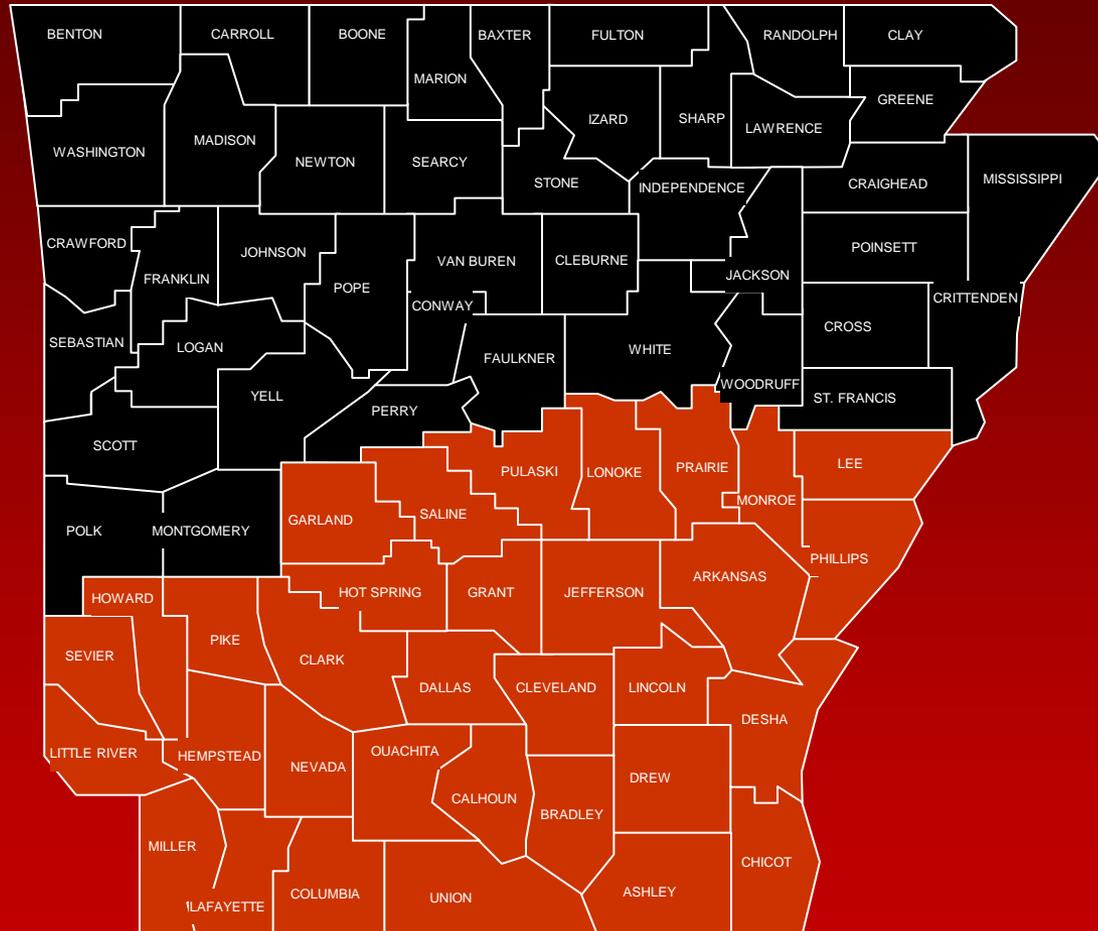
Plant hardiness zones 5b+

St. Augustinegrass



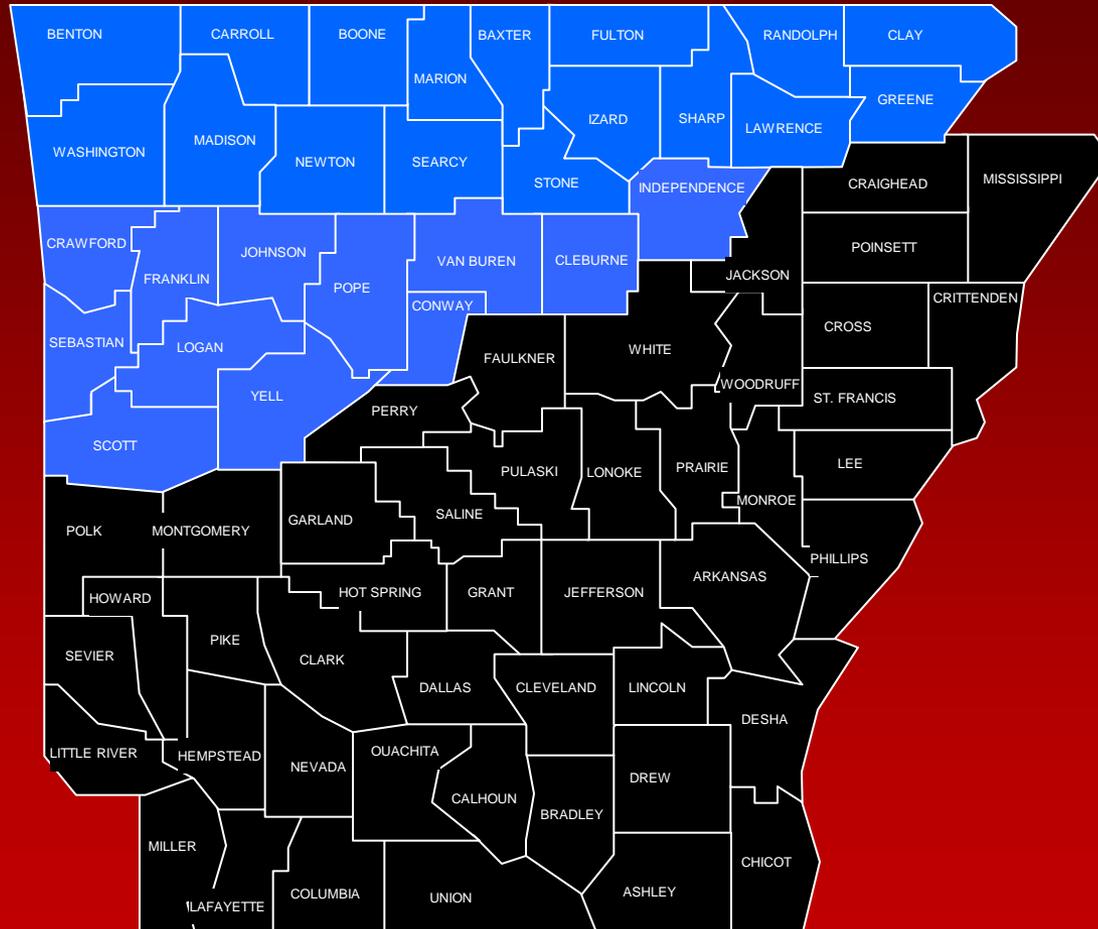
Plant hardiness zones 8+

Centipedegrass



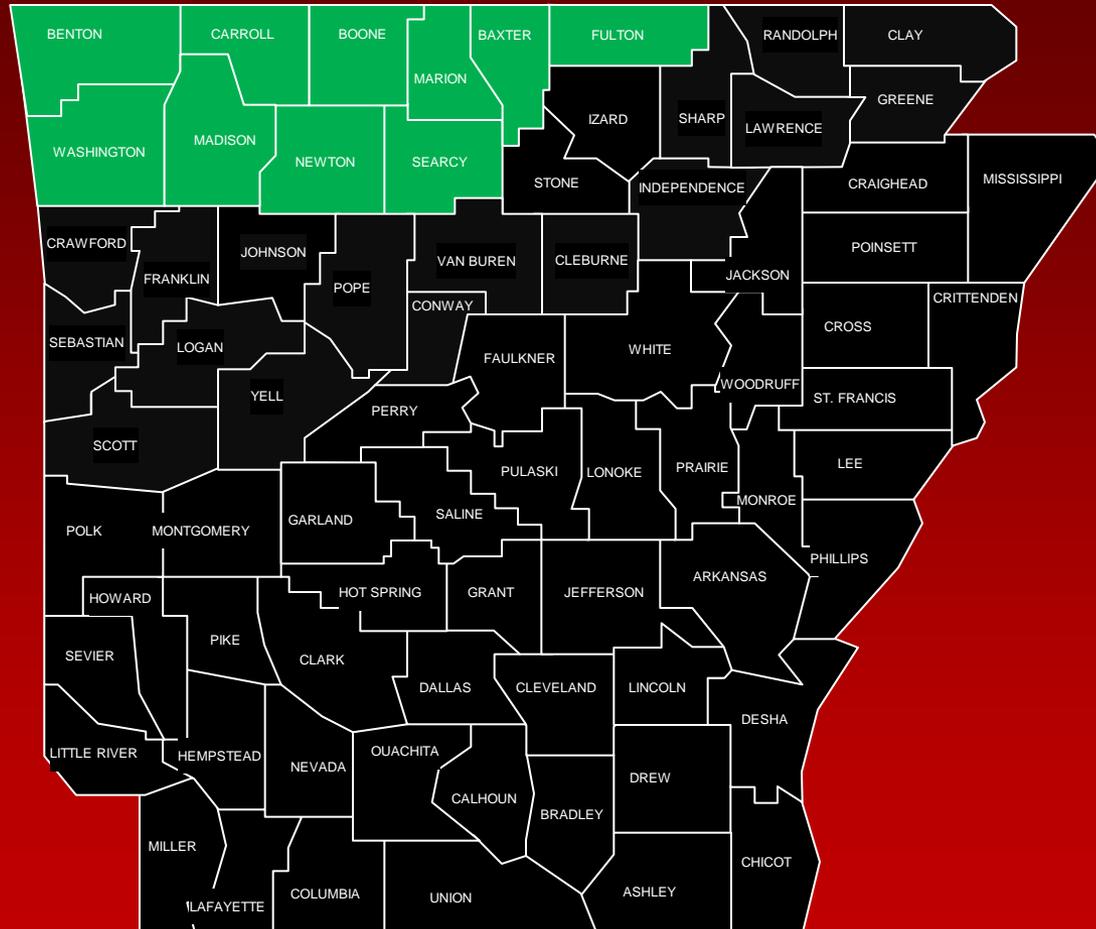
Plant hardiness zones 7b+

Tall fescue



Plant hardiness zones 5-6a

Kentucky bluegrass



Plant hardiness zones 5-6a

A large, dense patch of green turf-type common bermudagrass growing in a field. The grass is vibrant green and appears to be in a well-maintained state. It is surrounded by dry, cracked soil, suggesting a hot or arid environment. The grass is growing in a rectangular shape, possibly a test plot or a small lawn area. The soil is light brown and shows significant cracking, particularly around the edges of the grass patch.

Turf-type common bermudagrass, seeded



Riviera bermudagrass
Seeded

Fertilizing your turf



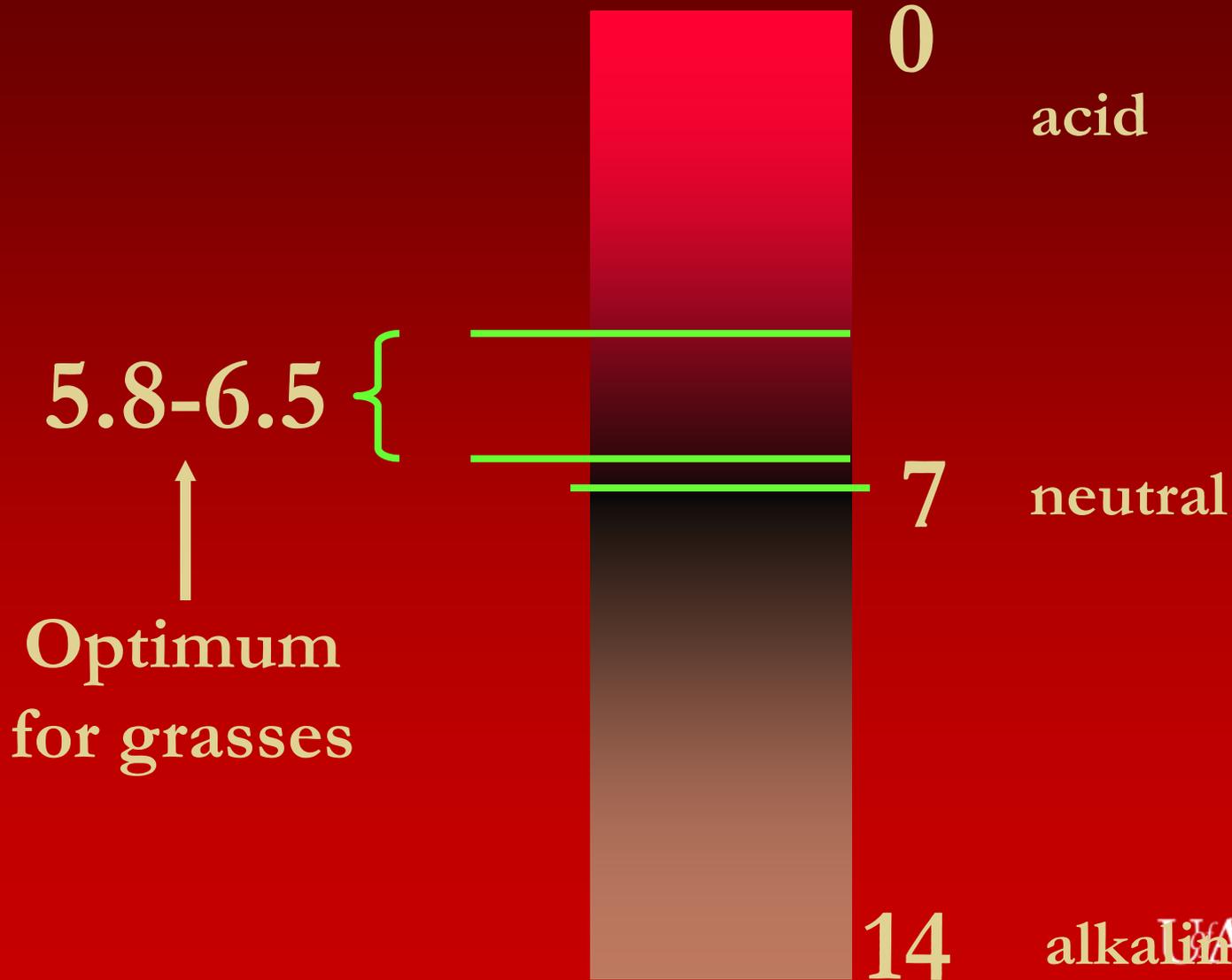
- Use science to determine your needs
- Page 18 MG

What does my turf really need ?

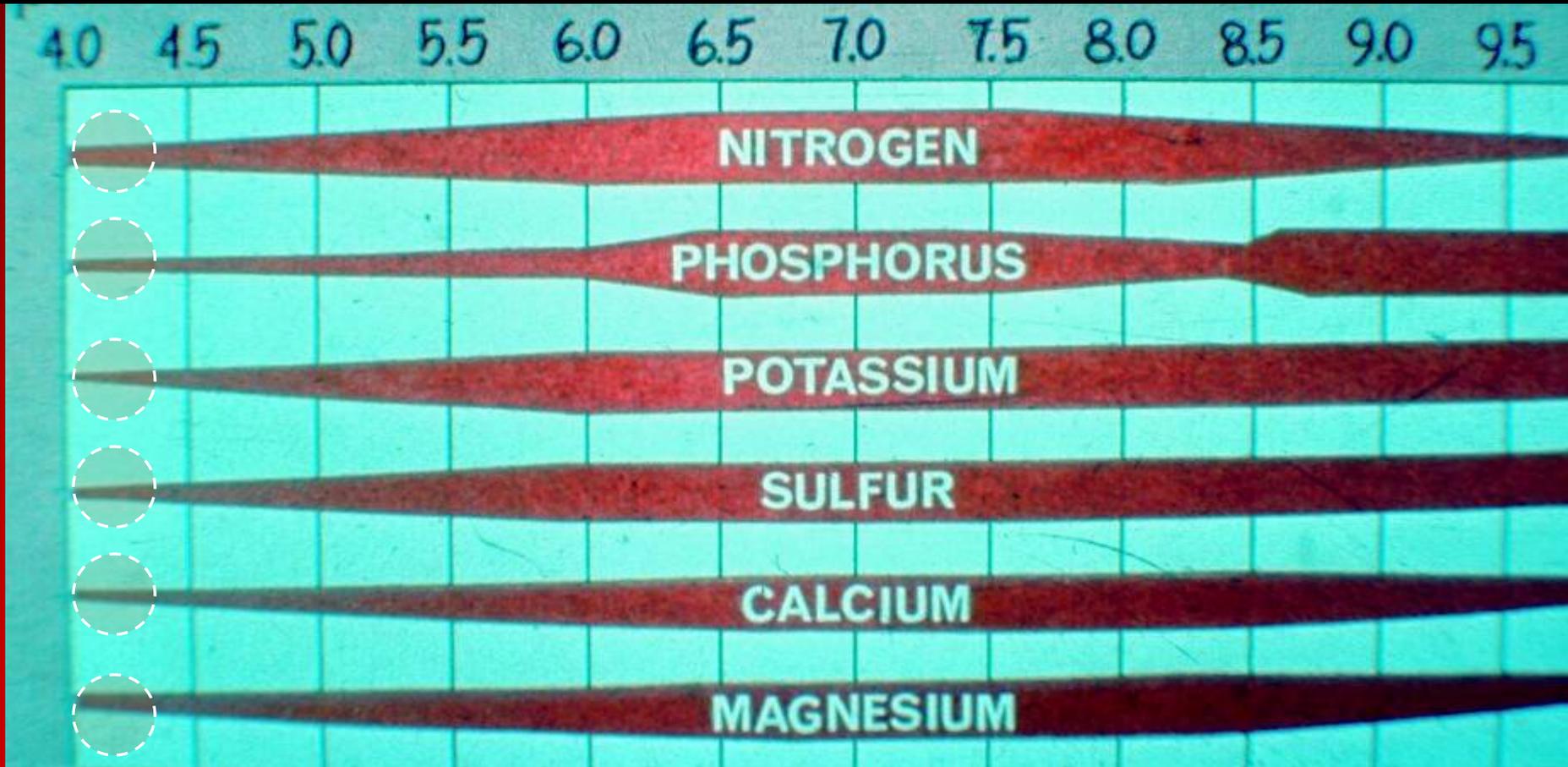


1. Get a soil test
2. Check pH, P, K

The pH scale



How Soil pH Affects Availability of Plant Nutrients



Cooperative Extension Service
Soil Analysis Report
Soil Testing And Research Laboratory
Marianna, AR 72360
<http://www.uark.edu/depts/soiltest>

The University of Arkansas is an equal opportunity/affirmative action institution

DENNIS EMERSON	Client ID:	9178976
111 N SCHOOL ST		
POYEN	AR	72128
Date Processed:	9/18/2007	
Field ID:	FOOTBALL	
Acres	1	
Lime Applied in the last 4 years:	No	
Leveled in past 4 years:	No	
Irrigation:	Unknown	
County:	Hot Spring	
Lab Number:	74994	
Sample Number:	149018	

1. Nutrient Availability Index

Nutrient	Concentration		Soil Test Level (Mehlich 3)
	ppm	lb/acre	
P	32	64	Above Optimum
K	111	222	Above Optimum
Ca	229	458	--
Mg	132	264	--
SO4-S	37	74	--
Zn	7.3	14.6	--
Fe	121	242	--
Mn	134	268	--
Cu	0.3	0.6	--
B	0.2	0.4	--
NO3-N			--

2. Soil Properties

Property	Value	Units
Soil pH (1:2 soil-water)	4.2	---
Soil EC (1:2 soil-water)		umhos/cm
Soil ECEC	10	cmolc/kg
Organic Matter (Loss on Ignition)		%
Estimated Soil Texture	Sandy Loam	

Estimated Base Saturation (%)

Total	Ca	Mg	K	Na
28.9	11.6	11.2	2.9	3.2

3. Recommendations (Notice: State and/or federal nutrient management regulations may supersede these agronomic recommendations.)

Crop		N	P2O5	K2O	SO4S	Zn	B	Lime
Last Crop	Athletic Field (404)	----- lb/1000 sq.ft. -----						
Crop 1	Athletic Field - Warm Season Grasses on a Soil Base (EST & MNT)	6	1.1	0	0	0	0	80
Crop 2	Lawn Turf - Ryegrass (EST & MNT) (429)	3	0	0	0	0	0	80
Crop 3								

80 lbs lime/1000 sq ft is the recommendation for this soil

4. Crop 1 No

Liming Your Lawn

Aaron Patton
Assistant Professor -
Turfgrass Specialist

Proper soil pH is necessary to produce a healthy, high-quality, attractive lawn. Lime is often applied to Arkansas lawns to help raise the soil pH near neutral, which increases the availability of most plant nutrients. The first step in liming your home lawn is to obtain a soil test before applying any nutrients. A soil test provides key information including soil pH, potassium and phosphorus levels. Soil testing is free through county Cooperative Extension Service offices.

Collect soil samples in a bucket from the upper 4 to 6 inches of soil from ten or more locations around the yard. Remove any vegetative material such as stems and leaves. Air dry and mix the samples thoroughly. Take about 1 pint of the mixture to your county Extension office for analysis (for more information see FSA2121, *Test Your Soil for Plant Food and Lime Needs*). Soil can be sampled any time of the year, but sampling lawns in late fall, early winter or late spring will help expedite the process, since the soil test lab has many agricultural samples to test in late winter and spring.

Soil pH and Liming

Soil pH is a measure of the soil acidity or alkalinity. The pH scale ranges from 0 to 14. A pH of 7.0 is neutral. Values less than 7.0 indicate acid conditions, while readings over 7.0 indicate alkaline conditions. Soil pH can have a dramatic effect on plant growth and on soil nutrient availability. Nutrients essential to

Take-Home Points

- Most lawns prefer a soil pH from 5.8 to 7.0, although centipede-grass performs best under more acidic conditions (pH = 5.0 to 6.0).
- Before you lime your lawn, have your soil tested.
- Do not apply more than 50 lb lime per 1,000 ft² in any one application.
- Choose a product that has a relative neutralizing value or effective calcium carbonate equivalent > 80 percent to ensure the lime is of good quality.

plant growth are most available between pH 5.8 and 6.5. Lime (usually CaCO₃, calcium carbonate) may be used to reduce soil acidity and improve nutrient availability. Data indicates that about 50 percent of lawns in Arkansas have a below optimum soil pH (≤ 5.7) (Figure 1).

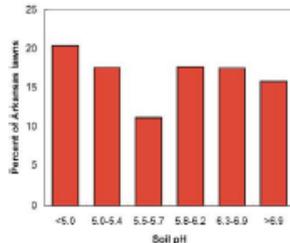


Figure 1. Summary of soil pH for 2006 Arkansas lawns soil tests. Data kindly provided by the University of Arkansas Soil Test Laboratory.

Arkansas Is
Our Campus

Visit our web site at:
<http://www.uaex.edu>

Liming

FSA6134, pg. 25 in MG

Fertilizing Your Lawn

Aaron Patton
Assistant Professor -
Turfgrass Specialist

Proper fertilization is necessary to produce a healthy, high-quality, attractive lawn. The first step in fertilizing your home lawn is to obtain a soil test before applying any nutrients. A soil test provides key information including soil pH, potassium and phosphorus levels. Soil testing is free through county Cooperative Extension Service offices. Collect soil samples in a bucket from the upper 4 to 6 inches of soil from ten or more locations around the lawn. Remove any vegetative material such as stems and leaves and air dry and mix the samples thoroughly. Take about 1 pint of the mixture to your county Extension office for analysis (for more information see FSA2121, *Test Your Soil for Plant Food and Lime Needs*). Soil can be sampled any time of the year, but sampling lawns in late fall or winter will make sure the results will be available before fertilizer is needed in the spring.

Calculating Your Lawn Area

The next key step in fertilizing your lawn is to determine the size. This will aid in calculating how much fertilizer and other materials you will need to maintain your lawn. The best way to do this is to divide your lawn into several squares, rectangles or circles. Calculate the area of these smaller shapes and then add them together to determine the total size of the lawn (Figure 1).

Area Calculation Example

This example illustrates how you might go about calculating the area of your lawn (Figure 2).

Take-Home Points

- Before you fertilize your lawn, have your soil tested.
- It is important to accurately determine the size of your lawn and to calibrate your spreader prior to fertilization.
- Proper nitrogen application timing and quantity are important and vary by turf species.
- Never apply more than 1.0 lb N per 1,000 ft² in any one application unless 50 percent or more of the nitrogen is slow-release.
- Use a mixture of quick- and slow-release nitrogen sources to allow for a quick green-up and an extended feed.
- Do not apply fertilizer to lawns immediately following or preceding a heavy rainfall.
- Sweep or blow any fertilizer off your driveways, sidewalks and streets back into the lawn after applying.

Acre or 1,000 ft²

Fertilizer calculations are often expressed as the amount needed per 1,000 ft². It is important to keep in mind the units we are dealing with when calculating fertilizer needs.

$$1 \text{ acre} = 43,560 \text{ ft}^2$$

$$\text{For example: } 20,000 \text{ ft}^2 \text{ is equivalent to } 0.46 \text{ acre} \\ (20,000 \text{ ft}^2 \div 43,560 \text{ ft}^2)$$

or

$$0.79 \text{ acre is equivalent to } 34,412 \text{ ft}^2 (0.79 \times 43,560 \text{ ft}^2)$$

Arkansas Is
Our Campus

Visit our web site at:
<http://www.uaex.edu>

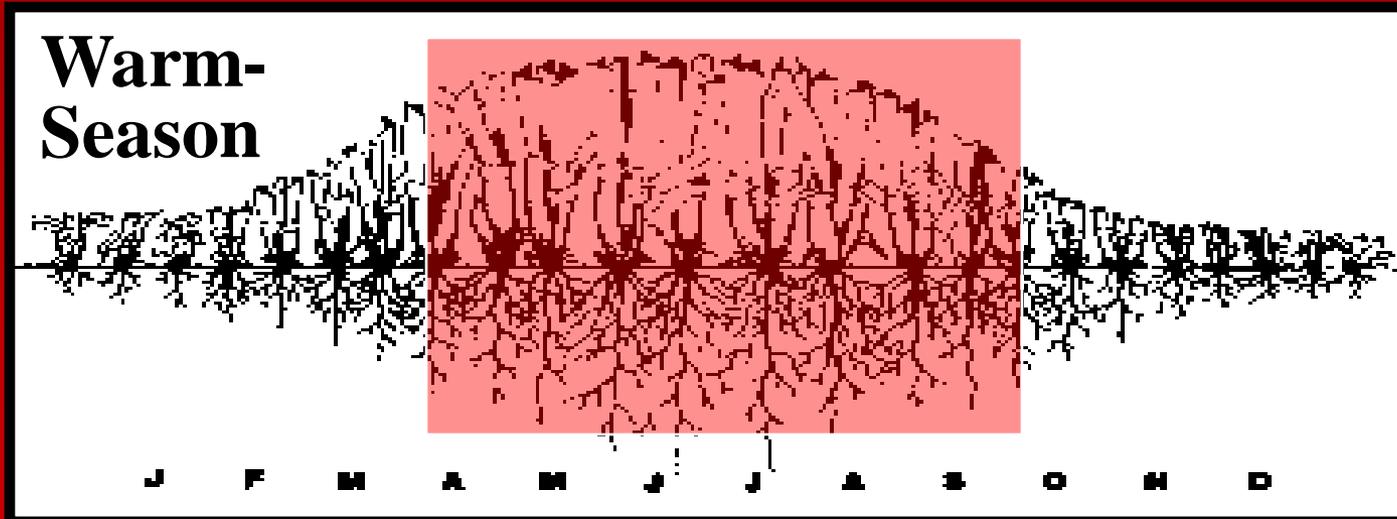
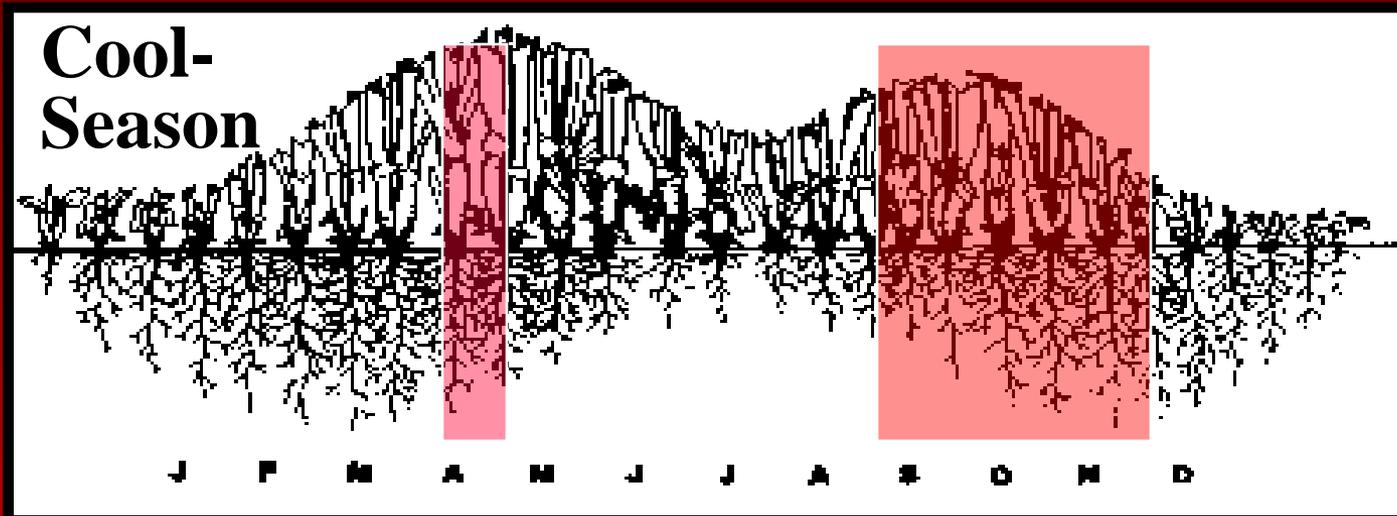
Fertilizing

FSA2114, pg. 18 in MG

Grasses require different amounts of N each season

- **High N requirements**
 - Bermudagrass (3-5 lbs. N / 1000 ft² / yr)
- **Low N requirements**
 - Zoysiagrass (1-2 lbs. N / 1000 ft² / yr)
 - Centipede (1-2 lbs. N / 1000 ft² / yr)
 - St. Augustine (1-3 lbs. N / 1000 ft² / yr)
 - Tall Fescue (2-4 lbs. N / 1000 ft² / yr)

Yearly Nitrogen Management of Grasses General Model



How much fertilizer to use?

- **Never more than 1.0 lbs nitrogen/1000 ft² in any one application**
- **Need two things to determine how much**
 - Calculate your lawn area
 - Fertilizer analysis

MINIMUM GUARANTEED ANALYSIS

Total Nitrogen (N) 46.00%
46.000% Urea Nitrogen

ESTES INCORPORATED

46-00-00

Urea Nitrogen
(Granular)

Derived From: Urea.

Application Instructions

FOR TURF USES: The best results with this product are obtained when it is applied to actively growing grass, and watered into the turf soon after application. Avoid mowing immediately following application to prevent pick-up. Apply only when foliage is dry. Sweep, brush or blow off any non-target areas to alleviate any staining or unwanted effects.

Rate of Product

(Desired Nitrogen)

Lbs. of Actual	Lbs. / Acre	Lbs / 1000 Sq. Ft.
1.50	142.01	3.26
1.00	94.53	2.17
0.75	71.00	1.63

Recommended applications are at the rate of one pound of nitrogen per 1,000 Sq. Ft. Actual rates and timing of applications will vary with weather, soil and turf conditions.

COVERAGE: 1 - 50 pound bag of 46-00-00 covers approximately 23,041 Sq. Ft. at the application rate of one pound of nitrogen (2.17 lbs. of actual product) per 1,000 sq. ft.

Note: For the agronomic application rates suitable for your area, consult a trained specialist or your local horticulturist.

Production No. 33630

First Aid and Storage

FIRST AID

May cause eye or skin irritation (particularly in sensitive persons). May be harmful if swallowed. Product users should wash thoroughly after using or handling this product. In case of eye contact, flush eyes with running water for at least 15 minutes. In case of skin contact, wash from skin with soap and water. In case of ingestion, dilute with water or milk. If necessary, induce vomiting only when victim is conscious. Call a physician.

CAUTION

**Keep out of reach of children.
Harmful if swallowed. Do not inhale.**

STORAGE AND CONTAINER DISPOSAL

- Do not contaminate potable water, ponds, food or feed by storage or disposal. Store in a dry place. Protect bags or other containers from damage. Keep bags or other containers closed when not in use. Do not store where children or animals may gain access.

- Completely empty bag into application equipment. Then dispose of empty bag in a sanitary landfill or by incineration, or if allowed by state and local authorities, by burning. If burned, stay out of smoke.

Precaution and Disclaimer

Avoid contact with clothing and shoes. After application, remove particles from clothing and shoes. Do not track product into the home.

Limit of Warranty and Liability

The manufacturer and seller warrant that this product conforms to the chemical description on the label and is reasonably fit for the purpose stated on such label only when used in accordance with the directions under normal use conditions. Except as specifically stated below, NO WARRANTIES, WHETHER EXPRESSED OR IMPLIED, ARE MADE WITH RESPECT TO THE PRODUCT OR ITS USE, AND NO AGENT OF THE MANUFACTURER OR OF THE SELLER IS AUTHORIZED TO DO SO.

Buyer and user of this product assume all responsibility for handling, storage and use not in accordance with directions. It is impossible to eliminate all risks inherently associated with the use of the product. Plant injury, ineffectiveness, or other unintended consequences may result because of such factors as weather conditions, presence of other materials, or the manner of use or application, all of which are beyond manufacturer's and seller's control. In no case shall the manufacturer or seller be liable for consequential, special or indirect damages resulting from the use or handling of this product.



189641

Formulated For and Distributed By:

Estes, Inc.

1925 W. John Carpenter Freeway, Suite 525
Irving, TX 75063

Phone: (469) 916-7631

Net Weight 50 Lbs. (22.68 Kg.)

ES8G460050-189641

Manufactured and Guaranteed By: Mears Fertilizer, Inc. P.O. Box 1271, El Dorado, KS 67042

How much fertilizer to use?

Nitrogen rate	1 lb fert.	Total lawn area
1000 ft ²	Analysis	

Example 2, page 22

0.75 lbs N	1 lb fert.	5,000 ft ²
1000 ft ²	0.46 lbs N	



8.2 lbs fertilizer (46-0-0)

Types of nitrogen fertilizer

- **Quick-release (water-soluble)**
 - Urea, ammonium sulfate, etc.
- **Slow-release (water-insoluble)**
 - Milorganite, methylene ureas, IBDU, sulfur coated ureas, polymer coated ureas, and more
- **Our recommendation is usually to use a product that has a little bit of both quick and slow release fertilizers.**
- **See pg. 20 in MG book**

Below optimum P or K

- Choose fertilizers based upon your soil test (from FSA2114 or pg. 21 in MG book)

Table 5. Selecting a fertilizer based on soil test recommendations.

	Soil K \leq 100 ppm	Soil K > 100 ppm
Soil P \leq 25 ppm	Choose products that are high in P and K. Fertilizers with high P and K ratios (examples include but are not limited to: 10-20-10, 10-10-10, 13-13-13, 19-19-19) should be used on these lawns.	Choose products that are high in P and low in K. Fertilizers with high P and low K ratios (examples include but are not limited to: 18-24-6, 20-27-5) or no K (examples include but are not limited to: 6-2-0) should be used on these lawns.
Soil P > 25 ppm	Choose products that are low in P and high in K. Fertilizers with low P and high K ratios (examples include but are not limited to: 22-3-14, 26-2-13) or no P (examples include but are not limited to: 10-0-14, 16-0-8) should be used on these lawns.	Choose products that are low in P and K. Fertilizers with low P and K ratios (examples include but are not limited to: 11-2-2, 27-3-4, 29-3-4, 29-2-5, 35-5-5) or no P or K (examples include but are not limited to: 34-0-0, 46-0-0) should be used on these lawns.

Be smart with nutrient applications!!



or



≡





Mowing (pg. 27)

- Height
- Frequency
- Equipment
- Clippings

Mowing

- FSA 6023
- Pg. 29

Mowing Your Lawn

Aaron Patton
 Assistant Professor -
 Turfgrass Specialist

John Boyd
 Professor -
 Weed Scientist

Why Do We Mow Grass?

Mowing is the most time-consuming lawn maintenance practice, but it is not without its merits. The primary purpose of mowing a lawn is to improve its appearance. Proper mowing technique, equipment, frequency and height will improve the quality of a lawn while also increasing the health of the turfgrass plants and decreasing weeds.

Plant Physiology

Mowing is a destructive practice because it reduces the amount of leaf tissue available for the production of energy. The general response to mowing is for the plant to produce more leaf tissue to replace what is lost. If too much leaf tissue is removed in any one mowing, plants will respond by redirecting energy away from valuable roots to producing new leaves. Additionally, turfgrass cannot efficiently capture nutrients and produce energy when mown too low. Therefore, proper mowing is a key ingredient to a successful, healthy lawn.

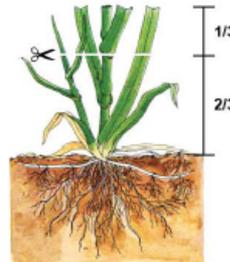


Figure 1. Never remove more than one-third of the leaf blade in a single mowing.

Take Home Points

- Mow often enough to avoid removing more than one-third of the grass blade height per cutting.
- Mow your lawn high.
- Keep the blades sharp enough to prevent a ragged appearance.
- Return clippings.
- Mow in a different pattern each time to reduce wear, compaction, scalping and grain.
- If you get behind in mowing, raise the mowing height so as not to remove more than one-third of the leaf, then gradually reduce the mowing height in subsequent weeks.

Mow Frequently

Mow as often as needed to never remove more than one-third of the leaf blade in a single mowing (Figure 1). In other words, if your mower is set at 3 inches, mow before your lawn reaches 4.5 inches high (Table 1).

Table 1. Mowing frequency as determined by the one-third rule.

Mowing Height (inches)	Height of Grass at Mowing (inches)	Amount of Grass Removed (inches)	Estimated Mowing Frequency (days) [†]
0.5	0.75	0.25	1.3
1.0	1.5	0.5	2.5
1.5	2.25	0.75	3.8
2.0	3.0	1.0	5.0
2.5	3.75	1.25	6.3
3.0	4.5	1.5	7.5
3.5	5.25	1.75	8.8
4.0	6.0	2.0	10.0

[†]Estimate based upon a daily growth rate of 0.2 inches.

*Arkansas Is
 Our Campus*

Visit our web site at:
<http://www.uaex.edu>

The 1/3 rule states...

“never remove more than 1/3 of the turfgrass leaves with a single mowing”



$(\text{Desired mowing height} * 1.5) = \text{mow at height}$

Mowing frequency as determined by the one-third rule (pg. 27).

Mowing height (inches)	Height of grass at mowing (inches)	Amount of grass removed (inches)	Estimated mowing frequency (days) [†]
0.5	0.75	0.25	1.3
1.0	1.5	0.5	2.5
1.5	2.25	0.75	3.8
2.0	3.0	1.0	5.0
2.5	3.75	1.25	6.3
3.0	4.5	1.5	7.5
3.5	5.25	1.75	8.8
4.0	6.0	2.0	10.0

[†] Estimated based upon a daily growth rate of 0.2 inches.

Mowing Height



Suggested mowing heights for major Arkansas turfgrasses

Species

Min

Max

----- height in inches -----

Tall Fescue

2.5

-

4.0

Common bermudagrass

1.5

-

3.0

Hybrid bermudagrass

0.75

-

1.5

Zoysiagrass

0.75

-

2.5

Centipedegrass

1.5

-

2.0

St. Augustinegrass

2.5

-

4.0

Non-Clipped

Clipped

1/4"

3/4"

1.5"



Kentucky Blue

Higher mowing of turfgrass promotes a good root system - Sir Walter results are similar to above

A close-up photograph of a grassy field. The grass is mostly green, but there is a significant amount of dry, yellowish-brown grass at the bottom of the frame, suggesting a mowing or cutting event. A yellow rectangular text box is overlaid on the left side of the image.

More than 1/3 removed

Scalping in spring???

- Use caution
- Before green grass blades (new growth) reach the intended scalping height.



Dull Mower Blades Cause A Drop in Turf Quality



- Dull or out of adjustment mower
- Problem will look worse as grass grows
- Improperly cut grasses can use up to 20% more water

Clipping Removal

The image shows three brown paper bags lined up on a concrete sidewalk. The bags are filled with grass clippings. The bag in the foreground is clearly labeled with green text that reads "LAWN & REFUSE BAGS". The background shows a grassy lawn and a concrete curb.

“To bag or not to bag.....”

Clipping Removal

- Do not remove clippings from your lawn, instead recycle them
- Clippings were historically removed because people mowed too infrequently and used too much fertilizer
- Clippings return up to 1.0 lb. N / 1000 ft² / year to soil by leaving the clippings
- Recycling clippings does not increase disease
- Recycling clippings does not increase thatch

Thatch

- A layer of undecomposed or partially decomposed (turfgrass) organic residues situated above the soil surface (pg. 31)



What causes too much thatch?

- **Over-irrigation**
- **Over-fertilization**
- **Improper pH (too low or high)**

- **Follow recommendations and you will have the appropriate level of thatch**

Thatch Prevention and Control

Jon Trappe
Program Technician -
Turfgrass

Aaron Patton
Assistant Professor -
Turfgrass Specialist

Thatch is a layer of dead and decaying organic matter between the soil surface and the base of the turfgrass plant. Under ideal conditions, soil microorganisms break down this organic matter before it has a chance to accumulate and form a thatch layer. Thatch accumulation occurs when plant production exceeds breakdown. Excessive thatch accumulation has negative consequences that can affect the turf and soil environment.

How Do You Determine When There Is Too Much Thatch?

A good way to determine thatch accumulation is to take a knife or spade and cut a wedge-shaped piece from the lawn (Figure 1). The sample should be cut deep enough to reach the soil. The thatch layer is the layer of organic material between the soil surface and the base of the turfgrass plant.

Take-Home Points

- Thatch is a layer of dead and decaying organic matter between the soil surface and the base of the turfgrass plant.
- A thatch layer greater than 0.5-inch deep will prevent air, water, fertilizer and pesticide movement into the soil.
- Proper mowing, fertilization, irrigation and soil pH will reduce thatch accumulation.
- Thatch can be removed by vertical mowing and core aeration.
- Taking a proactive approach to promote organic matter decomposition will not only reduce thatch accumulation and inputs by the homeowner but will ultimately promote a healthier lawn.



Figure 1. A zoysiagrass soil profile showing less than 0.5-inch thatch accumulation (left) compared to zoysiagrass soil profile showing 2.0 inches of thatch (right).

*Arkansas Is
Our Campus*

Visit our web site at:
<http://www.uaex.edu>

- FSA6139
- p. 31 in MG book

Soil cultivation

- **Types**
 - **Aerification**
 - Hollow tine (often called coring) **Use this type on lawns**
 - Solid tine (used on golf courses)
 - **Dethatching**
- **Benefits**
 - Increase water infiltration (aerification and dethatching)
 - Increase air exchange (aerification)
 - Decrease compaction (aerification)
 - Decrease thatch (aerification and dethatching)

Growing Turfgrass in Shade

Aaron Patton
Assistant Professor -
Turfgrass Specialist

As much as 25 percent of lawn turf is grown in the shade. Shade can come from many sources including bushes, trees, fences and buildings. These sources reduce exposure to sunlight and also air circulation.

Photosynthesis is the process that plants use to capture energy. Photosynthesis is reduced in the shade because of a decrease in light intensity, quantity and quality, and the result is reduced turf quality. Turfgrasses grown in shade often exhibit thinned narrow leaves, reduced shoot and root growth, reduced density and tillering, reduced energy reserves and longer leaves with a more upright growth habit. Shade weakens turf so that it is more susceptible to traffic, heat, cold and drought stresses as well as certain pests.

Although shade is detrimental to turf health, there are specific species, cultivars and management practices that can be used to improve turf quality in shaded environments.

Selecting a Turfgrass for Shaded Areas

Turfgrass species and cultivars vary in their tolerance of shade (Table 1). Warm-season grasses prefer full sunlight. Bermudagrass (*Cynodon* spp.), which is the predominant lawn grass in Arkansas, unfortunately has very poor shade tolerance. Zoysiagrass (*Zoysia* spp.) and centipedegrass (*Eremochloa ophiuroides*) have fair shade tolerance, with zoysiagrass

Take-Home Points

- Turfgrass species and cultivars vary in their tolerance of shade.
- Pruning limbs, reducing fertilization, increasing the mowing height, monitoring soil moisture, interseeding, reducing traffic, removing leaves, controlling pests and applying certain plant growth regulators will help improve turf quality in shade.
- There are many ground covers and perennials better adapted to shade than turfgrasses. If plant materials are not suitable for your site or landscape design, decorative mulch and gravel are alternatives.

being adapted for use throughout Arkansas and centipedegrass limited to the southern half of Arkansas due to poor low-temperature tolerance. St. Augustinegrass (*Stenotaphrum secundatum*) has good shade tolerance and is the most shade tolerant of the warm-season grasses, but its use is also limited to the southern half of Arkansas due to poor low-temperature tolerance. Cool-season grasses have good shade tolerance and perform well in northern Arkansas in lawns receiving morning sun and some afternoon shade. Tall fescue (*Festuca arundinacea*) is well adapted for Arkansas lawns, since it is the most heat and drought tolerant of the cool-season grasses. Creeping red fescue (*Festuca rubra*), perennial ryegrass (*Lolium perenne*) and Kentucky

*Arkansas Is
Our Campus*

Visit our web site at:
<http://www.uaex.edu>

- FSA6140
- pg. 34 in MG book

Shade Tolerance (pg. 34)

Tall fescue	Good
St. Augustinegrass	Good
Zoysiagrass	Fair
Centipedegrass	Fair
Bermudagrass	Poor

Managing shaded turf

1. Plant *shade tolerant species* and cultivars in shaded areas.
2. Selectively *prune tree branches* to decrease shade.
3. *Fertilization* should be decreased by half for shaded turfs.
4. Increase the *mowing* height in shaded areas in order to increase leaf area for photosynthesis.
5. *Irrigation* should be monitored closely in shaded areas. In general shaded areas stay moist and require less irrigation, however, trees can out-compete turfgrass for soil moisture in summer months causing turf to become drought stressed.
6. *Interseeding* tall fescue under shade trees in bermudagrass lawns is an option for those in the northern-half of Arkansas
7. *Leaf removal* is key to turf maintenance in the shade.
8. *Traffic* tolerance is reduced in shaded turf. Limit traffic in shaded areas.

CREEKWOOD AVE

SUSAN CR





If all else fails plant a ground cover

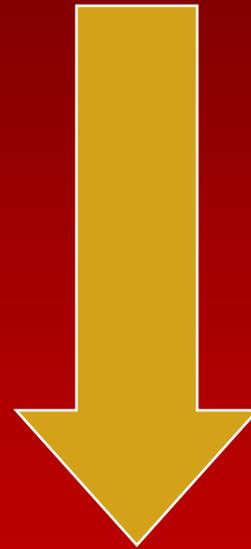
Irrigation



Relative Water Need

- Bermudagrass
- Zoysiagrass
- St. Augustinegrass
- Centipedegrass
- Tall Fescue

less water



more water

Relative Water Need

- Depends on species
- If efficiently irrigated, research data indicates that many trees require as much water, if not more water than grasses (Devitt et al., 1995)



Irrigation tip No. 1



A little brown is good... (see pg. 37)

Deep and infrequent irrigation stimulates rooting

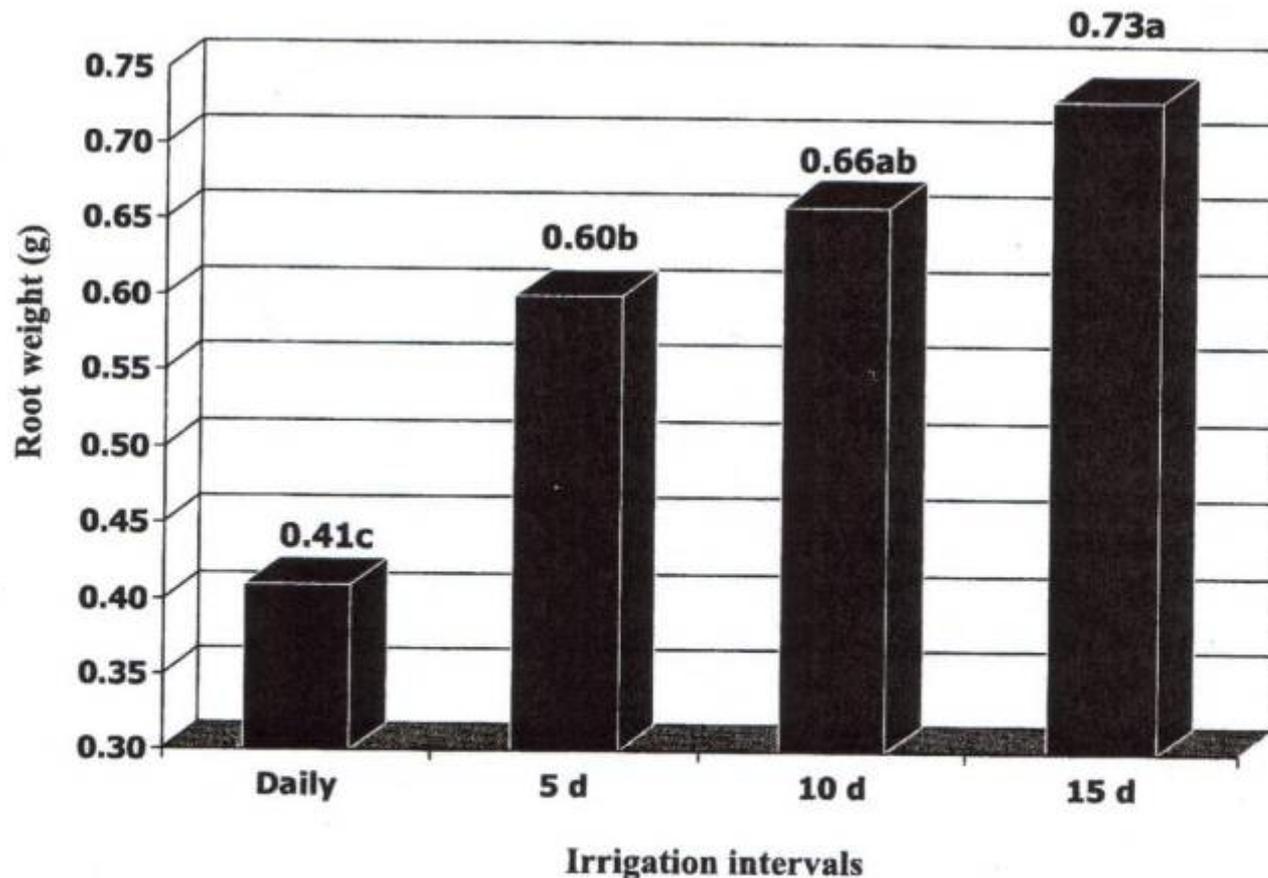


Fig. 2. Root weight of six combined bermudagrass cultivars with data from each cultivar ('SWI-1012,' 'Arizona Common', 'Tift.No3', 'Tifsport', 'Aussie Green', and 'Celebration') pooled together. Mean data points followed by the same letter are not significantly different at Fisher's least significant difference test at $P \leq 0.05$ (1 g = 0.0353 oz).

Drought Stress Symptoms

1. Stress begins before visual symptoms appear.
2. Purple, off-color appearance.
3. Footprinting.
4. Rolled leaf blades



St. Augustinegrass

Drought Stress

Where to look

- On slopes
- Under trees
- Compacted areas
- Along walks and driveways



Lawn Care Calendars (FSA8118 - FSA6122) pp. 45-58

- Cool-season
 - Tall Fescue
- Warm-season
 - Bermudagrass
 - Zoysiagrass
 - Centipedegrass
 - St. Augustinegrass

UNIVERSITY OF ARKANSAS
DIVISION OF AGRICULTURE
Cooperative Extension Service

Agriculture and Natural Resources

FSA6121

Lawn Care Calendar

Bermudagrass

Axon Patton
Assistant Professor -
Turfgrass Specialist

John Boyd
Professor -
Weed Scientist

These suggested maintenance practices will help you care for your lawn throughout the year. Because every site is different due to variations in location, terrain, soil type, condition of lawn, previous lawn care and other factors, adjust these practices and dates to suit your home lawn.

Bermudagrass (*Cynodon spp.*) is the most commonly used lawn grass in Arkansas. It will grow on a wide range of soil types as long as there is adequate drainage and plenty of sunlight. Bermudagrass is not a shade-tolerant turfgrass. Full sun is required for it to thrive. Other attractive features include rapid recovery from traffic damage and good drought tolerance. Established bermudagrass will turn brown during extended dry periods but recovers after the first significant rainfall. Durability and the ability to recover quickly make it the first choice for high-traffic areas.

The quick growth rate of bermudagrass compared to slower-growing grasses like zoysiagrass and centipedegrass makes bermudagrass the most affordable turfgrass to purchase as seed. Rapid growth means frequent mowing during June, July and August. Mowing frequency is also tied to nitrogen fertilization and rainfall or irrigation. Because bermudagrass is a fast grower that produces rhizomes and stolons, it readily invades ornamental beds, gardens and requires frequent edging along walks and driveways. The aggressive properties that make it a desirable turfgrass also make it a major weed.

The hybrid bermudagrasses (*Cynodon dactylon* × *C. nana-occidentalis*), which include 'Tifway' (Tifan 419), 'TifSport', 'Patriot'

and many others, are generally finer textured than common bermudagrass (*Cynodon dactylon*) and must be started from sod, sprigs or plugs. For more information on locating bermudagrass cultivars, see the *Arkansas Sod Source Directory*, FSA4116.

Common bermudagrass is typically seeded. After years of nothing but Arkansas Common bermudagrass on the market, the quality of seeded bermudagrasses has improved dramatically since 2006. New seeded varieties such as 'Riviera' and 'Tukon' (developed at Stillwater, Oklahoma) are a good choice for lawns in Arkansas. They are attractive, cold-tolerant grasses that are well adapted in all parts of the state. 'Princess-77' (from New Mexico) is a seeded, fine-textured variety that approaches the quality of 'Tifway', but lacks sufficient cold tolerance for use in north Arkansas. Many other cultivars are also available. For more information on seeding a lawn, see *Seeding a Lawn in Arkansas*, FSA2118.

Tifway is a hybrid released in 1962 from the USDA research station in Tifton, Georgia. Tifway is available from many sod farms in Arkansas. While not ideal, Tifway is a better choice than 'Tifgreen' (Tifon 328) for lawns in Arkansas. The biggest problem that homeowners have with hybrid bermudagrasses is the inability to mow them correctly. Hybrid bermudagrasses look best when mowed three times per week at 0.5 to 1.5 inch with a reel mower. Because this isn't practical for most homeowners, a seeded bermudagrass is often a better choice.

Arkansas Is
Our Campus

Visit our website at:
<http://www.uaex.edu>

University of Arkansas, United States Department of Agriculture, and County Government Cooperative

Bermudagrass maintenance calendar.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Watering†				●	●	●	●	●	●	●		
Mowing				●	●	●	●	●	●	●		
Fertilization				●	●	●	●	●	●			
Liming		●	●	●	●				●	●	●	●
Aeration				●	●	●	●	●	●			
Dethatching				●	●	●	●	●				
Seeding		●	●	●	●	●						
Sodding		●	●	●	●	●	●	●	●	●	●	●
<hr style="border-top: 1px dashed black;"/>												
Weed control												
Preemergence-crabgrass	●	●	●	●								
Postemergence-broadleaf			●	●	●	●	●		●	●	●	
Postemergence-grasses/sedges				●	●	●	●	●				
Postemergence-winter annuals											●	●

† Bullets represent the optimum time period to perform various maintenance practices to your bermudagrass lawn. The optimum lawn maintenance period may be started earlier or extended based on variations in annual weather conditions and/or location in Arkansas. Dark bullets represent the best months for each practice, and lightly shaded bullets represent possible months.

turf.uark.edu



UNIVERSITY of ARKANSAS TURFGRASS SCIENCE

RAZORBACKS



search turf

LINKS FOR

- Turf Tips
- Turf Help
- Educational Programs
- Extension Publications
- Research
- Prospective Students
- Personnel
- Alumni
- News and updates
- About us
- Site Index



Rhizoctonia Large Patch is the most significant disease of zoysiagrass in Arkansas. Read more about this disease in extension publication FSA7527 or by exploring the Turf Tips section in the October 15, 2007 posting.

Department of Horticulture
Cooperative Extension
University of Arkansas

316 PTSC, 1 University of Arkansas, Fayetteville, AR 72701-1201
Send corrections, suggestions, and comments to ajpatton@uark.edu
Best viewed using Internet Explorer 7.0 or higher

TODAY'S NEWS

Synthetic (Artificial) Turf vs. Natural Grass Athletic Fields - [Read more](#)

New Lawn Care Calendars - [Read more](#)

Graduate students receive awards - [Read more](#)

SCHEDULE OF EVENTS

August 5, 2009 - [Turfgrass Field Day](#), Fayetteville.

Pesticide Recertification Training Available at the [Turfgrass Field Day](#).



<http://www.arhomeandgarden.org/lawns.htm>

File Edit View Favorites Tools Help
 Links UAEX My Stuff UA Intranet
 Google Go RS
 UA Lawns

<http://www.arhomeandgarden.org/lawns.htm>



Cooperative Extension Service

Agricultural Experiment Station

[Search](#) | [Publications](#) | [Jobs](#) | [Personnel Directory](#) | [Links](#)
[County Offices](#) | [Departments](#)

- [About Us](#)
- [Find Us](#)
- [Agriculture](#)
- [Business & Communities](#)
- [Families & Consumers](#)
- [Health & Nutrition](#)
- [Home & Garden](#)
 - [Arbor Day](#)
 - [Commercial Horticulture](#)
 - [Composting](#)
 - [Control of Disease, Insects, and Weeds](#)
 - [Fruits, Nuts, Vegetables & Herbs](#)
 - [Gardening Calendar](#)
 - [Gardening with Janet Carson](#)
 - [International Master Gardener Conf.](#)
 - [Landscaping](#)
 - [Lawns](#)
 - [Master Gardener](#)
 - [Plant of the Week](#)
 - [Your Home](#)
- [Links](#)
- [Newsletters](#)

Lawns

Because you are reading this, you do not need to be convinced of the benefits of a healthy lawn. But, bear in mind that Arkansas lies in what turfgrass types call the transition zone. The practical description of the transition zone is an area where summer is often too hot for cool season grasses such as bluegrass, ryegrass and tall fescue and winter is occasionally too cold for warm season grasses, which include Bermudagrass, Zoysiagrass, Centipedegrass and St. Augustinegrass. Thus, Arkansas' climate frequently makes lawn maintenance a challenge.

Listed below are publications written to help Arkansans maintain healthier lawns.

Calendars

- [Lawn Care Calendar: Bermudagrass - FSA6121](#)
- [Lawn Care Calendar: Centipedegrass - FSA6120](#)
- [Lawn Care Calendar: St. Augustinegrass - FSA6119](#)
- [Lawn Care Calendar: Tall Fescue - FSA6118](#)
- [Lawn Care Calendar: Zoysiagrass - FSA6122](#)

Establishment

- [Choosing a Grass for Arkansas Lawns - FSA2112](#)
- [Seeding a Lawn in Arkansas - FSA2113](#)
- [Establishing a Lawn from Sod - FSA2042](#)

Maintenance

- [Fertilizing Your Lawn - FSA2114](#)
- [Liming Your Lawn - FSA6134](#)
- [Lawn Mower Safety - FSA1005](#)
- [Mowing Your Lawn - FSA6023](#)
- [Test Your Soil for Plant Food and Lime Needs - FSA2121](#)
- [The Soil Test Report - FSA2153](#)
- [Understanding the Numbers on Your Soil Test Report - FSA2149](#)

Natural Resources

Questions?

THE
END

The words "THE" and "END" are spelled out using sticks and twigs on a black background. The word "THE" is in the top row, and "END" is in the bottom row. The letters are constructed from various types of sticks, some green and some brown, arranged to form the shapes of the letters.