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
- **tiller**
- **rhizome**
- **Stolon**
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
Choosing a Grass for Arkansas Lawns

Aaron Patton
Assistant Professor - Turfgrass Specialist
John Boyd
Professor - Extension Weed Scientist

What to Plant

No one type of grass is best suited to all situations. Avoid the trap of letting personal preference and the name of established become the overriding factors in selecting a grass. Your choice of a lawn grass should be based on the characteristics of your site, including sun and soil conditions.

Commonly used grasses include:

- Kentucky bluegrass
- Annual ryegrass
- Perennial ryegrass
- Tall fescue
- Zoysiagrass
- Bermudagrass
- St. Augustinegrass
- Zoysiagrass
- bahiagrass
- Lovegrass

These grasses are adapted to a variety of environments, so you will want to choose the grass that best fits your site.

Winter Hardiness

Arkansas lies in the transition zone. This means that no one type of grass is best for all of the state. Winter-hardy grasses are best adapted to the winter months. The best choice for a lawn in Arkansas is a mixture of winter-hardy and warm-season grasses.

Heat Tolerance

Warm-season grasses such as St. Augustinegrass and zoysiagrass are more heat-tolerant than cool-season grasses. During hot weather, these grasses will be more attractive to birds and other wildlife.

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Seeding a Lawn in Arkansas

The first two steps in establishing a lawn are selecting the grass and preparing the soil. The soil should be well-drained and free of weeds. Site preparation involves removing existing vegetation and grading the area.

Winter Hardiness

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Heat Tolerance

Warm-season grasses such as St. Augustinegrass and zoysiagrass are more heat-tolerant than cool-season grasses. During hot weather, these grasses will be more attractive to birds and other wildlife.

Establishing a Lawn From Sod

Warm-season grasses are popular in Arkansas, such as St. Augustinegrass. Annual ryegrass and fescue are also used. Sodding is a more expensive method of establishing a lawn, but it can be a good choice if you want a quick and easy installation. Sod can be purchased from local nurseries or online.

Sodding

FSA2042

Page: 15 MG
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
Cooperative Extension Service
Soil Analysis Report
Soil Testing And Research Laboratory
Marianna, AR 72360
http://www.uark.edu/depts/soiltest

1. Nutrient Availability Index

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Concentration ppm</th>
<th>Concentration lb/acre</th>
<th>Soil Test Level (Mehlich 3)</th>
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<tbody>
<tr>
<td>P</td>
<td>32</td>
<td>64</td>
<td>Above Optimum</td>
</tr>
<tr>
<td>K</td>
<td>111</td>
<td>222</td>
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<td>Ca</td>
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</tr>
<tr>
<td>Mg</td>
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<td>264</td>
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<td>SO4-S</td>
<td>37</td>
<td>74</td>
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<tr>
<td>Zn</td>
<td>7.3</td>
<td>14.6</td>
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<td>Fe</td>
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<td>242</td>
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<td>Mn</td>
<td>134</td>
<td>268</td>
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<td>Cu</td>
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<td>0.6</td>
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</tr>
<tr>
<td>B</td>
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<td>NO3-N</td>
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2. Soil Properties

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

3. Recommendations

Last Crop | Crop | N | P2O5 | K2O | SO4S | Zn | B | Lime |
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Last Crop</td>
<td>Athletic Field (404)</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
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<tr>
<td>Crop 1</td>
<td>Athletic Field - Warm Season Grasses on a Soil Base (EST &amp; MNT)</td>
<td>6</td>
<td>1.1</td>
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<td>0</td>
<td>0</td>
<td>80</td>
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<td>Crop 2</td>
<td>Lawn Turf - Ryegrass (EST &amp; MNT) (429)</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>80</td>
</tr>
<tr>
<td>Crop 3</td>
<td>---</td>
<td>---</td>
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<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>
The pH scale

- **0**: acid
- **7**: neutral
- **14**: alkaline

Optimum for grasses: 5.8-6.5
How Soil pH Affects Availability of Plant Nutrients
80 lbs lime/1000 sq ft is the recommendation for this soil
Liming Your Lawn

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 neutrality, 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 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 90 percent of lawns in Arkansas have a below optimum soil pH of 5.7 (Figure 1).

Fertilizing Your Lawn

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 yard. 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).

The soil test report indicates your soil is pH 7.2. Lime is needed and the recommended application rate is 50 pounds per 1,000 square feet. How many square feet do you want your lawn to be? What size is your yard? How much soil do you want to limed? How many bags of lime do you need to buy? How much will it cost? How much will you save by liming your lawn? What will be the long-term benefits of liming your lawn? What will be the short-term benefits of liming your lawn? How will liming your lawn affect the appearance of your lawn? How will liming your lawn affect the structure of your lawn? How will liming your lawn affect the soil of your lawn? How will liming your lawn affect the water of your lawn? How will liming your lawn affect the air of your lawn? How will liming your lawn affect the climate of your lawn? How will liming your lawn affect the health of your lawn? How will liming your lawn affect the beauty of your lawn? How will liming your lawn affect the value of your lawn? How will liming your lawn affect the value of your house? How will liming your lawn affect the value of your property? How will liming your lawn affect the value of your neighborhood? How will liming your lawn affect the value of your community? How will liming your lawn affect the value of your city? How will liming your lawn affect the value of your state? How will liming your lawn affect the value of your country? How will liming your lawn affect the value of the world? How will liming your lawn affect the value of the universe? How will liming your lawn affect the value of the infinite?
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

Cool-Season

Warm-Season
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
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)

<table>
<thead>
<tr>
<th>Lbs. of Actual</th>
<th>Lbs. / Acre</th>
<th>Lbs / 1000 Sq. Ft.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.50</td>
<td>142.01</td>
<td>3.26</td>
</tr>
<tr>
<td>1.00</td>
<td>94.53</td>
<td>2.17</td>
</tr>
<tr>
<td>0.75</td>
<td>71.00</td>
<td>1.63</td>
</tr>
</tbody>
</table>

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.

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.

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

Beverage and Precaution

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 herein, 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 in accordance with directions. It is impossible to eliminate all risks inherent to 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.

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.)

ESBG468968-189641

189641

Manufactured and Guaranteed By: Mears Fertilizer, Inc.
P.O. Box 1271, El Dorado, KS 67042
# How much fertilizer to use?

<table>
<thead>
<tr>
<th>Nitrogen rate</th>
<th>1 lb fert.</th>
<th>Total lawn area</th>
</tr>
</thead>
<tbody>
<tr>
<td>1000 ft²</td>
<td>Analysis</td>
<td></td>
</tr>
</tbody>
</table>

## Example 2, page 22

<table>
<thead>
<tr>
<th>Nitrogen rate</th>
<th>1 lb fert.</th>
<th>Total lawn area</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.75 lbs N</td>
<td>1 lb fert.</td>
<td>5,000 ft²</td>
</tr>
<tr>
<td>1000 ft²</td>
<td>0.46 lbs N</td>
<td></td>
</tr>
</tbody>
</table>

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>
<thead>
<tr>
<th>Soil K ≤ 100 ppm</th>
<th>Soil K &gt; 100 ppm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soil P ≤ 25 ppm</td>
<td>Choose products that are high in P and low in K. Fertilizers with low P and high 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: 18-24-6, 20-27-5) should be used on these lawns.</td>
</tr>
<tr>
<td>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.</td>
<td></td>
</tr>
<tr>
<td>Soil P &gt; 25 ppm</td>
<td>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.</td>
</tr>
<tr>
<td>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.</td>
<td></td>
</tr>
</tbody>
</table>
Be smart with nutrient applications!!

or

=
Mowing (pg. 27)

- Height
- Frequency
- Equipment
- Clippings
Mowing

Mowing Your Lawn

Why Do We Mow Grass?
Mowing is the most time-consuming lawn maintenance practice, but it is not without its rewards. The primary purpose of mowing a lawn is to improve its appearance. Proper mowing techniques, equipment, frequency, and height will improve the quality of a lawn while also maintaining 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, turfgrasses cannot efficiently capture nutrients and produce energy when grown too low. The bottom line: proper mowing is a key ingredient to a successful, healthy lawn.

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 clipping.
- Mow in different patterns each time to reduce wear, compaction, scalping, and grain.
- If you get behind in mowing, raise the mowing height to as low as one-third more than one-third of the leaf blade in a single mowing (Figure 1). In other words, if your mower is set at 0.5 inches, move your lawn reaches 0.5 inches high (Table 1). If you get behind in mowing, raise the mowing height to as low as one-third more than one-third of the leaf blade in a single mowing (Figure 1). In other words, if your mower is set at 0.5 inches, move your lawn reaches 0.5 inches high (Table 1).

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

<table>
<thead>
<tr>
<th>Mowing Height (inches)</th>
<th>Leaf of Grass (inches)</th>
<th>Amount of Grass Removed (inches)</th>
<th>Mowing Frequency (days)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5</td>
<td>0.75</td>
<td>0.25</td>
<td>0.0</td>
</tr>
<tr>
<td>1.0</td>
<td>1.5</td>
<td>0.5</td>
<td>2.0</td>
</tr>
<tr>
<td>1.5</td>
<td>2.25</td>
<td>0.75</td>
<td>3.0</td>
</tr>
<tr>
<td>2.0</td>
<td>3.0</td>
<td>1.0</td>
<td>6.0</td>
</tr>
<tr>
<td>3.0</td>
<td>3.75</td>
<td>1.25</td>
<td>6.0</td>
</tr>
<tr>
<td>4.0</td>
<td>4.5</td>
<td>1.5</td>
<td>7.0</td>
</tr>
<tr>
<td>5.0</td>
<td>5.25</td>
<td>1.75</td>
<td>8.0</td>
</tr>
<tr>
<td>6.0</td>
<td>6.0</td>
<td>2.0</td>
<td>10.0</td>
</tr>
</tbody>
</table>

*Estimate based upon a daily growth rate of 0.2 inches.*

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Visit our website at: http://www.uan.edu
The 1/3 rule states…
“never remove more than 1/3 of the turfgrass leaves with a single mowing”

(Desired mowing height * 1.5) = mow at height
Mowing frequency as determined by the one-third rule (pg. 27).

<table>
<thead>
<tr>
<th>Mowing height (inches)</th>
<th>Height of grass at mowing (inches)</th>
<th>Amount of grass removed (inches)</th>
<th>Estimated mowing frequency (days)†</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5</td>
<td>0.75</td>
<td>0.25</td>
<td>1.3</td>
</tr>
<tr>
<td>1.0</td>
<td>1.5</td>
<td>0.5</td>
<td>2.5</td>
</tr>
<tr>
<td>1.5</td>
<td>2.25</td>
<td>0.75</td>
<td>3.8</td>
</tr>
<tr>
<td>2.0</td>
<td>3.0</td>
<td>1.0</td>
<td>5.0</td>
</tr>
<tr>
<td>2.5</td>
<td>3.75</td>
<td>1.25</td>
<td>6.3</td>
</tr>
<tr>
<td>3.0</td>
<td>4.5</td>
<td>1.5</td>
<td>7.5</td>
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<td>3.5</td>
<td>5.25</td>
<td>1.75</td>
<td>8.8</td>
</tr>
<tr>
<td>4.0</td>
<td>6.0</td>
<td>2.0</td>
<td>10.0</td>
</tr>
</tbody>
</table>

† Estimated based upon a daily growth rate of 0.2 inches.
Mowing Height
## Suggested mowing heights for major Arkansas turfgrasses

<table>
<thead>
<tr>
<th>Species</th>
<th>Min</th>
<th>Max</th>
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</thead>
<tbody>
<tr>
<td>Tall Fescue</td>
<td>2.5</td>
<td>4.0</td>
</tr>
<tr>
<td>Common bermudagrass</td>
<td>1.5</td>
<td>3.0</td>
</tr>
<tr>
<td>Hybrid bermudagrass</td>
<td>0.75</td>
<td>1.5</td>
</tr>
<tr>
<td>Zoysiagrass</td>
<td>0.75</td>
<td>2.5</td>
</tr>
<tr>
<td>Centipedegrass</td>
<td>1.5</td>
<td>2.0</td>
</tr>
<tr>
<td>St. Augustinegrass</td>
<td>2.5</td>
<td>4.0</td>
</tr>
</tbody>
</table>
Higher mowing of turfgrass promotes a good root system - Sir Walter results are similar to above.
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

“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

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 aerification.
- 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.
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

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. Turfgrass 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 (Bromus inermis) have fair shade tolerance, with zoysiagrass 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 bluegrass (Poa pratensis) are very good turf choices.
## Shade Tolerance (pg. 34)

<table>
<thead>
<tr>
<th>Grass Type</th>
<th>Tolerance</th>
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<tbody>
<tr>
<td>Tall fescue</td>
<td>Good</td>
</tr>
<tr>
<td>St. Augustinegrass</td>
<td>Good</td>
</tr>
<tr>
<td>Zoysiagrass</td>
<td>Fair</td>
</tr>
<tr>
<td>Centipede grass</td>
<td>Fair</td>
</tr>
<tr>
<td>Bermudagrass</td>
<td>Poor</td>
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</tbody>
</table>
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.
If all else fails plant a ground cover
Irrigation
Relative Water Need

- Bermudagrass
- Zoysiagrass
- St. Augustinegrass
- Centipedeegrass
- 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)

less water

• Turfgrass
• Trees

more water
Irrigation tip No. 1

A little brown is good… (see pg. 37)
Deep and infrequent irrigation stimulates rooting

![Bar graph showing root weight in g for different irrigation intervals: Daily, 5 d, 10 d, and 15 d. The root weights are 0.41c, 0.60b, 0.66ab, and 0.73a, respectively.]

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
<table>
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<tr>
<th></th>
<th>Jan</th>
<th>Feb</th>
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<th>Apr</th>
<th>May</th>
<th>Jun</th>
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† 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.
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 Your Lawn - FSA6118
- Soil Test Report - FSA6118
Questions?
THE END