

Seeding a Lawn in Arkansas

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The first two steps in establishing a home lawn from seed are obtaining a soil test and selecting a turfgrass species. A soil test provides key information including soil pH, potassium and phosphorous 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*). After you have sent your soil off to be tested, you must decide which turfgrass species is best adapted for your lawn. Bermudagrass, centipedegrass, St. Augustinegrass, tall fescue and zoysiagrass are the most popular choices for Arkansas, with bermudagrass being the most commonly used turf. For more information about species selection, see FSA2112, *Choosing a Grass for Arkansas Lawns*.

Site Preparation

Determine area. A key step in establishing a lawn is to determine the size of the area. This will aid in calculating how much seed, soil, fertilizer and other materials you might need to establish the 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.

Control perennial weeds. If there are perennial weeds or undesirable grasses on the site, the first step

should be weed control. A typical example would be a common bermudagrass yard that is being converted to zoysiagrass. In this case, it is important to control the bermudagrass before planting. Roundup (glyphosate) is the most commonly used herbicide for preplant weed control. Make the spray solution by adding 2 2/3 ounces of 41 percent Roundup per gallon of water. Glyphosate is sold under many trade names other than Roundup. Concentrations of these other formulations may vary from 1 to 41 percent. It is important to read the label before using. Do not expect complete control of bermudagrass from a single application of Roundup. Apply one application to actively growing bermudagrass, followed by another application in 3 to 4 weeks to control any regrowth from bermudagrass stolons and rhizomes.

Remove trash. Remove all wood, concrete, pipe, rock and construction scrap that may interfere with turfgrass root growth and water movement. Insist that the builder not use the site as a dumping ground for paint, concrete, etc.

Rough grade. If extensive grading is necessary, stockpile existing topsoil and replace it after the rough grade is set. The rough grade should slope gradually away from the house at least 15 feet in all directions. A 1 foot drop in 50 feet will usually supply adequate surface drainage. Grades steeper than a 1 foot drop in 4 feet may cause mowing and erosion problems. Alternatives to a steep grade include terraces, retaining walls or planting a ground cover.

Install drainage and irrigation. Subsurface drainage and irrigation should be installed before final grading and smoothing. Drainage lines are usually placed 6 to 18 inches deep.

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Table 1. Arkansas phosphorus and potassium recommendations for established and newly planted lawns

Phosphorus Fertilizer Recommendations		Potassium Fertilizer Recommendations	
Soil Test P Level and Concentration Range (ppm)		Soil Test K Level and Concentration Range (ppm)	
Below Optimum	Above Optimum	Below Optimum	Above Optimum
≤ 25	> 25	≤ 100	> 100
--P Fertilizer Rate, lbs P ₂ O ₅ /1,000 ft ² /yr--		--K Fertilizer Rate, lbs K ₂ O/1,000 ft ² /yr--	
2	0	2	0

Table 2. Arkansas lime recommendations for newly planted lawns

Soil Texture	Soil Water pH Level Interpretation					
	Below Optimum			Medium	Optimum	High
Soil Test Ca	< 5.0	5.0 - 5.4	5.5 - 5.7	5.8 - 6.2	6.3 - 6.9	> 6.9
ppm	----- lbs CaCO ₃ lime/1,000 ft ² -----					
<500	80*	57	46	0	0	0
500 - 1500	115	92	69	0	0	0
1501 - 2250	138	115	92	0	0	0
>2250	138	138	115	0	0	0

*Lime rates are for CaCO₃ (Ag lime) sources that contain a 90% Calcium Carbonate Equivalent. Adjust the lime rate for other sources of lime.

Irrigation pipe should be placed below the frost line and normal tillage depth (12 to 18 inches).

Add topsoil. It may be necessary to add topsoil if soil fertility is poor or if topsoil was removed previously for rough grading. Approximately 19 cubic yards of topsoil are required to create a layer 6 inches deep over 1,000 square feet. If suitable topsoil is not available, existing soil may be modified. If the topsoil lacks organic matter, additives including peat, decomposed manure or composted rice hulls may be incorporated at 1 to 3 cubic yards per 1,000 square feet. These materials should be mixed with the native soil at least 6 to 8 inches deep.

Apply amendments. Uniformly apply phosphorus, potassium and lime according to soil test recommendations (Tables 1 and 2). Lime, fertilizer and organic amendments should be thoroughly mixed (tilled) into the upper 6 to 8 inches of soil. Avoid tilling when the soil is too wet to avoid damaging the soil structure.

Final grading. The final grade is best accomplished by tilling the surface to a depth of 2 to 3 inches. This will smooth the surface soil in preparation for planting. Use a hand rake for small areas. Larger areas require a heavy steel drag mat, soil blade, plank drag or tiller. Allow one week for the soil to settle before final grading. Irrigation or significant rainfall will aid in settling the soil. A properly prepared planting bed should be firm enough to walk on with the top 1/2 inch of soil loosened. During final soil preparation, examine

height and slope of soil in relation to walks and driveways. Driveways and walks should be the same level as the soil surface. Fill any low spots which may collect and hold water after irrigation or rainfall.

Care should be taken not to impact existing trees. Tilling around trees may cut a large percentage of a tree's surface roots which can weaken or kill the tree. Trees can also be killed by placing large amounts of soil over the roots because this practice deprives the roots of oxygen. If significant grade changes are needed, it is recommended that a root-aerating tree well be constructed by an experienced professional.

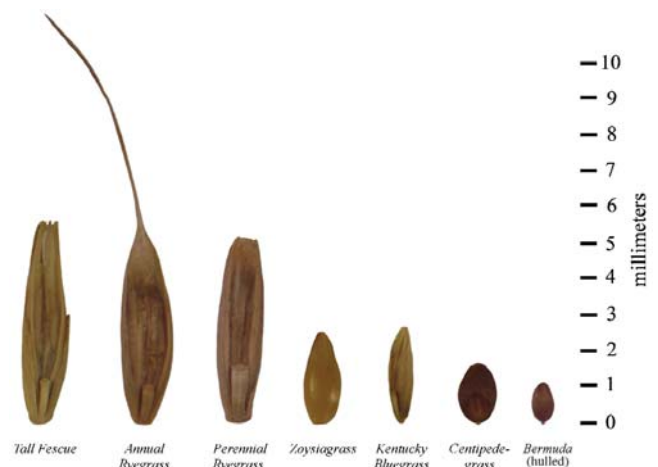


Figure 1. Seed size and appearance differ among turfgrass species.

Seeding

Common bermudagrass and tall fescue are the turfgrasses most commonly established from seed in Arkansas (Figure 1). Centipedegrass and zoysiagrass can also be established from seed. Kentucky bluegrass is not well adapted to Arkansas and has limited use in northern Arkansas. Perennial ryegrass is commonly used for seeding temporary lawns and overseeding for winter color.

It is important to purchase quality grass seed. According to state law, each seed bag must be labeled as to what exactly is in the bag. Make sure the seed was tested within the last six months and check that the germination rate is 85 percent or better. Also, make sure the seed label specifies the cultivar you had in mind and contains less than 0.3 percent weed seed and no noxious weeds. Other things to look for are less than 5 percent inert matter and less than 0.5 percent of any other crop.

Small lawn areas may be seeded with a 2- to 3-foot drop spreader (Figure 2). Drop spreaders are more accurate than rotary spreaders and allow planting along driveways, sidewalks and beds without wasting seed. The spreader must be calibrated to deliver the appropriate seeding rate. Divide the total amount of seed equally and plant in two directions to assure uniform distribution of the seed. Immediately after seeding, the soil surface should be lightly raked with the back side of a leaf rake or dragged with a piece of chain link fence or flexible metal mesh door mat to cover the seed with 1/8 to 1/4 inch of soil. After raking or dragging, roll the area with a water ballast roller one-third to one-half full to bring the seed into contact with the soil.

Mulching

While mulching is not essential for lawn establishment, it will help prevent erosion on sloped sites, conserve moisture and reduce seed loss from wind, birds and washing. Weed-free straw is a good choice for mulching. One square bale of straw typically covers 1,000 square feet (Figure 3). The tendency for most homeowners is to apply too much



Figure 2. Seeding an area with a drop seeder.



Figure 3. Straw should be applied lightly. Applying too much will shade out germinating seedlings.



Figure 4. Various erosion control blankets can be used on slopes to help reduce erosion and retain soil moisture during establishment.

straw. Applying straw too thick can be detrimental to establishment and require removal after seedling germination. About 50 percent of the soil should be visible after mulching. There are many other erosion blankets available to help prevent erosion and increase soil temperature and moisture-holding capacity (Figure 4). These materials are often constructed out of jute, coconut fiber, excelsior, polypropylene and paper-based products. Some blankets are permanent, while others are to be removed after seed germination. Read and follow the manufacturer's instructions for best results.

Watering

Seedlings are very susceptible to moisture stress during the first few weeks after seeding. The upper 1 inch of soil should be kept moist with frequent irrigations for the first two or three weeks after planting.

Table 3. Seeding rates and timing for turfgrasses in Arkansas

Species	Area of Adaptation	Seeding Rate lbs/1,000 ft ²	Days to Germinate	Planting Time
Tall fescue + Kentucky bluegrass	North	5.0 to 7.0	5 to 21	September-October preferred
Tall fescue	Central, North	8.0 to 10.0	5 to 10	September-October preferred (or early spring)
Bermudagrass	Statewide	0.5 to 1.0	7 to 14	May-June
Centipedegrass	South	0.25 to 0.5	7 to 14	May-June
Zoysiagrass	Statewide	1.0 to 2.0	10 to 21	May-June
Annual or perennial ryegrass (overseeding)	Statewide	6.0 to 10.0	5 to 8	September-November

After the seed germinates and seedlings develop, the lawn should be watered less often. Eventually, the lawn should be watered deeply and infrequently only when the plants show signs of water stress.

Mowing

Start mowing as soon as the turf is tall enough to cut. Set the mower at the desired height of cut depending upon the species. A 3-inch cut is good for tall fescue, and a 2-inch cutting height will work well for bermudagrass, centipedegrass and zoysiagrass. Frequent mowing of seedlings will help with weed control, increase tillering and limit clipping accumulation. A sharp blade is important to avoid injuring the seedlings. Avoid mowing when the lawn is muddy because the wheels will pull some seedlings out of the ground.

Fertilizing

New turfgrass seedlings have poorly developed root systems, and thus, they cannot effectively take up nutrients from the soil. Therefore, it is important to fertilize frequently after seeding to encourage establishment. Apply 0.75 to 1 lb N/1,000 ft² four to six weeks after germination and again eight to ten weeks after germination. These fertilizations will help the turf develop an extensive fibrous root system that is better able to take up nutrients and obtain water.

Bermudagrass

New cultivars of bermudagrass released within the last ten years make seeding bermudagrass more feasible than in the past. Seeding is sometimes preferred to sprigging or sodding because it is more economical. If the decision is made to seed bermudagrass, there are many cultivars available, but only a few are well adapted to Arkansas. Most of the seed sold in retail outlets such as ‘Guymon’, ‘Jackpot’, ‘Panama’, ‘NuMex Sahara’ and Arizona common either lack cold tolerance in Arkansas or have low turf quality. Improved cultivars with good cold tolerance and improved turf quality should be planted instead. Recommended cultivars include ‘Barbados’, ‘Contessa’, ‘Riviera’ and ‘Yukon’. ‘Princess 77’ is another improved cultivar, but it should not be used

in the northern one-third of Arkansas due to lack of cold hardiness.

Seed bermudagrass at 0.5 to 1 lb/1,000 ft² (Table 3). When bermudagrass is seeded too heavily, lateral growth is inhibited by competition among the bermudagrass seedlings. Some seed is coated with fertilizer, fungicide and other products to improve growth. Coated seed will require higher seeding rates.

Do not seed bermudagrass after July 1. Later plantings do not have sufficient time to become well established before cold weather arrives. May to early June is a good time to seed bermudagrass, although seed can be planted as early as February. Research in Arkansas has shown that in addition to May and June, bermudagrass can also be successfully established when seeded in late winter (February) to early spring (April). The practice of planting seed when soil temperatures are outside the normal range needed for germination is referred to as dormant seeding. Dormant seedings of bermudagrass will begin to germinate and grow once soil temperatures become optimum for germination, which is around 63°F. If this approach is used on a new lawn, care must be taken to prevent erosion during the period before the seed germinates.

Annual grassy weed control may be necessary to help establish seeded bermudagrass. Preemergence herbicides cannot be used during establishment. Some postemergence herbicides can be used. MSMA can be safely applied to control crabgrass in bermudagrass seedlings about two weeks after the bermudagrass germinates. Once the bermudagrass has become established (after about eight weeks of growth), weed control options are similar to mature bermudagrass lawns. See FSA2109, *Home Lawn Weed Control*, for more information on weed control.

Centipedegrass

Centipedegrass has typically been established from sod in Arkansas, but this species may be seeded. Seed prices have declined in the past few years, making establishing centipedegrass from seed even more attractive. Centipedegrass produces a very small seed and is often mixed with sand or milorganite for easier spreading. Seed centipedegrass at 0.25 to 0.5 lb/1,000 ft² (Table 3). ‘TifBlair’ is an improved

cultivar well adapted for lawns in the southern one-half of Arkansas.

An ideal pH range for centipedegrass is 5.0 to 5.5, so lime is rarely needed. Avoid using complete fertilizers such as 13-13-13 because excess phosphorus (the middle number) will tend to bind with iron, making it unavailable to plants. Since centipedegrass is a heavy iron user, yellow, unhealthy plants may result from iron deficiency.

Zoysiagrass

Improved cultivars of zoysiagrass released within the last ten years make seeding zoysiagrass a more desirable option than in the past. Seeding is sometimes preferred to sprigging or sodding for establishment because it is more economical. Recommended cultivars include 'Compadre' and 'Zenith', both of which have excellent cold hardiness.

Seed zoysiagrass at 1 to 2 lbs/1,000 ft² (Table 3). Some seed is coated with fertilizer, fungicide and other products to improve growth. Coated seed will require higher seeding rates.

Do not seed zoysiagrass after July 1. Later plantings do not have sufficient time to become well established before cold weather arrives. Late May and June are good times to seed zoysiagrass. Zoysiagrass is slower to germinate (14 to 21 days) and to fully establish (90 or more days) than bermudagrass, so weed control is important during establishment. Annual grassy weed control will be necessary to help establish seeded zoysiagrass. The preemergence herbicide Tupersan is safe to apply immediately following zoysiagrass seeding to prevent unwanted crabgrass germination. MSMA can be safely applied to control crabgrass in zoysiagrass seedlings about two weeks after the zoysiagrass germinates (NOTE: This may cause some yellowing to the zoysiagrass.) Once the zoysiagrass has become established (after about eight weeks of growth), weed control options are similar to mature zoysiagrass lawns. See FSA2109, *Home Lawn Weed Control*, for more information on weed control.

Tall Fescue

Ideally, tall fescue should be seeded in September so that it has sufficient time to develop before the onset of cold weather and heat the following summer. A second choice would be seeding tall fescue in March. The primary drawbacks of spring planting are potentially wet conditions, cool temperatures, early spring weeds and poor summer survival.

Do not plant a forage-type tall fescue such as Kentucky 31. The turf-type tall fescue varieties are much more desirable as lawn grasses. Many varieties of turf-type tall fescue are available. It is a good idea to plant a blend of two or three varieties. It is most convenient to purchase prepackaged blends of tall fescue varieties rather than attempting to blend varieties on your own. Some of the higher rated varieties in trials at the University of Arkansas and in the

transition zone include 'Apache', 'Avenger', 'Barvado', 'Bonanza', 'Cayenne', 'Cochise III', 'Durana', 'Dynasty', 'Finelawn Elite', 'Firebird', 'Greenkeeper', 'Guardian', 'Inferno', 'Jaguar', 'Justice', 'Masterpiece', 'Millennium', '2nd Millennium', 'Plantation', 'Rebel', 'Rebel II', 'Rebel Exeda', 'Red Coat', 'Rembrant', 'Scorpio', 'Shenandoah', 'Solara', 'Turbo' and 'Watchdog'.

Seed tall fescue at 8 to 10 lbs/1,000 ft² (Table 3). At first glance, tall fescue seeding rates may seem high. It is a mistake to skimp on the amount used because an unsatisfactory, clumpy stand will result.

Kentucky Bluegrass

Kentucky bluegrass is only marginally adapted to northern Arkansas. To help offset its lack of drought tolerance in summer, it can be mixed with tall fescue which has better drought and heat tolerance. Ideally, this mixture should be seeded in September so that it has sufficient time to develop before the onset of heat the following summer.

Many varieties of Kentucky bluegrass are available. One new class of Kentucky bluegrass cultivars with improved heat tolerance has emerged. It is a hybrid of Texas bluegrass and Kentucky bluegrass. Commercially available cultivars of this hybrid include 'Durablue', 'Thermal Blue', 'Thermal Blue Blaze' and 'Solar Green'.

These hybrid bluegrasses have improved heat tolerance but are not improved enough to consider planting them alone in a lawn. It is a good idea to plant a mixture of turf-type tall fescue and hybrid bluegrass. It is most convenient to purchase a prepackaged mixture of tall fescue and hybrid bluegrass varieties rather than attempting to blend varieties on your own. A common mixture percentage would be 90 percent tall fescue seed and 10 percent hybrid bluegrass seed by weight. Seed this mixture at 5 to 7 lbs/1,000 ft² (Table 3).

Hydroseeding

Hydroseeding is the process where professionals apply seed in a water, fertilizer and mulch slurry (Figure 5). This process was developed in 1953 by Charles Finn in order to help establish turf on



Figure 5. Arkansas lawn being established by hydroseeding.

roadsides. This process is especially helpful in areas with difficult equipment access such as sloped areas. Wood- or paper-based products are typically used as a mulch to help retain moisture. Professionals also commonly add tackifiers or polymers to help increase uniformity and the stability of the hydromulch. The key ingredient in hydroseeding is the seed, so it is important to use improved cultivars that are well adapted to your location.

Temporary Lawns

Many new homes are completed in late summer or early fall when the timing is not appropriate for planting popular warm-season grasses such as bermudagrass, zoysiagrass and centipedegrass. In this situation, planting a temporary lawn will provide erosion control and reduce the amount of dust and mud tracked into the house. The choices for a temporary lawn include small grains such as wheat, rye and oats and cool-season turfgrasses such as tall fescue and ryegrass. Perennial ryegrass is a good choice because it germinates quickly, is readily available and produces a nice looking lawn. September and October are good months for planting ryegrass. Minimal seedbed preparation is needed for temporary lawns. Temporary lawns seldom require fertilization.

Winter Overseeding

Many homeowners do not like to look at a brown lawn all winter. Overseeding a warm-season lawn with a cool-season grass in late summer or early fall will provide a green lawn during winter and spring. Overseeding is most effective with bermudagrass lawns. Overseeding other warm-season species grown in Arkansas (such as zoysiagrass) often creates problems that outweigh the benefits. Regardless of the existing species, overseeding usually causes some damage to the lawn and can cause severe thinning or death to the permanent lawn species.

Overseed about one month before the warm-season lawn normally turns brown (early October to mid-November). Mow the existing grass short, but do not scalp the lawn. Use a vertical mower (available at rental stores) to prepare the lawn for overseeding. Vertical mowing should slice the surface of the soil 1/4 to 1/2 inch deep to allow the seed to reach the soil. Seed 6 to 10 lbs/1,000 ft² of either annual or perennial ryegrass. Begin frequent light waterings to keep the seed moist until it germinates. After the new plants emerge and begin to grow, reduce the watering schedule until it is back to normal.

Start mowing when the grass is about 2 to 3 inches tall. Maintain the grass at a cutting height of about 2 inches. Apply a nitrogen fertilizer about six

weeks after overseeding. Cool weather should slow growth enough to alleviate the need for frequent mowing or additional fertilization.

The overseeding grass should die next spring with the onset of warm weather. Cool, wet spring weather may cause the overseeded grass to persist while the warm-season grass begins to green up. If the weather remains cool into early summer, it may be necessary to remove the winter grass with a herbicide.

Weed Control

Most turfgrass herbicides are intended for use on established grasses. Thus, herbicide use on newly planted grasses should be very conservative. If possible, wait until the grass has gone through several mowings or a full growing season before using chemical weed control.

Tupersan (siduron) may be used for preemergence control of annual grasses in newly seeded fescue, bluegrass, perennial ryegrass and zoysiagrass. Do not use Tupersan on centipedegrass or bermudagrass.

There are no preemergence herbicides recommended for use in newly seeded bermudagrass or centipedegrass.

If weed competition is severe enough to warrant herbicide use, a good rule of thumb is to wait until a recently seeded fescue or bluegrass lawn has been mowed two to three times before using the three-way herbicides (2,4-D + dicamba + MCPP). In seeded bermudagrass or zoysiagrass, wait approximately two to three weeks after seedling emergence before using MSMA to control crabgrass.

MSMA should not be used on centipedegrass. Vantage (sethoxydim) may be used for annual grass control in centipedegrass. Do not apply sethoxydim until 3 inches of stolon growth has occurred. Do not apply more than 2 pints per acre per growing season. Do not apply more than 1 pint per acre per application.

Additional fact sheets are available at <http://publications.uaex.edu/>. For more information about turfgrass, visit turf.uark.edu.

References

Patton, A.J., G.A. Hardebeck, D.W. Williams, and Z.J. Reicher. 2004. Establishment of bermudagrass and zoysiagrass by seed. *Crop Sci.* 44:2160-2167.

Shaver, B.R., M.D. Richardson, J.H. McCalla, D.E. Karcher, and P.J. Berger. 2006. Dormant seeding bermudagrass cultivars in a transition-zone environment. *Crop Sci.* 46:1787-1792.

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