

An important part of obtaining a good turfgrass stand is the selection of species and varieties that are best adapted to the specific location. Most turf problems encountered during the first or second year can be related directly to mistakes or omissions made prior to or during turf establishment. A new turfgrass site should always be prepared to correct existing problems and avoid potential problems.

Turfgrass Selection

The first step in turfgrass establishment is selecting a grass that is adapted to the area and suits the future use of the turf. Turf characteristics, such as climate adaptation, water use, traffic tolerance, color, quality, maintenance requirements, and available resources, need to be considered when selecting a turf species. Climatic adaptation and traffic tolerance, which largely determine the future use of the turf area, are the two most important factors. For more information about selecting the right turfgrass for your area, please see NMSU Extension Guide H-508, *Turfgrasses for New Mexico* (http://aces.nmsu.edu/pubs/_h/H508.pdf).

Site Preparation

Site preparation is of utmost importance because it affects the management, appearance, and life of the turf area. It includes various operations such as clearing, tilling, grading, fertilizing, modifying soil, controlling weeds, and installing an irrigation system.

The absolute minimum soil depth for a lawn is 4 inches. However, for deep root penetration and the benefits that come from an extensive and deep root system, a depth of 6 inches or more is recommended. Loams and sandy loams with a pH of 6.0 to 7.0 are the very best soils for producing a beautiful lawn. Unfortunately, this ideal soil is seldom found on any property in New Mexico, and soil modification and/or the



© Mariusz Blach | Dreamstime.com

addition of topsoil may be necessary. Have your existing soil tested and consult your local county Extension agent (<http://aces.nmsu.edu/county/>) about soil suitability as well as preplant fertilization. For more information on how to take a soil test, see NMSU Extension Guide A-114, *Test Your Garden Soil* (http://aces.nmsu.edu/pubs/_a/A114.pdf).

Preplant Weed Control

If an existing turf area has an undesirable plant cover and needs to be replanted entirely, a nonselective, systemic herbicide should be applied before cultivating and grading the area. Glyphosate eliminates most of the undesirable weedy grasses and broadleaved weeds. Glyphosate moves down, or translocates, in plants to also kill underground portions. Two applications 4 to 8 weeks apart may be necessary for deep-rooted perennial grasses. Directions for application rates and other instructions on the label must be followed. A waiting period of 7 days after glyphosate application may be necessary before tilling or disturbing the sod. Do not use premergent or residual type herbicides during this phase.

¹Extension Turfgrass Specialist, Department of Extension Plant Sciences, New Mexico State University.

Clearing and Grading

Around newly constructed buildings, clear the site of all building materials (wood, cement, and bricks), as well as any buried stumps, rocks, stones larger than 2–3 inches in diameter, or other debris. This important measure is often overlooked. If not done thoroughly, these materials can affect irrigation and turf establishment. Grade the entire area to eliminate any possible drainage problems on the property. This includes sloping the grade away from building foundations and filling low-lying areas. For large areas, a tractor-mounted blade and/or box is most often used for rough grading. Hand tools, drags, and rototillers perform well on areas that are smaller in size. The grading will probably uncover more debris that should be removed and not buried.

Soil Modification

If the minimum soil depth cannot be achieved (for example if a caliche layer is close to the surface) or if the soil test shows that the existing soil is unsuitable for turfgrass growth, topsoil and/or soil amendments should be added. Add topsoil (loamy sand, sandy loam, or other soil suitable for the area) and organic matter to achieve a total topsoil depth of 4–6 inches after firming. A more shallow soil can negatively affect turf appearance and can lead to increased water use. If peat or compost is recommended to be incorporated into the topsoil, use a rate of 50 to 100 pounds per 100 square feet. Depending on soil test results, additional soil amendments and preplant fertilizer can be added at this point. Rototill the mixture to a depth of at least 6 inches. This will control most annual weeds, alleviate subsoil compaction, and allow the topsoil mixture to bond with the subsoil, which will improve root penetration and water movement. Contact your county Extension agent if you have questions regarding the soil test, local compost quality, or the extent of soil modification required.

Preplant Fertilization

Starter fertilizer—a fertilizer that is low in nitrogen and high in phosphate and potassium—should be used as your preplant fertilizer at a rate of 0.5 to 1 lb of potassium (as K_2O) and 1 to 1.5 lb of phosphate (as P_2O_5) per 1,000 square feet. In most situations, the starter fertilizer should be worked into the soil prior to seeding or laying the sod to prevent injury to the developing turfgrass roots.

Irrigation System

Install the irrigation system after rough grading the new site. This is a good time to install because the soil settling in the trenches can be repaired during the fine grading process. Also, the irrigation system can be tested for any design and operational problems before planting. Proper care must be taken to ensure that irrigation components are not damaged during grading. Use marking flags on all sprinkler heads and valve locations. Be sure to follow local plumbing codes and obtain proper permits. Employ only licensed irrigation designers and installers.

Fine Grading

Before fine grading, settle the area by applying irrigation water (about 0.5 to 1 inch). Fine grading levels and smoothes the soil surface in preparation for planting. Large areas that can accommodate heavy machinery should be fine graded with a tractor-mounted box blade or a heavy-duty rake. Fine grade the entire site manually by using a rake or a steel drag mat to smooth out high spots on smaller to medium-sized areas. Remove any additional construction debris brought up during the grading process.

At this point, set sprinkler heads at the proper height—flush with the ground for seeding or 0.5 to 0.75 inch above the soil level if sodded. Apply water again to finish settling the soil and to provide adequate soil moisture for the seeding or sodding process. Any weeds that emerge prior to planting should be controlled with a non-residual contact herbicide. If the lawn area or amount of weeds is not too large, weeds can be removed by hand.

Turfgrass Seeding

Timing

A lawn can be started successfully from seed at many times during the growing season. However, it is better to establish cool-season grasses, such as Kentucky bluegrass, perennial ryegrass, or tall fescue, in late summer or early fall. Warm-season grasses, such as buffalograss or bermudagrass, can be seeded between late April and June. Historically, a soil temperature of 65°F or above was considered necessary to establish warm-season grasses from seed. However, recent studies have shown that cumulative heat from temperatures between 50 and 60°F can also result in successful establishment. It is therefore not necessary to wait until May or June before you seed buffalograss or bermudagrass. Seeding rates vary with species (Table 1) and are determined by seed size, purity, percent germination, and growth habit.

Grasses	Seeding time		Seeding rate (lb/1,000 ft ²)	Sod availability
	Northern NM	Southern NM		
Warm-Season				
Bermudagrass				
hulled	May 15–Aug. 1	April 15–Sept. 1	1–1.5	√
coated	May 15–Aug. 1	April 15–Sept. 1	1.5–2.0	
Blue grama	May 15–Aug. 1	April 15–Sept. 1	1–2	N/A
Buffalograss	May 15–Aug. 1	April 15–Sept. 1	3–3.5*	
St. Augustinegrass	Seed is seldom available			
Zoysiagrass	May 15–Aug. 1	April 15–Sept. 1	1–2	√
Cool-Season				
Bentgrass	Aug. 15–Sept. 15	Sept. 1–Oct. 15	0.5–1	√
Fine fescue	Aug. 15–Sept. 15	Sept. 1–Oct. 15	3–4	√
Kentucky bluegrass	Aug. 15–Sept. 15	Not recommended	1–2	√
Perennial ryegrass	Aug. 15–Sept. 15	Sept. 1–Oct. 15	7–9	N/A
Tall fescue	Aug. 15–Sept. 15	Sept. 1–Oct. 15	7–9	√

*Seeding rate is for buffalograss seed burrs. Each burr contains one or more seeds.

Seeding Practices

Hand seeding is most practical for small turf areas. A small handheld rotary spreader can be used for this purpose. A drop-type fertilizer spreader calibrated for delivering the appropriate seeding rate should be used to seed larger areas. Drop spreaders are generally preferred for seeding because they are more accurate. Their spreading pattern is less influenced by wind and different seed sizes compared to a rotary spreader. When using a rotary spreader, larger seeds are thrown farther than smaller seeds, resulting in uneven distribution of grass species within the area. Spread the seed with several applications, using crisscrossing patterns. Follow up with a light raking and lightly roll the area to ensure good seed-to-soil contact. Be careful not to bury the seed too deeply.

Turfgrass Sodding

Sod can be used almost year-round in the southern half of New Mexico. In the northern half, sodding can be done in the spring, summer, and fall months. Sodding in winter can result in winter-kill. Planting sod in extreme heat can also be detrimental. Do not leave sod in pallets or rolls in the full sun unless you can lay it quickly. Have the soil prepared ahead of time and have your labor crew ready to go when the sod arrives.

Sod can be obtained in rectangular cut pieces or in small or large rolls. The width of the rolls can vary from 12 to 36 inches, depending on the size of the job. Soil preparation is the same for sod as it is for seeding. The soil surface needs to be fairly solid and level prior to laying the sod. Sometimes the area will need to be rolled.

Footprints or equipment tire tracks will leave sunken areas that the sod roots will not contact, and dead spots will occur as a result. You must have good contact between the sod and the soil surface.

Begin by laying the sod out against a straight surface edge like a sidewalk, driveway, or building. Try to keep the sod pieces in straight lines if possible. Make sure that the sod pieces fit completely against all edges of walkways, driveways, walls, and buildings. If using smaller rectangular pieces of sod, make sure that on the second pass you stagger the pieces by 50% in length. In other words, make sure that the pieces do not line up exactly with the cut ends all the way across the lawn. Alternate the rows of sod like you would laying brick. At the ends of the rows, use a sharp knife to cut off the excess sod. Save these cut pieces for filling in the odd shapes.

The sod pieces need to be pushed against each other both within the rows as well as between rows. Do not leave any gaps between the pieces. Fill the cracks between with excess soil. When you are finished laying the sod, go over the area with a roller. This helps to push the sod in contact with the soil surface. Water immediately after sodding. If it is a large area that requires a long watering time, you may need to water periodically while laying the sod. Continue watering on a frequent basis for several days after completion. Check with your local utility about watering regulations. Do not fertilize or use pesticides until the grass has reached the recommended mowing height and you are beginning to mow on a regular schedule.

Turf Maintenance During Grow-In

Starting immediately after seeding or sodding, maintain turfgrass areas during the grow-in period by watering, mowing, and fertilizing. These are the three crucial components to ensure a dense and weed-free turf stand in the shortest time possible.

Watering

Irrigation is the most important cultural practice for promoting seed germination and sod establishment. If there isn't enough water, turf will establish slowly—if at all—and sparingly. Insufficient watering is the main reason turf fails to establish. Seedlings are very susceptible to desiccation, and the soil around the seed should not be allowed to dry out. A newly seeded area should be irrigated to provide moisture to the whole seedbed. Apply enough water to moisten the soil around the seed, but avoid overwatering and puddles. As the seedlings develop and reach a height of about 2 inches, the frequency of irrigation should be reduced, and the area must be watered more deeply. After the lawn has been mowed several times, irrigate deeply and infrequently. For more information, see NMSU Extension Guide H-504, *How to Water Your Lawn* (http://aces.nmsu.edu/pubs/_h/H504.pdf).

Mowing

Mowing should begin when the first shoots reach a sufficient height to be mowed. All cutting equipment should be sharp, and mowers should be adjusted precisely to the proper mowing height. Immature turf plants are uprooted easily by dull mowing equipment, especially when the soil is wet.

Wait for the surface of the root zone to dry and become firm before mowing. Do not wait too long to mow a newly seeded lawn; mow early and often. The one-third rule—never remove more than one third of the aboveground grass plant—also applies to immature turf stands. For more information, see NMSU Extension Guide H-505, *Mowing Your Lawn* (http://aces.nmsu.edu/pubs/_h/H505.pdf).

Fertilizing

Newly seeded or sodded turf plants have poorly developed root systems and cannot take up nutrients from the soil effectively. Therefore, it is important to fertilize frequently to encourage establishment. Nitrogen and

other nutrients should be applied sufficiently but not abundantly. High rates of fertilizer can injure the plants and/or restrict root and shoot growth. Apply 0.5 to 0.75 lb N per 1,000 square feet every other week for 6 to 8 weeks, and follow general fertilization guidelines thereafter. All other nutrients, such as phosphorous, potassium, magnesium, calcium, and iron, should be applied according to soil test results. With the exception of iron, most of these nutrients are usually abundant in New Mexico's soils. A soil test can reveal the lack of certain minerals and prevent nutrient deficiencies. For more information about soil testing, please see NMSU Extension Guide A-114, *Test Your Garden Soil* (http://aces.nmsu.edu/pubs/_a/A114.pdf), and contact your county Extension agent if you have questions regarding the soil test.

Brand names appearing in publications are for product identification purposes only. No endorsement is intended, nor is criticism implied of similar products not mentioned. Persons using such products assume responsibility for their use in accordance with current label directions of the manufacturer.

The pesticide recommendations in this publication are provided only as a guide. The authors and New Mexico State University assume no liability resulting from their use. Please be aware that pesticide labels and registration can change at any time; by law, it is the applicator's responsibility to use pesticides ONLY according to the directions on the current label. Use pesticides selectively and carefully and follow recommended procedures for the safe storage and disposal of surplus pesticides and containers.

Original authors: Bernd Leinauer, Extension Turfgrass Specialist; and John White, Doña Ana County Agricultural Agent.



Bernd Leinauer is a professor and Extension Turfgrass Specialist in the Department of Extension Plant Sciences. He received his M.S. and Ph.D. degrees in crop and soil science from Hohenheim University in Stuttgart, Germany. His Extension and research program focuses on developing water management strategies for turf areas to reduce the amount of water used for irrigation.

Contents of publications may be freely reproduced for educational purposes. All other rights reserved. For permission to use publications for other purposes, contact pubs@nmsu.edu or the authors listed on the publication.

New Mexico State University is an equal opportunity/affirmative action employer and educator. NMSU and the U.S. Department of Agriculture cooperating.