

# Turfgrass Establishment In Texas

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Much can be done during turf establishment to make certain turfgrasses persist at an acceptable level of quality in response to appropriate annual management programs. After all, grasses are the only plant material that we actually play on or walk on in the landscape! Yet, turfgrasses are often planted without much thought as to what is needed to have the turfgrass prosper in good health. To properly plant turfgrass requires appropriate:

- site and soil preparation (the foundation!)
- planting technique for seed, sod, sprigs or plugs (the basic methods for establishing a lawn)
- post planting care and maintenance program.

This publication will explain the importance of each of the steps involved in turfgrass establishment. These steps, or principles, are similar whether planting seed, sod, sprigs, or plugs. They are also important in renovating a turfed area of poor quality or in just repairing an isolated area. Every effort should be made, where applicable, to use the guidelines explained herein. Turfgrass selection for adapted grass species and varieties is one of the most important factors to consider for long-term success of any turfed site. Consideration should include the area of Texas, intended use, soil type, soil depth and the desired turf management program (mowing, fertility, irrigation, etc.).

## PLANTING METHOD OPTIONS

The choice of grass species and variety can influence which establishment methods are available to you. Turfgrass can be established by seed, sod, sprigs, or plugs. Seed and sod establishment are commonly understood. However, sprigging and plugging are unfamiliar to many individuals. Therefore, before selecting a turfgrass one should be familiar with the establishment options available. Sprigging is commonly used to plant bermudagrass. Sprigs or vegetative plant parts (stolons and rhizomes) can be purchased or obtained by thoroughly shredding a piece of sod. Sprigs are perishable and should be planted immediately upon arrival at the site. The method of planting will depend upon the type of grass, time of year, and your location in Texas.

**Table 1.** Turfgrass establishment methods suited to or available for use in Texas.

Grass Species	Seed	Sod**	Plug	Sprig
Bermudagrass	Yes*	Yes	Yes	Yes
Buffalograss	Yes	Yes	Yes	NR#
Centipedegrass	Yes	Yes	NR	NR
St. Augustinegrass	NA###	Yes	NR	NR
Zoysiagrass	Yes*	Yes	Yes	NR
Tall fescue	Yes	Yes	NA	NA
Kentucky bluegrass	Yes	NA	NA	NA
Texas bluegrass	NA	Yes	NA	NA

\*Seeded types are typically not available as sod. Most improved bermudagrass, zoysiagrass and St. Augustinegrass do not produce viable seed and are only available as sod, plugs, or sprigs

\*\*Sod producers may grow only certain grass species or varieties of individual species and may or may not market plugs

# NR not the preferred or recommended method as successful large scale establishment is difficult

### NA may not be available in Texas or not appropriate method

**Seed.** Seeding has a low initial cost for seeded turfgrass species and varieties. The best temperature range for seed germination of warm-season grasses is from 70°F to 95°F. Therefore, late spring to early summer (location dependent) is the best time to seed bermudagrass and other warm-season turfgrasses. Yet, zoysiagrass and to some extent centipedegrass establishment from seed is much slower than bermudagrass.

Cool season grasses are best planted in the fall in the areas of North Texas where they are adapted. Not all turfgrasses produce viable seed, and if they do, they may not produce enough to be profitable to market or the seed may not “come true.” This means that the plant produced from the seed will not necessarily look, or act, like the plant that produced the seed.

Seed quality can be evaluated by reading the seed test information that is required on every seed container. The seed test date should be current, within one year of purchase. Germination and purity should be as high as possible with a low weed and inert matter content. Buying certified seed insures that the variety stated to be in the package is indeed the variety in the package being purchased.

**Information on the Seed Label.** Grass seed for lawns should have a high percent germination and purity. Information on germination and purity is required by state law to be on all seed containers. Low-priced seed is often the most costly because it may have a low percent germination and purity. Thought should be given to purchasing seed on the basis of percent "Pure Live Seed," which is the product of the percent purity and the percent germination. For example, bermudagrass seed with 85 percent germination and 98 percent purity contains 83 percent "pure live seed" ( $0.85 \times 0.98 = 0.83$ ). In contrast, bermudagrass with only 80 percent germination and 85 percent purity contains only 68 percent "pure live seed." Seed should be stored in a cool and dry place to maintain viability. By law the seed germination is only good for 1 year after testing. Make sure that the date of purchase is before the "sell by" date on the label.

Figure 1. A sample of information on a grass seed label

Lot # BR549-98-0254 Very Good Grass Blend		
Kind	% purity	% germination
Golly Bermudagrass	49	85
BeGood Bermudagrass	24.5	85
Forever Bermudagrass	24.5	85
% Crop Seed	0.8	
% Inert matter	1.1	
% Weed seed	0.1	no noxious weeds
Origin: AZ tested 6/09 sell by 6/10 Jane Doe Seed Company, Somewhere USA		

**Sod.** Turfgrasses that spread by rhizomes or stolons can be grown and harvested as sod. Although sod costs more than seeding, sodding may not cost anymore than seeding when the long-term cost of "growing-in" seedling turf is factored in to the total cost. Usually more irrigation,

fertilization, weed control, and time are required to successfully establish turf from seed than from sod. Therefore, sod brings added value over seeding.

#### **Sodding Advantages Over Seeding**

- It is the quickest way to establish turfgrass
- Provides immediate soil erosion control
- Eliminates issues with dust and mud
- Minimizes any need for weed control during establishment
- Can be used once the sod has rooted
- Can be planted nearly year round
- Can get the best turfgrass varieties from sod producers
- Can be used for total turf installation or repair of smaller areas

The best time to sod is when the turfgrass is actively growing. This means that the sod will root or knit down as quickly as possible. As with seed, certified sod, if available is the best way to be sure the buyer is getting the stated variety.

Figure 2. Sod pieces stacked on a pallet awaiting installation



Before ordering or obtaining the sod be sure you are prepared to install it and have adequate irrigation capability. Sod is perishable; it should not remain on the pallet or stack longer than 36 hours (less in hot weather).

**Ordering Sod.** Sod has traditionally been sold by the square yard. However, the trend is to sell on a per square foot basis. Once the area has been measured for its size in square feet, divide the total square feet by 9 (the number of sq ft in a sq yard) to calculate square yards. This equals 111 square yards per 1000 ft<sup>2</sup>. There is some waste in installation due to odd shapes and irregular pieces.

**Sprigs.** Some turfgrasses that spread by stolons may be harvested and used to establish new turf. This process is referred to as sprigging, and it is used primarily for establishing hybrid bermudagrasses. Sprigging costs more than seeding but less than sodding. Sprigs are sold by the bushel. A bushel of sprigs is approximately equal to 1 square yard of shredded sod. Turf should be sprigged in the spring to early summer period in order to get as completely established as possible before winter.

Recognize that sprigs are perishable and must be planted as soon as possible after harvest. In addition, sprigging requires that the sprigs be kept moist so they do not dry out. This requires a good irrigation system and diligent irrigation practices. Bermudagrass sprigged at 5 bushels per 1,000 square feet should cover within two months; zoysia may require an entire growing season and for that reason is rarely sprigged. After sprigging, the sprigs may be covered with a thin layer of topsoil or mulch. Since the sprigging is initially sparse, weed control will likely be necessary once the planting is mature enough to tolerate herbicides labeled for this use.

**Plugs.** Relatively small areas can also be established or repaired using plugs of grasses that spread by stolons such as bermudagrass, St. Augustinegrass, centipedegrass, or zoysiagrass. Turf sites may be plugged at any time during the growing season when adequate moisture is available. The proper distance between plugs depends on the rate of growth and on how soon a cover is desired. St. Augustinegrass plugs 2 to 4 inches in diameter planted on 2-foot centers should completely cover within three months if adequately watered and fertilized. Press the plugs firmly into the soil, and roll the planted site to give a smooth surface for mowing.

## STEPS TO FOLLOW BEFORE PLANTING

**#1 Target the date of planting and work back to accomplish the following steps.** Turfgrasses are best established under the right growing conditions. There are certain periods of the year when temperature, moisture, and day-length are most favorable for establishing cool-season and warm-season grasses. Cool-season turfgrasses are best seeded in late summer to mid-fall as this provides the greatest chance for success. Warm-season turfgrasses are best seeded from from spring to early summer. Table 2 provides the approximate best establishment dates based on grass species and planting method, including sod, plugs, and sprigs.

**#2 Measure the lawn area.** Measure to determine the total square feet to be planted. Fertilizer nutrients are purchased and applied based upon recommendations given in pounds per 1000 sq. ft. Grass planting stock will need to be ordered based on the size of the area to be planted.

**#3 Soil Test.** Texas soils are often deficient in the major nutrients required for turf. East Texas soils normally are deficient in nitrogen, phosphorus, potassium, and require lime to adjust acid soil pH. Soil testing will determine

whether the soil pH and nutrient (phosphorus, potassium, calcium, and magnesium) levels are in a range that favor turf growth. The soil test report will indicate how much fertilizer or lime needs to be applied prior to planting. Lime and fertilizer applications work best when they can be mixed into the upper 4 to 6 inches of the soil. Soil sample boxes and soil analyses are available through your local office of the Texas AgriLife Extension Service. Soil sampling information and testing is also directly available from Texas A&M Soil, Water, and Forage Testing Laboratory (<http://soiltesting.tamu.edu/>). Allow 2 to 4 weeks to get the results from the soil testing lab.

**#4 Control perennial weeds.** Weeds are opportunistic, quick to germinate, and grow in the absence of turf competition. Perennial grassy and broadleaf weeds are best controlled when they are actively growing, by applying a non-selective systemic herbicide prior to tilling the soil. This eliminates their competition with new grass plants as well as to enhance the quality of the new lawn.

If left uncontrolled, weeds detract from the appearance of the lawn and cannot be selectively removed with herbicides after the turf is established. This may be more difficult in late spring plantings since weather is not as favorable prior to planting to obtain good control on some perennial weeds (e.g., bermudagrass, dallisgrass, nutsedge). Two applications 4 to 8 weeks apart may be necessary to control perennial grassy weeds. The most popular choice for non-selective pre-plant weed control has been various formulations of glyphosate, such as Roundup. Glyphosate has no soil residual and planting can follow in seven days. Grasses vary in their ability to tolerate selective herbicides applied in a new seeding, sprigging, or plugging.

In addition, herbicides that are labeled for use in these types of new plantings are often more tolerated as the stand has been allowed to mature before their application, often after the second or third mowing. Always read the label prior to using any herbicide.

**#5 Grass selection.** Grass species or varieties differ as to their commercial availability as seed, sod, sprigs, or plugs. Availability varies by region for vegetative material (sod, sprigs, plugs). Specific grass seed varieties may be hard to locate since garden centers typically only carry a few varieties of each species. Refer to publication SCS-2009 05, "Turfgrass Selection" to select grasses best suited for your area - available from the following website: <http://soilcrop.tamu.edu/publications.html>.

**Table 2.** Types of planting material, methods rates, and recommended season of planting

Grass Species	Established From	Method of Planting	Quantity per 1000 sq. ft.	Best Planting Season
Bermudagrass	Seed	Broadcast	1/2 to 1 lb	Seed & sprigs: spring and early summer; Sod any time of year - best during Spring and late summer & fall
	Sprigs	Broadcast or sprig 6" apart in 12-inch rows	5 to 10 bushels of sprigs	
	Sod	Solid planting staggered in a brick like pattern	Same amount in square feet as area to be sodded	
St. Augustinegrass	Sod	Solid planting staggered in a brick-like pattern	Same amount in square feet as area to be sodded	Sod: same as above; Plugs: spring and early summer
	2-inch plugs cut from sod or stolons	2-inch sod plugs on 12-inch centers, stolons on 12-inch centers	Cut sod pieces from 30 sq. ft. of quality sod, stolons from 3 to 6 sq. ft. of sod	
Centipedegrass	Seed	Broadcast	1/2 to 1 lb	Seed: spring and late summer to early fall; Sod: same as above
	Sod	Solid planting staggered in a brick-like pattern	Same amount in square feet as area to be sodded	
Zoysiagrass	Seed	Broadcast	1 lb	Seed: spring and early summer; Sod: same as above
	Sod	Solid planting staggered in a brick-like pattern	Same amount in square feet as area to be sodded	
Buffalograss	Seed	Broadcast	2 to 3 lbs	Seed: spring; Plugs spring and early summer; Sod: same as above
	Plugs	2-inch sod plugs on 12-inch centers	Cut sod pieces from 30 sq.ft. of quality sod	
	Sod	Solid planting staggered in a brick-like pattern	Same amount in square feet as area to be sodded	
Tall fescue	Seed	Broadcast	6 to 8 lbs	Sept. - November
	Sod	Solid planting staggered in a brick-like pattern	Same amount in square feet as area to be sodded	Sept. - April
Kentucky bluegrass	Seed	Broadcast	1.5 to 2 lbs	Sept. - November
	Sod	Solid planting staggered in a brick-like pattern	Same amount in square feet as area to be sodded	Sept. - April
Ryegrass	Seed	Broadcast	6 to 8 lbs	Sept. - November

**#6 Initial Soil preparation & grading.** Turfgrasses are typically healthier, use less water, and tolerate environmental stress if they are grown in a relatively deep non-compacted soil. A soil depth of 10 to 12 inches is preferred. Yet, in many parts of Texas good topsoil is a scarce commodity. Therefore, the soil may need to be worked to be able to grow turf and ornamentals. Grade

the seedbed to provide surface drainage away from the house, walks, and driveways. A fall of 6 inches for every 40 to 50 surface feet is adequate for drainage, provided no pockets or depressions exist. Take care to not direct excessive water to neighboring properties. In some cases, subsurface drainage systems may be needed to remove excess water from poorly drained sites.

If significant grading is required, stockpile the topsoil to the side while grading the sub-grade, then redistribute topsoil evenly over the sub-grade. Remove all debris, such as stones, tree stumps, and construction debris. Any need for soil grading and tillage will vary.

Five reasons for tilling the soil before planting include:

1. Reduce compaction and improve rooting.
2. Incorporate materials to adjust soil pH.
3. Incorporate phosphorus fertilizers if recommended by soil test.
4. To incorporate soil amendments (normally organic matter) to improve the soil structure.
5. To improve surface grade/drainage - poorly drained sites stay wet and result in poor growth.

Avoid compacted soil layers. If soil layers are compacted, as is commonly the case in new home construction, make every effort to deeply scarify or chisel plow so this does not become a permanent barrier to water flow and root penetration. This type of tillage takes time and the right equipment to do well. Such corrective tillage on compacted soils is typically not done. Instead compacted soils are commonly covered up with a small amount of surface tillage or a shallow sand layer. Much can be done to improve water holding capacity, turf and landscape ornamental plant health, and water conservation over the life of the turf if soil is better prepared when landscapes are established!

If a considerable part of the lawn needs soil to be added to make the desirable surface grade, use a loam or sandy loam soil. Repeated wetting of filled sites will help settle the loosened soil.

Avoid terraces, if possible, because of the difficulty of establishing and maintaining grass on steep slopes. If a lot slopes steeply, build retaining walls rather than terraces. When trees are to remain in the landscape, grade the soil gradually and carefully away from the trunk. If a soil is used to fill the area more than 2 or 3 inches above the existing surface around trees, build a retaining wall with drainage to prevent covering tree roots. The wall should be constructed at least 4 to 6 feet from the trunk. Walks and driveways should be flush with the final soil grade before planting.

Soil additives (i.e., organic matter from compost), if used, are best incorporated (tilled in) prior to the final grading of the topsoil. Do not till the soil when wet, as this will

compact the soil and destroy soil structure. It may or may not be necessary to modify the character of the soil to provide a good rooting zone for the health and persistence of the turf. A sandy loam soil with favorable levels of organic matter is considered most satisfactory for turf. If the original surface soil is heavy clay, it may be impractical to amend the soil. Proper tillage of heavy clay soils can improve establishment success.

Organic matter sources to use to amend soils include composts, well-decomposed sawdust (hardwood), or similar material. Organic matter should be thoroughly mixed in the top 4 to 6 inches of the seedbed. This mixing can be done using cultivation operations such as rotary tilling. The area should be graded properly to provide surface drainage. It is very important to grade the landscape so that the turf areas slope away from all buildings to prevent standing water around buildings following excess rainfall. Rolling the soil to firm the surface helps identify low areas in the lawn that can trap water from irrigation and rain. Areas that tend to hold water stay wet too long, thus making it difficult to maintain a quality stand of turfgrass. After working the soil, it is a good practice to irrigate the soil to encourage any soil settling, again to identify and re-grade low areas prior to planting.

**#7 Irrigation system.** Install any in-ground irrigation system following the grading and before the final grading. Soil disturbed by trenching will then have time to settle with repeated irrigation. Be certain to use qualified and licensed irrigation designers and installers. Irrigation heads should be at the same level of the final grade when seeding and elevated up to 1/2 to 3/4 inch if sodding.

**#8 Pre-plant fertilizer.** Some fertilizer nutrients and lime (more an issue in East Texas) are best tilled 4 to 6 inches into the soil prior to planting. This is easier to accomplish on sandier soils than on heavy clay soils. Starter-type fertilizers typically have higher amounts of phosphorus compared to nitrogen and potassium and their N-P<sub>2</sub>O<sub>5</sub>-K<sub>2</sub>O nutrient analyses approaches a 1:2:1 ratio. Soil test submission forms ask for the type of grass to be planted and the returned soil test reports will suggest the types and rates of fertilizers needed for a successful establishment.

Soil testing also picks up soil conditions unique to any particular site. Most turfgrasses prefer soil pH in the range of 6.0 to 7.0. Centipedegrass is one exception as it prefers

moderately acidic soils (pH of 5.0 to 5.5). The soils in East Texas have tendency toward acidic pH and would need liming to properly adjust the pH for centipedegrass or for other grasses that prefer pH near neutral. Only soil tests are able to determine lime requirements. In Texas, much of the soil pH is above 7. While sulfur can be used to lower pH, the amount of sulfur and the effort required makes it impractical to do so.

Most turfgrasses can benefit from starter type fertilizers at planting that are high in phosphorus. In the absence of a soil test report apply 1 lb of nitrogen, 1 1/2 lbs of phosphate, and 1 lb of potash per 1000 sq. ft. This should be mixed into the top 4 to 6 inches of soil.

**#9 Working the soil before the final grade.** If tilled, the area should be irrigated repeatedly (3 to 6 times) to allow the soil to settle. This will identify low spots that can then be regraded to re-establish the surface grade before planting.

**#10 Final soil preparation.** If planting with seed, sod, or plugs, the soil should be rolled to firm the soil surface and then lightly raked to leave a corrugated soil surface.

If the site is to be sprigged, the soil surface need not be firmed. In this case, the goal is to leave the soil surface slightly loosened in the upper 1 to 2 inches. This allows the sprigs to be set into the soil and favors root initiation, which enhances sprig establishment. Make certain final soil preparation is done prior to ordering sod, sprigs, or plugs. These materials are perishable and should be planted as soon as they arrive on site.

## PLANTING: TIPS BY METHOD

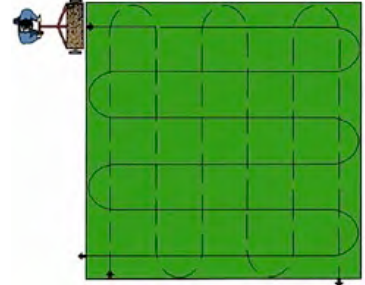
Be familiar with equipment needed to plant seed, sod, sprigs, or plugs. If planting is contracted out, be certain to check the extent of services and grass species/variety in specification of work. See Table 2 for planting information.

**Seeding.** Although seed can be sown by hand, it is better to use small seed distributors. Divide seed required for a specific area into two equal parts, one to be broadcast as you walk back and forth in a one direction, the second to be sown as you walk at right angles to the first seeding. This method provides uniform distribution of seed. After seeding, roll the area with a weighted roller to ensure good seed to soil contact. Water lightly and keep the

surface moist for grass seedlings to sprout.

The time required to see the green fuzz from seedling growth will vary from 10 to 14 days, depending on climatic conditions and grass variety. Seeded grasses that have a creeping growth habit (e.g., bermudagrass, or centipedegrass), can be planted on 2 to 4 inch centers and provide a satisfactory stand.

Figure 3. Pattern for seed distribution



**Sprigging.** Sprigs broadcast over an area provide a quicker and more uniform cover than plugs or sprigs set in rows. Do not cover sprigs too deeply with soil since you must leave part of the sprig (or stolon) above soil level to produce shoots. In repairing smaller areas, or where sprigs do not get set into the soil, sprigs can be covered with a thin layer of topsoil to enhance establishment. Sprigging requires more attention to timely irrigation the first several weeks after planting while roots emerge from the sprigs and grow deeper into the soil. Bermudagrass is most suited for sprigging and is best sprigged in the spring, though it may be sprigged at any time during the growing season when adequate moisture is available.

**Plugging.** The proper distance between sod plugs depends on grass species and how soon a 100% ground cover is desired. St. Augustinegrass plugs (4-inch diameter or square) planted on 2-foot centers, are able to grow together within 3 months if adequately watered and fertilized. Bermudagrass sprigs broadcast at 3 to 5 bushels per 1,000 square feet should cover within 2 months; zoysia planted by plugs may require an entire growing season, or even two growing seasons to fully establish.

**Sodding.** Prepare the soil completely to a final grade before ordering the sod. The surface should be free of footprints, stones, depressions, and mounds. When sodding a lawn, lay the sod blocks or rolls like bricks on a smooth surface that has been firmed. Sod is perishable and is best installed within 24 to 36 hours of harvest! After the sod is laid, roll or tamp lightly and keep it moist until it is well rooted. Do not overwater! If the terrain is sloping place the sod strips perpendicular to the slope.

Make certain to butt each sod piece up against the others as tightly as possible when laying the sod. If the sod dries soon after transplanting, it will tend to shrink and separate from adjoining pieces, leaving gaps, which provide the opportunity for weeds to invade.

The presence of mildew and distinct yellowing of the grass leaves, as you pull the pieces off the pallet, is evidence of “sod heating” injury. It results when sod is left on the pallet too long. Planting such sod should be avoided.

Figure 4. Sod installation



To reduce the need for short pieces when installing sod, it is generally best to establish a straight line lengthwise through the lawn area. The sod can then be laid on either side of the line with the ends staggered as when laying bricks. A sharpened concrete trowel is very handy for cutting pieces, forcing the sod tight and leveling small depressions. Immediately after the sod is laid, it should be rolled and kept moist until the sod is well-rooted into the soil. Newly transplanted sod should be watered immediately to wet the soil below to a 3-inch depth to enhance rooting. During the 2 to 3 week following transplanting, sod should be watered daily to maintain this soil moisture.

### AFTER PLANTING “GROW-IN” PRACTICES

**Mulching.** Mulching is a common practice used on cool season grasses but not on seeded warm season grasses such as bermudagrass or buffalograss since heavy mulch blocks out sunlight which might harm warm season grass seed development. However, hydro-seeded sites may use a layer of hydro-mulch to stabilize the soil surface and aid germination.

**Watering seeded or newly sprigged lawns.** Lightly, but effectively, water newly-seeded or sprigged areas at frequent intervals. Keep the seed or sprigs and the soil moist, not saturated, during this initial growth period. It

may be necessary to water four or five times for short periods during hot, windy days. The first 10 days to 2 weeks are especially critical. If young plants are allowed to dry out, they may die. After about 2 weeks, root system development should be well under way. Watering frequency should be slowly reduced for about 1 month after seeding or sprigging. Then treat as on an as needed basis, much as you would an established lawn.

**Watering sodded lawns.** Roots develop fairly rapidly under good growing conditions and with good watering practices. Water newly sodded areas much like established turf except more frequently. After the sod is planted:

- Initially irrigate to apply enough water to ensure that the soil under the sod is wetted to a depth of 2 or 3 inches.
- Water to a depth just beyond the depth of the root system each time the sod begins to dry out.
- Water it on an as needed basis, after 2 weeks or so, much as you would an established lawn. The turf will show signs of wilt if it needs irrigation.
- Avoid overwatering as it saturates the soil and slows root growth since roots need oxygen to grow into the soil.

**Mowing.** Allow the turf grass plant to reach a height that is 1/3 greater than the desired lawn mowing height for turfgrass maintenance before beginning to mow. The recommended lawn mowing heights therefore determine how frequently to mow! Sharp mowers are essential. Dull mowers can dislodge or damage young seedlings.

**Fertilizer.** If fertilizer was applied prior to planting, and the area was planted during the active growing season then:

- Apply nitrogen fertilizer at a rate of 3/4 to 1 lb of nitrogen per 1000 sq.ft. when new growth from seedlings or sprigs reaches 1 1/2 inches tall.
- Begin to follow a maintenance fertilization program 30 days after the above application. Refer to Texas AgriLife Extension Bookstore publication E-437 "Lawn Fertilization for Texas Warm Season Grasses" (<http://agrilifebookstore.org/>) for fertilizer rates and application timing for established warm-season lawns.

**Weed Control in seed, sprigs, or plugs.** Newly planted areas are likely to become weedy before the area is covered with grass.

Control weeds by frequent mowing, adequate fertilization and judicious use of water.

- Favor turfgrass growth by using pre-plant fertilizer and water new plantings as needed.
- Apply nitrogen fertilizer when seedlings or the growth of sprigging reaches 1 1/2 inches tall or 1 month after plugging.
- Regular mowing will keep weeds in check until grass plantings mature enough to tolerate post-emergence herbicides.

Broadleaf weeds can be a problem in spring, summer, or fall plantings. Annual grassy weeds are a problem in spring and summer plantings. Where weed eradication is necessary, the safest method is hand weeding. Weeds are best controlled when they are young. When selecting herbicides, be certain the turf is tolerant of the herbicide. Always read and follow the label guidelines prior to using any herbicide.

**Weed control in sod.** Sodded areas have few if any weed problems after planting if good quality weed-free sod is used. It is especially important to make certain the sod pieces are butted tightly against each other to avoid open seams. It is in the seams where weeds invade.

**When is turf considered fully established?** A turf is truly established when the grass can express the true characteristics of the species. Often it is assumed that a lawn is “established” when it has 100% ground cover. Yet, a grass planted from seed or sprigs can reach total ground cover, under good care, in 60 days. If newly seeded or sprigged sites experience drought conditions or traffic, the new plantings would be at risk, compared to grass stands that have long been planted. Planting sod significantly speeds up the true establishment process. For seed, sprigs, and plugs it takes about a year from the date of planting to consider the lawn truly established.

## Overseeding Warm Season Grasses for Winter

Overseeding bermudagrass turf for winter color is another type of turf establishment used on sports turf, golf courses, and commercial lawns. However, it is a choice and is not necessary. In addition, overseeding warm-season grasses that are not fully established can result in severe damage to newly planted turf. Overseeding should only be done on fully established turf.

The actual seeding is typically done about 5 to 8 weeks prior to the expected first fall frost date. The turfgrasses most commonly used for this purpose are varieties of perennial ryegrass, intermediate ryegrass, and improved turf-type annual ryegrass. Perennial ryegrass is generally the preferred choice for winter quality. The rate for ryegrass-overseeding ranges from 5 to 10 pounds per 1,000 square feet depending on the type of turf. The most important issue associated with overseeding occurs in spring, during a period of time known as “spring transition.” This is the period of time it takes the turf to change from the actively growing overseeded grass cover back to pure bermudagrass. In a perfect scenario, as temperatures begin to warm and bermudagrass begins to “green-up,” the overseeded grasses would gradually die out from the heat and humidity stress. As the overseeding thins, bermudagrass plants take their place. In many years temperatures do not warm soon enough for the overseeding to thin out, so it suppresses and delays bermudagrass spring recovery. It is not uncommon, in years that favor the overseeded grass health, to have the overseeding just die all at once in mid to late spring, leaving behind a thin and weak bermudagrass turf. This is more of a concern with the perennial ryegrasses than it is with improved turf-type annual ryegrasses.



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