

Establishing Buffalograss Turf in Nebraska

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This NebGuide is the first in a two-part series on buffalograss, and discusses cultivar selection, converting Kentucky bluegrass to buffalograss, and establishing buffalograss.

Introduction

Buffalograss (*Buchloë dactyloides*) is a native grass species grown on the Great Plains for centuries. Both cyclic and prolonged droughts have allowed it to evolve its water use efficiency. In areas where water is limited, interest in this grass species for home lawns is increasing.

While the evapotranspiration rate of buffalograss is similar to bluegrass, it has two water-efficiency advantages over bluegrass:



Figure 1. Cody buffalograss used in a low-use playground area at Gering, Nebr. (Photo courtesy city of Gering, Ron Ernst and Tom Walsch.)

- (1) Buffalograss will root to a depth of three feet or more compared to eight inches for bluegrass. This characteristic allows buffalograss to use moisture from a larger soil volume that has been stored from the nongrowing season.
- (2) Buffalograss has a shortened growing season. The bluegrass-growing season lasts nearly eight months from early April into late November for most of Nebraska, but buffalograss's growing season is five months long, from mid-May to mid-October. This shortens the length of the growing season by two to three months, depending upon the year and area of the state.

These two factors allow buffalograss to need very little supplemental irrigation water, once established, throughout much of the state (Figure 1).

Buffalograss is a warm-season, sod-forming grass. It spreads by seed and by stolons (runners) that take root and produce new plants at the nodes. Buffalograss usually is dioecious with male and female inflorescences (flowers) occurring on separate plants.

Male flowers produce pollen in one-sided spikes on stems, which stand 3 to 8 inches above the leaves (Figure 2). Female plants produce one or more bur-like inflorescences that are partially hidden among the leaves near ground level. Each bur may contain one or more caryopses (seeds). The vegetative cultivars are merely a solid stand of female plants.

Eliminating the male flower produces a turf with a more uniform look that reduces the mowing frequency for turf managers who want a maintained appearance. In contrast, keeping the male flowers in the turf can add texture and color for a more naturalistic landscape setting.



Figure 2. Male flower of buffalograss.

Buffalograss:

- initiates growth in May and begins to go dormant in late September or early October;
- does not tolerate excessive shade; and
- once established, can survive under flooded conditions for short periods of time.

Cultivar Selection

Several new buffalograss cultivars have been released based on breeding programs at the University of Nebraska-Lincoln. These new cultivars have been specifically developed for turf, while older cultivars were originally developed for pasture.

The new buffalograss cultivars are classed into two types: vegetative or seeded. The vegetative cultivars are established from plugs, sprigs, or sod.

Occasionally blue grama is mixed with buffalograss. The seed stalk of blue grama also adds visual interest if the turf is grown in a native setting and not mowed. Planting spring-flowering bulbs randomly into the turf can give color in early spring when buffalograss is dormant.

Current varieties recommended for Nebraska include Cody®, Bowie®, and SWI-2000 as seeded cultivars; Legacy and Prestige as vegetative cultivars.

Converting Kentucky Bluegrass to Buffalograss

Buffalograss cannot be successfully over-seeded into actively growing Kentucky bluegrass or other cool-season grasses because cool-season grasses are too aggressive and competitive for this method to work. The turfgrass manager has two options: (1) Physically remove the existing turf with a sod cutter; or (2) kill the existing bluegrass or cool-season grasses with an application of glyphosate.

If the stand of Kentucky bluegrass is thin, and there is no thatch layer, seed buffalograss into the bluegrass and then spray the turf with glyphosate in the fall of the establishment year. Wait until after the buffalograss is dormant to kill the cool-season grasses.

Good seed-to-soil contact is needed for germination of buffalograss. If thatch or heavy residue is present, till the area to incorporate the residue. Residue left on the surface results in poor germination. Thatch also will slow the ability of stolons to establish where surface residue is left.

Establishment of Buffalograss

Buffalograss may be established by seeding, vegetative plugs, or sod, and all methods require proper establishment methods (bed preparation, fertility, pre-plant weed control, and irrigation) to ensure a good turf stand.

If vehicles or extensive foot traffic have compacted sod, you should deep till or, preferably, chisel the site to a depth of 18 to 24 inches to promote deep rooting. Additional bed

preparation may be necessary, depending on your choice of burs (seed) or vegetative material. Work the soil to a garden-like but firm condition before planting. The seedbed should be firm enough to walk on without sinking more than one-half inch into the soil. This can be accomplished mechanically by packing with a roller or cultipacker, or by irrigation.

Fertility

Buffalograss adapts to a wide range of soil types but is best suited for naturally fertile, clay, and loam upland soils, where maintenance requirements will be lowest.

It will establish and grow in areas with eroded soils and often does well under low fertility and poor drainage conditions. A soil test will help identify nutrient needs. If needed, a starter fertilizer high in phosphorus, incorporated at time of establishment, enhances seedling root development and stolon growth.

Nitrogen also is important for early plant growth. If the soil isn't tested, apply the starter fertilizer at the rate of 1 lb N/1,000 square feet. An exception to this recommendation would be if the site is particularly environmentally sensitive.

Seeding

A successful turf stand requires proper seed placement. For large areas, excellent stand establishment can be achieved with a depth-limiting drill that plants burs at a depth of three-fourths inch or less. Assure proper soil-seed contact by using a harrow or hand raking first in one direction and then in a perpendicular direction. It may help to roll the area with a rolling drum packer or cultipacker before irrigation.

Late spring is the optimum time for establishing buffalograss, but it can be established successfully until mid-August, if adequate irrigation is available to enhance seedling establishment. For best results, buffalograss should not be seeded after Aug. 15 in eastern Nebraska and after Aug. 1 in western Nebraska. Seeds will not germinate until soil temperatures reach 60°F, usually after May 15 in eastern Nebraska and May 31 in western Nebraska. For Nebraska as a whole, June 1 is a good target date if the goal is to have a full stand by September. It is important to control early-season weeds before spring seeding.

Irrigation during germination and stand establishment enhances successful establishment. Without irrigation, stand establishment is slowed considerably and may take more than one growing season to occur. In the western areas of the state it is highly recommended to water the newly seeded area. Keeping the area damp the first few weeks following seeding will greatly increase the germination rate and stand establishment. This usually requires more than one sprinkling per day. Gradually reduce irrigation frequency through the summer as the root system of the new turf develops. Unirrigated fall seeding of buffalograss (when soil temperatures are > 50°F) is not recommended and often fails because young seedlings are susceptible to frost and winter desiccation (drying). It also is best to avoid dormant seeding of buffalograss, since establishment is rarely successful with this approach.

The amount of seed required depends on many factors. Trials conducted in Nebraska indicated 1 to 3 lb of burs per 1,000 square feet, seeded in early June, produced fully covered stands by mid-September. Problems associated with weed competition, seedbed preparation, seed placement, nutrient availability, and/or dry soils can inhibit stand establishment. Unless the season is unusually wet, irrigation must take place to assure uniform germination and growth during establishment. Based on all factors, the recommended seeding rate is 1 to 2 lb burs/1,000 square feet.

Vegetative Plugs and Sodding

Stand establishment with sod of improved turf-type buffalograss will decrease time required to cover the planted area.

Plugs are small diameter cores of vegetative cultivars that decrease cost of initial installation vs. sod.

Spacing between plugs can vary, depending upon how quickly you want full coverage. Vegetative plugs should not be placed farther apart than 24 inches on center. If you are working with less than optimal site conditions and preparation, or if project expectations require optimum coverage, reduce placement interval to 12 inches or less to provide a full stand within the first growing season.

Plug condition is important to establishing a successful stand. Plugs harvested from an established field, placed in trays, fertilized, and watered in a greenhouse or under clear plastic for 4 to 8 weeks are called pre-rooted plugs. For early spring and summer plantings, pre-rooted plugs have been shown to establish more quickly than those not pre-rooted. Plugs harvested in March, pre-rooted and planted in May will, under proper growing conditions, establish an acceptable stand by fall. Plugs not pre-rooted need 3 to 4 weeks to initiate growth and may not provide complete cover by fall. Newly harvested plugs may "go brown" after planting due to transplant shock. Proper establishment methods can help minimize this off-color period and ensure good rooting of the plug.

Buffalograss sod of the vegetative varieties is becoming more available and can be considered as an alternative to seeding and plugging. Prepare the sod bed the same way as you would for seeding or plugging. Irrigation and fertilization of the sod area is the same as that for a vegetative plug planting. Sod, like newly harvested plugs, may exhibit an off-color appearance during the first few weeks after planting.

Irrigation

Watering is necessary to establish buffalograss whether planted with seed, vegetative plugs, or sod. Post-planting irrigation requires a light application of water at one-fourth to one-half inch, depending on present soil moisture and natural precipitation. Water only to maintain a slightly moist surface and adequate subsoil moisture. This practice helps reduce weed competition. Excessive irrigation will increase the number of annual weeds that germinate in the turf. Treated seed should start emerging in 5 to 10 days after planting. Water vegetative and sod the same as seeded plantings until the plants have

rooted. Don't let water puddle or run off. Establishment will take longer without supplemental watering.

Weed Control

Like other grasses, one of the greatest challenges during establishment is weed control. Remove growing weeds from the seed or sod bed before planting by spraying with glyphosate, if the weeds are small. If the weeds are large, tillage may be necessary. Weeds that develop after buffalograss has been seeded should be eliminated as quickly as possible. Weeds taller than buffalograss seedlings should be mowed at a 2- to 3-inch height. Hand weeding is effective in establishing smaller buffalograss stands.

The fertility and irrigation required for successful buffalograss establishment also promotes more aggressive weed species. Herbicides for use in buffalograss establishment are somewhat limited. Check with area specialists for the most current recommendations.

The second in the series "Management of Buffalograss Turf in Nebraska" discusses irrigation, mowing, fertilization and weed control after the turf is established.

This publication has been peer reviewed.

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