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:

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.
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 condi-
tions. 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
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 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 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 establish-
ment. 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 har-
vested 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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