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G96-1297 Buffalograss: An Alternative Native Grass for Turf (Revised October 1998)

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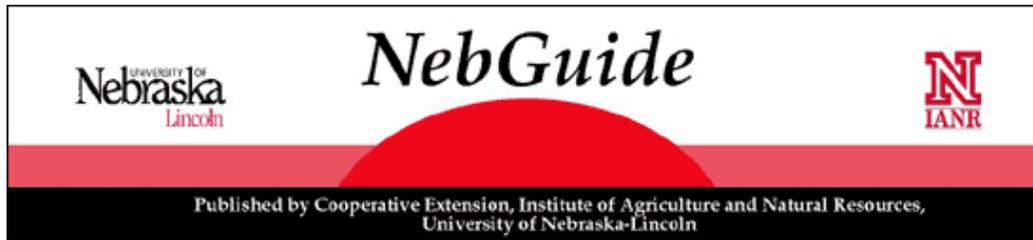
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Buffalograss: An Alternative Native Grass for Turf

This NebGuide discusses the benefits of buffalograss turf plantings.

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Buffalograss (*Buchloë dactyloides*) is a native grass species which has prospered on the Great Plains for centuries. Both cyclic and prolonged droughts have allowed it to evolve water use efficiency and sod forming ability. People are using this short, fine-leaved prairie grass as an ecologically sound and energy efficient turf.

Buffalograss is a warm-season, sod forming grass. It spreads both by seed and by stolons (runners) which take root and produce new plants at the nodes (*Figure 1*). Buffalograss is usually dioecious with male and female inflorescences (flowers) occurring on separate plants. Male flowers produce pollen in one-sided spikes on stems, that stand 3-8 inches above the leaves. Female plants produce one or more burr-like inflorescences that are partially hidden among the leaves near ground level. Each burr may contain one or more caryopses (seeds).

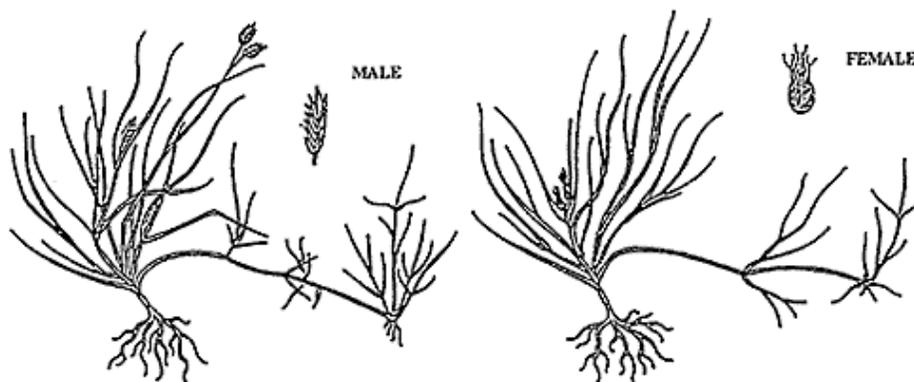


Figure 1. Male and female buffalograss.

Buffalograss initiates growth in early May and begins to go dormant in the early fall. Leaves are blue-green during the growing season. Great variation exists in color, leaf width and internode length. Buffalograss does not tolerate excessive shade and is not considered well adapted to sandy soils. Once established, it can survive under flooded conditions for short periods of time. Because of its extensive, deep root system and relatively low water use rate, buffalograss has a high resistance to drought stress. Depending on rainfall, one or more monthly summer irrigations will normally prevent summer dormancy in buffalograss. Once established, a buffalograss lawn requires substantially less water than the widely cultivated cool-season turfgrasses.

Cultivar Selection

Breeding programs at the University of Nebraska and at commercial companies have resulted in the release of several new buffalograss cultivars. While older cultivars were originally developed for pasture use, new cultivars have been specifically developed for turf use. These cultivars are shown in *Table I*.

<i>Cultivar</i>	<i>Sex</i>	<i>Best Adaptation¹</i>	<i>Propagation</i>	<i>Turf Performance</i>
'609'	F	S/T	Sod	Excellent
'315'	F	N/T	Sod/Plugs	Excellent
'378'	F	N/T	Sod/Plugs	Excellent
Prairie	F	S/T	Sod	Excellent
Stampede	F	S/T	Sod	Excellent
Cody	M/F	N/T/S	Seed	Excellent
Tatanka	M/F	N/T	Seed	Excellent
Bison	M/F	N/T	Seed	Good
Texoka	M/F	N/T	Seed	Good
Sharp's Improved	M/F	N/T	Seed	Good
Topgun	M/F	S/T	Seed	Very Good
Plains	M/F	S/T	Seed	Good

¹ N = Northern U.S.; S = Southern U.S.; T = Transition Zone

Establishment of Buffalograss

Buffalograss may be established by seeding, vegetative plugs or sodding. All methods require proper establishment methods (bed preparation, fertility, preplant weed control and irrigation) to insure a good turf stand.

Bed Preparation – If soils have been compacted by vehicles or extensive foot traffic, deep till or, preferably, chisel the site to a depth of 18-24 inches to promote deep rooting. Additional bed preparation may be necessary, depending on your choice of burrs (seed) or vegetative material. When establishing turf with seed, 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 0.5 inch into the soil. This can be accomplished mechanically or by irrigation. If

you choose to establish the turf with vegetative material, the garden-like condition is preferred but is not as important, provided the plug or sod has good contact with the soil.

With both methods it is important to eradicate all vegetation in the area to be planted. Either tillage or herbicide will accomplish this. Control early season weeds with tillage before seeding. An application of a non-selective herbicide, such as Round-up or Finale, is recommended before establishing vegetative plugs. Follow all manufacturer's label instructions and restrictions when applying pesticides.

Fertility – Buffalograss is adapted to a wide range of soil types but is best suited for naturally fertile, clay and loam upland soils. Maintenance requirements for buffalograss turf will be lowest on these sites. It will establish and grow in areas with eroded soils and often does well under low fertility and poor drainage conditions. A starter fertilizer high in phosphorus applied at time of establishment enhances seedling root development and stolon growth. Nitrogen is also important for early plant growth. Use a starter fertilizer to aid seedling establishment and growth.

Seeding – Proper seed placement is needed for a successful turf stand. For large areas, excellent stand establishment can be achieved with a depth limiting drill which plants burrs at a depth of 0.5 inch or less. Use a 1-2 inch row spacing. For smaller areas, broadcasting seed is sufficient. Assure proper soil-seed contact by using a harrow or hand raking first in one direction and then in a perpendicular direction. Rolling the area before irrigation can be beneficial.

Time of Seeding – Late spring is the optimum time for establishing buffalograss. Seeds will not germinate until soil temperatures reach 60° F. This is 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 greatly influences success. Areas without irrigation can be seeded in the fall or winter after soil temperatures fall below 50° F. However, frost the following spring may delay stand establishment. For best results, buffalograss should not be seeded after August 15 in eastern Nebraska and August 1 in western Nebraska. Unirrigated fall seedings of buffalograss (when soil temperatures are > 50° F) are not recommended and often fail because young seedlings are susceptible to frost and winter desiccation (drying).

Seeding Rate – The amount of seed required depends on many factors. Trials conducted in southeast Nebraska indicated rates of 1 to 3 lb of burrs per 1,000 sq ft, 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 burrs/1,000 sq ft.

Seed Sources – Several seeded improved turf-type buffalograss cultivars are available in bulk form. Be sure to specify that you want primed seed. Primed seed has been soaked or treated with KNO₃, a relatively non-toxic salt, to help soften the seed coat. This process breaks down dormancy.

Vegetative Plugs and Sodding – Stand establishment with sod of improved turf-type buffalograss will decrease time required to cover the planted area. Plugs are helpful when early landscape aesthetics or soil stabilization are important.

Vegetative Plug Establishment – Plugs should be 2 inches or more in diameter with a minimum depth of 2.5 inches. Spacing between plugs can be varied, depending upon how quickly full coverage is desired. Vegetative plugs should not be placed further than 24 inches on center. If site conditions and preparation are less than optimal, reduce placement interval to provide a full stand within the first growing season.

During establishment, it is important to keep weeds to a minimum. Periodic mowing at a 2 to 3 inch height will help minimize weed competition.

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 4-8 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 3-4 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 insure good rooting of the plug. Applying a starter fertilizer at 1 lb of phosphorus and 1 lb of nitrogen per 1,000 sq ft will aid in establishment and growth. Irrigation will not only help maintain active growth but also will decrease the length of time required for establishment.

Sod Establishment – Common buffalograss sod such as Texoka or Sharps should be harvested at a depth of at least 2-3 inches while improved cultivars such as `609', `315' and `378' can be harvested at a shallower depth. Because buffalograss has a limited fibrous root structure, the deeper harvesting depth insures sod integrity and sufficient numbers of roots for establishment. The sod bed should be prepared to a previously described garden-like and weed-free condition. Irrigation and fertilization of the sod area is the same as that of a vegetative plug planting. Sod, like newly harvested plugs, may exhibit an off-color appearance during the first few weeks after planting.

Plug and Sod Selection – The selection of a buffalograss cultivar and choice of male or female plants will depend on the intended use. Establishing a single cultivar stand will provide greater stand uniformity. However, as with selecting a single cultivar of cool season grasses, it is important to select a cultivar least susceptible to diseases and pests. Careful consideration should also be given as to whether to select a cultivar with one or both genders (sexes). If a stand is unmowed, the male and female flowers have a different appearance. Male flowers generally extend above the leaf blades whereas the female flowers remain close to the ground and are not as visible (*Figure 2*). When mowed to the same height, the sexes are not easily distinguished at a distance. Because male and female varieties continually initiate flowering throughout the growing season, the visibility of the flowers is highly dependent on the variety. Therefore, selection of one cultivar over another depends on the user's preference.



Figure 2. Male (left) and female buffalograss in an unmowed turfgrass stand.

Plug and Sod Sources – As improved selections are released, more vegetative cultivars will become commercially available and vegetative propagation will be more common. See current NebFact for additional information on recommended cultivars.

Irrigation – Watering is necessary to establish buffalograss whether with seed, vegetative plugs or sod. Seeding requires a light application of water at .25 to .5 inch, depending on present soil moisture and natural precipitation. After seeding, water only to maintain a slightly moist surface and adequate subsoil moisture. This practice also helps reduce weed competition. With treated seed, seedlings should start emerging in 10-14 days. Water vegetative plantings every other day for the first week, every third day the second week. Water once a week the third through the fifth weeks, if rainfall is less than .25 inch since the last irrigation. Do not let water puddle or run off.

On hot days, light watering (syringing) in the late morning or early afternoon will improve stolon elongation and rooting in plants established from all methods. Syringing is the light application of water (.125 inch or less) to prevent wilt and to cool the turf. For established stands, one deep irrigation (or rainfall) during July, August and September is sometimes necessary if green growth is desired. In low maintenance situations no water is necessary, but some leaf-tip browning may become evident. Establishment will take longer without watering.

Weed Control – The greatest challenge during buffalograss establishment is weed control. Remove growing weeds from the bed before planting. 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 2-3 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. Only limited information is available on herbicide safety of newly planted buffalograss, but do not apply herbicides until the planting has been mowed twice at the recommended mowing frequency. Refer to Neb-Guide G91-1045, *Turfgrass Weed Prevention and Management* for more information.

Insects – In general, buffalograss is relatively free of insect and mite pests. This may be because established buffalograss usually harbors many beneficial insects which naturally control pest populations. These natural enemies include big-eyed bugs, syrphid flies, lady beetles, predatory mites and several species of parasitic wasps.

In Nebraska, the most potentially serious pests of buffalograss identified so far are a tiny, grass-infesting mealybug, the buffalograss webworm and a short-winged species of chinch bug.

There are not, however, insecticides registered to control mealybugs, chinch bugs or webworms on buffalograss. Control of these insects is through proper maintenance and cultural practices.

Diseases – Buffalograss is relatively free of plant pathogens. Isolated cases of diseases have been reported; however, little research has been done in this area. Proper maintenance of buffalograss, incorporating integrated pest management practices, should reduce the likelihood of disease infestations.

Management of Established Turf

Irrigation – After the establishment year, buffalograss lawns in Nebraska usually can be maintained with no irrigation beyond precipitation. The quality of a buffalograss lawn may, however, be enhanced with timely irrigation. In especially dry springs, irrigation when the turf begins to green up will insure a vigorous, dense lawn that is competitive with weeds. The greatest benefit from supplemental water is gained in late July through August during the period of active stolon growth. Irrigation applied at this time helps the stolons develop roots at the nodes, thus establishing new plants. Unfortunately, irrigation at this time will also promote weed growth. The period of time in which the turf exhibits a green color may be moderately extended in the fall with additional water if freezing temperatures do not occur.

Fertilizer – For optimum results, apply fertilizer between June 15 and June 30. This nitrogen stimulates new tissue and is available during the period of active stolon development in July and August. If fertilizer is applied to an established buffalograss lawn, actual nitrogen levels should not exceed 2 lb. per 1,000 square feet per year. Additional applications of nitrogen may be required on poor soils.

Mowing – Because Buffalograss is a naturally short grass that grows to 4 to 5 inches, mowing requirements are reduced. Buffalograss lawns can be mowed to 3 to 4 inches to remove the slender male flower stalks that develop above the height of the leaves. This may require regular mowing, since the male flowers are continually produced. Female selections may require less mowing, since the female flower is found in the canopy. Buffalograss turf can be given a uniform appearance by mowing at a 2.5 inch height at three to four

week intervals in late spring and two to three week intervals later in the season. Improved cultivars of buffalograss can also be mowed at lower heights (0.5 to 1.0 inches) for golf course fairway use. These lower heights will require more frequent, mowing and increased management to maintain quality.

The amount of supplemental water needed to maintain a green turf and good stand quality is influenced by mowing management. Minimal mowing and higher cutting heights will allow buffalograss to maintain a vigorous root system. Removal of more than 1/3 of the leaf material will reduce root activity and growth, making plants more susceptible to moisture stress near the soil surface. Do not cut the grass by more than 1/3 its total height at any one mowing. Because of the aggressive stolon development, buffalograss may require edging along walks, driveways, shrubs and flower beds.

Weed Control – Once established and properly managed, weed pressure in buffalograss is minimal. If herbicides are required, follow label directions explicitly. Plateau, Ronstar G, Dimension, Dacthal, Barricade, Pendulum and Surflan are preemergence products currently labeled for use in buffalograss. Except for Dacthal, Barricade and Dimension, their use is restricted to certified applicators. A spring application for control of summer annual weeds, such as crabgrass, goosegrass and spurge, should be applied when soil temperature reaches 50° F. A second preemergence application in late summer or early fall will control winter annuals, such as henbit, chickweed and annual bluegrass.

Postemergence control of annual grasses is best achieved with Plateau or arsenical compounds (DSMA, MSMA). Broadleaf products cleared for use in buffalograss include a number of 2,4-D-containing products. Do not apply products containing 2,4-D if temperatures are expected to exceed 80° F on the day of application.

Confront and Buctril, available to certified applicators, are also labeled for buffalograss. Dormant buffalograss can be sprayed with Round-Up to control winter weeds. Fall applications can be applied after the first frost or when the buffalograss turns straw-brown. Spring applications of Round-Up should not be applied to buffalograss if the turf is showing any green color. Round-Up applications applied to semi-dormant buffalograss will significantly delay green-up and could severely injure the buffalograss.

Reference to trade or brand names is only for the convenience of users.
Mention of a product does not constitute an endorsement, guarantee or warranty by the University of Nebraska.

Care and Management Summary – Turf-Type Buffalograss	
Requirements:	Grows best in full sun Should have at least 6-8 hrs. per day of direct sunlight Good soil drainage is essential Adapted to wide range of soil types Not suited to sandy soils
Establishment:	May 31-August 1: Western Nebraska May 15-August 15: Eastern Nebraska Water 0.25-0.5 inch/week depending upon natural precipitation Seeding: 1.0-2.0 lbs burrs/1,000 sq ft Plant seed 0.25-0.5 inch deep Vegetative: Plugs planted on 1.0-2.0 ft centers
Mowing:	2-4 inches for home lawns, 0.5-4 inches for golf courses Low maintenance area may be mowed taller or not at all Frequency is affected by amount of watering and fertilizer Catching clippings optional

Watering:	Deep soaking once a month during July-September for higher maintenance areas Soak soil before winter if soil is dry Occasional or no watering for low maintenance areas
Fertilizing:	June 15-June 30 is best; second application, if used, July-August 1-2 lbs actual nitrogen/1000 sq ft Less on low maintenance and natural areas, more in high maintenance areas or on poor soils or in areas with a larger growing season
Weed control:	Avoid frequent watering, short mowing and over fertilizing Minimize early season watering Avoid 2,4-D and related products in the spring, when temperature is above 80° F, and on first year turf Control broadleaf weeds in the fall Use labeled pre-emergence weed control products
Insects/Diseases:	Follow good maintenance and cultural practices Apply labeled insecticides only when necessary

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