factsheet 77 *Stenotaphrum secundatum*
Buffalo, St Augustine grass

Called "St. Augustine grass" and sometimes "carpetgrass" in the United States, "crabgrass" in Bermuda and the West Indies, "gramillon" in Argentina, "wiregrass" in St. Helena and "buffalo grass" in Australia, gaining its common name after the ship Buffalo that carried it to Australia. It should not be confused with what is also known in America as buffalo grass, which is *Buchloe* species.

A perennial robust grass widely used for pastures and lawns. In the warmer climates of the tropics and subtropics it rivals couch grass in importance. The species is primarily of tropical origin and is native to sandy beach ridges, fringes of swamps and lagoons, salty and fresh water marshes and limestone shorelines.

Originally from the West Indies, Buffalo grass is a coarse textured, stoloniferous species that roots at the nodes. Unlike couch grass, Buffalo grass has stolons but does not have rhizomes. Its stems (stolons) and overlapping leaf sheaths are generally compressed; leaf blades generally folded, abruptly contracted at the base, rounded and boat-shaped at the tip, and smooth; ligule is reduced to a short fringe of hairs; collar is petioled and the sheath greatly compressed and hairy along the margins. Inflorescences mostly terminal, spike like racemes and spikelets embedded in main axis; each raceme bearing 1-3 spikelets; spikelets lanceolate or ovate, awnless and sessile; glumes membranous, the lower glume less than half as long as spikelet; lower floret staminate, upper floret complete and caryopsis ovate to oblong, 2.0-3.0 mm long, often failing to mature.

So long as fertility and drainage are adequate, Buffalo grass tolerates a wide range of soil types. Buffalo grass grows satisfactorily at a pH range from 5.0 to 8.5, but develops a chlorotic appearance in highly alkaline soils (above pH 7.5). It does not tolerate compacted or waterlogged soil conditions. Buffalo grass is highly tolerant of soil salinity, producing satisfactory growth at high salt levels. Prefers full sun, requiring at least 6 hours of sunlight per day, but tolerates moderate shade, being as good or better than other warm season grasses for shaded sites. Under densely shaded conditions, Buffalo grass develops thin, spindly turf. Dormant and yellows in winter. It does not tolerate frost, temperatures below −4°C are lethal. Produces a thick thatch over time and is slow to grow back from a severe scarifying. It does not take to overseeding. It does not tolerate traffic as well as some other warm season species. It produces satisfactory turf at moderate levels of maintenance, effectively competes with weeds and other grasses and has only a few serious pests.

In moist, warm climates Buffalo grass maintains a satisfactory turf cover with only occasional mowing. In drier climates (below 30 inches annual rainfall) it survives with supplemental irrigation. At higher maintenance levels, Buffalo grass produces a thick, lush, dark green turf that is highly preferred. It has lost popularity in southern Australia due to the variety of better turf species available.

*Bitterblue* is an improved variety selected from common St. Augustine grass in the 1930s for its finer leaf texture, darker blue-green colour, and better density. It has improved (good) cold tolerance and good shade tolerance compared to Common, but it is not resistant to chinch bugs or grey leaf spot disease. Bitterblue also has lower tolerance to the triazine herbicides (atrazine, simazine) than other St. Augustine grass varieties have.

*Common* St. Augustine grass has been grown since the 1800s and produces a coarse, open lawn that is susceptible to chinch bugs and herbicide, cold, and shade damage. Common varieties are light green in
colour and do not respond well to fertilisation. Are not recommended if the appearance and quality of the lawn are important.

**Delmar** is a semidwarf St. Augustine grass variety that has improved shade tolerance, shorter internodes, darker green colour, and improved cold tolerance. Due to the semidwarf growth habit, this variety has slow lateral stolon growth and therefore requires longer to grow in and to recover from damage. This variety is susceptible to chinch bugs, sod webworms, and brown patch disease.

**Floratam** is an improved variety of St. Augustine grass that was released jointly by Texas A&M University and the University of Florida in 1973. This variety is distinguished by its reddish-coloured stolons. It has a very coarse leaf texture and poor cold and shade tolerance. It does, however, have good resistance to chinch bugs and SADV. Floratam is one of the most preferred varieties of St. Augustine grass to use in open, sunny areas where chinch bugs are a problem; however, research has shown that there is a strain of chinch bug that will damage it.

**Floratine** This variety is an improved selection from Bitterblue that was released by the University of Florida in 1962. It has a finer leaf texture and denser growth habit and tolerates closer mowing than Common St. Augustine grass varieties do. It is not resistant to chinch bugs but will tolerate light to moderate shade.

**Floralawn** was released in 1986 by the University of Florida as an improved variety with resistance to chinch bugs, SADV, sod webworms, and brown patch disease. This variety is similar to Floratam in terms of shade tolerance, leaf texture, and sensitivity to cold temperature exposure. Floralawn should be grown in mild climates in moderate shade to full sun under low to medium fertility.

**Jade** is an improved semidwarf St. Augustine grass variety that is characterised by shorter internodes, improved shade and cold tolerance, and darker green colour. It has a finer leaf texture and better shade tolerance than Delmar, but it is susceptible to chinch bugs, sod webworms, and brown patch disease.

**Raleigh** was released by the North Carolina Agricultural Experiment Station in 1980 for its improved cold tolerance. Raleigh has a coarse leaf texture, is susceptible to chinch bugs and brown patch and grey leaf spot diseases, and is less shade tolerant than Bitterblue or Floratine. Raleigh has been noted to turn yellow during peak summer temperatures, and its growth slows during cooler temperatures. Named Sir Walter by one Australian seed importer.

**Seville (SS100)** is a dark green semidwarf St. Augustine grass variety that was selected for its fine leaf texture. This variety has a compact growth habit, so it can tolerate lower mowing heights. Seville is susceptible to chinch bugs and sod webworms. This variety also tends to be thatch-prone, has shallow rooting, and is sensitive to cold temperature exposure. It is resistant to SADV and performs well in either shade or full sun. Seville was released in 1980. This was a joint venture between O. M. Scott and Sons, Marysville, Ohio, which had developed, registered, and patented this particular variety and Pursley Turf Farms, Palmetto, Florida, which had obtained the exclusive right to release and market it. Pursley Turf sold the grass as pre-rooted plugs in plastic flats through franchised dealers. Until now St. Augustine grass had been marketed in California in flats. Nevertheless, the Pursley Turf marketing method provided improved keeping quality, plus an ability for the homeowner to "grow-in" a turf on-site, much as the golf course superintendent would do it, and thereby attain a smoother surface. The variety known as Palmetto is an unnecessary trade name for this variety.

**Propagation.** For as long as Buffalo grass has been cultivated, it has been propagated by vegetative means -- stolons, plugs or sod. Only recently has the seed production potential of Buffalo grass been realised; but, as yet, significant use has not been made of that potential because only a few strains of Buffalo grass are fertile

In small lawn plantings, 2 to 4 square inch sod plugs are planted on 1 to 2 foot spacings. Buffalo grass can be successfully established from plugs anytime during the growing season if water is available.

Fertilisation during the establishment period (first three months after planting) is critical to developing a complete cover of Buffalo grass. A starter fertiliser (one high in phosphorous) or a ‘complete’ fertiliser should be applied at planting time. Subsequent applications of nitrogen at monthly intervals at a rate of 1 pound per 1,000 square feet will promote rapid spread of grass plugs. Weeds can be controlled preemergent with atrazine or post emergent with asulam (Asulox) and hormone-type herbicides (2,4-D, MCPP, dicamba).

**Management.** After establishment the success of Buffalo grass as a lawn grass depends largely on management. The level of maintenance put into Buffalo grass is directly related to the turf's overall quality. The higher the level of maintenance, the higher the level of turf quality. Turfgrass quality is affected by the amount of fertilisation, the mowing height, the mowing frequency, irrigation or watering, thatch control, and pest control.

Mowing, fertilisation and supplemental watering are required to maintain a dense, green, weed-free turf. Where rainfall is adequate, Buffalo grass will survive with little care. Where rainfall is less dependable, close management of water is required to maintain a satisfactory lawn.
The growth rate is dependent on temperature, moisture availability and nutrient availability. Any one of these factors can limit the rate of growth of this species. In spring with mild daytime temperatures and cool night temperatures, Buffalo grass greens up, but makes little growth. As day and night temperatures increase during late spring and summer, the growth rate increases. An established turf of Buffalo grass may require mowing every 2 weeks in early spring and as often as every five days by late spring if nitrogen fertiliser is applied. During autumn, as temperatures cool, Buffalo grass maintains its dark green colour, but its growth rate declines sharply. Mowing frequency may be reduced to twice monthly during late autumn and early winter.

**Mowing heights** may range from 25mm to 75mm depending on the frequency of mowing and the degree of shade present. At mowing heights below 50mm, Buffalo grass should be mowed every five days during late spring and summer. At a 50mm mowing height, a 7-10 mowing schedule is adequate. Above 50mm, Buffalo grass should be mowed at 10 to 14 day intervals. In moderate to dense shade, Buffalo grass should be mowed at about 75mm at 10 day intervals.

During autumn, mowing height should be raised about 25mm to increase total leaf area of the turf. The increased leaf area will help the grass accumulate energy reserves to get through the winter. The greater leaf area will also help prevent weed invasion during the dormant season.

If Buffalo grass is not mowed often enough and is improperly watered, it can accumulate thatch. Water only when there are signs of moisture stress to keep Buffalo grass growth to a minimum and reduce the rate at which thatch is deposited and accumulated.

Mowing Buffalo grass too low can also cause problems with turf quality. Consistent low mowing will reduce the turf density and thus reduce the turfgrass plant's ability to recover and grow. In addition, weeds are more of a problem in thin turf where sunlight is able to penetrate the turf canopy and stimulate weed seed germination.

**Fertilising.** Buffalo grass is responsive to nitrogen fertiliser in terms of colour and growth rate. On sandy soils Buffalo grass requires about 5g/m² per month during the growing season to maintain satisfactory colour and density. At rates above 5 g/m², Buffalo grass produces lush growth that is highly susceptible to insects and diseases. On heavier textured soils 3 g/m² of nitrogen every month is adequate to maintain good colour and growth. Thatch accumulation is also a problem when nitrogen fertilisation exceeds the required rate. About half as much potassium as nitrogen is essential to maintain growth. Potassium has been shown to increase root growth, cold tolerance and drought tolerance in Buffalo grass.

Phosphorous requirements for established Buffalo grass are very low and generally met from the soil. Occasional applications of a phosphorous fertiliser material may be required. Newly planted Buffalo grass will respond to phosphorous fertilisers in terms of an increased rate of spread.

Late autumn fertilisation helps maintain colour and density of the lawn into the winter and promotes early recovery of the grass in the spring. Thus, to extend the length of time a Buffalo lawn is attractive, the lawn should receive about 5 g/m² of nitrogen every 30 to 60 days from early spring through autumn.

Buffalo grass is sensitive to iron deficiency and readily develops chlorotic symptoms in alkaline or iron deficient soils. This deficiency can be corrected with foliar applications or iron sulfate or iron chelate. Soil applications of iron sources are less effective than foliar application in alkaline soils because the iron is rendered insoluble.

**Controlling Thatch.** Buffalo grass typically develops a layer of organic material called thatch between the green leaves of the turfgrass and the soil surface. This thatch layer accumulates over time if not managed properly. If the thatch layer is allowed to accumulate to a thickness greater than 20mm, problems will arise. Thatch can harbour insects and disease-causing organisms, create a barrier to air and water movement, and elevate the living turfgrass plant away from the soil.

Check the thickness of the thatch layer in autumn by cutting a small triangle or square in the turfgrass, using a knife or shovel. Remove this "plug" and look at the soil beneath the green turfgrass plants. The thatch layer will be brown to black in colour and have a different appearance from the native soil beneath. If the thatch layer is thicker than 20mm, mechanically dethatch the lawn in spring, any time from late October to February. However, it is recommended to delay dethatching until the turfgrass has completed green-up after winter dormancy and begun to initiate good spring growth. Use a core aerator, vertical mower, power rake, or spring attachment for a mower to remove thatch. Apply a light application of lime (5kg/100 m²) after dethatching to help the remaining thatch to decay. Control thatch by using routine core aerification followed by a light topdressing of soil and/or sand.

**Diseases.** Buffalo grass is susceptible to a number of turfgrass diseases including brownpatch, St Augustine Decline (SAD), grey leaf spot, Helminthosporium, Pythium, rust, downy mildew and others. All of these
diseases, except SAD, are caused by fungi and can be controlled by good management and fungicides. SAD is a virus disease for which there is no chemical control. Only resistant varieties of Buffalo grass are effective against this disease. Floratam, Seville, Raleigh and several experimental varieties have shown good resistance to the SAD virus.

Brownpatch and grey leaf spot are the most serious diseases caused by fungi attacking Buffalo grass. Although these diseases rarely kill Buffalo, they severely weaken and thin the grass to the degree that the lawn is unsightly. Preventive applications of fungicides are most effective against these diseases.

**Weeds.** A healthy Buffalo grass lawn effectively crowds out most weeds. But Buffalo grass that is not properly maintained or is weakened by insects or disease can be invaded by grassy and broadleaved weeds. Cool season weeds such as deadnettle, chickweed, clover and burr medic are a serious problem in dormant Buffalo grass. These weeds can be controlled by hormone-type herbicides in early spring. Annual grassy weeds such as fescue, annual bluegrass and crabgrass are best controlled by timely applications of preemergent herbicides. Perennial grasses such as paspalum and couch grass are difficult to control in Buffalo grass turf. Nonselective products can be applied as directed sprays to these weeds to obtain control.

**At a glance**

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<tr>
<th>Climate</th>
<th>Disease tolerance</th>
<th>Drought tolerance</th>
<th>High temperature tolerance</th>
<th>Cool temperature tolerance</th>
<th>Irrigation requirement</th>
<th>Mowing height</th>
<th>Tolerance to close mowing</th>
<th>Thatch production</th>
<th>Nitrogen fertiliser requirement</th>
<th>Salt tolerance</th>
<th>Shade tolerance</th>
<th>Soil compaction tolerance</th>
<th>Soil pH</th>
<th>Texture (leaf blade width)</th>
<th>Rate of establishment</th>
<th>Wear tolerance</th>
<th>Recovery from moderate wear</th>
<th>Selection of herbicides</th>
<th>Diseases</th>
<th>Pests</th>
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<tr>
<td>warm, humid, coastal</td>
<td>medium</td>
<td>poor</td>
<td>excellent 20-35°C</td>
<td>low</td>
<td>moderate. About 25mm/week at 30°C</td>
<td>low</td>
<td>low</td>
<td>high</td>
<td>high</td>
<td>high</td>
<td>fair</td>
<td>good</td>
<td>5.5 to 7</td>
<td>coarse, 6-8 mm</td>
<td>fast</td>
<td>fair</td>
<td>fair</td>
<td>good</td>
<td>MSMA, pendimethalin , propyzamide</td>
<td>Brown patch, Helminthosporium, Pythium, Spring Dead Spot, rust, downy mildew</td>
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<td>Curl grubs (African Black beetle, Cockchafers), sod webworm, armyworm, cutworm, ground pearls</td>
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</tbody>
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**REFERENCE**


DUBLE R L. 1996. St. Augustine grass. Texas Agricultural Extension Service


Heritage Seeds Turfgrass Handbook 1997
