



Maintaining Bermudagrass Lawns in the Mojave Desert

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Bermudagrass makes an excellent lawn at the middle and lower elevations of the Mojave Desert. Bermudagrass is a warm season grass because of its temperature requirements for food production, growth and maintenance. Bermudagrass is not popular in climates where cool season grasses are better adapted because bermudagrass can be invasive, turns straw in color during the winter dormancy season, and is not tolerant of shade. However, bermudagrass can save as much as 40 percent in water use over a similar lawn planted in tall fescue.

Common bermudagrass (*Figure 1*) has been largely replaced by improved turf-type seeded bermudagrass cultivars in the last 10 years. There are now low growing, seeded-types which grow low to the ground like vegetative hybrid bermudas, and thus perform best when mowed three times weekly in the summer with a reel-type mower. These types perform best when mowed at 1 inch or less. There also are new seeded types which prefer higher mowing heights of 1½ inch, which can be mowed less often with a rotary-type mower (Nu-MexSahara).

Hybrid bermudagrass makes a high quality turfgrass which must be established vegetatively (sod, plugs, sprigs) because it cannot produce pollen. Most hybrid bermudagrass tends to have high shoot density, better weed resistance, fewer seed heads, finer and softer texture, produce fewer allergy problems and often have dark green color. These benefits come at a price in terms of a lower mowing height, increased mowing frequency and require more expensive reel-type mowers.

Some hybrid bermudagrasses include Tifway (aka 419), Tifgreen (aka 328), Santa Ana, Bob-Sod (aka Bullseye), Midiron and others. Mow higher maintenance varieties such as Tifway, Tifgreen, Bob-Sod and Santa Ana with a reel type mower. Others such as Midiron are also higher in maintenance but, like common bermudagrass, can be mowed with a rotary mower.

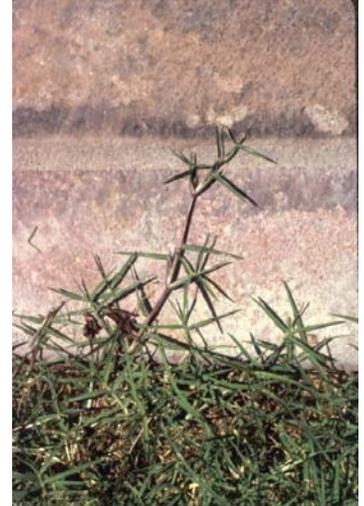


Figure 1. Common bermudagrass stolon

Fertilizer Applications

Several shades of light green color, along with a slight noticeable decrease in turf stand, are indications of low nitrogen in the turf soil. Low growing bermudagrass generally has a greater need for nitrogen than taller growing (rotary-type) bermudagrass. Common bermudagrass, as well as other taller growing types (seeded or otherwise), should be fertilized three to four times during its growing season while hybrid bermudagrass requires fertilizer applications more frequently; every four to six weeks on light, sandy soils while on heavier soils it might extend to eight week intervals. If a mulching mower is used and clippings returned to the lawn, one application per year of a high quality fertilizer can be omitted.

Applications of fertilizer to bermudagrass can begin anytime new spring growth appears and about four to five weeks after the danger of frost is over. The last fertilizer application is usually no later than August, if planning to overseed. Fertilizer applications during winter are dictated by the cool season grass used in overseeding. If bermudagrass is not to be overseeded, then late fall applications of nitrogen (October and November) may delay the onset of the winter brown color by a month or more if fall temperatures are mild.

In landscape and lawn fertilizers, the amount of nitrogen (N), phosphorous (P) and potash (K) nutrients are referred to as the fertilizer “analysis” or “grade.” Nitrogen is most limiting in desert soils, while lawns benefit from the application of all three nutrients on soils which are high in sand content. The term “fertilizer ratio” is the relative amounts of all three components to each other.

Ideal lawn fertilizers have a fertilizer ratio of 3:1:2 (examples: 15:5:10; 21:7:14) or 4:1:2 (example: 20:5:10). Some lawn fertilizers may be classified as “slow release” since they release their nutrients slowly over weeks or months after an application. Quick release fertilizers are less desirable since they release nutrients in a very short period of time resulting in more frequent mowing.

Ideally, at least half of the nitrogen contained in a lawn fertilizer should be in the form of “slow release” nitrogen. Slow release fertilizers are more expensive but require fewer applications per year. The use of slow release fertilizers is more compatible with mulching mowers because turfgrass growth is more manageable and nutrients are recycled in harmony with grass leaf production.

Yellowing of the turfgrass in random patterns (*Figure 2*) normally signals the need for an iron fertilizer application. Iron fertilizers are most commonly applied at least once a year either as a separate iron fertilizer (usually as a spray) or combined with a slow release product. Some iron fertilizers stain concrete if accidentally applied to these surfaces. Mowing the turf too short, too infrequently, or having water soaked soils in a lawn will increase the likelihood of having an iron deficient turf.

Mowing

Bermudagrass can be mowed extremely short (3/16 inch) or as high as 2 inches depending on its intended use and the variety. The usual mowing height for hybrid bermudagrass is from 0.5 to 1½ inches while common, and a few hybrids, can be mowed at 2 inches. The seeded variety, Nu-Mex Sahara and the vegetative hybrid Midiron, can be mowed at these tall heights and still look good.



Figure 2. Yellowing of grass in random and irregular patches can usually be attributed to an iron deficiency.

Generally speaking, lower mowing heights require more frequent mowing. Low growing bermudagrass varieties will not perform adequately if they are not mowed three times weekly with a reel-type mower during the hot summer season. Mowing a “low growing” bermudagrass at a high height with a rotary mower often results in leggy shoots, which only have leaves at the end of the shoot. Mow frequently enough so that no more than 1/3 of the grass plant is removed at each mowing. Rotary mowers cannot give a quality cut to lawns at heights lower than 1 ½ inch and only reel mowers should be used at heights lower than this.

Recycling grass clippings into the turfgrass is highly recommended provided mulching mowers are used. Mowing with a mulching mower and returning the clippings to the soil can substitute for one fertilizer application per year. Reel mowers can act as mulching mowers provided the grass catcher is removed and the lawn is mowed frequently enough to allow for clippings to decompose back into the lawn.

The first mowing of the season for bermudagrass is after new growth is seen and the danger of frost has well passed, usually after mid March. Set the first cut lower than normal to remove as much brown, dead growth as possible but not below ½ inch. Do not dethatch or vertical mow the bermudagrass at this time. Bag and remove clippings from the first mowing. After the first mowing, return to normal mowing heights and begin recycling the clippings to the lawn.

Irrigation

Bermudagrass lawns require less water than most cool season lawns such as tall fescue. Even if bermudagrass is not overseeded for the winter, it still requires irrigation (1/2 inch every two to three weeks) to keep the soil moist and prevent winter desiccation.

Irrigate lawns in the early morning hours before sunrise to avoid water loss due to wind. During the coldest months, schedule irrigations to avoid icing of walkways. To encourage deeper rooting, water deeply but infrequently. The number of days between irrigations varies from lawn to lawn but should decrease from winter to summer and increase from summer back to winter.

The total number of minutes during an irrigation cycle, once determined, normally does not change throughout the year but the number of days between irrigation events does change. This is because applied water replaces water lost by the lawn since its last irrigation. Apply enough water when irrigating so that water penetrates the soil evenly to about 6 to 8 inches. Thus in March, the irrigation may apply 1 inch of water every 5 to 7 days, and apply the same 1 inch of water every third or fourth day in June, July and August. One irrigation cycle can be split into several smaller cycles to discourage water waste due to runoff and puddling. Splitting a long irrigation cycle into smaller ones is particularly effective when irrigating turfgrass on slopes or when grown on heavy clay soils which absorb water slowly.

A well-designed and correctly installed irrigation system is essential for a high quality lawn in the desert. Uneven water coverage results in brown, or off-color, patches of grass between sprinklers (*Figure 3*). Increasing station run times on the irrigation clock to compensate for these dry spots results in inefficient and over application of water to the rest of the lawn.

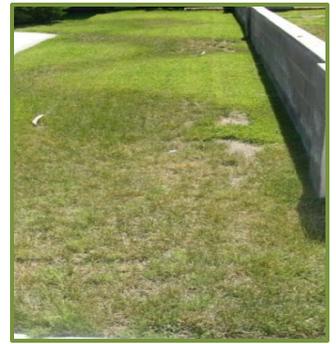


Figure 3. Brown areas alternating with green areas due to poor irrigation design, improper sprinkler maintenance or inadequate pressure.

Lawn irrigation systems installed for bermudagrass may use sprinklers with 2 inch popups. This popup is adequate provided the grass is not mowed above 1½ inches. Mowing higher than this requires pop-up sprinklers that extend above the lawn more than 2 inches. Pop-up sprinklers are labeled as having either a 12 or 15 foot spacing (between sprinkler heads), and replacement nozzles must match each other for even and efficient water application. Make sure all nozzles have the same precipitation rate which is dictated by the working pressure of the irrigation system.

Dethatching and Aerifying

Thatch is a mixed layer of soil containing both living and dead underground shoots (*Figure 4*). Most thatch results from the death of grass stems, stolons, rhizomes and roots. These plant parts are high in fibers which do not decompose easily. A thin layer of thatch (less than ½ inch) can be advantageous to a lawn. Grass clippings quickly degrade and do not cause a buildup of thatch. Excessive thatch accumulation (½ inch or more) decreases lawn quality because it prevents water from penetrating deeply into the soil, can harbor insects and diseases and causes shallow rooting leading to increased drought problems. Excessive thatch promotes scalping and diminishes the overall quality of the lawn. If the bermudagrass is not going to be overseeded, dethatching should be done in the summertime since plant shoots will grow back quickly during warm weather. Dethatching might also be called power raking, vertical mowing or verticutting which are essentially all the same thing.



Figure 4. Thatch is the decomposed or partially decomposed layer of organic matter just above the soil surface.

In some lawns, dethatching may be an annual occurrence while in others it may be less often. Thatch often forms readily when using low growing bermudagrass varieties that like to be mowed short and frequently. Excess applications of water and fertilizer usually speed up thatch accumulation. Small lawns can be dethatched using a hand held thatching rake while larger lawns require a power rake, vertical mower or verticutter. These services are sometimes provided by lawn care companies or machines can be rented for the day. Removal may result in a large amount of thatch that must be disposed of. Using a rotary mower with a bag attachment works well for removing thatch debris.

Aerifying, which leads to improved water penetration and aeration of the lawn’s rootzone, is the process of introducing a series of “holes” through the lawn and into the soil. Aerifying helps correct problems promoted by thatch, heavy clay soils, compaction due to traffic and slopes encouraging rapid water runoff. Aeration can increase the root depths of grasses which, in turn, improves drought tolerance. Aerifying can lead to water savings by increasing the percentage of applied water into the root thus decreasing water that would otherwise be wasted. Aerifying is best done just prior to, or during, the summer since lawn recovery from damage is rapid during these months. Schedule aerification at least one month prior to the onset of hot weather to encourage deeper rooting of the lawn and problems associated with drought. Aerifying once per year should be frequent enough for most lawns. Plug or core aeration gives the most long lasting results. Remove the cores after raking and discard or compost.

Overseeding

Overseeding is the fall establishment of a temporary, cool season grass into a permanent warm season lawn. This results in a green, winter lawn when bermudagrass is normally brown and dormant. The ideal time to overseed is fall when bermudagrass is still green but growth is slowing due to fall temperatures but still warm enough for cool season grasses to get established. Normally, fall overseeding is best when daytime temperatures are averaging 81 to 83° F. In the Las Vegas valley, this may occur from mid-September through mid-October. Once warm weather returns in the late spring, the lawn is encouraged to “transition” back to bermudagrass by reducing the mowing height, watering less often, and fertilizing with a quick-release nitrogen fertilizer such as ammonium sulfate or urea. Cool season grasses preferred for overseeding are either annual or perennial ryegrasses. Annual ryegrass is an inferior winter lawn in both color and texture but is less expensive, dies earlier in the spring and is best mowed at 2 inches or more.

Several perennial ryegrass varieties are quite heat tolerant and tend to persist into mid-summer before high night temperatures and humid weather happen. These heat tolerant ryegrasses tend to co-exist with bermudagrass during the heat of the summer and as a result there is little to no transition period. The result is a lawn with two grasses which have different mowing, irrigation and fertilizer requirements during the summer. Thus the lawn is extremely hard to manage correctly.

Steps to overseed in the fall include:

- 1) Raise the height of the grass two weeks before overseeding
- 2) Shut off the water several days before overseeding
- 3) Mow and bag the grass at the normal mowing height followed by a lower height (forced scalping)
- 4) Light vertical mowing, if required, and bag all clippings and debris
- 5) Seed, fertilize and apply ¼ inch of topdressing
- 6) Roll the seedbed
- 7) Water
- 8) Fertilize the new lawn after the first mowing.

Transitioning a lawn back to bermudagrass in the spring should begin six to eight weeks after the danger from frost has passed, usually mid April in the Las Vegas valley. Bermudagrass responds to lower mowing heights and nitrogen applications when nighttime low temperatures are 60 degrees F or above. Using quick release nitrogen fertilizers increases stress on ryegrass while favoring bermudagrass growth.

Pest Management

Prevent or control pests by first using nonchemical means. Apply pesticides as a last resort, not a first one. All pesticides must be applied according to label recommendations. Keep humans and pets off of treated areas for 24 hours or until the pesticide has “dried” or has been “watered in” and the surface is dry.

Weed control. Many weeds are poor competitors with vigorously-growing turfgrass and their establishment can be prevented through proper lawn maintenance. The most critical maintenance practices in preventing weed invasion include correct mowing height, regular and appropriate fertilizer applications and uniform application of adequate water. Common problem weeds in bermudagrass that can be controlled through appropriate lawn maintenance include crabgrass and goosegrass, annual bluegrass and perennial cool season grasses such as tall fescue. Crabgrass and goosegrass are annual weeds that may at times require applications of preemergent herbicides in the spring. Perennial cool season grasses such as tall fescue can be eliminated either by pulling, digging or spot applications of a nonselective herbicide such as Roundup™. Annual bluegrass is probably the most difficult to control. Late summer, fall and winter applications of preemergent herbicides are commonly used. Do not apply pre-emergent herbicides in late summer and fall if you are planning to overseed.

Disease control. There are very few disease problems for bermudagrass in our desert climate. Spring dead spot has been recorded occasionally. Avoid over saturating newly transplanted summer sod, especially during humid weather.

Insect control. Insect problems are also very limited for bermudagrass turfgrass in our desert climate. On occasion, white grubs, cutworms, armyworms and springtails have been reported as problems but rarely cause significant damage.

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