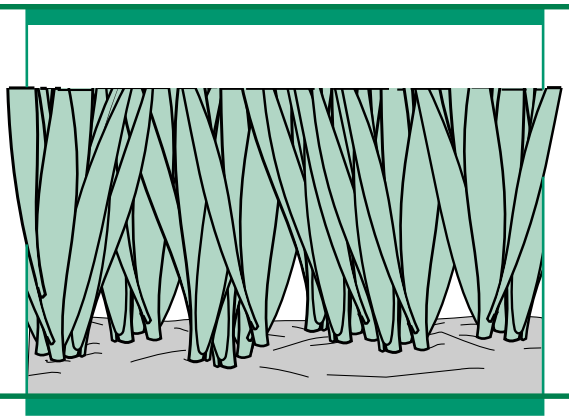
BERMUDAGRASS FOOTBALL FIELDS

Turfgrass



Bermudagrass is a vigorous, wear-tolerant, warm-season turfgrass that provides an alternative to cool-season grasses for Kansas football fields. Potential risks and rewards of using bermudagrass for football fields are discussed here.

Advantages of Bermudagrass

Bermudagrass grows vigorously during the hot summer months when the field is being prepared or renovated for the football season. It has excellent drought and heat tolerance. Bermudagrass requires about 50 percent less water than cool-season grasses during the hot summer months. It has excellent wear tolerance and recovery when actively growing. There are relatively few pest problems.

Disadvantages of Bermudagrass

Bermudagrass may not survive harsh winters. Most cold-hardy cultivars are vegetative types, which are more expensive to establish than seeded types. It typically goes dormant in October. The last few games will be played on a dormant field unless overseeded with an appropriate cool-season grass. As bermudagrass goes dormant, wear tolerance and recovery are reduced.

The best bermudagrass varieties for Kansas are cold-hardy. These suffer winter injury under harsh conditions but are less prone to this problem than susceptible varieties. Because even the most cold-hardy bermudagrass cultivars are only marginally cold-hardy in Kansas, using bermudagrass makes more sense in some parts of the state than others. Northern and western counties will experience more winter injury to bermudagrass than southern counties. But bermudagrass football fields have performed well as far north as Manhattan and the Kansas City metropolitan area.

Even if some winter injury occurs there is plenty of time during the summer to renovate damaged areas. This works well with football fields, because they are not typically used until mid August or later.

Cultivar Selection

Midfield, *Midlawn* and *Quickstand* are the most cold-hardy bermudagrass cultivars for use in Kansas. Additionally, *Midiron* is an older variety that features good cold tolerance and is less expensive to plant. They are all vegetative cultivars. They must be planted by some means other than seeding, like sprigging or plugging. All four cultivars can provide a quality field, but there are some differences among them.

Aggressiveness

Aggressiveness is a desirable trait in an athletic field turfgrass because it determines how well the field recovers from traffic injury. *Quickstand* is the most aggressive of the four cultivars. *Midfield* was specifically developed for athletic field use, and is somewhat more aggressive than *Midlawn* or *Midiron*, even though these last two varieties still have adequate aggressiveness for athletic field use.

Visual attractiveness

Midlawn, *Midiron* and *Midfield* have a finer texture than *Quickstand.* Under good conditions they will provide a more attractive playing surface. But *Quickstand*, while coarser textured, can still produce a visually attractive field when well maintained. Density of all four cultivars is similar, but *Midiron*, *Midfield* and *Midlawn* tend to hold their color further into the fall than *Quickstand.*

While the above varieties represent the most cold-hardy for Kansas fields, an alternative is to annually replant an aggressive, but more cold-sensitive variety like *Tifway*, which is used in heavily trafficked areas in Arrowhead Stadium. Plant material from these varieties is less expensive, but replanting may need to be budgeted annually. Field managers and administrators should carefully consider the importance of cost, aesthetics and aggressiveness as it relates to their particular situation. For example, in

heavily used fields, aggressiveness may be more important than visual appeal. On the other hand, for high-profile game fields, visual characteristics and cost of annual renovation may be given more weight in making the decision. If possible, personal visits to fields planted to each cultivar should be made before making a final decision.

Establishment and Care of New Fields

Planting

Sprigs are harvested segments of bermudagrass rhizome and stolon tissue that can be replanted. Units of measure for sprigs may differ with geographic location. A "Georgia" bushel is roughly equivalent to 0.25 cubic feet and should be planted at a rate of 450 to 600 bushels per acre, 10 to 15 bushels per 1,000 square feet. In comparison, a "Texas" bushel is roughly equivalent to 1 cubic foot and should only be planted at 150 to 200 bushels per acre, 3 to 5 bushels per 1,000 square feet. Be sure to find out which bushel measurement your supplier uses. In either case, sprigs should be evenly broadcast over the field, incorporated into the ground, and rolled to enhance sprig or soil contact. Patience is critical with sprigs because visible tissues will appear desiccated for one to two weeks following planting before new green growth appears. In the meantime, root and rhizome growth underground is very active.

Plugs are small pieces of sod and should be planted on 10 to 12-inch centers. Ideal planting dates for either sprigs, plugs or sod are between late May and mid June. Planting later than mid June may leave too little time for the field to become established before football season begins. At least eight weeks, and preferably 10 weeks, should be allowed to grow in a sprigged or plugged bermudagrass field before use begins. Sod will require only one to two weeks to root, but three to four weeks is advisable between sodding and field use.

Watering

Irrigation is critical to the successful establishment of the new field. Sprigs, especially, are susceptible to dessication if not kept moist. The field should be kept constantly moist, but not water-logged, until the new sprigs or plugs have rooted and begun to send out runners. Then irrigation can gradually revert to a more normal program.

Crabgrass and Goosegrass Control

Until 100 percent cover is achieved, crabgrass and goosegrass should be controlled by applying the preemergence herbicide oxadiazon (*Ronstar*). This is the safest and most effective preemergence herbicide for newly sprigged or plugged bermudagrass because it does not inhibit new root growth. Other preemergence herbicides may inhibit both rooting and horizontal spread of new bermudagrass. Apply oxadiazon at a rate of 2 pounds active ingredient per acre at the time of planting and again about six weeks later.

As an alternative, quinclorac (*Drive*) or *MSMA* can be used at label rates to control existing crabgrass. Wait until the new sprigs or plugs have rooted before applying either of these herbicides. *MSMA* works best when crabgrass is fairly small, and it often requires a repeat application two weeks after the first. Quinclorac is extremely effective on crabgrass, even crabgrass that has begun to tiller, but it is ineffective against goosegrass. *MSMA* has fair activity on goosegrass, but requires repeat applications. *MSMA* will also help suppress yellow nutsedge, also called nutgrass or watergrass, which can be a problem in new stands.

Fertilization

Fertilize aggressively with nitrogen until complete cover is achieved. Use a quick-release nitrogen source such as urea or ammonium sulfate. Apply 0.5 to 0.75 lb. of actual nitrogen per 1,000 square feet every week beginning at planting and continuing until complete cover is achieved. Before planting, apply phosphorus and potassium if soil test results indicate a need for these nutrients. A soil test will also reveal whether the pH needs adjustment. Bermudagrass grows best in soils with a pH between 6.0 and 7.0, but will tolerate pH's between approximately 5.5 and 7.5.

Mowing

Begin mowing as soon as the grass grows beyond the desired height. A reel mower is best, but a rotary mower can be used if the blades are kept sharp. Begin mowing at $1^1/_4$ to $1^1/_2$ inches. Once full cover is achieved, the height can be raised up to two inches if desired.

Cultivation

Once the seedbed is prepared, no cultivation will be necessary during the establishment year.

Management of Established Fields

Mowing

Mow at a height of $1^1/_2$ to 2 inches. A good reel mower is preferred and is necessary for mowing below $1^1/_2$ inches. The blades must be kept sharp and adjusted properly. Bermudagrass looks best when mowed at $1^1/_4$ to $1^1/_2$ inches. If you do not have a reel mower, mow at $1^1/_2$ to 2 inches. Once again, keep the blades sharp. Mow frequently. Do not remove more than one-third of the foliage at any one time. This means you must mow when the grass is just shy of 2 inches for the $1^1/_4$ height, when it is $2^1/_4$ inches for the $1^1/_2$-inch height and when it is 3 inches for the 2-inch height. Obviously, the lower you mow, the more frequently you will have to mow. Mowing at the proper frequency with a sharp blade is one of the most important practices for a quality field.

Irrigation

Bermudagrass will need about 1 inch of water each week during the summer, whether from rain or irrigation. In the spring and the fall it will require less. Soak the soil deeply with each irrigation. Schedule irrigations so that the field is on the dry side for games and other events. This will help prevent excessive compaction. A properly functioning, well-adjusted irrigation system is critical to a field's success. Traveling sprinklers, also called water cannons, can be used, but care must be taken to ensure water is applied uniformly and in sufficient amounts.

Fertilization

Established bermudagrass football fields will require a monthly application of 1 pound nitrogen per 1,000 square feet, starting in mid-May and ending in mid-August. Quick-release nitrogen sources such as urea or ammonium sulfate can be used. Fertilizing after August 15 may predispose the turf to winter injury. Phosphorus and potassium should be applied based on soil test results. A soil test will also tell you whether you need to adjust the pH.

Cultivation

Core-aerate two or three times a year — early June and early July are the optimum times. Lightly verticutting following aeration will help break up the cores. Only core-aerate or power rake after August 15 if you overseed a cool-season turfgrass like perennial ryegrass into the field. Late summer cultivation without overseeding may predispose bermudagrass to winter injury. When core aerating, go over the field enough times so that cores are pulled about every 2 inches. The soil moisture level is very important for this operation. The soil should be moist enough so that it crumbles easily when worked between the fingers. It should not smear. If compaction becomes severe, one of the aerations should be done with a *Verti-Drain*, or similar unit that penetrates deeper into the soil.

Crabgrass/Goosegrass Control

Many preemergence herbicides are labeled for use on bermudagrass. If the middle of the field is thin from the intense play in the fall, oxadiazon *(Ronstar)* should be used in that area, and a less expensive product could be used for the rest of the field. All products except prodiamine (*Barricade*) and *dithiopyr (Dimension)* will require two applications, approximately April 1 and June 1 for most of Kansas, for season-long control. Quinclorac *(Drive)* or *MSMA* can be used at label rates to control existing crabgrass. *MSMA* works best when the crabgrass is fairly small, and it often requires a repeat application two weeks after the first. Quinclorac is extremely effective on crabgrass, even if it has begun to tiller. It is ineffective against goosegrass. *MSMA* has fair activity on goosegrass, but requires repeat applications. On established bermudagrass, metribuzin (*Sencor 75*) may be used for postemergence goosegrass control but may cause temporary discoloration.

Broadleaf Weed Control

Broadleaf weeds can be controlled on an as-needed basis with *Trimec*, *Confront*, or a similar product at label rates. Late September or October is the best time to treat perennial broadleaf weeds such as clover and dandelion, but with scheduled football games this may be difficult. Late March or early April is the next best time.

Other Weed Control Strategies

If winter annuals such as henbit, chickweed and speedwell are a recurring problem, they can be controlled with an appropriate preemergence herbicide applied in early September. Prostrate knotweed germinates in late winter and would also be controlled with this application. Alternatively, prostrate knotweed can be controlled with an application of *Trimec*, or a similar product, in early spring.

Perennial cool-season grasses, such as tall fescue, are best controlled with an application of the non-selective herbicide, glyphosate (*Roundup*), in late February when bermudagrass is fully dormant and will not be injured by glyphosate. It is important not to apply glyphosate if green growth is visible on bermudagrass.

Insect Control

Bermudagrass does not have many serious insect pests. Grubs are the major insect pest of bermudagrass in Kansas. Usually, bermudagrass will outgrow grub damage. However, grub damage to roots could lead to winter kill of areas. If annual grubs (chafers) become a problem, apply imidacloprid (*Merit*) or halofenozide (*Mach 2*) at label rates in early to mid July. Imidacloprid and halofenozide can be used in a rotation from year to year. If you see visible damage from grubs, that means the grubs are likely to be large and difficult to kill. Trichlorfon (*Dylox*, *Proxol*) is the insecticide recommended for such situations, as it has good "knock-down" properties and acts quickly. But trichlorfon has a short residual, so it should not be used for preventative applications.

Disease Control

Bermudagrass gets few diseases, so fungicides usually will not be necessary. Spring dead spot is the most important disease of bermudagrass, but the most cold-hardy cultivars, such as *Midlawn* and *Midfield*, seem to have somewhat better resistance. Research at K-State and other universities has demonstrated that aerating twice during summer, followed each time by verticutting to break up cores, can reduce the symptoms of spring dead spot. In addition, the use of acid-reacting fertilizers, such as ammonium sulfate, also reduce the severity of this disease.

Traffic Control

A quality field cannot be achieved and maintained if play is excessive. Most practices should be conducted on a separate field. Practices on the game field should be limited to the light practice the day before the game. More than one game field will be necessary if more than two teams use the field for games. Marching band practices should be conducted on a separate field. Marching bands often cause more damage to the field than the football team.

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Kansas State University Agricultural Experiment Station and Cooperative Extension Service

MF-2451 April 2001