



Best Management Practices on Bluemuda Athletic Fields  
Brian Winka, CSFM  
Advanced Turf Solutions

## **Introduction**

Bluemuda is the concept of growing warm and cool season grasses together long term and year-round in the transition zone. Specifically, in this article I will be discussing mixtures of bermudagrass and Kentucky bluegrass. The concept has become possible and popular due to improved Kentucky bluegrasses like HGT from Barenbrug. These new bluegrasses have shown tremendous improvements in germination and establishment within the past decade. Furthermore, these new bluegrasses have increased heat tolerance and disease resistance which also make them attractive for Bluemuda turf. This Bluemuda concept has taken off and is being used on golf course fairways and athletic fields all across the transition zone.

Managing a mixed field can be a challenge but the reward is worth it. Early research has shown improved traffic tolerance and recovery in the Bluemuda plots vs bermudagrass only plots. This is a great advantage for high use athletic fields that are played on throughout the year. One of the other benefits is the color enhancement on the field. This is an advantage as improved aesthetics can go a long way to promoting safe fields and can also make the field manager look good. By having the HGT bluegrass with the bermuda year-round, the color is a much darker green compared to a bermudagrass field alone.

There is a cost savings advantage to this concept as well. By inter-seeding the bluegrass, you eliminate the need to overseed the entire playing surface every fall. The other cost savings is that there is no transition so there is no need for a chemical application to remove the cool season turf from the bermudagrass.

A good Bluemuda athletic field management program produces an attractive and wear-resistant surface. The results from proper field construction, turfgrass selection, properly timed cultural and agronomic practices will be a superior playing surface.

Maintaining an acceptable & safe playing surfaces requires properly timed cultural practices. These practices include mowing, fertilization, irrigation, cultivation, weed control, and controlling other pests like insects or diseases when necessary. A well-developed and maintained Bluemuda athletic field can withstand extensive use. This practice began in 2012 in Missouri with excellent results. Through trial and error I was able to develop a BMP for athletic fields based on the results over the past five years of managing Bluemuda fields.

## Mowing

Proper mowing promotes deep rooting and good shoot density, desirable mat and uniform growth. Regular mowing at the right height with properly-maintained equipment cannot be over-emphasized. For the Bluemuda a mowing height of 3/4 to 1" is preferred with 1 1/2" being the maximum mowing height for a quality playing surface. A consistent mowing height throughout the growing seasons will produce the best playing surfaces.



The turf should be mowed often enough so that no more than 1/3 of the leaf surface is removed at a mowing. Generally, this means the field should be cut three times a week during the summer. Higher mowing heights may not need as frequent mowing but will result in lower quality and weaker turf.

If mowing frequency is properly adjusted, clippings may be returned without harming the turf. If excessive clumping of clippings occurs, they should be dispersed or removed. Reel mowers provide the best cut for Bluemuda but with either a reel or rotary mower, the blades must be kept sharp and properly adjusted. If clipping and mowing frequency is an issue, a monthly application of a growth regulator like Armor Tech PGR 113 at a rate of 8-10oz per acre can be helpful for keeping the canopy height in check.

## Fertilization

Managing the field as a mix is important for overall plant health. Applying fertilizer at the right time is as important as using the right fertilizer. Fertilization should be determined from a soil test analysis. Bluemuda fields should be fertilized when the turf is actively growing throughout the season to promote an even growth pattern.

Bluemuda fields should be fertilized in a manner that does not allow one species of turf to dominate the other. Slow release Nitrogen sources, controlled release and organic fertilizers are preferred for a base. Healthy Grow with Armament 2-4-3 is a good example, it is aerobically composted chicken manure (ACCM) infused with a

biological metacatalyst that promotes beneficial microbial activity in and around the soil and plants. RATE: 400 lbs of product/acre.

If you need to give the field a quicker shot of Nitrogen early in the spring, a product such as ATS 22-0-4 w/Armament is recommended. It contains 50% polymer sulfur coated urea (PSCU) and is coated with Armament for improved efficiency and nutrient uptake. RATE: 150 lbs of product/acre.

Another option is Healthy Grow with Armament 10-3-2. This fertilizer is an organic-based blend of nutrients derived from aerobically composed chicken manure (ACCM) and ammonium sulfate plus beneficial non-plant food ingredients. RATE: 400 lbs/acre.

Foliar applications on a 3-4-week basis has been proven to provide excellent results.

Foliar-Pak Grow-In is ideal for recovery of turf damaged by biotic or abiotic stresses. Combines the foliar nutrients required for rapid turfgrass establishment and recovery. RATE: is 9 to 12 oz/1000

Foliar-Pak Play-On combines the foliar nutrients necessary for maintaining turfgrass health throughout the season while providing consistent, controlled growth and long-lasting color. RATE: is 9 to 12 oz/1000

During periods of high traffic that requires a boost of fertility for recovery, substitute Foliar-Pak Play On with Foliar-Pak Grow-In at 9 to 15 oz/1000 rate.

## **Irrigation**

It is very difficult to maintain an athletic field without irrigation. Irrigation should be scheduled to supplement rainfall and frequency and duration depends on environmental factors and limitations of the irrigation system. If possible use a soil moisture meter like the POGO Turf tool to determine the timing and amount of irrigation needed.

The ideal irrigation interval will depend on the environmental conditions but should occur just prior to wilt. During wilt, most grasses have a darker or a dull bluish green color and the leaf blades begin to fold or roll when the grass is under water stress. Irrigation should begin when these signs are first observed.

The best time of day to irrigate the turf is before sunrise because there is typically less wind and lower temperatures which means less water loss to evaporation. Further, early morning irrigation washes the guttation water from the leaf and can reduce disease pressure. Running your irrigation at night is more efficient than during the day, but the activities on the field will determine when you are able to



water. Irrigating 24 to 48 hours before major field use will help reduce soil compaction.

## **Cultivation**

Cultivation generally includes aeration, fraze & vertical mowing, and topdressing. The activities on the field produces a compacted surface layer in the top 2 to 3 inches of the soil on both native and sand based fields. This results in reduced pore space, reduced internal air and water movement, and gradual thinning and weakening of the turf.

There are many acceptable aeration techniques and pieces of equipment. Frequency of aeration generally depends on soil texture and frequency of field use. Fine texture soils, fields with heavy use and fields used when wet will require more aeration.

Bluemuda fields can be aerified anytime during the year that the turf is actively growing and not under extreme stress. The first aerification should be done in the spring just before fertilization. If field use is heavy or the soil is compacted, aerifying should be conducted monthly during the growing season, if not more.

Slicing with solid blades 1/4 to 1/2 inch wide cultivates the soil with minimum surface disruption & can be effective in relieving soil compaction. Solid tine aerification is another option to relieve compaction with little to no disruption of the playing surface. Solid tines and slicing blades are effective even when the soil is a little drier.

## **Topdressing**



Topdressing is the addition of a thin layer of soil on the turf surface. Parts of the field which are used continuously tend to become depressed from the heavy use. Topdressing with a 1/8 inch layer (10.4 cu. ft. or 0.4 cu. yds. per 1000 sq. ft.) can level and smooth these areas. In addition to smoothing the surface, topdressing also reduces thatch. Light, frequent topdressings to build up lower areas are preferred over less frequent, heavier topdressings. The

topdressing soil should be of similar texture to the soil on site and can be worked into the turf with a drag mat.

## Establishment



Bluemuda fields can be established in a number of ways but the most important factor is to ensure good seed to soil contact. The time of year is also a factor when considering getting the two grasses growing together and how you want to introduce the bluegrass into the bermudagrass. Remember that the establishment of a

Bluemuda field will take longer than a traditional ryegrass overseeding, do not expect the same results. This is a long-term solution and it is an inter-seeding not an over-seeding.

In late-spring or early summer, fraze mowing the bermudagrass is the preferred option for establishing a Bluemuda field. Often times there is a thatch layer on an existing bermudagrass field that you must get through to have successful germination. Frazе mowing will eliminate any thatch build up, and will also open the canopy to allow more sunlight on the soil surface for improved seed germination. Seeding can start as soon as the field is cleaned off.



The best methods for incorporating seed is to use a slit seeder or a dimple seeder. Slit and dimple seeders create a slice or hole in the soil that the seed falls directly into and ensures good seed-to-soil contact. To improve establishment, slit or dimple seed in at least two directions perpendicular to each other. If growing Bluemuda for sod, a dimple seeder is the preferred method for seeding into the Bermuda.

Plant 3 to 4 pounds of bluegrass seed per 1,000 square feet. Plant the seed shallow, less than 1/4 inch for best results. Soil temperature must be over 60 ° F for bluegrass seed to germinate and establish. Light, frequent irrigation applications for the first 2 to 3 weeks are essential for best results.

If fraze mowing is not an option, or you are seeding in the fall, core aeration, vertical mowing or spiking to open up the seedbed has been very successful. Aerating or spiking in two directions, and then broadcasting the bluegrass grass seed uniformly has worked well, with the seedlings establishing in the openings and spreading from

there to blend with the existing bermudagrass. Broadcasting seed onto an area *without* incorporating the seed into holes & slits or topdressing will not be as effective.

For a fall establishment, some turf managers have had success with applications of growth regulators on the bermudagrass to slow the growth, and improve establishment of the bluegrass. Apply the growth regulator to the bermudagrass 1-2 weeks before seeding the bluegrass. It is important to seed early enough in fall to allow seedlings to mature to the point where they can withstand the stresses of winter. September 1<sup>st</sup> is a good target date to start a fall inter-seeding in the transition zone.

Another option for establishing a Bluemuda field is to start with a bluegrass field and inter-seed a cold tolerant variety of Bermuda seed like Riviera or Yukon. The best time of year for this is late spring early summer in the transition zone. Bermuda seeds require a soil temperature of above 65 degrees to germinate and will not start germinating until this temp coupled with adequate soil moisture is present. Optimum outside air planting temps should be between 75-90 degrees. The seeding rate for overseeding an existing Bermudagrass lawn is 1 -2 lbs. per 1,000 sq. ft. or 45-90 lbs. per acre.

Bluemuda has been an extremely successful idea that has improved fairways and athletic fields across the transition zone. By following these practices, the program can be successful at your site as well. I am happy to discuss this concept with you further to find out if it is a good idea for your facility.