

Mowing: Height Manipulation

by Mike Andresen, CSFM, and Leo Goertz



Turfgrass is a complex organism. Mowing decisions concerning cutting height and frequency of cut impact far more than aesthetic appeal; they affect turf health, density and grass variety dominance. Well managed mowing can result in a more vigorous plant, with greater stress resistance and thus a better surface for athletic fields.

Conditions for top playability on athletic fields may not be the conditions ideal for the turfgrasses on those fields. Sports turf managers develop mowing strategies to fit their specific playing fields and conditions with safety and playability always the top two issues of consideration.

Mike's Mowing Strategy

Iowa State University is in Ames, Iowa, in the cool-season grass zone. Winter temperatures can drop to below zero and remain there for extended periods. Snowfall may be frequent and heavy or infrequent and minimal. Summer temperatures often are in the high 80s and low 90s with high humidity levels. Spring and fall bring widely fluctuating temperatures. Over the last decade, annual precipitation levels have ranged from flood to drought conditions.

As athletic turf manager for the university, I keep the mowing height of the Kentucky bluegrass/perennial ryegrass football game field at 1 5/8 inches. This strategy is based on my observations and experience and does not necessarily agree with the advice or opinions of others.

There are several reasons why I've chosen to mow at a consistent (and relatively short) height. First, I feel it promotes more plants per square foot, which in turn promotes quicker recovery from the damage and wear of play. Because our overall maintenance program keeps the turf growing rapidly, maintaining this height requires mowing every other day to follow the "1/3 rule." (Remove no more than one-third of the turfgrass blade in any one mowing.) Maintaining this short height also requires daily attention to field conditions to retain the precise surface we want.

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Penetration of the tines is a bit deeper and more uniform and core removal is easier at the lower height. The holes created have greater exposure to air, water and sunlight.

I'm also convinced I get a less damaging and more efficient topdressing job. There's less distance within the turfgrass canopy for the topdressing material to filter through to reach the soil surface. I believe I can put on a bit more topdressing at this lower height without worrying that the leaf blades will be covered by the topdressing material.

I have more control of the moisture in the canopy, crown and organic layer. This helps me control humidity as much as possible. Though this sets up a chance for a more volatile temperature environment, it's balanced by the degree of control.

I'd rather grow grass in a prairie environment than in a rainforest. With the lower consistent mowing height I know that the turf will dry out more quickly and that irrigation will be needed in dry, windy conditions. But, I'd rather have that than an environment that traps moisture and holds it there, creating moist, lush "rainforest" conditions that encourage the activity of disease organisms and provide an environment more susceptible to insect pests.

There are potential negatives to this strategy. First, it may be opening the possibility for a more volatile situation for diseases or insects since, theoretically, the turfgrass stress level would be higher at the lower height. However, if the environment is managed to correspond with existing and anticipated conditions, I'm not convinced that this is entirely true. By avoiding a lush situation within the growing plants, I've seen minimal disease and insect activity.

Next, the lower height of cut results in a thinner bladed plant due to the closeness of the plants. I feel I get more plants per foot, providing better and faster post-game recovery.

There are some keys to this management strategy. The prime one is monitor, monitor, monitor! Use all the tools available (soil probe, temperature gauge, magnifying glass, amber lens glasses) to gauge conditions so you can use proactive rather than reactive management practices and can control the environment as much as possible.

Next, develop an efficient irrigation system and irrigation philosophy. With the lower mowing height, when you need a syringe, you need it now!

Then, be prepared with a set of last resort strategies. Be ready to skip a day of mowing if the grass really shows stress. Use the very light syringe (as if you lick your finger, then blow on it) to relieve stress as needed.

Finally, be willing to swallow your pride and raise the mowing height in desperate cases.



Closely monitoring turf, and using proactive rather than reactive strategies, helps develop strong, healthy and attractive playing surfaces.

Leo's Mowing Strategy

Texas A & M University is in College Station, Texas, in the warm-season turfgrass zone. It's a bit north and west of Houston, but still within what is loosely classified as the humid South. Temperatures are hotter earlier and longer than in the Midwest, but ice and snow are still winter factors. Annual precipitation has fluctuated between too much and too little within the last decade.

As athletic field manager for the university, I use varying mowing heights to achieve the results I want. I use only Bermudagrass on our football game field. I start mowing at a 1/2-inch height in March and continue at that level until August 1. Then I raise the height to 3/4 inch until October. I'll then go to a 7/8-inch height and stay at that level through the winter when the Bermudagrass goes dormant.

I feel 1/2 inch is too short for play because it exposes the turf to greater wear and tear. At the college level, the longest cleats football players can wear are 3/8 inch. If those 3/8-inch studs dig into 1/2-inch turf they'll reach into the thatch and do more damage than the plant can withstand. With more tissue on top to protect the rhizomes and stolons, the plants have enough resources to recover from the damage.

When the days become shorter in October, I put even more tissue on top with the 7/8-inch cut to collect light and heat and keep the Bermudagrass going as long as possible. With the 7/8-inch cut I can keep the turf growing past the first couple frosts and cool spells. We finish play in November and, if the temperatures follow our usual pattern, the longer leaf tissue gives us the ability to maintain plant growth and finish the season still playing on a growing surface. I'll stay with that 7/8-inch height through the course of winter.

Once the weather breaks in March, I want to shave the turf down to 1/2 inch to get more heat and light to the crown of the plant to stimulate growth. I'll then verticut and incorporate all the necessary cultural practices at the shorter height to help thicken the turfgrass stand and form a dense base for play.

I do overseed perennial ryegrass into the Bermudagrass football practice fields, but keep the height of cut at 1/2 inch, just like the game field, so there's no difference in height to

affect the players. Our football coaches feel the perennial ryegrass is too slick to play on which is why I keep straight Bermudagrass on the football game field. The perennial ryegrass on the football practice fields is only actively growing in the fall during the late part of October and early November, and then only a minimal amount of the perennial ryegrass comes into play.

To insure that happens, I'll make the applications of perennial ryegrass at lower rates over a longer period. I'll only apply about 2 to 3 pounds on the football practice field in late October. I'll then repeat the applications two or three times for a total of approximately 10 pounds of perennial ryegrass seed per 1,000 square feet. As that germinates and comes up and gets mature, it's ready to provide the surface for spring training.

We use reel mowers across all the fields because it gives a clean cut and enhances the patterning effect. We mow the football game and practice fields every day as much for thatch and sprig clean up as mowing off the top of the blades. We'll also use the reel mower, with the reels disengaged, right after a game to push back into place all the divots and sprigs that have been disturbed during play. This light rolling insures good root and soil contact and eliminates the drying effect of air contact around the plant roots over night. We'll then come back in the next day to mow. If we mow right after the game, we'll take off too much leaf tissue of the sections that have been roughed up, resulting in the yellowing and stress of scalping.

With our baseball and softball fields, I maintain a 3/4-inch height all season so the turf height doesn't change the ball speed.

I do use overseeded perennial ryegrass in our Bermudagrass base on both our baseball and softball fields. I overseed in late October with the perennial ryegrass. Once it is up and growing I mow it at 3/4 inch and go through the spring playing season on the perennial ryegrass. I don't make any adjustments in mowing height through May and into the first part of June, keeping the perennial ryegrass actively growing until the end of the spring playing season. I mow the baseball and softball fields every other day. The baseball and softball seasons end about the same time the perennial ryegrass does. Weather conditions become too hot for it and just hot enough to stimulate active growth in the Bermudagrass base. I do use all the cultural practices to phase it out over the summer except dropping the mowing height. I don't have to push for phasing it out by a certain time so I don't need to be too aggressive, but I do make sure it isn't so active it hurts the Bermudagrass base. The teams hold their fall practices and workouts on the actively growing Bermudagrass. Once that is completed, I'll overseed with the perennial ryegrass. 🏈

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