Future of Green Speed

What are your options?

By Douglas Linde

If you have ever watched golf footage from the 1960s it's obvious that the greens look slow—at least according to today's standards.

Since the1960s, cutting heights have dropped from 3/16 inch to 1/8 inch and speeds have doubled. As a result, maintenance budgets have ballooned, cupping area has decreased and some greens have become unplayable. In fact, today's speeds are significantly changing green design and architecture.

As a golfer, I can appreciate the challenge of fast, sloping greens. As a turf manager, I have mixed feelings concerning fast putting greens.

Putting surfaces are larger, flatter and smoother. Slopes of new greens today average 1% to 3%, whereas slopes of greens built during the early 1900s averaged 5% to 8%. Placing a hole on a slope greater than 3% at today's green speeds would make putting ridiculously difficult. Many older U.S. courses have discovered that their undulating greens become treacherous to play when maintained at high speeds.

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Maintenance headache

Simply put, as turf is mowed lower, maintenance increases. This applies to turf in any situation—golf course, athletic field, lawn. Less leaf tissue results in less photosynthesis, less evapotranspiration, less carbohydrate production, and shallower roots. These reductions lead to less heat, cold, drought, and wear tolerance, which lead to more core cultivation, topdressing, hand watering, pesticides, mowing, labor, etc.

For superintendents, lower mowing translates into more sleepless nights in July; for the equipment and chemical industry, lower mowing means more revenue. For the golfer, lower mowing means higher fees or membership costs. I commend the USGA and other golf organizations for studying ways to make golf more affordable. One area to consider is cutting height.

Will this trend continue? Or will cutting heights and green speeds stabilize over the next decade?

It's hard to tell, but I believe the economy will have a significant influence. An economic downturn that decreases rounds played will cause courses to find ways to cut costs. We may start seeing budget cuts in 2001 along the Eastern U.S., since many courses in that region reported a decrease in number of rounds played in 2000.

If the economy heats-up again, budgets will continue to skyrocket. Green speeds of 14 feet and hand-mowed fairways may become common.

The golf organizations that set up professional golf tournaments typically set the standard for course conditions because so many other courses try to mimic those tournament conditions for their everyday play. Green speeds of 12 feet, firm, uniform bunker sand, and uniform rough have become common tournament conditions.

Your best strategy

What can you do as a superintendent? One strategy is to fight for higher heights by using basic plant physiology and economics. Explain and demonstrate to the greens committee or owner the economic consequences of lower mowing. Do some number crunching to estimate the increased cost of shorter grass.

Years ago, the superintendent set the course conditions. Today, members, owners, and golfers have a larger role. Of course,

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they have the final say on conditions, but by educating them in this area you may receive some sympathy when some grass dies during the dog days of summer or when the budget gets out of control.

Also, you may suggest to your members other ways to make their course more difficult besides super slick greens. For example, Scott Anderson, Superintendent at Huntingdon Valley C.C., Huntingdon Valley, PA, encourages grain on his bentgrass/Poa annua greens. The grain adds another factor for the golfer to consider.

Or, how about making the rough actually rough and non-uniform, or making bunkers more penal by changing to a more uniform sand that doesn't pack well? Ever consider keeping greens dry and firm?

Don't forget to consult your greens committee or owner before making any changes.

New turf alternatives

You could look for new grass varieties, equipment or practices that will maintain green speeds without lowering the mower. For example, the new ultradwarf bermudagrasses provide a surface as firm and fast as bentgrass. That's good news for transition zone courses. The new bentgrass varieties are better adapted to a 1/8-inch cutting height, but they will not necessarily decrease your budget because many require additional aeration and topdressing to control thatch.

Lightweight rollers have been proven effective for increasing green speed without mowing lower. Topdressing, lower fertility, walk-behind mowers, and drier greens are other ways to increase speed without lowering the mower, however each practice has some potential labor and cost increase side effects.

The Alka-Seltzer® solution

A final option you have is to stock-up on antacids and rise to the challenge of maintaining super-slick greens all year by lowering the mower. But you still should explain how lower mowing affects plant physiology and economics just in case Mother Nature decides to show who's in charge.

Whatever the future brings for green speed you can guarantee that superintendents will need to adjust their maintenance practices to accommodate. Understanding the consequences of lower mowing and clearly communicating them to your greens committee or owner could save your job.

In 2020, when you're watching footage from today, I wonder what comments you'll have about today's greens ... will Johnny Miller be quoting speeds of 10, 15 or 20 feet?

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Preventing Summer Dormancy

of cool-season grasses

By Doug Linde

What if you stop eating food for a few days? Your body begins using its stored carbohydrates—also known as fat. As these reserves are depleted, you become weak and more susceptible to illness. There is a similar relationship within the cool-season grass plant.

As temperatures get into the high 80s, photosynthesis by cool season grass slows and fewer carbohydrates are produced. Eventually, carbohydrate use from respiration can exceed production. During this period plants rely on stored carbohydrates to remain alive. Even though the plant is dormant and its leaves are void of chlorophyll, the plant continues to respire. If it doesn't respire, it's dead. As the stored carbohydrates become depleted, the plant becomes more susceptible to disease and climatic stresses.

Understanding basic plant physiology is critical in preventing summer dormancy. Although irrigation is a major component in dormancy prevention there are other practices that can improve the plant's ability to avoid, survive and recover from dormancy.

Carbohydrate production lag

Kansas State University researchers studying bentgrass have found that the respiration rate actually increases as soil temperature increases. Combine this with the natural reduction in photosynthesis during high temperatures and it results in a condition in which carbohydrates are used faster than they can be produced. This is a main reason for summer bentgrass decline.

They also determined that by raising the cutting height, the gap between carbohydrate production and consumption becomes smaller.

Summer dormancy is a survival mechanism of cool season turfgrasses. These grasses will enter dormancy when exposed to extended heat and moisture stress. Processes significantly slow and growth ceases but the plant remains alive. Letting cool season grasses fall into dormancy is not an option for many turf managers.

Most U.S. golfers demand green playing surfaces and extended dormancy can lead to plant death—although 1999 in the Northeast proved that grasses can be highly resilient even after an extended summer dormancy period. I was surprised how well grasses recovered, even those straw-brown areas in the rough that were battered by cart traffic.

Know plant physiology

Understanding basic plant physiology is critical in preventing summer dormancy. Although irrigation is a major component in dormancy prevention there are other practices that can improve the plant's ability to avoid, survive and recover from dormancy. Most of these practices must be implemented before the summer stress period. Some managers refer to these practices as pre-stress conditioning.

1. RAISE THE MOWER. Higher mowed turf results in a deeper and more dense root system.

2. IRRIGATE DEEPLY AND INFREQUENTLY – This irrigation regime improves rooting and causes other morphological alterations that improve drought tolerance. Jack Fry from Kansas State University recommends "drawing-out the irrigations as far as possible without affecting quality of the putting surface". Mildly stressing turf between irrigations will slow shoot growth and promote root growth. Also, irrigate sparingly in the spring to force roots deeper before high temperature stress periods of summer. However, during high temperature stress periods make sure adequate soil moisture is available for transpiration cooling.

3. AVOID N APPLICATIONS IN SPRING OR SUMMER THAT PRODUCE RAPID SHOOT GROWTH. Plants burn carbohydrates for shoot growth. Root growth is sacrificed during periods of rapid shoot growth.

4. ESTABLISH SPECIES OR VARIETIES THAT ARE MORE HEAT AND DROUGHT TOLERANT. For example, Crenshaw bentgrass is more heat tolerant than Penncross bentgrass. Tall fescue is more drought tolerant than Kentucky bluegrass and perennial ryegrass.

5. ENCOURAGE ROOT GROWTH – Do everything you can to improve rooting throughout the year. A deeper, more extensive root system improves drought tolerance and the plant can extract water from a larger volume of soil. Core cultivation increases soil pore space in which roots can grow.

6. COOL THE SOIL – Forcing cool air into drain lines of a putting green. This is gaining popularity—especially for greens that historically have problems during summer.

7. COOL THE TURF – Syringing and air movement cool the turf by evaporation.

8. LIMIT TRAFFIC – Spread traffic wear. Keep carts on paths or in roughs only.

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