



Recent studies have shown that a combination of mowing and rolling greens during the summer months is the best strategy for keeping turfgrass healthy. Plus, there are large economic gains, too – depending on if you triplex mow or hand mow.

On one green, the researchers did what the average facility in Tennessee does and walk mowed it six days a week. On another green, they mowed on Monday, rolled on Tuesday, mowed Wednesday, rolled Thursday, mowed Saturday and then didn't do anything on Sunday.

The study found the quality of the green that was mowed only three times a week was much better than the green that was mowed six times a week. The reason, Sorochan believes, can be explained through science.

"Golf courses on a daily basis just go out and mow, so first thing in the morning they're removing that leaf surface area, which causes stress in the plant," he says. "The plant then uses energy through photosynthesis to heal the wound. When you look at creeping bentgrass, whether it's in the transition zone, Michigan, upstate New York or Vancouver, the best and most efficient time for that grass to photosynthesize is early morning till noon. So, if you've cut it, even though it's using energy to heal itself, you've removed that much

more leaf area that would be absorbing light. So simply by skipping one day of mowing, less energy will be used to heal a wound and there will also be that much more surface area for light energy or photosynthesis to occur."

The study also went one step beyond science and analyzed the economic impact of alternating mowing with rolling – and the results were eye-opening.

"We determined that if you were a private club and walk-mowed your greens, it freed up \$22,000 a year in your budget, which included the cost of two rollers," Sorochan says. "And that money, of course, could be put toward more topdressing sand, another laborer or whatever."

The average daily fee course saved \$11,000 per year if it walk mowed. However, those daily fee courses that triplex mowed only saved about \$1,600 a year, and triplex mowing cost country clubs that incorporated rolling and mowing practices \$80 per year, which included the purchase of two rollers.

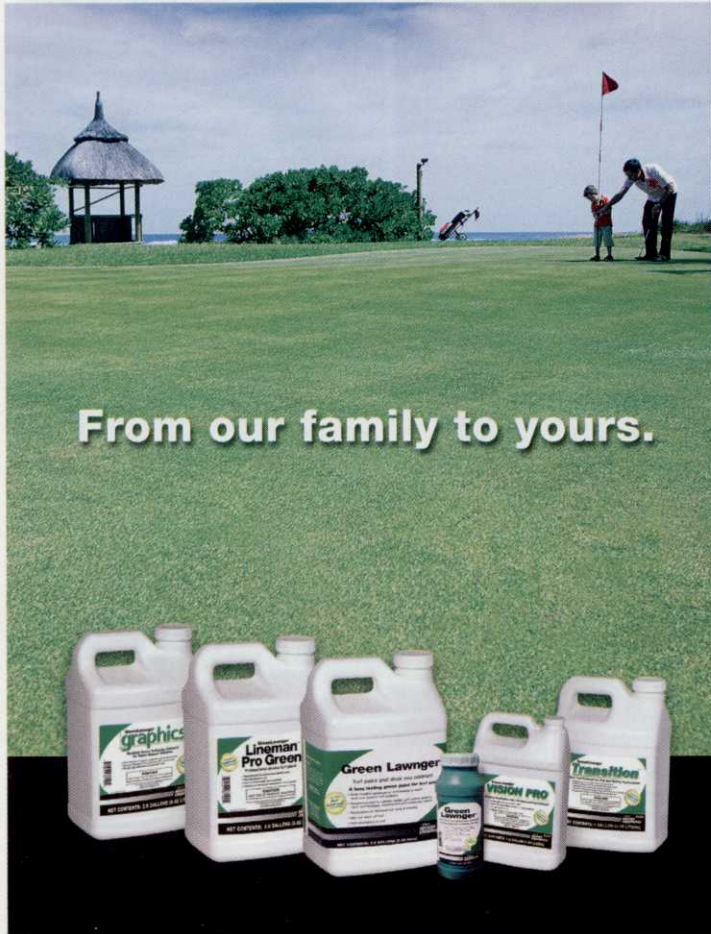
Based on this economic data, Sorochan saw

more superintendents switching to alternating mowing and rolling on a yearly basis more for the benefit of their budgets than the health of their greens.

Dr. Frank Rossi of Cornell University, who recently gave a talk entitled, "Putting Green Mowing...Less Is More," says a lot of people feared there would be a huge downside to rolling if done excessively, but he believes the only downside is created by operator error. Sorochan agrees.

"The problems stem from starting and stopping, spinning out or just stopping," he says. "I recommend to roll as far off the collar as possible or onto the collar. But a lot of people are limited by bunkers or slopes and sometimes end it a foot or two or three or five feet short of the collar, especially if the pin is in the back and you're coming to the front and you've rolled it all the way to that one spot. Don't stop in the same spot every time."

With the lightweight rollers available today, stress from rolling is minimal compared to stress from mowing, Sorochan says. **GCI**



From our family to yours.

Introducing Becker Underwood's Green Lawnger® family of products with ColorLock™ technology.

• **Green Lawnger®**
Turf Colorant

Instantly restores natural green color to dormant or discolored turf.

• **Lineman® Pro Green**

The only green turfgrass paint approved for use on NFL® playing fields.

• **Graphics™**
Turf Colorant

Resilient green turfgrass colorant for warm-season varieties.

• **Transition™**
Turf Colorant

Dark turf colorant for fall and spring applications.

• **Vision Pro™**
Application Aid

Visual spray application aid and UV-resistant turf colorant.

When it has to be right, it has to be Green Lawnger Turf Colorant

BECKER UNDERWOOD®

Green Lawnger® and Lineman® are registered trademarks and Graphics™, Vision Pro™, Transition™, and ColorLock™ are trademarks of Becker Underwood, Inc., Ames, IA.

800-232-5907

www.beckerunderwood.com

A PRE-EMERGENT LIKE NO OTHER

(innovative)



Specticle™ herbicide is here. And bringing a new standard for pre-emergent grass and broadleaf weed control in turfgrass.

New Specticle herbicide is here to provide you superior control of crabgrass, goosegrass and 75 other troublesome grasses and broadleaf weeds. With its unique mode of action, Specticle offers unsurpassed residual control with no known resistance issues. Plus, Specticle's innovative chemistry uses up to 40 times less active ingredient resulting in a lower impact to the environment. When it comes to superior control, other products just don't compare. Get ready to achieve more while applying less with Specticle.

For more information, visit www.BackedbyBayer.com/Specticle



Bayer Environmental Science

Bayer Environmental Science, a division of Bayer CropScience LP, 2 T.W. Alexander Drive, Research Triangle Park, NC 27709. 1-800-331-2867. www.BackedbyBayer.com. Specticle is a trademark of Bayer. Not all products are registered in all states. Always read and follow label directions carefully. © 2011 Bayer CropScience LP.



SPECT(i)CLE™

Apply less. Achieve more.

When rollers were reintroduced in the early 1990s, there was some concern that they could cause wounding and potentially create entryways for diseases. But that has been disproven, too, says Sorochan.

"In actuality, we found that rolling reduced diseases," he says. "Tom Nikolai showed it could reduce dollar spot by 50 percent. And Bruce Clark found you could reduce anthracnose just by incorporating lightweight rolling with your mowing three times a week."

Cornell University's Rossi did his own study, but unlike Sorochan's, it was primarily focused on mower types. Still, he found that there was virtually no effect in the summer months going to three to four mows a week and rolling every day.

"Superintendents can get the performance they want but at the same time, the evidence from the work we've done shows the less you mow, the healthier the plant is," Rossi says.

Rossi's study examined the variable frequency of clip from Eclipse mowers that allow for ground speed and real speed adjustment.

It also looked at bed knife position and the aggressiveness of cut of different mowers. "We sort of found some hidden stresses you would see in mowers that a lot of guys don't pick up on," he says. "At the end of the day, there are some fine points to our work, but you want to mow as little as you need to get the performance you need. You also need to realize that mowing will only get you so far. If you want to keep a healthy surface and get maximum performance, you have to roll."

For those superintendents who haven't embraced this mowing-rolling concept, Rossi encourages them to at least try some vibratory rollers on a triplex mower because "there is significantly less injury associated with using that piece of equipment and it's much faster than a speed roller."

The performance of speed rollers or sidewinders has been compared to triplex rollers, Rossi says, and little difference has been found. So, in his opinion, superintendents should go with speed. "From a time perspective, it's a heck of a lot easier to bum around

with a triplex roller than have to drag a speed roller or side roller," he says.

Yet another study conducted by the University of Arkansas's Jay Richards, Mike Richardson, Aaron Patton and Josh Landreth with Karcher and Nikolai addressed green speed when it comes to rolling.

The objective of the study was to determine the effects of mowing and rolling frequency and mowing height on turf quality and green speed on a sand-based green. The conclusion was that rolling had a greater impact on increasing ball roll distance than reducing mowing height. Also, that mowing frequency could be reduced without a decrease in ball roll distance if turf was rolled on days when mowing was skipped. Therefore, those managing greens may be able to mow less frequently during hot, humid periods to minimize turf stress and produce healthier putting green turf without sacrificing green speed. **GCI**

Jason Stahl is a freelance writer based in Cleveland.

FINANCING Available

www.biologicalmediation.com



Architectural Design assistance and Engineering is included with every custom built prefabricated structure. Restrooms, lightning shelters, concessions and more.

- Sustainable design and materials
- Renewable energy solar systems



Custom Builders
BMS
BIOLOGICAL MEDIATION SYSTEMS, INC

800-524-1097

got map?

WE DO.

Get the superintendent's mapping you need for less than you'd expect.

CourseVision.com



Booth #907 in Orlando

DRIVING THE QUEST FOR THE PERFECT CUT.



— www.stens.com —

Go



BED KNIVES



REELS



ROLLERS



ENGINE PARTS



BLADES



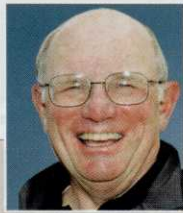
With parts fitting over 300,000 applications in five distribution centers, the part you need is only a click away. All of our parts are competitively priced and tested to ensure the highest quality. So you can use the best parts at a great price. And best of all, you can do it really fast.

Helping Business Run Better™



Stens
THE PARTS COMPANY™

1-800-457-7444



Monroe Miller is a retired golf course superintendent. He spent 36 years as superintendent at Blackhawk Country Club in Madison, Wis. Miller can be reached at groots@charter.net.

I STAND CORRECTED!

Foolish me, especially on the downside to my 65th birthday, offering a golf course pop quiz. During my teaching assistant career a student would occasionally challenge a pop quiz question. The course was open to students in other disciplines and they liked to question quiz answers and discuss them. I should have remembered this when I penned my recent "Quiz" column.

Not long after the October issue mailed, I received a wonderful email from a longtime friend, who I'll call "The Professor." He is a veteran superintendent, designer and builder with sterling qualifications as a golf course historian. The Professor wanted to discuss a few of my answers. It seems he took the quiz and failed. Beads of sweat collected on my forehead as I read his message. All I could think about was The Professor and his formidable greenkeeping knowledge.

The Professor challenged the answer to Question #3. The answer I recorded is straight from any number of history books, including USGA sources. But the Prof offer this: "TO THE GOLF PLAYERS, from the Rivington Gazette, a New York Tory newspaper in 1779 – "The season for this pleasant and healing exercise is advancing. Gentlemen may be furnished with excellent clubs and suitable Calado balls by enquiring at the printer." I wonder if the historians at the USGA have considered this reference.

Question #5 related to the first woman involved in turfgrass science. I couched the question with the words "likely," and "science" and "major," but the Professor wrote me: "My first thought went to Georgina Campbell, first female Head Greenkeeper, in 1901

at Franklin Park, MA. Then I thought about Elfreda Claukie (sic), Professor Dickenson's assistant at Massachusetts State in the 1930s, but then I thought of Gertrude Farley, National Greenkeepers Association of America Secretary who authored 'Golf Course Commonsense' in 1931, which covered practical and scientific methods.

"The development of 2,4-D was done by Dr. E. J. Kraus, University of Chicago, 1941, during WWII under the USDA 'Hormone Project.' A USDA published report by Dr. Mitchell and Dr. Marth indicated that newly labeled 2,4-D 'could have selective weed control in turf.' Ms. Davis then did trials that reconfirmed Dr. Kraus' experiments."

"Beads of sweat collected on my forehead as I read his message. All I could think about was The Professor and his formidable greenkeeping knowledge."

The Prof's notes here are important additions. I have visited that Franklin Park area of suburban Boston while visiting the park, Frederick Law Olmstead's home, and the Country Club, all-important and historic. But I did not know of Ms. Campbell. Gertrude Farley is well known by many of us, and a friend of mine has a mint copy of her book, which I have read.

It seems a fair answer would include the women noted by the Prof.

Here are the Professor's comments about Question #7: "Piper and Oakley? These two individuals had the closest ties to greenkeeping in a scientific sense, and became closely entwined with Dr. Walter Harban, USGA vice president who pushed the USDA to devote more time toward golf course turf. Thus the first imitative on scientific turf management came about in 1915 from USDA's Piper and Oakley. The book 'Turf for Golf

Courses' was a compilation of chapters by Hugh Wilson, C.B. Macdonald and Dr. Walter Haban as well as Piper and Oakley. It was published in 1917, then in 1919 and 1929."

I still get excited thinking about the Jacobsen school for college students I attended in the summer of 1968 and the prototype RIDING triplex greensmower we were introduced to. The Prof responded to the question with "1927 and the Worthington Overgreen." His answer is right, of course, to the question I wrote. The Overgreen was a WALKING triplex greensmower!

Finally, the answer I reported for Question #10 came from the first line of "Specification for a Method of

Putting Green Construction," a USGA booklet authored by the Green Section Staff: In 1960, after years of scientific research sponsored by the USGA and several universities, the Green Section's "Specification for a Method of Putting Green Construction" were published. I think I might prevail on this question since The Professor considered it false because of the 1968 publication "Building Golf Holes for Good Turf Management."

The Professor deserves applause for his clarification and corrections. He literally has a lifetime of contributions to our profession and has provided leadership at all levels, including the very top. Many of you would like to know his identity; many have already guessed correctly, I'd bet.

That will be the next quiz's gimme question, which I will run past The Professor before anyone else sees it. GCI

To read Monroe's "Pop Quiz" column, enter <http://tinyurl.com/3ybgvch> into your Web browser.



Don't let root dysfunction take out your turf.

SPECIAL
REBATE SAVINGS
AVAILABLE
NOW!

Trust Segway® for season-long protection against destructive pythium root dysfunction.

By the time you spot pythium root dysfunction, the real damage has already been done. Safeguard your greens with the immediate and long-lasting control of Segway fungicide. Using Segway first in your rotation helps prevent costly root dysfunction problems all season long, so you can focus on more important things.

Start the season with the protection of Segway fungicide and prevent pythium root dysfunction from demolishing your turf. For more information about Segway fungicide, log onto fmcprosolutions.com or contact your local FMC Sales Representative or FMC Sales Agent.

Now Segway can save your course even more! Ask your FMC Sales Representative or Authorized FMC Sales Agent how you can take advantage of valuable rebate savings on Segway fungicide.

FMC

FMC Professional Solutions

1-800-321-1FMC • fmcprosolutions.com

SEGWAY
FUNGICIDE

WANTED

Poa: Dead or Alive?

There are two schools of thought about our friend *Poa annua* – try our best to help it survive through the summer, or try our best to crowd it out and be done with it.

by Jim Black

Global warming and climate change? Sunspots? Congress?

Whatever you want to pin the blame on, Summer 2010 went down in the books as a record-breaker. According to the National Oceanic and Atmospheric Administration (NOAA), the summer of 2010 (June-August) was the fourth warmest on record for the contiguous land mass that is these United States. Combined with seasonal rainfall amounts which either caused us to invent new golf course drainage systems, or created new ways to effectively teach employees the art of proper hand watering, turf maintenance was the bane of many superintendents' existence last year.

Either way you experienced it, lots of grass plants met their demise in 2010. And if you had a high percentage of *Poa* on your course, this was all the more evident. All the experts agree, except for the Pacific Northwest, *Poa* didn't really have a chance last year in most of the country.

There are two schools of



Top: Treated *Poa* and clumpy rye. Middle: *Poa* and clumpy ryegrass. Bottom: *Poa* seed head control. White block is the untreated area.

thought about our friend *Poa annua* – try our best to help it survive through the summer, or try our best to crowd it out and be done with it.

KEEPING POA ALIVE

As much as we may lament the trials and tribulations of co-existing with *Poa* (new name: *Poa trivialis y tribulationes*), some courses – either due to preference, budgetary constraints, sheer *Poa* population, or some other reason – have no other choice but to do their best to keep *Poa annua* alive. Keep in mind that the majority of the US Open Championships for the last 10 years have been played on *Poa annua* greens, so it can't be all bad, right?

Certainly we can plot and plan *Poa* survival tactics for the coming summer of 2011, but on what do we base our strategies? Average? I'm convinced there is no average since summer weather extremes are the norm across the country. "Average" is just a figment of our collective turf management imaginations.

According to Zac Reicher and Roch Gaussoin, professors at the University of Nebraska-Lincoln's department of agronomy and horticulture, the practice of proper cultivation will be the key to your success, just be very mindful of its timing and frequency. For example: to create a really solid stand of *Poa*, aerate in the spring and fall to bring more seeds to the surface to encourage more *Poa* germination. Summer aeration, on the other hand, can expose shallow roots to temperature extremes which can lead to *Poa* failure.

Other cultivation practices that encourage a living stand include:

- **IRRIGATION** – Lighter, more frequent irrigation to keep the shallower roots of *Poa* cool and hydrated. If you have staffing problems, but have proper drainage and a reliable irrigation system, you may be able to get

away with setting up several syringe cycles throughout the day. Keep in mind though – proper hand-watering will always be more efficient and effective.

- **MOWING** – You have to be prudent when summer stress sets in when it comes to your mowing schedule and procedure. If it's possible at your club, skip a day of mowing, only perform a clean up pass every other day, and switch to walking mowers (if you don't already) if time/budget allows. Always collect clippings.

- **DISEASE CONTROL** – Be sure to include in your fungicide program controls for summer

“Either way you experienced it, lots of grass plants met their demise in 2010. And if you had a high percentage of *Poa* on your course, this was all the more evident.”

patch disease and anthracnose, along with your regular dollar spot/brown patch/pythium regimen.

- **VERTICUTTING** – Combined with light topdressing helps to reduce compaction and encourage root production. Healthier roots will be key going in to the summer months. Verticutting also helps to reduce seed head populations, making for smoother putting surfaces.

- **FERTILITY** – Spring and fall nitrogen is critical when annual bluegrass is most aggressive, but it is also a good idea to apply light, liquid applications during the summer months as well to keep the plants active.

- **GROWTH REGULATION and SEED HEAD SUPPRESSION** – Now comes the fun part. If you are going to choose to live with and encourage *annua* | bluegrass, you'll have to have a seed head control plan in place for the annual biotypes. Some of the products in today's market include Embark T&O

(mefluidide), Proxy (ethephon), Trimmit (paclobutrazol), and Primo (trinexapac-ethyl).

Timing of these products in respect to seed head emergence is ultra-critical, and a solid course of action is to consult with your local reps and extension agents to narrow your application dates down based on degree days, historical data and physical observation. A huge upside is the theory that suppression of seed heads creates heartier plants due to the misdirection of energy away from seed production and into plant reserves.

Kevin Hicks, superintendent

process. If you prevent or limit that process, it stands to reason that energy can be used for other processes in the plant.”

When Kevin was working at clubs in Arizona and Boise, ID, he was in an anti-*Poa* phase. His strategy was to let the *Poa* go through its seeding process in the spring with the understanding it would be “out of gas” by the time the summer stress rolled in, thereby encouraging its demise. “When you boil it down,” he says, “it is a matter of manipulating the plants to perform when and how you want them to.”

Doug Obermann, turf and ornamental products manager with PBI-Gordon, explains that Embark T&O is one of the most economical seed head control products on the market with a cost per acre averaging less than \$20.

“At 3.2 percent AI,” Obermann says, “there is no label prohibition in regards to greens. But be careful with the Embark 2S. It's seven-times stronger at 28 percent AI and cannot be applied to putting greens.”

“Application timing is most critical,” he explains. “Watching degree days, or using an ‘indicator area’ on your course that is a little warmer will help you decide the best time to spray.”

Obermann also talks about “bronzing,” or the discoloration that comes along with most control products. “It's usually gone in about seven days,” he said. “You can mask it by including iron in the tank.”

Hicks says of the bronzing effect, “The bronzing is better than the white seed heads, and most golfers don't notice anyway.”

INSECT CONTROL

Be sure to have a preventative insect control program in place as well, especially if there is a history of *Hyperodes* weevils (*annua* | bluegrass weevil), black turfgrass atenius, white grubs, nematodes, and any other insect

TURF MAINTENANCE

that may feed on the plant or root structures.

TRAFFIC CONTROL

If your layout allows, use good traffic control methods to control cart/foot traffic, especially around the greens, encouraging players to alter their access to the putting surfaces from day to day. This will help to eliminate compaction and repetitive stress on the plants.

THE STRATEGY FOR ELIMINATION

First and foremost, to successfully have a plan for *Poa* elimination, you'll need to be sure it is just that – a well-thought-out, well-funded, well-communicated plan. Depending on which stage of the program you're in, if you miss an herbicide application or an aeration gets off-schedule by a couple weeks, you could have a major setback in your progress.

Control and elimination of annual bluegrass comes mainly in the form of pre-emergence herbicides, post-emergence herbicides, and growth regulators.

Stan Zontek, director of the Mid-Atlantic region of the USGA Green Section, has seen many turf managers achieve great *Poa* control success with long-term growth regulation programs that include a season-long regimen of Cutless or Trimit growth regulation products. "The key," Zontek explains, "is to begin your program in the spring when growth begins and follow through with the program into the fall when the grass stops growing. Patience and persistence, without the use of bio-stimulants, has produced some pretty amazing results."

From Professors Reicher and Gaussoin of UNL: "Pre-emergence herbicides applied in early fall are highly effective on the annual biotypes of annual bluegrass, as long as they are applied in early September prior to the germination window (Dernoeden, 1998.) The longer



Kevin Hicks (far right), discusses his *Poa* program with regional PBI-Gordon reps Mike Sorenson (left) and Trevor Radford (middle).

DOLIG OBERMANN/PBI-GORDON

“Patience and persistence, without the use of bio-stimulants, has produced some pretty amazing results.” – STAN ZONTEK, USGA

lasting herbicides prodiamine, dithiopyr, or pendimethalin will work for this, and a second application in November, December, or the following March may be required to insure control of spring-germinating annual bluegrass.”

For postemergent control, Bayer produces the widely popular Prograss (ethofumesate). Three applications in the fall spaced two weeks apart has been the norm, but there have been reports of inconsistent control at rates safe for Kentucky bluegrass or creeping bentgrass (Dernoeden and Turner, 1988).

Another postemergence product is Velocity (bispyribac-sodium) from Valent. Effective for

control in tee and fairway height creeping bentgrass, Velocity becomes more effective at temperatures over 70F, so know what your percentage of *Poa* coverage is in any treatment area.

Paul O’Leary, golf course superintendent at Walden Country Club in Crofton, Md., shared a story from a previous club. “We decided to try it on a ryegrass championship tee that actually had much more annual bluegrass than I realized,” he says.

“Luckily, not too many club members played from the back tees, so when the Velocity took the 70 percent of the tee that was *Poa* out, few people were affected.,” O’Leary adds. “It actually turned out to be a good thing

because I was able to make that tee a pure stand of ryegrass.”

The age-old trick in the south and transition-zone states using warm-season grasses is to use glyphosate products on dormant stands of turf.

But PBI-Gordon’s Obermann warns, “Bermuda can be set back a couple weeks if it’s not totally dormant, and some superintendents are moving away from this practice due to the risk factor. But spraying on a warm winters day will definitely kill your *Poa*.”

Other products effective on *Poa* include PBI-Gordon’s new Katana (flazasulfuron) Bayer’s Revolver (foramsulfuron), Monument (trifloxysulfuron) from Syngenta, and Tranxit (pyridine-sulfonamide) from DuPont.

Remember to always read and follow label instructions. **GCI**

Jim Black is a freelance writer and turfgrass manager living in the mid-Atlantic.