



THE Facts ON Frost

GREEN MAINTENANCE GUIDE

Riding in my golf car on cold, frosty mornings always brings a feeling of rejuvenation. The clean, fresh air and bright sunlight lift my spirits and clears my head. The reflection of a million tiny rainbows

looking back at me from the crystalline turf reminds me of the wonders of nature and the good fortune of being in this business. "Those poor schlubs on the beltway heading to the city never get to experience this," I think to myself.

I zip my golf car up to the clubhouse and bounce out of it in an excellent mood — thankful for the day, for the great game of golf, for my luck to be where I am today. Expecting to be greeted with the same, I pull open the pro shop door and am met with ...

"Can we go yet?"

"Waddaya mean, frost delay?! There wasn't any frost at my house!"

"Can I let them go yet? What about 8:30? Do you think that will be OK? Huh? Huh?"

Peeking out the pro shop window, I see a golf car heading down No. 1, hightailing it out to the second tee in order to sneak out before the "official" starting time of "No-frost: 30."

"What about those two?" I hear. "They get to go out. Why can't we all go?"

Like a frozen icicle that can't hang onto the gutter anymore and breaks away to shatter on the sidewalk, my insanely optimistic mood is shattered by this onslaught of demands to play golf.

My experience in this business has taught me a few simple rules about golfers:

1. Rain or shine, winter or summer, golfers step on

Golfers get hot under the collar when the ice-cold crystals prevent them from playing. What's a superintendent to do?

By Jim Black CONTRIBUTING EDITOR

the first tee of the day with the hope and anticipation that the rounds of golf they are about to play may just turn out to be the best rounds of their entire lives.

2. Many (dare I say most?) golfers don't think about tomorrow when they're playing golf. The only thing that matters is this moment, this round, this score. I have found this to be the reason behind the divot and ball mark dilemma.

3. For the most part, golfers want the superintendent and crew to do everything possible at all times to make the golf course as perfectly playable as possible. This, of course, includes guarding from frost damage, aerification, topdressing, fertilizing, spraying, hand watering, mowing, etc. There's only one small catch: DON'T DO IT ON THE DAY THAT I'M PLAYING!

These rules come and go through my mind in an instant as I formulate my answers and prepare my prediction as to when the frost will melt enough to allow play. As diplomatically as possible, I let our most honored paying customers know when I feel in my best expert guess that it should be safe to play, then speed off in my utility vehicle in the hopes of

regaining my good mood somewhere else in my day.

I think to myself, "If only I could help them understand."

Send in the experts

"Why can't we play on frost?"

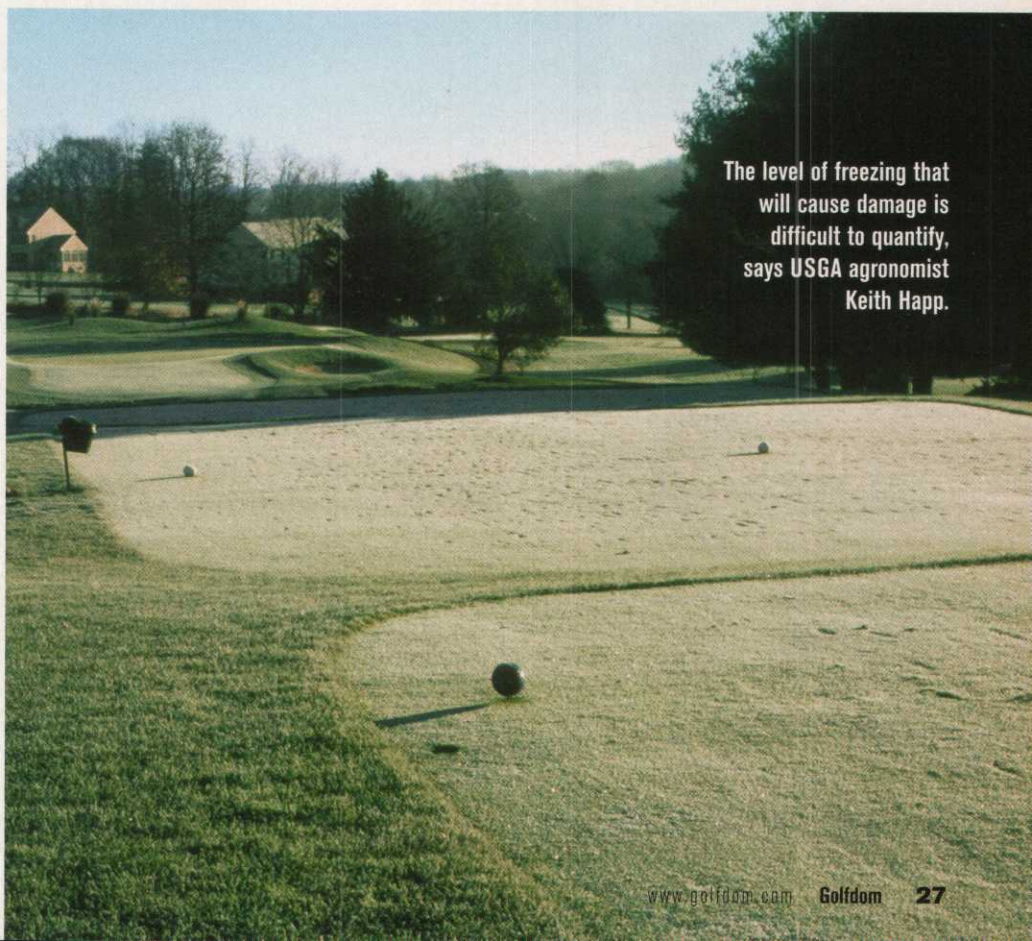
This is a simple enough question, but the answer might not seem so simple — especially to someone who doesn't want to hear it. I contacted the United States Golf Association's (USGA) Green Section to see if its staff could help with the answer.

Keith Happ and Darin Bevard, both senior agronomists for the Mid-Atlantic Section, were more than happy to help out.

"Physiologically speaking," Happ says, "there is the potential damage to turf from the cells rupturing as they are exposed to traffic stress when frozen. This damage is irreversible. Yes the plant will eventually grow out of it, but surface quality will be affected and playability will suffer.

"The level of freezing (shade, elevation, grass type, soil type, soil moisture) that will cause damage is difficult to quantify," Happ adds. "There are just too many variables to consider.

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The level of freezing that will cause damage is difficult to quantify, says USGA agronomist Keith Happ.

The Facts on Frost



Contrary to popular belief, frost is not frozen dew.

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"While there may be times when brown grass does not result, there still is damage that predisposes the plant to other problems."

We can all understand Happ's point, but what about the guy who says: "I've stepped on frosted grass plenty of times before and didn't see any footprints or damage at all. I don't believe you."

Bevard offers up this interesting analogy.

"Consider the flu or common cold. Obviously, when you go to a supermarket, sporting event, conference or fly in an airplane, you're constantly exposed to germs. However, you don't get infected with a cold or flu every time that you engage in one of these activities.

"There is a variety of variables that must come together when you're exposed to these germs for you to get a cold. With all of the money spent medically on these issues, we still do not know what those variables are.

"When you're dealing with living organisms, it can be difficult to pinpoint the catalyst for problems," Bevard continues. "I always tell people that you may walk on frost eight out of 10 times and never see damage. The problem is I can't tell you when the two times you will cause severe damage will be. It's like Russian roulette."

Meteorologically speaking

Understanding what frost actually is was my next logical step in trying to find out why it



can be so devastating to golf course turf if not treated with respect. Also, I was curious as to why there can be frost on the grass when the temperature has risen above freezing.

Interestingly enough, "surface temperature" or "ambient temperature" is an official measurement that is taken between 4.1 and 6.6 feet off the ground. Since cold air is more dense, it will settle below what is the measured surface temperature and keep the air at true ground level below freezing after the thermometer rises above it. This would also explain why frost is more prevalent in the valleys and hollows of the golf course.

And, contrary to popular belief, frost is not frozen dew. According to "The Weather Doctor," (www.islandnet.com/~see/weather/whys/frost.htm), "frost is a covering of ice crystals on the surface produced by the depositing of water vapor to a surface cooler than 0 degrees Celsius (32 degrees Fahrenheit)." Since the water vapor changes directly from a gas to ice, dew technically isn't a factor in the equation.

The USGA's Bevard also had this to add to the scientific equation: "The level of plant hardening is a major component. I believe a hardened, frosted plant will sustain less damage than one that has not completely hardened because there is more water inside the cells in the actively growing plant."

Superintendent knows best

Every superintendent knows his course's microclimate best and what it can handle as far as the frost goes. Sometimes it's a matter of science and nature, but other times common sense kicks in.

Paul Masimore, certified superintendent of Marlton Golf Club in Upper Marlboro, Md., offers a logical and common-sense approach.

"Have you ever tried to putt or even wanted to putt on a frosted green? It is not a good, quality playing surface," he says. "My feelings are, if I can't send my staff out to mow, roll or blow off the surface, then it is not

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"The only visual damage I've seen are footprints," one superintendent says.

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playable. I like to see two-thirds of my first green frost-free before I send my staff out for maintenance. After we have cleared the third green, I let play out. If I am only blowing the surface clean and no other maintenance, I let play out as soon as I clear the first green.

"The only visible damage I've seen are footprints. I've never gotten down with a scope to look at the turf with footprint damage to see how extensive the damage might be. And just imagine what you would hear from some golfers about having to putt through a very obvious footprint.

THE DAMAGE
POTENTIAL TO
THE TURFGRASS
CLEARLY
OUTWEIGHS
THE NEED TO
"LET THEM GO."

"I was taught not to let anyone on frosted turf, and I have not varied from that policy during my career," Masimore adds. "If one considers how frost is formed, then it's obvious that damage can be serious. Letting play out for usually a small number of golfers just does not justify the risk for potential damage. If the course was booked solid for play

during that time of year, then maybe I would look at other options for getting play out faster."

So you can see, the damage potential to the turfgrass clearly outweighs the need to "let them go" because they're pressuring you. The fact that caring for a golf course is a year-round task gets lost on the golfer who has called in sick for the opportunity to tee it up.

A golfer will never know that because he damaged the turf that day by walking on a frost-covered green, the turf will have a harder time coming out of dormancy two months down the road and it will be the first grass to succumb to disease when the conditions are right for it. ■

Jim Black is a turf professional and contributing editor for Golfdom.

IT'S A European

Golf course managers across the big pond eradicate *Poa annua* by starving it of fertilizer and water. Could this turf management technique work in America?

By Larry Aylward EDITOR IN CHIEF

The greens are hungry at Essener Golf Club in Essen, Germany. In fact, they're starving.

But Seve Schmitz, the golf course manager at Essener, has the bentgrass/*Poa annua* greens on a rigid diet for a reason. He's trying to rid them of the dreaded *Poa annua*. Schmitz despises annual bluegrass like many American superintendents do.

Maybe more.

When Schmitz does feed the greens, he uses a type of fertilizer the *Poa* doesn't like.

Yes, it's kind of like feeding brussel sprouts to a 5-year-old. The kid will stare at them and dally at them with his fork, but he won't eat them.

Schmitz is also keeping his course's greens parched, as part of his *Poa*-riddance program. The *Poa*, which doesn't have long roots to draw deep into the soil profile for water, doesn't like this procedure either.

So Schmitz is here to tell American golf course superintendents that he *can* make *Poa* go poof on his course's greens by cutting back sharply on fertilization and irrigation. "It's a common practice in the United Kingdom," Schmitz says.

Schmitz, who implemented the program at his course about two years ago, is sold on its success. Generally, he says a superintendent can reduce the *Poa* on his course's greens by 80 percent to 90 percent in up to five years.

Now, for the \$65 million question: Could Schmitz's program work on U.S. golf course greens to eradicate *Poa*?

Schmitz says it would, but he notes that the United States Golf Association (USGA) Green Section doesn't advise American superintendents to take such an approach to kill *Poa*.

"They're worried the bentgrass will suffer," Schmitz says of USGA agronomists.

But he quickly adds, "I can assure you the first grass to suffer will be the *Poa*."

Stanley Zontek, director of the USGA Green Section's Mid-Atlantic Region, is familiar with Schmitz's agronomic process to control *Poa*.

"We categorize it as the acid theory," Zontek says, noting the old practice that aims to create acidic conditions that favor certain turf varieties. "It goes back almost 100 years."

Zontek classifies Schmitz's program to rid *Poa* as a variation on the acid theory. While Zontek doubts the program would be a good fit for *Poa* control in the United States, he doesn't dismiss it completely.

"We won't say it won't work," Zontek says. "It just produces a quality of putting green

GREEN MAINTENANCE GUIDE

Thing

that we're not sure the American golfer is ready to accept."

Jim Snow, national director of the USGA Green Section, says Schmitz's program wouldn't work at most American courses for a variety of reasons. Many U.S. golf courses are subject to much more heat and humidity, closer mowing heights and heavier golfer traffic than European courses, Snow says. Under such conditions, he says disease problems would be exacerbated if the turf was starved of nutrients and water. Hence, significant turf loss could occur.

Snow says the method might work "here and there" along the cool New England coast on turf that doesn't receive much play, or at courses where golfers don't mind the appearance of their greens. "But most courses in the United States don't have that luxury," he adds.

Golfers have accepted the method at Schmitz's course, however. Schmitz, who has been in the business for 35 years, has spent the last 17 years of his career at Essener, a 55-year-old private club. The parkland-style course, with many trees and a clay-based soil, is one of the oldest in Germany.

The course's greens are comprised of Heriot and Bardot varieties of colonial bentgrass. And of course, there's the unwanted *Poa*. Schmitz and the members at Essener dislike *Poa* because it disrupts green speed. Ahh, green speed — it's an issue in Germany like it is in America.

Not surprisingly, Schmitz says

Essener's members travel to the United States, mostly Florida and California, to play golf on courses which have fast greens. Then they return to Essener and ask Schmitz to speed up the greens there.

Schmitz says he's been able to convince members that green speed can be increased — not by mowing the greens shorter but by making the greens more consistent from a playability standpoint by converting them to almost one turf variety exclusively.

"Our standard height of cut is 4 millimeters (0.16 inches),"

Schmitz says.

"We're not

going down to the 2.5-millimeter height of cut (like courses in the United States)."

Problem is, the *Poa* on the greens, when mowed at 4 millimeters, prevents consistency of the greens. "But if we have a high population of bentgrass in the greens, then we have a very consistent roll," Schmitz stresses.

When they're fertilized, Essener's greens are fed nitrogen almost exclusively. Phosphates and potassium are used on occasion. Schmitz also uses highly acidic ammonium and iron sulfates, which the *Poa* doesn't prefer. The bentgrass does, however.

Schmitz fertilizes the greens when the *Poa* appears especially weak and thin. Then the hungry but still healthy bentgrass reacts swiftly to the feed, but the exhausted *Poa* doesn't. Hence, the bentgrass outperforms the *Poa*.

The *Poa* also can't withstand the infrequent waterings, Schmitz points out. "The

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Seve Schmitz, a golf course manager in Germany, stands by his method to control *Poa annua* on greens.



It's a European Thing

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shallow rooting grass will die three times faster than a grass that can reach down with its roots and pull more moisture," he says.

Schmitz and his crew overseed the greens monthly with Browntop bentgrass. They verticut the greens in two directions prior to overseeding. They topdress the greens after overseeding, and brush it in.

Schmitz notes the greens can't be groomed heavily for at least two weeks after overseeding.

Yes, the greens don't look healthy at times. The bentgrass is able to retain its blue-green color, but the yellow *Poa* looks like it's ailing. "Your membership must be aware that the greens will look a bit sick at times," Schmitz says.

Schmitz has been preaching "consistent playability of greens" to members as the way of making them roll quicker. "If we have decent fine grass and not a bunch of spongy *Poa annua* biotypes, then the greens will putt better," he says.

Some U.S. superintendents have tried facets of Schmitz's *Poa* control program, says Zontek, who adds he recently spoke to a Virginia superintendent who placed his course's greens on a modified acid theory. The course had new greens, and the superintendent planned to fertilize them with ammonium sulfate to drop the pH level and suppress disease.

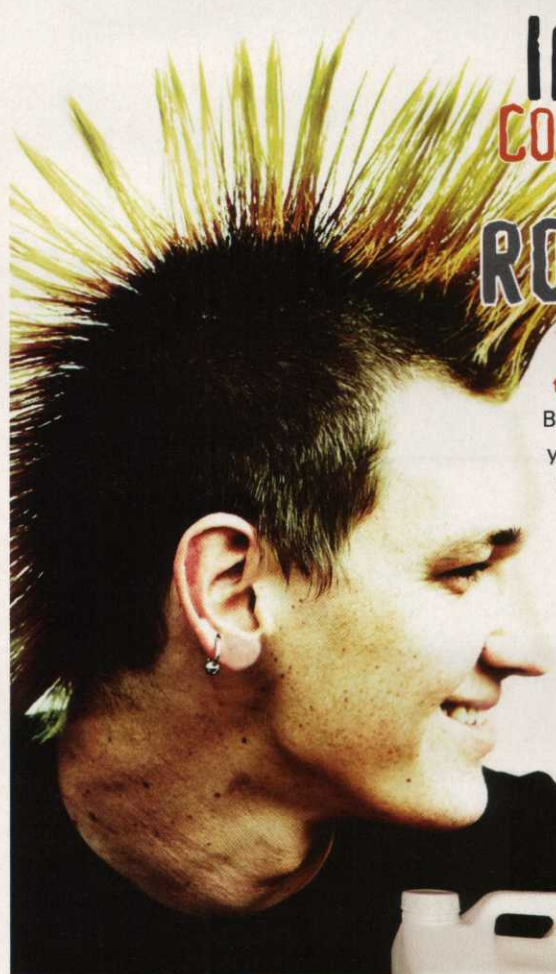
ON THE VERGE OF

It's been a long time coming, but its arrival date may be on the horizon. If all goes well on the regulatory end, Roundup Ready creeping bentgrass, a joint project between The Scotts Co. and Monsanto Co. that has been in development for several years, might be available for sale next year, Mark Schwartz, senior vice president of seed operations for Scotts, recently told *Golfdom*.

Roundup Ready creeping bentgrass is a genetically modified turf. Scotts and Monsanto inserted a gene to modify the plant's DNA to make it resistant to Monsanto's nonselective herbicide Roundup to make it easier for superintendents to control turf weeds, especially *Poa annua*.

In January, Schwartz said he hoped the government would deregulate the product in the next six to nine months. He said the U.S. Department of Agriculture indicated it would publish an Environmental Impact Statement (EIS) on the product between now and mid-June. "Effectively, the EIS will point out any environmental risks or lack thereof, and should have a recommended course of action," Schwartz said, noting the Environmental Protection Agency must also sign off on the product before it can be sold.

Roundup Ready creeping bentgrass has sparked controversy the past few years. Bill Rose, chairman of Turf-Seed,



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"But it's a resort golf course and costs more than \$100 to play," Zontek says. "So [the golfers] like the greens mowed at one-eighth of an inch."

The sticking point is the height of cut. Zontek says U.S. golfers demand fast greens made by a short cut, not just consistent ball roll. He adds that Schmitz's *Poa*-control method allows greens with consistent playability, but they are dense.

Zontek says many European golf course managers and greenkeepers adhere to the process because they believe it's part of traditional greenkeeping — not the modern-greenkeeping methods

that permeate through golf course maintenance in America.

"You mow high, you don't water and you don't fertilize — it's a links-management type philosophy," Zontek says. "It's like Fords and Chevys — people are passionate about one or the other. You've got the traditional greenkeepers, and you've got the modern greenkeepers."

Another reason the program might not work in America has to do with the bentgrass. Although both colonial and creeping bentgrasses can withstand less fertility than *Poa annua*, colonial bent remains more vital against less fertility than creeping bent. And as Bob Brame, director of the USGA Green Section's North-Cen-

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Deregulation?

has voiced his concerns about the glyphosate-resistant turf cross-breeding with non-glyphosate-resistant turf.

In 2004, *The New York Times* reported that a "new study shows that genes from genetically engineered grass can spread much farther than previously known, a finding that raised questions about the straying of other plants altered through biotechnology."

In 2002, Scotts and Monsanto temporarily withdrew their application for the approval of Roundup Ready bentgrass for commercial use in order to answer more questions the American Plant Health Inspection Service (APHIS) had about the turf variety. At the time Scotts said such a delay was common in the regulatory process.

Schwartz said "it's understandable" that it has taken so long to bring Roundup Ready creeping bentgrass to market. Because it's the first perennial turfgrass up for deregulation, it has received more scrutiny, he said.

"This is an important precedent, not just for Scotts, but for any company that may think about having a genetically enhanced turfgrass crop or other perennial such as shrubs or trees," Schwartz added.

— Larry Aylward



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It's a European Thing

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tral Region, points out, colonial bentgrass is the preferred variety on European golf course greens, whereas creeping bentgrass is the preferred variety on American greens.

However, colonial bentgrass can't stand as much player traffic as creeping bentgrass. And Brame stresses the colonial bentgrass, when starved along with the *Poa*, is especially vulnerable to turf damage caused by heavy traffic.

"This variety of bentgrass does not tolerate the heat and humidity of warmer climates nor close mowing," Zontek adds, noting that colonial bentgrass is adapted north of the Mason-Dixon line in the East and in some regions of the north-west United States. "Diseases like brown patch ravage colonial bentgrass."

Brame supports Schmitz's strategy to weaken *Poa* by keeping the greens on the thirsty side. Brame says the strategy is especially effective when used in com-

bination with plant growth regulators.

But Brame stresses that hand watering becomes an absolute if superintendents elect to do this. He brings this up because there are many courses where members restrict superintendents and their crews from hand watering during the day.

"They just don't understand the value of it, and they don't want to see the staff pulling hoses out to do it during the day,"

Brame says. Hence, a superintendent is forced to increase irrigation at night, which defeats the purpose of keeping the greens dry in the first place.

Schmitz admits the program "seems like a crazy way of greenkeeping," but he says it works. "We've had tremendous success with it. We already have greens with 85 percent bentgrass."

Schmitz admits the *Poa* will never be completely eradicated because it has a seed bank in the greens. "But we can live with 80 percent to 90 percent bentgrass," he adds.

While it's a successful way to control *Poa*, Schmitz says there are European greenkeepers who have lost their jobs because they haven't been able to execute the process properly. Timing and patience have everything to do with the program's success.

Zontek calls the program "management on the edge."

Someday, however, American superintendents may be forced to adopt a similar program to maintain greens if they are required by law to cut back on fertilizer, water and chemicals.

"Maybe in 30 years it will be a different story," Zontek says.

But for now, Snow says none of the USGA's 17 agronomists would recommend such an extreme strategy to control *Poa annua*, except in the most benign situations.

"Avoid overwatering and overfertilizing, yes, but grow healthy turf if you want to provide high-quality turf for your golfers and keep your job," Snow adds. ■



At Essener Golf Club in Germany, Seve Schmitz strives toward achieving consistent-rolling greens, not fast greens.

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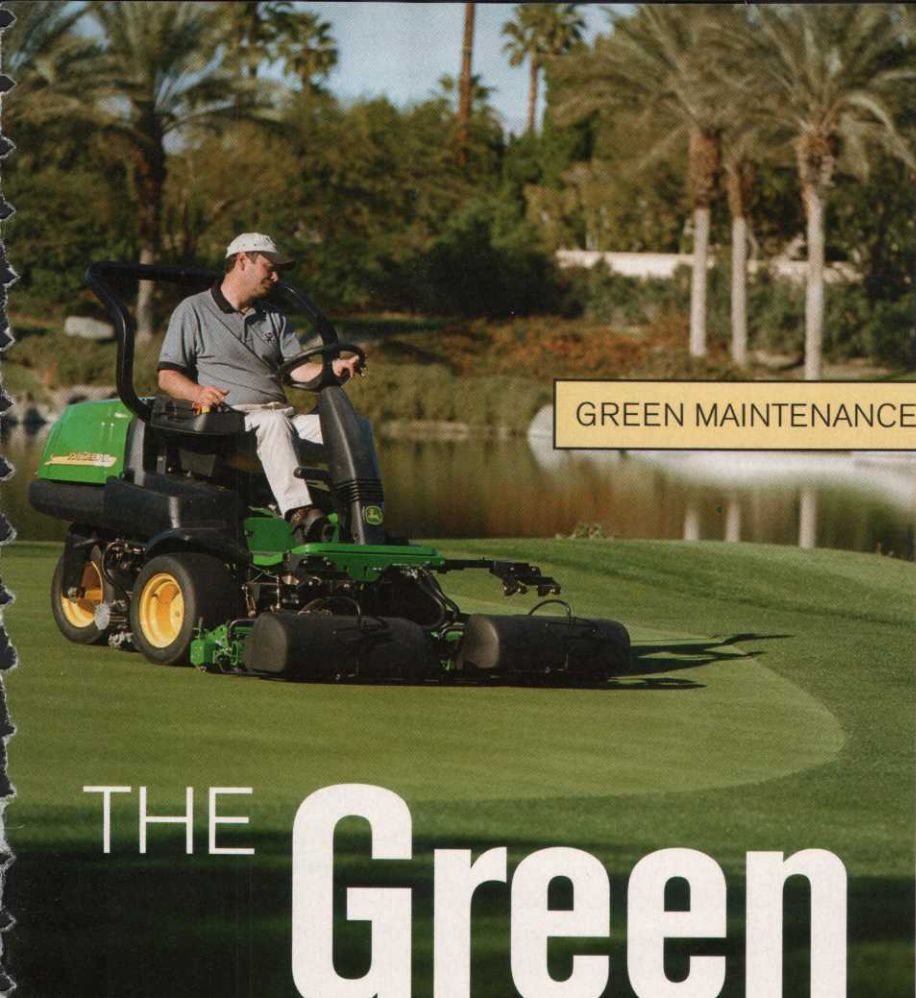
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the machine down approaching the edge of the green and minimize the effect on the clip rate and make your turns under control at a much slower speed," Buchko says. "Once you're lined up again, you can accelerate through the cut."

Two other elements of the InCommand control system are upgraded handles and clutch systems. The D-handle series serves as a common operating platform for all the company's walking greens mowers while improving operator comfort. The new clutch provides a smoother, more controlled en-

THE Green Mile

Mower manufacturers go the extra distance to enhance product lines

By Thomas Skernivitz MANAGING EDITOR

The quest to build the perfect greens mower is much like the quest to build the perfect green: It never ends.

Jacobsen and The Toro Co., two of the three major players in the equipment arena, announced upgrades in February at the annual Golf Industry Show. John Deere, meanwhile, continues to ride the year-old wave created by its release of the industry's first hybrid greens mower.

"They can get a whole lot better," Jeff Buchko, a product manager with Jacobsen, says of greens mowers. "From a cut perspective, there are lots of things we can do. But from an operator perspective,

(mower manufacturers) really have not addressed the needs of the operator for a long time."

Jacobsen intends to fulfill some of those operational needs with the addition of a speed control feature — the first of its kind, the company reports — on its PGM 22 and GK 500 greens mowers. The InCommand control system allows the operator, via a speed paddle on the handle, to increase and decrease the forward speed of the machine with minimal effect on clip rate.

"If you're cutting greens that have a very tight distance between the edge of the green and an obstruction like water or some sort of wall or tree, you can slow

gement of the cutting and traction system, the company says.

"The purpose of those three components is to give the superintendent more control of the machine as well as lending itself to make it easier to operate," Buchko says.

Toro has integrated the technology behind its Greensmaster Flex 21 greens mower into its Flex 18 model, available in July. A narrower 18-inch cutting unit, in combination with the Flex head technology, allows the Flex 18 to better follow contours, especially concave contours, than its predecessor.

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Jacobsen is adding a speed control system, with a speed paddle on the handle, to its greens mowers.

The Green Mile

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In turn, the bed knife position on the Flex 18 has been made less aggressive than the Flex 21 to reduce the bruising that could occur in severe undulation conditions. However, an optional bed knife is available to customers who still prefer the aggressiveness of the Flex 21.

Thus far, superintendents privy to use of the Flex 18 "love" the concept, Toro marketing manager Greg Janey says.

"They like the fact that it cuts, feels and operates similar to the Flex 21," he says. "They have reported less marking with the Flex 18 when compared to other mowers on the same green."

Toro has also added the Dual Precision Adjustment (DPA) cutting unit technology to the Flex 18 while eliminating the rear roller leveling adjustment.

Janey says the operation, control and maintenance of the Flex 18 are the same as the Flex 21. Meanwhile, the turf will

need a minimal amount of time to be trained to the new cut.

"When mowing in severe undulations, the Flex 18 will cut in areas that have previously been uncut," Janey says. "The result is a more consistent height of cut across your green, but because these areas have in the past been maintained at a higher effective height of cut — due to the inability of traditional mowers to get into and cut undulations — it will take a week or so to train the turf."

While the Jacobsen and Toro products are just reaching market, John Deere's 2500E hybrid greens mower has already

Toro's Flex 18 mower features a narrower cutting unit.



won over many superintendents during the last year. Todd Kauffman, the superintendent at Bay Harbor (Mich.) Golf Club, replaced his fleet of greens mowers last summer with six new 2500E machines; three for greens and three for tees.

"They've been great.

What I really like is that they eliminate the 102 hydraulic leak points, which is a major thing you worry about," Kauffman says. "They're quieter, which is nice, too, because we have a lot of homes by our green sites. (Noise) was a big complaint we heard, but you can actually run these at half throttle and mow your greens and still have the same reel speed." ■

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As much as an issue divides Republicans and Democrats, *Poa annua* divides those who try to manage it and those who try to kill it. For those trying to control it, straddling the issue may be the key.

Traditionally on warm-season turfgrasses such as bermudagrass, dinitroaniline herbicides have been used effectively for pre-emergence control of *Poa annua*, while the triazines and pronamide have been used for both pre- and postemergent control. Recently, a new class of herbicides — sulfonylurea — has been developed that is effective for *Poa annua* control on bermudagrass and other selected warm-season grasses.

Although sulfonylurea herbicides have been around since the late 1970s, the new products have high activity at low rates with extremely low environmental risk. It appears that sulfonylurea chemistry can be effectively altered to target specific weeds. The potential exists within this herbicide class for future product development.

For permanent cool-season turfgrasses such as creeping bentgrass, perennial ryegrass and Kentucky bluegrass, pre-emergent control of *Poa annua* has been marginal at best. Postemergent control for several years was limited to ethofumasate primarily used on perennial ryegrass fairways. A new herbicide, bispyribac-sodium, which is an ALS (acetolactate synthase) inhibitor similar to sulfonylurea, has come to the market showing effectiveness for controlling *Poa annua* in creeping bentgrass.

Although these new herbicides show great promise, potential variability in controlling *Poa annua* exists. One cause of variability may have to do with learning how to use them. Rate, timing, application methods and environmental conditions often influence efficacy.

However, the greatest variability in control is because of *Poa annua* itself. With repeated use of the dinitroanilines, triazines and pronamide, *Poa* resistance or tolerance has occurred. Also, a population shift from annual to more perennial species has occurred.

The effectiveness of new herbicide technology will be based on knowing why and what type of *Poa annua* is present. Globally, *Poa* is

Attack *Poa* on All Fronts. Then What?

BY KARL DANNEBERGER



THE KEY
TO LONG-TERM
CONTROL
IS REALIZING WHY
IT'S THERE
IN THE FIRST PLACE

GREEN MAINTENANCE GUIDE

adapted to a range of climatic conditions. It is one of the most widely dispersed in the world, located on all seven continents. Regionally, *Poa* behaves primarily as a true annual. But a more perennial behavior occurs the farther you move into the northern United States and Canada.

On a smaller scale, variability exists on golf courses. Studies have found that *Poa annua* varies considerably from greens, fairways and roughs on a single golf course in the temperate regions of the United States. Gene flow can occur among greens but is restricted among fairways. The potential for “blending” and “isolation” increases the potential for resistance or tolerance.

Poa annua is a formidable opponent. If every herbicide that was labeled for *Poa annua* control in the last 70 years worked, *Poa annua* would be on the endangered species list.

The key to long-term control is realizing why it's there in the first place. Management practices targeted for making conditions less favorable for *Poa annua* will in turn make herbicide applications more efficient and effective.

I'm reminded of when World War II Japanese leaders asked Admiral Yamamoto if he could destroy the U.S. Navy's Pacific fleet at Pearl Harbor. Yamamoto said he could and added he would be able to freely sail the Pacific Ocean for six to 12 months. But then what? Yamamoto's point was, after attacking and destroying the U.S. Navy, it would eventually come back and “do what we do.”

After attacking your *Poa annua*, if you do not know why it was there in the first place, then what?

Danneberger, an Ohio State University turfgrass professor, can be reached at danneberger.1@osu.edu.

ON THE Verticutting Edge

You could say that more golf course superintendents are taking the vertical leap — that is, they've turned to vertical mowing to help tend turf.

Make no mistake, though. This jump is no leap of faith. Verticutting, the thinning of turfgrass by blades or wire tines that cut perpendicular to the soil, is a proven maintenance technique used to achieve healthy turf.

There are two types of verticutting — a shallow cut and a deep cut. Both promote lateral and vertical growth by slicing stolons and rhizomes. A deeper verticut, however, removes more material, which allows for sand to fill in spaces previously taken up by organic material.

Brad Aldridge, a product manager with John Deere & Co.'s golf group, says verticutting is getting more popular across the board — from municipal to public to private courses. A big reason is the demand from golfers for improved playing conditions. That means superintendents must strive to provide tournament-like conditions, even when there are no tournaments. And they've realized that verticutting can help them do that to satisfy golfers' expectations, not to mention keep up with the competition.

There are myriad benefits to verticutting, which has also fueled its popularity.

More superintendents add vertical mowing to their maintenance programs to improve golf course conditions

By Larry Aylward EDITOR IN CHIEF

Jeff Buchko, a product manager for Jacobsen, says more university researchers have concluded that verticutting is a cultural practice that's critical to turf care. Turf that is verticut can withstand the threat of disease and harsh weather better. Simply put, verticutting stimulates growth.

Not only does verticutting remove thatch, which is a breeding ground for turf disease, but it also provides channels to allow moisture and oxygen to get into the rootzone, says Tony Ferguson, the senior marketing manager of Reelmaster products for The Toro Co.

Another reason for verticutting's increased popularity is that turf recovers quickly from the process, so

golf course play isn't disrupted.

"You're cutting slits in the turf, and those slits will fill in the first time you mow the turf with a greens mowers," Aldridge says. "A lot of times you can verticut and mow, and golfers won't know you've been there."

Verticutting is not just a greens thing anymore, Ferguson points out. Like many turf maintenance procedures, such as topdressing and aeration, verticutting is also performed on fairways. "That will continue to some degree as budgets and manpower allow," Ferguson adds.

Jacobsen introduced its Verticut 214 a few years ago with fairways in mind. Its

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On the Verticutting Edge

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84-inch cutting path and 4-mph cutting speed covers more than 3 acres an hour for high productivity, the company says. It also features three cutting heads that penetrate soil up to 3 inches to quickly remove thatch and debris.

Aldridge has noticed a trend where more superintendents are getting more aggressive with their verticutting practices on newer turf varieties (which form thatch quicker) by combining them with aerification. They do this during the prime growing season when recovery is faster. They will aerify to maximum depth and then verticut immediately after to remove even more material.

Aldridge says John Deere is capitalizing on the trend and recently released a new attachment that enables both processes to be performed at the same time. Deere's Aercore 800 is equipped with the attachment. "You'll be able to finish the prac-

WHILE VERTICUTTING IS
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tice much quicker, and it will also save on labor to complete it," Aldridge says.

As verticutting gets more popular with superintendents, Ferguson says more suppliers are entering the verticutting arena with new products.

"It's all part of a system of turf care management that allows superintendents to maintain their turf to a higher level," he adds, noting that verticutting is also

getting more popular in sports turf care and is even gaining a presence in the lawn care industry.

While verticutting is a simple procedure, there are a few tricks of the trade that operators should keep in mind. While it may sound elementary, Buchko says it's important to keep a constant eye on the equipment and its many moving parts while it's in operation to ensure it's functioning correctly and safely.

Both the verticutter attachment and greens mower verticutters should spin in the opposite direction that a reel would, helping to bring up more material and yield a more aggressive and consistent verticut, Aldridge says.

Ferguson advises superintendents to perform verticutting on a routine basis. Don't do it when you have a problem, such as turf disease caused by too much thatch; do it preventively to avoid such problems. ■

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