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STUEDEMANN IS THE MAN

As his time at TPC Deere Run
closes, a new journey begins as a
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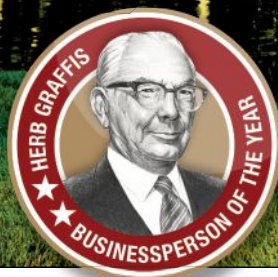
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Hard work in the Network

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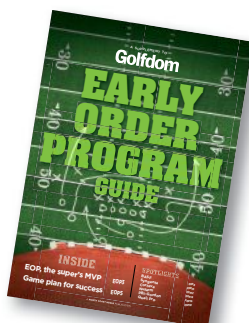
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2021

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"Starting this year, we're going to combine our November/December issues into one giant-size megaissue, replete with everyone's favorite dog calendar (yeah, I said it)."

SETH JONES, Editor-in-Chief & Associate Publisher

Breaking the rules

Above everything else, superintendents are problem-solvers. After observing them for 20-plus years, you'd think I would have inherited some of their better qualities. But I'll admit, I can be a slow learner.

A superintendent once told me how he overcame the small nagging problems on the course that seemed menial individually but together greatly detracted from the aesthetics of the course. He imagined the small problem — say an abandoned hose left in the woods — as a low-hanging dead branch. Every time he drove by, he imagined hitting his head on it. Hit your head enough times, and you're going to finally get mad enough to pull over and fix it.

I've been hitting my head with the November and December issues of *Golfdom* for years. These end-of-the-year issues are usually on the small side and lacking in real news, as most of the major announcements in the industry are on hold until January. Plus, there are concerns associated with the timing of the issues hitting mailboxes.

While some areas of the country welcome the December issue of *Golfdom*, in other climates, that magazine might go unnoticed for a while.

We believe we've found a fun way to overcome these two low-hanging dead branch issues and make the place shine even better.

Starting this year, we're going to combine our November/December issues into one giant-size megaissue, replete with everyone's favorite dog calendar (yeah, I said it) and the annual State of the Industry report. We're also going to add some more fun to the issue (more on that soon).

And in the spring of 2023, when courses are ramping up their crew size for the season, industry announcements are coming right and left and we're rushing to get readers both a PGA Championship preview and a U.S. Open

preview published within weeks of each other, we're going to publish a bonus issue of *Golfdom*. This bonus issue will spotlight as many professional tournaments as we can cram in there and the maintenance crews behind the tournaments. We're calling this issue the 2023 Tour Guide special.

These adjustments to our publishing schedule might not be as momentous as calling Rees Jones and having him scour old black-and-white photos for a multimillion-dollar course restoration. But in our world, it's pretty significant, and I'm excited to finally share the idea.

Now here's the fun part for the November/December


giant-size megaissue and where you come in.

Golfdom is not my magazine — I do not own it. It is also not owned by an association. There is no board of directors. *Golfdom*, my friends, is a family-owned magazine. And you and I are both in that family. And as a family-owned publication, I don't mind saying we need your help.

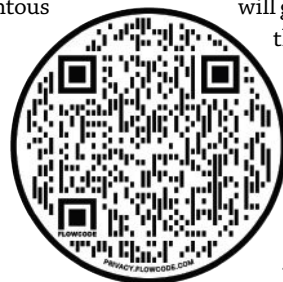
In the new combined November/December issue, we're going to include a reader-created list of the best products of 2022. We're also going to include a list of readers' favorite products of all time. We think this will be a fun year-end feature to complement our State of the Industry reports. We see it as an entertaining way to get feedback and insights from a bunch of readers, not just on how the 2022 golf season went but on some of the best tools the industry has to offer.

On this page, you'll see a QR code. **Scan the code and answer our three-question survey. It'll take all of two minutes.** And then my crew

will get to work pulling this new feature together.

We hope this change gets your crew and our crew all on the same page ... Isn't that the very definition of the word '*Golfdom*,' after all? All of us in the industry, working together. 

Email Jones at: sjones@northcoastmedia.net.

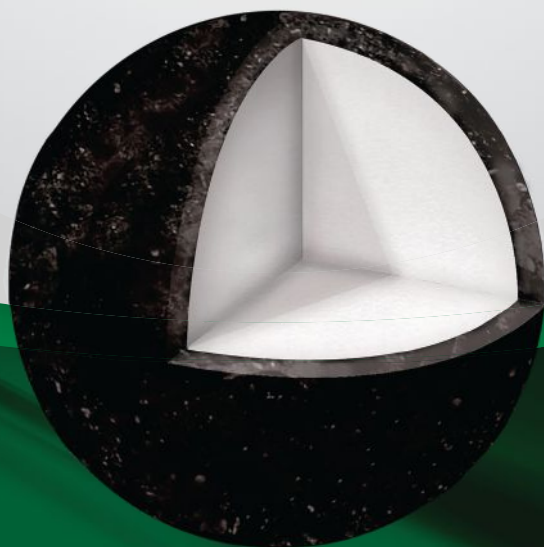


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Starter

NEWS, NOTES AND QUOTES



// BRANCHING OUT

BAYER ENVIRONMENTAL SCIENCE PROFESSIONAL BECOMES ENVU

SPINOFF AS STAND-ALONE COMPANY IS CONTINGENT ON CLOSURE OF CINVEN'S ACQUISITION OF THE BUSINESS

➔ Bayer's Environmental Science Professional business will become a standalone company named Envu, contingent on the successful close of Cinven's acquisition of the business from Bayer. Pronounced "ehn-view," the company said it derived its name from "environment" and "vision" and developed it with input from both employees and customers worldwide.

"As a trusted industry leader, we know that ensuring continued customer success requires strong partnerships and a renewed perspective," said Gilles Galliou, president of the Environmental Science Professional business at Bayer and future CEO of the new standalone company. "That's why Envu will be dedicated to bringing customers innovative solutions to help them push their business forward and tackle the toughest challenges our environments face today."

Company leaders say Envu will work alongside customers to see challenges through their eyes, bringing together diverse points of view and a vision beyond chemistry.

"The fact that our new company will be focused solely on environmental science will allow us to solve problems faster, smarter and more efficiently," said Galliou. "The challenges we solve today



Gilles Galliou, CEO of Environmental Science at Bayer

will help ensure a healthy future for all that's clearly in view."

From now until the divestment transaction officially closes, the organization will remain the Environmental Science Professional business of Bayer. However, the company said it looks forward to fully launching its new corporate identity upon the successful close, which is on track for later this year. The company said it also plans to continue working with Bayer once it's officially a standalone entity.

"We have an established track record of bringing effective, safe and sustainable solutions to customers," said Tiffany Fremder, head of global marketing for Environmental Science. "We will continue this commitment as Envu and

// NEW ROLES

PBI-GORDON MAKES PAIR OF PERSONNEL MOVES

PBI-Gordon promoted Jason Manz to the newly-created role of vice president of strategic marketing and new business development. The company also promoted Eric Smith to vice president of regulatory, formulation and good laboratory practice (GLP).



Jason Manz

Upon joining PBI-Gordon in 2020, Manz served as senior director of national accounts and will maintain those responsibilities as he transitions to his new role.

He holds a Bachelor of Science degree in agricultural studies from Iowa State University and an MBA from Concordia University in St. Paul, Minn.

"Jason has been an excellent coach and mentor to many employee-owners within and outside of our team," said Neil Cleveland, senior vice president of PBI-Gordon Corp. "His attitude, values and willingness to do whatever is necessary to drive excellent results will serve him well in his new role. This is a well-deserved promotion for Jason."

Most recently, Smith was PBI-Gordon's senior director of regulatory, formulation and GLP.

He is a graduate of Millikin University, holding Bachelor of Science degrees in both biology and psychology.

"Since joining the company eight years ago, Eric's leadership skills, insights, values and focus have become a tremendous asset to PBI-Gordon, our employee-owners, and – ultimately – our customers and business partners," said Cleveland. "This is a well-deserved promotion, and we wish him all the best for continued success."



Eric Smith

expand our focus on innovation to achieve long-standing environmental health and sustainability."

// DONE DEAL

Troon acquires tech and service company ClubUp

The company plans to expand and enhance ClubUp's current platform including additional features from user feedback

➔ Troon adds ClubUp, a golf technology and service company that caters to 65 golf clubs and resorts operating caddie programs worldwide.

As part of the deal, Troon said it will invest significantly in ClubUp technology, expanding and enhancing the current platform while adding new features that partner clubs have requested. The existing ClubUp team will continue to lead the company as part of the transaction.

"The team at ClubUp is very excited to be part of Troon," Matthew Rose, founder and CEO of ClubUp, said. "We remain committed to providing a world-class platform for the over 8,000 independent contractors using ClubUp to provide caddie services. Our business model and operations will remain unchanged. The

support and investment from Troon will enable us to add even more value to our customers. The time was right for ClubUp to be acquired and Troon was the ideal partner to help us take the next step as a leading golf technology company."

ClubUp provides technology that helps improve the caddie experience for golfers and caddies at partner clubs and resorts. Additionally, ClubUp technology offers a way to schedule and communicate with caddies working at a partner club property.

ClubUp added 25 new partner clubs in 2022, amounting to 65 total partner clubs and resorts using its technology. These include National Golf Links, Shinnecock Hills Golf Club, Los Angeles Country Club, Ridgewood Country Club and Cherry Hills Country Club.



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Jon Urbanski

@jonurbo

Director of golf course and grounds, Wilmington (Del.) CC

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// NEW BOOK

LATEST EDITION OF GOLF COURSE MAINTENANCE GUIDE HITS SHELVES

Practical Golf Course Maintenance: The Art of Greenkeeping 4th Edition, authored by Michael Bavier and Luke Cella, is now available.

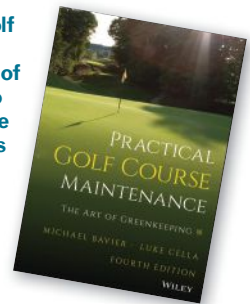
The book assists golf industry professionals with every component of course management to create the best possible environment for players and guests.

As seasoned golf industry professionals, Bavier and Cella have years of hands-on experience solving problems relating to every facet of running a modern golf course. This fourth edition contains new and updated advice and guidelines for running a golf course, including a new chapter offering guidance for superintendents to work with club officials and green committee members to achieve success in their challenging roles.

Bavier and Cella discuss rule changes from the USGA and R&A and how those changes affect maintenance strategies. Additional subject matter includes current and future course technologies such as robotic mowers, drones and advanced irrigation systems.

Chapters also provide an overview of the evolving job descriptions and responsibilities of key positions in the field.

The book is available through Amazon in hardcover and Kindle editions.



// STANDOUT STUDENTS AWARDED

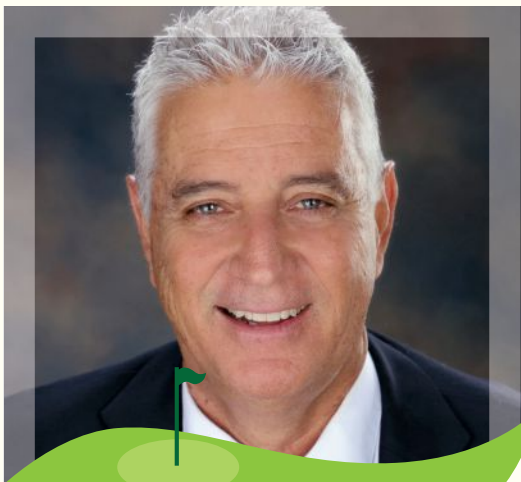
PRIMERA ANNOUNCES KROPP STRONG SCHOLARSHIP WINNERS

Primera recognized three scholarship winners at its Annual Meeting and Trade Show on July 18-20 in Madison, Wis. The Kropp Strong Scholarship program honors Michael Kropp, a past board chairman for Primera.

Primera awarded scholarships to Hailey Bohrer, a finance major at West Virginia University; Rosabella Pitera, pursuing a medical doctorate at the University of Minnesota and John Martin, IV, an engineering student at the University of North Georgia.

Kropp's wife, Mary Beth and son, Alex, attended the event and distribute the awards.

LEGENDS INITIATIVE



TIM HIERS, CGCS

Director of Agronomy

White Oak Conservation, Yulee, Fla.

By Seth Jones

Started by Anuvia and co-sponsored by Audubon International and *Golfdom*, the Legends Initiative celebrates superintendents who have gone above and beyond in their careers — not just in maintaining tremendous golf courses but also in their contributions to the industry, creative problem solving and mentorship. *Golfdom* sat down with Anuvia Legend Tim Hiers to discuss the characteristics of successful turf pros and what day stands out to him in his career.

What are the characteristics you most admire in successful people from our industry?

They're persistent and hungry to achieve. They treat their staff well. They share their own knowledge but are not afraid to ask for help. But they're also realistic. I like to call them 'reformed perfectionists.' They need to be balanced. Sure, they can work 70 to 80 hours a week and be successful, maybe even respected in their community. But you've never heard anyone on their deathbed say, 'I wish I would have worked more.' That doesn't mean in August, a superintendent in Chicago might have to put in those hours ... but you have to have a balance. Now, my wife would roll her eyes if she heard me say that ...

What do you tell the younger generation who work with you about sharing golf's environmental story with the world at large?

We need to lead the charge. There are environmental activists, and there are active environmentalists. There's a big difference. As superintendents, we know how to care for the habitats we work on and around. Still, we also need to take the responsibility of communicating and interacting with the community seriously. You can't just tell them what you're doing; you have to show them. Keep in mind, by the time you get acclimated at a course, you get a new green committee. I tell people, if you go to the gym and work out and lose 40 pounds, you don't stop going. You keep going to maintain what you've accomplished.

Have you had a moment in your career that stood out as being significant in what it meant to you as a superintendent?

I would say it was the day in 1988 I met Ron Dobson of Audubon International. Back in the 1970s, we'd get pickerelweed and arrowweed in our ponds, and we'd spray and kill it. Ron asked me why I killed it, then explained to me that really small fish hide in it, and bigger fish need those smaller fish for food. Today we don't spray it. We plant it. The same with dead trees; he asked me what I was going to do with a dead tree. I told him I was going to cut it down. Then he told me about what that dead tree meant to the bugs and the birds and how important it was to keep it there. He made me rethink everything.

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// #TOP2IN2022

GOLFDOM ASKS: WHAT'S YOUR FAVORITE PRODUCT EVER?

? Starting this winter, your friends at *Golfdom* are going to mix things up. It begins with a combined November/December double-sized issue. And it continues with a special bonus issue in the spring of 2023, focusing on the superintendents around America hosting professional tournaments.

Here's where you, the reader, come in. We're asking all our Friends of *Golfdom* to submit to us **1 their favorite two products they utilized in 2022** and **2 their favorite product of all time**, even if it's no longer on the market.

For additional details, including a QR code to submit your products, see *Golfdom* Editor-in-Chief Seth Jones' column (page 4). And don't forget to help us out by submitting those products for this special issue!

GO FIGURE

\$730 MILLION

Amount ET-based irrigation scheduling and soil moisture meters have saved U.S. golf courses annually, according to GCSAA

• For more information see Mike Kenna's Off the Record column, page 52

Source: GCSAA third survey of water use and management practices

// LONGTIME LEADER

GCSAA COO RANDQUIST RETIRING

Bob Randquist, a longtime superintendent and the current chief operating officer of the GCSAA, announced he will retire on Oct. 15 of this year.

Randquist was a longtime superintendent at Southern Hills CC in Tulsa, Okla. He hosted the 1982 and 1994 PGA Championships at Southern Hills, as well as 1995 and 1996 PGA Tour Championships. He also helped secure the 2001 U.S. Open for the course.

Randquist also served as director of golf course and grounds at Boca Rio GC in Boca Raton, Fla., for 20 years. He joined GCSAA as COO in 2018.

"Serving GCSAA and its members has allowed me to further contribute to an organization and membership that provides the educational and professional development opportunities that helped me enjoy a successful career as a golf course superintendent," Randquist said.

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"The club should only tell you what they want — how you get there is entirely up to you."

MATT SHAFFER, *director of golf course operations emeritus Merion Golf Club, Ardmore, Pa.*

Leading from a position of power

When I visit with superintendents, I see many of them lack power at their facility. If you let the club tell you when to aerate, topdress and do your maintenance, you have lost control. The club should only tell you what they want — how you get there is entirely up to you.

I was always in control, *always*. Control really needs to be established early in your tenure. Changing later is much more difficult. It can be done but that is the long game, and I was never good at the long game.

When I took a job, I identified all the problems and started implementing a plan to rectify the issues. I established how much it would cost and then it was game on. To establish credibility, I took the low-hanging fruit first, like course detail, cleanup and making sure the staff was clean, sharp, professional and polite.

When I went to green committee and board meetings, I was prepared and never deviated from the objective or solution. When I would get challenged with, 'We can't af-

ford that!' I would say, 'Let's see how we can make more money!' At the end of the day, the problem still cost the same and I am not going to compromise my plan to fix what they can afford.

I took a job at a big club, and they earmarked a sizable amount of money for a maintenance building. When I did my due diligence, I found out it was underfunded. I went back and said I needed an additional \$1.5 million. They said NO. I responded by saying, 'Take that money and put a roof on the clubhouse.' They were dumbfounded.

This did a couple of things. One, it showed that what I said is what it is. And two, that I was a team player.

Now some of you are saying, 'I don't think I could do

that.' If you want control, you have to do it! Four years later, we built a state-of-the-art building and it cost \$2 million more than the original budget. I guess I'm better at the long game than I thought I was!

I'll share something my dad told me one time: I asked him once, 'When do you worry about getting fired?' He told me that you're most vulnerable to getting fired when you are worried about getting fired. I said, 'What?' He went on to explain to me that when you're worried about getting fired, you are reactive instead of proactive.

Another quick Augusta story

One year at Augusta National, I had to stay at the course on


Christmas Day. Everyone else had the day off and most went home to Pennsylvania. As luck would have it, it snowed! So, I put my skis and boots in the truck and went to work. I went up behind the clubhouse and proceeded to ski down across the 9th green and down to the lower range, thinking to myself, I bet I am the only person to ever do this!

A couple of weeks later, Paul (R. Latshaw) and I got called into Mr. Armstrong's office. Paul looked at me and said, 'what did you do now?' Mr. Armstrong proceeded to tell us that there was new technology at ANGC. Would you like to see how it works? SURE!

He turned on the TV and there I was skiing. Paul says, 'What am I looking at?'

Mr. Armstrong said, 'Mr. Shaffer, why don't you take it from here?'

I said, 'Look how good my form is ... and I haven't skied in over two years!'

Paul still couldn't get his head around it. Then Mr. Armstrong clarified for him what he was seeing and now I had two people mad at me. On the way down to the shop, Paul shook his head and chuckled. He said, 'Get to work, and do you think you can stay out of trouble?' It was my turn to laugh! 

Matt Shaffer, a longtime superintendent, is the owner of Minimalistic Agronomic Techniques (M.A.T.) He was previously the superintendent at The Country Club in Cleveland, Ohio, and is director of golf course operations emeritus at Merion GC, Ardmore, Pa., where he hosted the 2013 U.S. Open. Reach him at matthewgshaffer@gmail.com.

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Hard work in the Network

As he transitions from TPC Deere Run superintendent to a director of agronomy for the PGA Tour's TPC Network, Alex Stuedemann recalls how he got here

BY SETH JONES

Lucas Glover called the course “immaculate.” Jordan Spieth described it as “awesome.” Nicholas Thompson said it was “in perfect condition.”

J.T. Poston certainly seemed to enjoy the conditions at the 2022 John Deere Classic, as he went wire-to-wire at TPC Deere Run in Silvis, Ill., to earn his second career win on the PGA Tour.

While Poston packed his clubs for a first-round tee time at the Open Championship at St. Andrews, Alex Stuedemann, CGCS, contemplated what the completion of the 2022 tournament represented to him. This was his 14th John Deere Classic — six as an assistant, eight as superintendent. It was also his final John Deere Classic as superintendent at Deere Run.

This fall, Stuedemann hands the Deere Run reins over to his former assistant, Jonathan Graham. Stuedemann, meanwhile, moves up the TPC Network ladder and will become a director of agronomy for the PGA Tour.

With those 14 professional tournaments at TPC Deere Run, and numerous other tournaments at TPC Twin Cities, TPC San Antonio and in South Korea, Stuedemann has grown his own network and helped courses succeed in providing professional-level playing conditions. In celebration of that success and his moving on from TPC Deere Run, Stuedemann is *Golfdom's* 2022 Herb Graffis Businessperson of the Year.

Every GM's dream

Darius Lane, public relations manager for John Deere Ag and Turf, was one of the two people who nominated Stuedemann for the Graffis Award. Lane said it was seeing Stuedemann in action at this year's John Deere Classic that motivated him. He describes Stuedemann as a ‘natural-born leader.’


“What makes him worthy (of the Graffis Award) is his leadership and his patience. He spends as much time as necessary to support his team or anyone else that needs his time. He has the skill and expertise to provide the ideal playing conditions. He has an infectious personality and an ability to build up others around him,” Lane says. “He’s deserving of this award because he’s embodied every criteria it takes to win the Graffis Award without ever caring about recognition.”

Mark Johnson, regional agronomist for the PGA Tour, knew Stuedemann when he was just a kid starting out in the industry. He says Stuedemann kept getting more responsibility because he kept meeting the challenges.

“He’s every general manager’s dream, as far as a superintendent is concerned,” Johnson says. “He’s a go-getter, one of those guys that I can trust to do what needs to be done. He’s not going to make excuses. I know his general manager does not want to lose Alex because to find someone with the business savvy that Alex has in that role is very rare.”

“The guy bleeds TPC Network red, white and blue,” says Collier Miller, director of TPC agronomy for the PGA Tour. “That’s a guy that when

Continued on page 14

A man with a beard and mustache, wearing a black vest over a light blue shirt and black pants, stands on a grassy area next to a pond. In the background, there is a golf course green with a white flag, a sand trap, and a line of trees.

Stuedemann says that while it will be hard to leave TPC Deere Run, he's happy to be able to follow his own advice. **"I continually tell people I work with to never stop learning,"** Stuedemann says.

"This is an opportunity for me to do that, and I'm excited I've been given the chance to do so."



The Herb Graffis Businessperson of the Year Award, given annually since 2012, is named in honor of *Golfdom's* founder, World Golf Hall of Fame member Herb Graffis. Graffis was one of the first people to think of golf as a business when he and his brother Joe founded *Golfdom* in 1927. With his vision, Graffis helped advance the game in numerous ways, from founding the National Golf Foundation and the Club Managers Association of America to his work advocating on behalf of superintendents and elevating their profile. It is with all due respect that we present this award in Mr. Graffis' honor.



2022 HERB GRAFFIS

**BUSINESSPERSON
OF THE YEAR**

AWARD



Continued from page 12

the time came, we had an opportunity for him because he's such a valuable individual to our network."

Stuedemann is excited to embark on this new path in his career but says leaving behind TPC Deere Run was not an easy choice.

"I really, really love TPC Deere Run," Stuedemann says. "My wife is from here; we met here, our kids (Sophia, 8, and Kaeva, 5) were born here. There's a lot of history, and that's the hardest



From left to right, Jarrett Chapman, assistant superintendent, Alex Stuedemann, CGCS, and Andy Cooper, assistant superintendent at the 2019 John Deere Classic.

part of the (leaving) conversation."

Stuedemann says he thought about all the talented people who have worked with him and then progressed on in their own careers ... and then decided that it was OK for him to do that as well.

"I looked at my career progression, and I said, 'You know what? It's time for someone else to have this seat and grow within this company. And it's time for me to grow further as well,'" Stuedemann says. "My wife, Erin, who has supported me the entire way said, 'yes, you're going to be away a bit more, but you're also going to get to share what you've learned in the business ... and likely, from a mental standpoint, we'll actually have you more at home.'"

'This isn't for you.'

Stuedemann wasn't born into the game of golf. It was a bad first part-time job and phone call from his dad that put him on the golf maintenance track.

Once Stuedemann turned 16, he started working with a friend at a Little Caesars near his house in the suburbs of Minneapolis. He'd work from 5 p.m. to 10 p.m. on nights he didn't have a soccer game or golf practice. It wasn't the smell of pizza he learned to hate (he still enjoys a slice), it was being stuck indoors. He asked his dad for help. His father knew Jim Nicol, CGCS-Retired, who would eventually host the 2002 and 2009 PGA Championships at Hazeltine National Golf Club in Chaska, Minn. At the time, Nicol was the superintendent at a local muni course.

"My dad put in a good word, and I got an interview with Jim," Stuedemann recalls. "He took one look at me and said, 'You're not

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gonna make it. This isn't for you.' But he hired me at \$4.25 an hour!"

On his first day, Nicol dropped Stuedemann off at a grove of trees and handed him a string trimmer. Nicol told him to trim around the trees. Stuedemann asked, 'When do you want me to be done?' Nicol replied, 'When all the trees are done.'

A few summers later, Stuedemann was off to college. His summers on the course were fun, but he was moving on. The next summer, he returned to the golf course crew. One of the assistants told him that if he wanted to, that job could become a career.

Finally, it was his parents who nudged him the rest of the way.

"My old man called me and said that the University of Minnesota has a (turf) program, and I should transfer back home and get into it," Stuedemann recalls. "The first class I took was a landscape design class, and I was hooked."

Working in the network

A few things appealed to Stuedemann about working on the golf course. One was the independence it offered; no one was looking over his shoulder. Another was being able to immediately see the results of his work. He loved 'killing himself' with a flat spade around a ragged bunker and then stepping back and admiring it once finished.

And he'd be remiss, he says, if he didn't add that he was impressed by the professional golfers. At TPC Twin Cities, he saw the likes of Lee Trevino, Chi Chi Rodriguez and Jim Colbert up close.

"They were playing on your golf course, and it was on TV," Stuedemann says excitedly. "It gave me extra motivation, and it was all tangible. It wasn't abstract (work) that came with other professions."

After his time at TPC Twin Cities, he caught on as an assistant superintendent at TPC Deere Run, starting in 2002. He says it

Continued on page 16



Tournament prep at TPC Deere Run is a team effort with (from left) Ryan Kurtz, Austin Muller, Cameron Winters and Nate Steinbeck.

PHOTO COURTESY: ALEX STUEDEMANN



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2022 GRAFFIS AWARD



“(Stuedemann) is one of the most caring superintendents I’ve ever worked for,” says incoming TPC Deere Run superintendent Jonathan Graham (right).

Continued from page 15

was a job he was not ready for. Others disagree.

“When we built TPC Twin Cities, Alex was already a star back then,” Collier Miller says. “We recognized (that) this person has the work ethic and communication skills. His personality and demeanor made him a pleasure to work with. That’s why we took him from Twin Cities to become the assistant at Deere Run.”

From there, Stuedemann became a project superintendent, then superintendent at TPC San Antonio. In 2012 and 2013, he was superintendent where it all started (sort of) at TPC Twin Cities, up until 2014, when he returned to Deere Run. Stuedemann doesn’t mention it himself, but there was also a month spent in South Korea, helping a first-time tournament course step up its game at the 11th hour.

“We’ve had an occasion here and there where we’ve had a challenge at a property,” Miller says. “We’d call Alex on the phone and say, ‘we could use some help.’ And he couldn’t get on a plane fast enough. He’s there helping us through the challenges.”

Pushing the limits

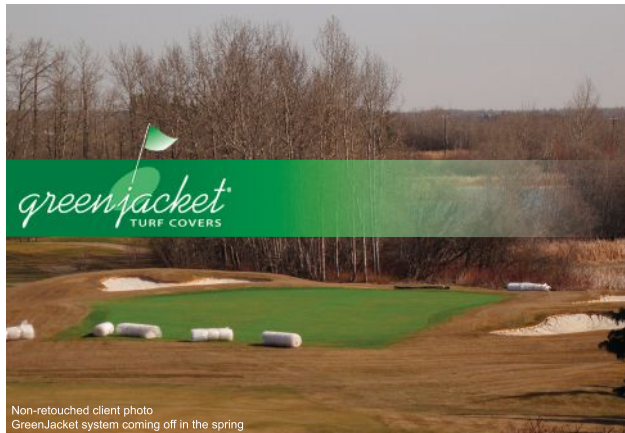
Jonathan Graham is excited to take over at Deere Run this fall but adds that he has big shoes to fill. Stuedemann, he says, has this presence that makes everyone feel secure that the smartest guy in the room has everything under control.

“He’s a risk taker and not afraid to make quick decisions. We would push the limits,” Graham says. “It’s a PGA Tour course, and you think it’s a high-dollar budget, but that isn’t necessarily the case. The location in Silvis, Ill. ... the golf market isn’t huge. The amount they can charge per round as compared to a larger golf market, you have to be able to make financial decisions that are risky but that still benefit the property and allow you to hit your bottom line. He’s really successful at it.”

Still, that isn’t Stuedemann’s best skill as a superintendent,

Continued on page 18

PHOTO BY: DARIUS LANE



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★★★ 2022 HERB GRAFFIS BUSINESSPERSON OF THE YEAR AWARD ★★★

Continued from page 16

Graham says. It's how much he cares about his crew.

"He's very knowledgeable and direct but also one of the most caring guys I've ever worked for," he adds. "He is very fair and promotes the team environment."

Johnson says that caring heart will make him succeed as a TPC agronomist.

"Alex's personality is not intimidating," he says. "He's very understanding. He'll cooperate with anybody. To follow the circus, as we call it, the PGA Tour from stop to stop, you meet all kinds of different people. Alex has the personality to manage that."

Last fall, Deere Run undertook a bunker renovation. Weather challenges put the project behind schedule. It was four days before Christmas, and the crew was still slinging dirt. There could have been a revolt. Stuedemann says the team finished



"We've had an occasion ... where we've had a challenge," says Collier Miller, director of TPC agronomy, PGA Tour. "We'd call Alex and he couldn't get on a plane fast enough."

off the project without a single complaint.

"It looked like a bunch of people were taking care of their own house," he says. "To me, that was most rewarding because everyone was fully engaged. They knew


the goal. It wasn't something you teach; it was just intrinsic. It was the moment I knew I had surrounded myself with fantastic people. There was no input needed, and it just felt extremely rewarding." 

PHOTO COURTESY: ALEX STUEDEMANN

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Game plan for success

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EOP, the super's MVP

Our EOP survey shows how early order programs allow superintendents to call the right play

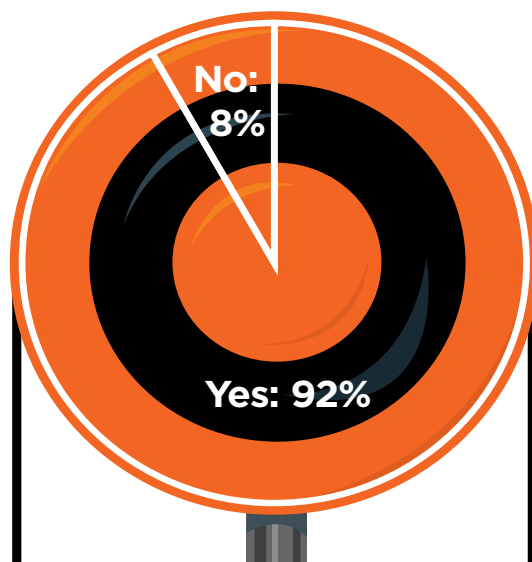
BY GOLFDOM STAFF

Fall is around the corner, and so is the time for tailgating, Friday night lights and early order programs. We surveyed superintendents this summer to get an idea of how supply chain interruptions impacted their buying decisions last year and this year.

Superintendents' EOP top playmakers:

- 1 Fungicides
 - 2 Herbicides
 - 3 Insecticides
 - 4 Fertilizers
- 

Have supply chain issues and inflation impacted your business?



“Scarcity has increased price of seed and chemicals. Early order, and early delivery last fall, helped prevent some issues.”

— Superintendent of a private course with limited public play in New York

More than 92 percent of superintendents surveyed said supply chain issues impacted their course.

“It’s all over the map,” a superintendent of a municipal course in Wisconsin said about supply chain issues. “Some products I’m still waiting for, and others were delayed slightly but have arrived.”

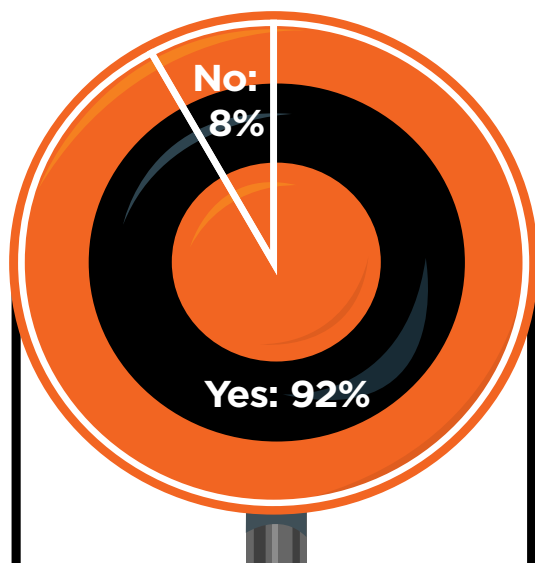
A superintendent at a private course in Colorado said his course struggled to get sup-

Continued on page EOP4





Do you plan to participate in EOPs this year?



“To be sure I have all my products ordered and know that I’ll have them all ready.”

— Superintendent of a private course in Rhode Island

Continued from page EOP3

plies this year due to the supply chain interruptions, but he was grateful for participating in EOPs last year.

“I’m thankful for EOPs. I had most of my products to apply on the course for 2022,” he said.

Fungicides top the list of EOP purchases, followed by herbicides, insecticides and fertilizers.

“I was told some products will become hard to come by later on this season,” a superintendent at a municipal course in Illinois said. “By utilizing EOP, I was able to ensure I had all the products I needed for the season.”

While 90 percent of superintendents surveyed last year said they expected to participate in EOPs, that number rose to 92 percent this year.

“EOP saved us thousands of dollars, and we were able to lock in our products for the season. It helped us tremendously this season,” a superintendent of a municipal course in Oklahoma told us. “We didn’t have to wait weeks in order to receive our product.”

For many superintendents, it’s the opportunity to save early. For others, it’s the

“I believe it saves our club a significant amount of money and allows us to do more things.”

— Superintendent of a private course in Florida

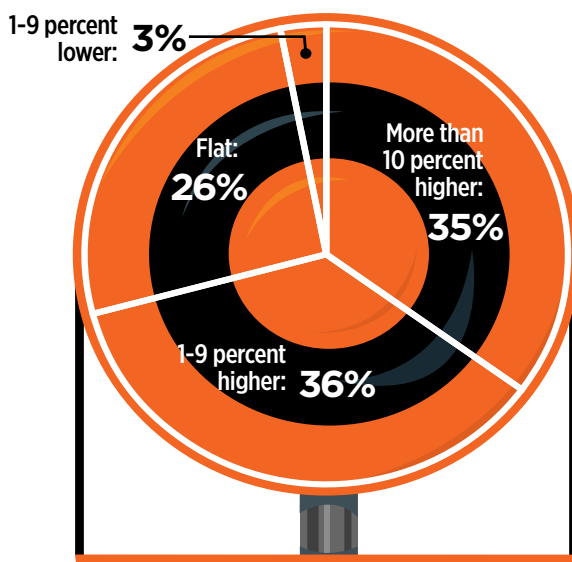
opportunity to make sure the products needed are on hand. A superintendent at a private course in Florida says he anticipates inflation to make a deep cut in his course’s program, and he and his team will have to take a hard look at the budget for next year.

“We’ve really had to think ahead with what we want to do and have had to live without products occasionally when they were not available,” the superintendent said. “I’m expecting inflation to make next year’s budget difficult, requiring us to make significant cuts to our programs. I’m hoping the club will be in a position to expand our fertilizer and chemical line, but we’ll just have to wait and see.”

When asked, 29 percent of superintendents said they would spend the same or less on EOPs this year. Although most superintendents, about 71 percent, said they expect to spend more this year on EOPs.

“Last year, I committed to purchasing foliar fertilizers for the whole year,” a superintendent at a private course in Florida said. “It locked us into one price and saved a ton of money. We participate for the pricing and the rebates.”[©]

My budgeted spend for control products for this year’s EOPs vs. last year:





Adam Mis, superintendent at Transit Valley Country Club in East Amherst, N.Y., says he's participated in early order programs for more than 25 years.

Game plan for success

Superintendents share their best strategies for winning this EOP season

BY ROB DIFRANCO, *Associate Editor*

As the early order program (EOP) season comes into focus, it's important for superintendents to dive deep into their playbooks and game plan for the season ahead.

Now, more than ever, EOPs are crucial to lock in prices and secure inventory as inflation and supply chain issues continue to give supers fits.

Film study

To build a solid game plan, superintendents not only have to know their opponents but themselves as well.

Self-scouting by looking at the amount of product used over previous years is how Adam Mis, superintendent at Transit Valley CC in East Amherst, N.Y., stays on top of knowing what he'll

Continued on page EOP6





EOPs help superintendents like Jim Pavonetti of Fairview Country Club in Greenwich, Conn., enter the season prepared to execute their plans.

“I’m at a club where I have a large budget, but I still couldn’t afford to overlook the early order programs, just based on the savings and the rebates that I get back at the end of the year.”

— JIM PAVONETTI, CGCS
superintendent
Fairview CC

Continued from page EOP5
need for the upcoming season.

“I have my sheet written out about what I use for the (fertilizer) program, and right before the fall, we update it and try and get all the best prices we can possibly get,” says Mis. “Another thing is they hold everything until the spring, so I don’t

have to store it, and away we go.”

Supers also need to consider outside factors, like inflation and supply chain slowdowns, when preparing their EOP plan. One superintendent of a private club in Connecticut says the savings both upfront and throughout the season make EOPs a key part of his success.

“When you’re participating in them, the price is right there that you’re going to pay,” says Jim Pavonetti, CGCS, superintendent at Fairview CC in Greenwich, Conn. “For some companies, that’s the price you’re going to pay in July, and you don’t know what kind of increase you’re going to see after the first of the year.”

Pavonetti says this year is the first he’s purchasing liquid fertilizers through an EOP due to increased fertilizer prices. He says the discount and rebate made it too difficult to pass up.

Training camp

Eric Thompson, superintendent at Tumwater Valley GC in Tumwater, Wash., has a unique perspective on EOP programs. Thompson previously

PHOTO BY JIM PAVONETTI



worked in sales, where he helped supers plan their EOPs from the supplier side.

That experience, combined with his work as a superintendent himself, has helped fine-tune his EOP strategy. Thompson says he only buys 60 percent of his chemicals through EOPs.

“Even when I sold, I tried never to sell more than 60 to 70 percent of a program,” he says. “Early on in my career, I tried to do 100 percent, and there were products that I didn’t use and products that I needed more of every year; it didn’t matter if I tried to do that much volume; I always had either a surplus or a negative.”

That 60 percent includes the products Thompson knows he’ll use the most. He also orders products that could see shortages in the season to ensure he has the inventory he needs.

Thompson estimates, with his strategy, that he saved 20 percent in 2022.

As far as a timetable goes, Thompson says he likes to give himself a month to plan for what he’ll order from an EOP. Thompson looks at his use from the previous year and projects where he’ll finish this year to inform his changes for the following year.

Game day

The 2022 season was full of twists and turns, with continued inflation, rising gas prices and supply chain woes.

Supers foresee several of those troubles continuing into 2023 and affecting fertilizer buys. Mis says he saved plenty by ordering fertilizer through an EOP last year.

“I figured it out by early ordering last year versus what fertilizer prices are now, we probably saved half of what we would have spent if we had bought it in-season this year,” he says. “Fertilizer prices have pretty much doubled on the raw materials.

“I already let the board know that early order 2022 might be more expensive than early order 2021 because of where we’re at on the cost of goods.”

Thompson’s best advice to other supers looking to win the day with EOPs in 2023 is to take advantage of dealer programs.

“I think the biggest thing I’ve learned from both my experience in sales and my experience as a su-

THE PICK IS IN

SUPERS SHARE THEIR NO. 1 PICK IN THE EOP DRAFT

“My No. 1 pick would be chlorothalonil. It’s the most used because it’s such a broad-spectrum fungicide. I don’t think there’s anyone out there that doesn’t have some out on their property at any point during the season.”

— ADAM MIS, superintendent, Transit Valley CC

“We have always had great support from the Syngenta team via a very friendly EOP user interface, a broad array of useful products and second-to-none support throughout the early order process that has allowed us to maximize our agronomic potential in an environmentally and economically responsible way.”

— Superintendent of a private course in Illinois

perintendent is to take advantage of some of these dealer programs. The dealers usually have a lot of good programs on their fertility products,” he says, “If you take advantage of that, you can get up to a 10-percent rebate. With the cost of fertilizer and the availability of phosphites, I think that’s a great way to go as far as staying ahead of the game in that capacity.”[®]



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 - 3 Order in October to lock in the highest rebates.
- Extended payment terms to June 7, 2023.

Qualifying Fungicide Purchase Level	Earned Incentive %	
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\$5,000-\$14,999	12%	8%
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\$35,000 +	24%	14%



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			Oct.1-Dec.2, 2022
2	Earn 10% rebate by reaching only \$15,000 in total purchases.	\$2,000-\$6,999	4%
3	Buy now and don't pay until June 7, 2023.	\$7,000-\$14,999	6%
		\$15,000+	10%

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- For additional savings, look for **volume discounts** on Acelepryn and Ference insecticides.

Step 1	Step 2	Plan It Your Way rebate levels	Once earned, this rebate also applies to the purchase of these insecticides
Purchase the following amounts of Posterity fungicide brands	Purchase the following amounts of Daconil, Secure and/or Posterity brands		
\$3,000	\$10,000 to < \$20,000	6%	Acelepryn 0.5 gal, Ference, Provaunt WDG
\$6,000	\$20,000 to < \$40,000	8%	
\$9,000	\$40,000+	12%	

Scan the QR code to learn more about the Plan It Your Way rebate.



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\$5,000 to < \$10,000	2%	5%	7%
\$10,000 to < \$20,000	2%	6%	8%
\$20,000 to < \$40,000	3%	7%	10%
\$40,000 to < \$70,000	3%	8%	11%
\$70,000 to < \$100,000	3%	9%	12%
\$100,000+	3%	10%	13%

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- Union® Fungicide SC
- Q4® Plus Turf Herbicide
- SpeedZone® EW Broadleaf Herbicide
- Pedigree Fungicide SC



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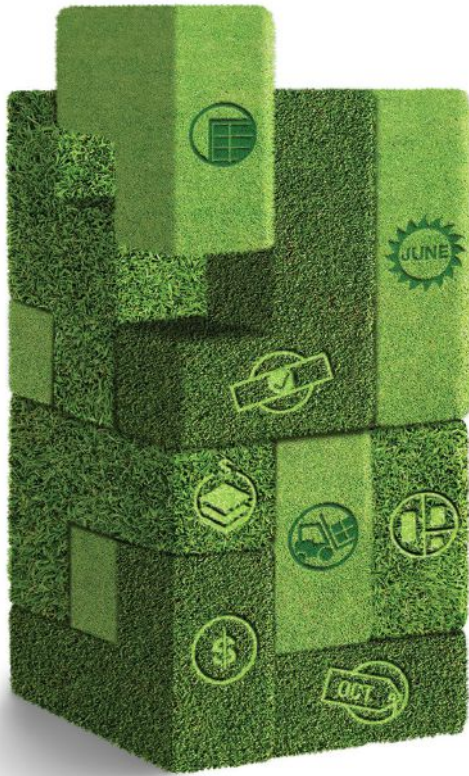
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// SWITCH IT UP

A LOOK AT MICRODOCHIUM PATCH CONTROL RESEARCH

By Mike Kenna, Ph.D.

In some parts of the U.S., there is pressure to reduce pesticide use on golf courses. This trend is more severe in Canada and Europe. At Oregon State University, researchers funded by the USGA Davis Program have conducted two three-year experiments to evaluate alternative products to control Microdochium patch on annual bluegrass putting greens.

The first experiment, initiated in September 2018, compares iron sulfate versus chelated iron to suppress Microdochium patch on an annual bluegrass putting green in the absence and presence of phosphorous acid. In all three years, iron sulfate heptahydrate applications made in the presence or absence of phosphorous acid suppressed Microdochium patch compared to the non-treated control — except for when the team applied 0.1 lbs. per 1,000 square feet of iron as iron sulfate in the absence of phosphorous acid in the third year of the experiment.

Chelated iron applied as DTPA in the absence of phosphorous acid did not suppress the Microdochium patch compared to the non-treated control in any of the three years except in the first year for the 0.2 lbs. of iron per 1,000 square feet application. The application of phosphorous acid in combination with either iron source significantly suppressed Microdochium patch compared to the non-treated control.

The second three-year experiment evaluated the long-term impacts of winter applications of alternatives to traditional fungicides on Microdochium patch suppression, summer putting green performance and soil fertility on annual bluegrass greens.

In the third year, all treatments suppressed Microdochium patch compared to the non-treated control and were not statistically different from the fungicide control rotation. However, anthracnose was severe in June 2021 on plots that received treatments that included combinations of iron sulfate and phosphorous acid.

The fungicide control had the least amount of anthracnose in July, with 0.6 percent anthracnose compared to seven other alternative control treatments with an average of 20 percent or more anthracnose. The fungicide control received the last application on March 3, 2021, with an application of Ascernity (benzovindiflupyr, difenoconazole) at a rate of 1.0 oz. per 1,000 square feet and Heritage Action (azoxystrobin, acibenzolar-S-methyl) at a rate of 0.4 wt. oz. per 1,000 square feet.

For more information:

Comparing iron sulfate versus chelated iron for the suppression of Microdochium patch on annual bluegrass putting greens in the absence and presence of phosphorous acid. <https://archive.lib.msu.edu/tic/res-sum/2021/2021.pdf#page=285>

Quantifying the long-term effects of alternative Microdochium patch management techniques on sand-based annual bluegrass putting green performance over multiple seasons. <https://archive.lib.msu.edu/tic/res-sum/2021/2021.pdf#page=288>



This project was funded in part by the USGA Green Section.

NEWS UPDATES

PRIME SOURCE RECEIVES REGISTRATION ON SUBLIME

Prime Source, a division of Albaugh, said the EPA approved its registration for Sublime Herbicide. Sublime is a patent-pending, selective herbicide that combines mesotrione, triclopyr and dicamba into a non-2,4-D option for professional turfgrass managers.

According to the company, trials of the new product did not show the weed bleaching associated with other mesotrione herbicides. Sublime is labeled for the control of more than 200 broadleaf weeds, including challenging species such as ground ivy, spurge, yellow wood sorrel, Virginia buttonweed, wild violet and several grassy weed species.

Additionally, Sublime is labeled for application to weeds growing in cool-season and certain warm-season turf species, including Kentucky bluegrass, perennial ryegrass, tall fescue, fine fescue, zoysiagrass and dormant warm-season turf species including centipede, St. Augustine (sod) and bermudagrass.

"Sublime has been described as a fantastic herbicide by one university trial cooperator," said Bret Corbett, technical services manager at Prime Source.

State registrations for Sublime are currently underway, and the product is slated to be available for shipment in the fourth quarter of 2022 through the Prime Source distribution network.

“IN WINTERS WHERE
SNOW MOLD FUNGICIDE
APPLICATIONS DEGRADE ...
PINK SNOW MOLD IS MOST
LIKELY TO TAKE ADVANTAGE.”

Paul Koch, Ph.D.

(see story on page 40)

//THINK PINK

What the future looks like for snow mold management

By Paul Koch, Ph.D.

I am often asked what impacts I think warming winters associated with climate change will have on snow mold management. The easy answer might be that warmer winters will result in less snow, which means less snow mold. But, the more accurate answer is complicated.

Shorter durations of snow cover typically mean less disease, but more winter rainfall events lead to more rapid dissipation of snow mold fungicides. In addition, warmer fall temperatures mean less hardening of the turf prior to winter, which leaves the turf more susceptible to snow mold development. In short, the only certainty that climate change provides for snow mold control is more uncertainty.

WHAT DOES THE RESEARCH SAY?

We have been fortunate enough to conduct snow mold research at numerous sites across Wisconsin, Michigan, Minnesota and Idaho. Since the fall of 2013, we have tested at the same locations at Marquette Golf Club in Marquette, Mich., and at Wausau Country Club in Wausau, Wis., every year, which provides us some insight into how snow mold is evolving over a relatively short time.

Wausau Country Club is located in the heart of Wisconsin amid towering pines along the Wisconsin River. Beginning in the spring of 2014 and going through the spring of 2017, snow mold in the non-treated controls averaged 65 percent (Table 1). However, beginning in 2018 and going through 2022, the percent of snow mold in the non-treated controls averaged 18

TABLE 1

	Wausau CC		Marquette GC	
	Snow mold (percent)	Snow mold type	Snow mold (percent)	Snow mold type
2022	1	Pink	95	Pink
2021	0	NA	73	Pink
2020	71	Pink	88	Speckled
2019	6	Pink	81	Pink
2018	11	Pink	99	Speckled
2017	41	Pink	70	Pink
2016	41	Pink	84	Pink
2015	90	Pink	94	Speckled
2014	88	Pink	95	Speckled

Snow mold type and severity at Marquette GC (Marquette, Mich.) and Wausau CC (Wausau, Wis.) from 2014 through 2022. The full reports from each of these years can be found at <https://tdl.wisc.edu/results/>.

percent. A large amount of snow mold in 2020 inflates that low number. Looking at just this nine-year period, the data from Wausau suggests that certain locations will experience less snow mold, though they are still prone to significant outbreaks from time to time.

Marquette Golf Club, located in Marquette, Mich., sits along the shores of Lake Superior in the Upper Peninsula of Michigan. Its northern location and proximity to the lake mean that it receives loads of snow every winter and, as a result, typically deals with loads of snow mold. In looking at our disease data over the past nine years from Marquette, it's clear that the overall amount of snow mold isn't decreasing.

From 2014 through 2017, the non-treated controls averaged 86 percent snow mold, while from 2018 through 2022, the non-treated controls averaged 87 percent (Table 1). However,

the type of snow mold present does appear to shift.

From 2014 through 2018, speckled snow mold (*Typhula ishikariensis*) was the primary snow mold present in 3 of 5 winters. From 2019 through 2022, pink snow mold (*Microdochium nivale*) was the primary snow mold present in three of the four winters. One location over a relatively brief nine years is too small of a sample to make any definitive conclusions. Still, I've had conversations with superintendents from the Mountain West who have also noticed increasing levels of pink snow mold in areas formerly dominated by gray and speckled snow mold.

HOW DO THESE SHIFTS IMPACT SNOW MOLD MANAGEMENT?

From a biological standpoint, the fungus that causes pink snow mold is

Continued on page 42



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ES-0822-GLF-0169-A-R1

Continued from page 40

much faster growing and grows at a wider range of temperatures than the fungi that cause gray and speckled snow mold. This means that pink snow mold is more likely to take advantage of rapid swings in temperature and moisture, whereas the slow-growing *Typhula* fungi need months of nearly constant conditions to cause disease.

This also means that in winters where snow mold fungicide applications degrade due to winter rainfall or snowmelt events, pink snow mold is the disease most likely to take advantage of the lack of plant protection.

From a product selection standpoint, certain chemistries are more effective against pink snow mold than gray and speckled snow mold. While products from the demethylation inhibitor (DMI)

Continued on page 44

FIGURE 1



The cutoff between no snow mold suppression and excellent suppression can be very sharp, as evidenced by this picture from Timber Ridge GC in Minocqua, Wis., in the spring of 2020.

PHOTO BY: PAUL KOCH

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FIGURE 2

Check plots — whether on the course or the research plot (like this one) — are an excellent tool to better understand your past, current and future snow mold pressure.

Continued from page 42

class are key for control of gray and speckled snow mold, chemistries such as iprodione, fludioxonil, prothioconazole and thiophanate-methyl are important for effective control of pink snow mold. If you're starting to see pink snow mold breakthrough, consider looking at the product(s) you're using and include one or more of the above products in your application.

From an application timing standpoint, don't apply a product based

purely on the calendar. Gayle Worf, Ph.D., was the University of Wisconsin turfgrass pathologist in the '70s and early '80s. He always told Wisconsin superintendents to have their snow mold product down prior to getting in the deer stand (i.e., the weekend before Thanksgiving). While that was effective advice then, today's warmer falls and later start to winter might not make that advice effective now.

My program has been working since 2016 to create a model that

Research Takeaways

- For nine years, the data from Wausau, Wis., suggests that specific locations will experience less snow mold, though those locations are still prone to significant outbreaks from time to time.
- Pink snow mold is much faster growing and grows at a wider range of temperatures than gray and speckled snow mold. Chemistries such as iprodione, fludioxonil, prothioconazole and thiophanate-methyl provide effective control.
- A model is under development that would predict the optimal timing of snow mold fungicides based on local environmental conditions that fall.
- There is a window of opportunity for snow mold control that is approximately 3 to 4 weeks long leading up to snow cover.

would predict the optimal timing of snow mold fungicides based on the local environmental conditions that fall. While we need to conduct some additional research before publicly releasing this model, the data we have so far clearly indicates that the timing of snow mold products is critically important for success.

Our research suggests a window of opportunity for snow mold control that is approximately 3-4 weeks long leading up to snow cover, and the decline in control at the front end of that window is very sharp. In our 2019-20 research, a

Continued on page 46

PHOTO BY: PAUL KOCH

No need to worry about overwatering with this fungicide for spring dead spot.



Jim Kerns

“It's very, very hard to overwater with something like Kabuto and root zone pathogens,” he says. “But you need to get that irrigation done as soon as possible to make sure the (fungicide) is getting deep enough into the ground.”

— Jim Kerns, Ph.D.

Professor and Extension specialist, North Carolina State University,
Department of Entomology and Plant Pathology



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Continued from page 44

difference of just 12 days in the application made the difference between a very effective application and failed application (Figure 1). We hope to have more information to share on this model in the next couple of years.

SHOULD YOU CHANGE YOUR SNOW MOLD PROGRAM?

In my experience, superintendents are more resistant to changing their snow mold control program than any other disease control program they have. I understand the hesitancy to try new programs. With snow mold, you usually only have one shot to get it right. But as products and regulations and the environment change, we might also need to update our programs to see whether there is a better fit.

The best way to investigate this on your own site is to install one or more non-treated check plots around the property. The benefits of check plots are numerous. If littered with disease, these plots illustrate to the golfers/membership/ownership the need for implementing these costly disease management programs (Figure 2). If they aren't littered with disease, and this holds true for several years, then it might indicate that you could alter your program without any decrease in disease control.

It's also important to keep up with the latest research! My program posts the results of our snow mold research on our Turfgrass Diagnostic Lab research webpage (<https://tdl.wisc.edu/results/>). This research includes product evaluations to find the best products for all types of snow mold under all conditions, but also our research on the development of the snow mold timing model and other related projects. I encourage you to visit the site and look at the research results to understand the most effective products and strategies for controlling snow mold. If you have any questions, please email me at plkoch@wisc.edu. ☺

Acknowledgments

To conduct all this valuable research takes a talented and committed group. First and foremost is Kurt Hockemeyer, who manages Wisconsin's Turfgrass Diagnostic Lab and directs our field evaluation trials. This year we again partnered with Professor Eric Watkins and Andy Hollman at the University of Minnesota on snow mold research at two sites in Minnesota. Lastly, the incredible superintendents who host our research and let us kill grass at their courses: Aaron Hansen at Wausau Country Club in Wausau, Wis.; Jay Pritzl at Timber Ridge GC in Minocqua, Wis.; Craig Moore at Marquette CC in Marquette, Mich.; Matt McKinnon at Cragun's Resort on Gull Lake in Brainerd, Minn.; Jeff Simondet at Giants Ridge GC in Biwabik, Minn.; Rick Mooney and Nick Korthals at Whitetail Club in McCall, Idaho and Eric McCormick at McCall GC in McCall, Idaho. Thank you to everyone for making our snow mold research successful year after year.



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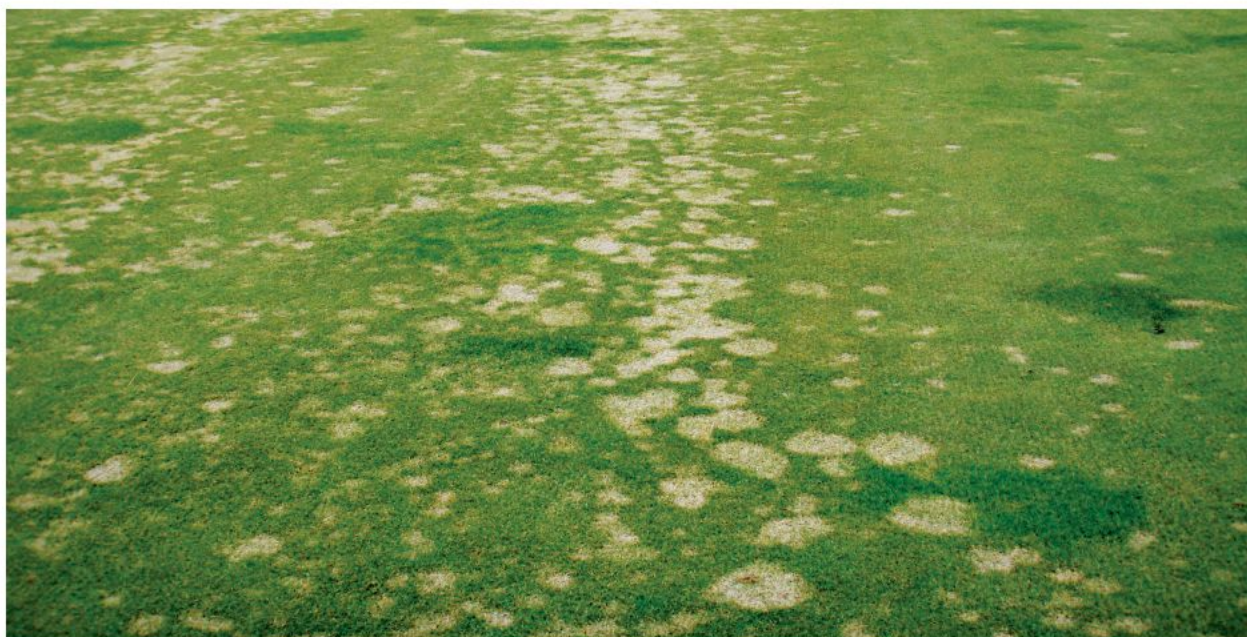
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Gray snow mold typically appears in places that experience long periods of snow-covered ground.

How to prevent gray snow mold

Last year was a particularly rough year for gray snow mold. Experts share how to prepare for the pathogen this year

By Chris Lewis

To decrease the odds of gray snow mold damage, Adam Thoms, Ph.D., associate professor in the department of horticulture at Iowa State University, advises superintendents to mow their rough at 2.5 inches. In doing so, they'll reduce matted turfgrass considerably.

Additionally, superintendents should add snow fences to their courses and remove snow from greens after 60 to 90 days of steady snow cover. After all, the disease thrives amid long periods of snow cover.

"To further limit conditions that are favorable for disease development, superintendents can also trim trees, which, in turn, increases sunlight so that the snow cover melts," Thoms says.



Adam Thoms

TO PREVENT OR NOT TO PREVENT?

Of course, gray snow mold damage varies from one area to the next, a factor that superintendents must also consider. Thoms says it's ultimately up to them whether they want to only spray their greens for cost savings or spray their greens and tees, particularly if their course will likely have

prolonged snow cover.

"The bottom line is this: do the costs of preventative treatments outweigh the costs of potential damage?" Thoms asks. "Each superintendent must reach their own conclusions, based on previous weather patterns and gray snow mold damage."

CULTURAL CONTROLS

Last year, various regions in the U.S. had a gray snow mold outbreak. Although Iowa's outbreak was not nearly as damaging as other states, Thoms noticed many local superintendents raked their courses' turfgrass so that it either stood back up or avoided matting.

He says Iowa superintendents also applied fertilizers to help stimulate turfgrass growth and recovery, mowed to remove damaged tissue and freshen up the appearance of the turf and removed trees to speed up snowmelt — a priority that more and more superintendents consider.


"I also think they were comfortable with fungicide programs, as sprayed areas were protected and didn't see damage," Thoms says. "Therefore, once bentgrass is going dormant, superintendents should get their fungicide sprays out. Timing is always key for successful protection." 

PHOTO COURTESY OF: PAUL KOCH

Syngenta

MATT GIESE, M.S.

Technical services manager



Gray snow mold on turfgrass can be a challenge to manage, especially when the infection process occurs in cold temperatures and under snow cover. Visible symptoms are generally not observed until spring melting begins. In addition, fungicide treatments are not effective at suppressing this disease in the spring after the snow has melted. As a result, unsightly damaged areas can persist well into the summer months before full recovery occurs. The best strategy to reduce or prevent damage is to plan for fungicide applications in the fall after mowing has ceased, but before permanent snowfall occurs. Since gray snow mold requires extended snow cover for growth and development, regions that lack continuous snow cover tend to have considerably less gray snow mold. By observing snow cover duration along with turfgrass damage in the spring, superintendents will be able to determine if they need preventive control measures.

Prime Source

BRET CORBETT

Technical services manager



Gray snow mold can occur really anywhere in which wet conditions persist during the winter months. There are many cultural practices superintendents can conduct to reduce infection. For instance, by aerifying and verticutting, along with any other practices that remove as much thatch as possible, they'll be able to combat snow mold. They must ensure they continue to mow until growing ceases, too. The biggest key to control is preventative sprays in the fall. Typically, superintendents need a combination of fungicides for effectiveness. As an example, they can combine a contact fungicide with Qols, DMIs and SDHIs. Managing healthy turfgrass is the best way to prevent gray snow mold or decrease its severity. By following best management practices, developing an IPM program and getting ahead with proper scouting — while also ensuring they use preventive fungicides before the snow cover occurs — superintendents will have a better chance of eliminating disease pressure.

Nufarm

AARON HATHAWAY

Technical services manager



For gray snow mold prevention, there are a few cultural practices that can limit pathogen growth and subsequent disease symptoms, especially in areas that have snow cover for long periods. First, avoid quick-release nitrogen applications late in the season as new growth is more susceptible to gray snow mold. Furthermore, apply one or two fungicide applications before snow falls for the winter. Remember to apply fungicides in 1 to 1.5 gallons of water per 1,000 square feet to ensure thorough coverage. Apply a fungicide (or fungicides) with more than one active ingredient, each of which has activity on gray snow mold. Tebuconazole and PCNB both have relatively superior activity on gray snow mold. Although these active ingredients (AIs) provide superior control, combinations of AIs offer more consistent and effective control of gray snow mold. Apply the treatment (or the second of the two) as close to the snow event that's likely to produce snow that remains for the season.

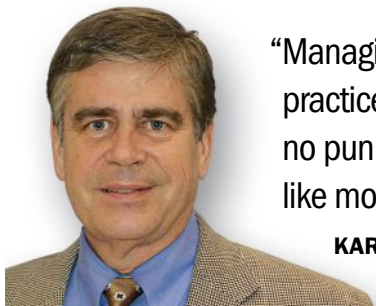
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Technical services manager



Most preventive gray snow mold fungicide programs consist of one or two applications prior to the first snow cover of the season and as close to the snow event as possible. Since gray snow mold develops after about 60 days of continuous snow coverage, there aren't any opportunities to make an effective application once the snow is on the ground. Applying too early can result in a significant loss of fungicide efficacy if the snow is delayed long enough. Research shows that the best approaches consist of multiple modes of action, often combining contact with systemic active ingredients. In regard to prevention changes concerning locations, the biggest difference is likely judging whether or not to spray in milder areas, which may not typically see extended snow cover. That said, once the snow is there, it's too late to apply anything. If there's any recent history of snow mold on a property, it's worth considering preventive measures.



“Managing grain consists of repetitive practices that are often ingrained — no pun intended — on a daily basis, like mowing.”

KARL DANNEBERGER, PH.D., *Science Editor*

Research against the grain

When turfgrass growth becomes horizontal, the leaves begin to lie in various directions. We call this grain. Oftentimes with grain, turfgrass leaves are sporadically coarse in nature, which contributes to a general roughness of the turf. Golfers view grain that occurs on putting greens negatively in that it impacts putting green consistency. If you putt with the grain (leaf blades lay away from you), the ball will tend to roll further or be faster than if you are putting against the grain (the leaf blades lay toward you), which will be a much slower putt.

Similarly, golfers may read a putt by looking at the way the grain lays between the golf ball and the hole. If the grain is toward the golfer, the turf may appear a little darker green, or conversely, if it lays away from the golfer, the turf may be a little lighter color. Grain can impact the amount of break in a putt.

Grain is often associated with the growth habit of the turfgrass species. For example, creeping bentgrass is prostrate in growth while annual bluegrass grows more upright. Bermudagrass greens — including the ultra-dwarf varieties — frequently develop grain. Grainy patches develop, which contrasts between the green areas and lighter green patches. Superintendents

may describe the patches or areas that develop on a bermudagrass green as grain, but the cause may be due in part to genetic mutations.

MANAGEMENT STRATEGIES

Managing grain consists of repetitive practices that are often ingrained — no pun intended — on a daily basis, like mowing. Mechanical practices to remove grain and improve texture include mowing (frequency, height, direction), verticutting, grooming (groomers), brushing and topdressing. The goal is to get the turfgrass plants to grow vertically or upright, thus removing grain and improving the density and texture of the turf.

Mowing greens are probably the

most consistent means of reducing grain. To improve leaf texture and help remove grain, consider changing mowing height, frequency and direction. Lower mowing heights tend to increase density resulting in a finer texture and reduced grain.

Frequently changing the direction of mowing can help remove grain by forcing the turf plant to grow more upright vs. mowing in the same direction, resulting in the plants laying in one direction. Grooved rollers on greens-mowers tend to stand the plant up prior to being cut by the mowing unit, especially compared to solid rollers.

REDUCING GRAIN

For the last several years, we have looked at the impact of brushing, including the evolution in brushing equipment on removing grain and improving putting green turf health. In our field day presentation this year, we will look at relatively low-cost methods of brushing. We are studying the impact of the brushing units on plant stress, green speed and overall quality, which is primarily the reduction of grain.

Of the remaining practices associated with managing grain — verticutting, grooming (groomers), brushing and topdressing — we studied brushing as the equipment has evolved and as a management practice.

With brushing units placed in front of the cutting unit and behind the front roller, we found brushing to be an effective method for reducing grain with little impact on plant health or playability of the putting surface.

As our ability becomes increasingly effective with removing grain, I wonder how much time golfers spend looking for it as they line up a putt. **G**

Karl Danneberger, Ph.D., *Golfdom's* science editor and a professor at The Ohio State University, can be reached at danneberger.1@osu.edu.



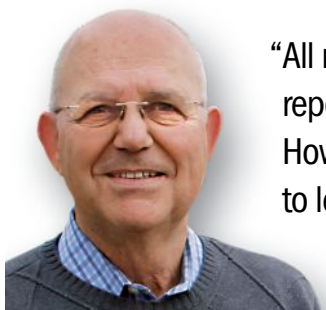
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“All regions except the Southwest reported reductions in water use. However, the Southwest continues to lead in the use of recycled water ...”

MIKE KENNA, PH.D., *Research Editor*

More good news on golf's use of water

The GCSAA's third survey of water use and management practices provides more good news. The first report provided water use estimates for 2005, the second in 2013 and the third survey for 2020.

Since 2005, water applied as irrigation declined by 29 percent, from 2.38 to 1.69 million acre-feet. Notable factors include a 12-percent reduction in golf facilities and a 25-percent reduction in water use.

Let me say here — it is disappointing that there is very little information on course water use from the 1980s. I think the results would be even more dramatic. I did some cursory searching on the internet and could not find definitive estimates of national golf course water use before the 2005 GCSAA survey.

In this third survey, all regions except the Southwest reported reductions in water use. This result does not surprise me since the droughts in the 1980s, and significant population growth made courses in the Southwest respond first to limited water supplies. However, the Southwest continues to lead in the use of recycled water along with the Southeast.

Of the management practices documented, keeping turf drier, pruning tree roots, changing to a more drought-tolerant turfgrass, mulching landscape

beds and increasing no-mow acres were significantly associated with reductions in applied water.

ECONOMIC IMPACT

The USGA estimates of the water-related research on economic impact line up well with this news. For example, approximately 55 percent of the golf facilities used less than one acre-foot of water per acre (325,851 gallons per acre) annually; only 10 percent used four acre-feet per acre (1.3 million gallons per acre) or more annually. Approximately 90 percent of superintendents were familiar with irrigation scheduling based on evapotranspiration (ET) and soil moisture meters.

Superintendents using soil moisture sensors reported higher annual cost savings per facility than ET-based irrigation scheduling. However, ET-based irrigation had the highest proportion of early adopters, with approximately 30 percent who started more than 10 years ago. Only 8 percent of soil moisture sensor users did so more than 10 years ago.

Approximately 7,683 facilities have

adopted soil moisture sensors, whereas only 4,522 facilities adopted ET-based irrigation. Soil moisture meters saved \$62,800 per golf facility, while ET-based irrigation was \$37,300 per facility. Soil moisture meters represent industry-wide savings of \$529.5 million annually, while ET-based irrigations were \$201.4 million annually.

Approximately 90 percent of economic impact survey respondents were familiar with management practices from research on naturalized rough and improved turfgrass cultivars. The adoption rate was 45.5 percent for naturalized rough and 42.6 percent for new cultivars. Naturalized rough had the highest proportion of facilities planning to adopt, and those previous adopters reported the highest annual cost savings per facility (\$56,996) — more than twice that of improved cultivars.

An estimated 6,915 facilities adopted naturalized rough, and 6,568 facilities have adopted improved turfgrass cultivars. Naturalized rough conversion had industry-wide savings of \$469.3 million annually, while improved cultivars saved \$174.6 million annually.

ET-based irrigation scheduling and soil moisture meters have saved the U.S. golf industry an estimated \$730 million yearly. Naturalized rough and improved turfgrass cultivars saved the golf industry \$643.9 million annually.

Results from the GCSAA surveys are published online (gcsaa.org/Environment/golf-course-environmental-profile) and *Crop, Forage, and Turfgrass Management* (CFTM). The USGA published economic impact results in the *International Turfgrass Society Research Journal* and CFTM. Both associations demonstrate the golf industry's commitment to environmental stewardship and promoting golf course superintendents' efforts on their golf courses. **G**

Mike Kenna, Ph.D., retired director of research, USGA Green Section. Contact him at mpkenna@gmail.com.

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-Thad Thompson, Terry Hills Golf Course

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MotorolaSolutions.com

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PrimeSource-Albaugh.com



4

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4 | Air Force F-19 Gen 3

The Air Force F-19 Gen 3 from **SEAGO** is designed to increase durability, performance and usability. The nylon-injected polymer deck is twice as strong as previous models. In addition, the new Ducar 150cc engine reduces the overall weight by 8 pounds, making the F-19 Gen 3 the lightest full-size mower on the market. A taller impeller also helps provide maximum float.

SeagorInternational.com



5

5 | TC125 Turf Collection System

The **JOHN DEERE** TC125 Turf Collection System is ideal for collecting cores, leaves, clippings, thatch and other types of debris. The TC125 tackles average turf in just 15 minutes. The hydraulically driven brush system is simple to operate and maintain, eliminating the need for an additional power source. Equipped with a 49-inch dump height and hydraulic lift cylinder, disposal of all debris is simplified. The offset towing feature provides a variety of options for transport, while an adjustable full-width roller accommodates a variety of turf conditions and brush wear.

Deere.com



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BillyGoat.com

The 19th Hole



Dave Johnson

DIRECTOR OF GROUNDS // The Country Club, Brookline, Mass.



After 18 holes — or maybe after hosting the 2022 U.S. Open — what's your drink of choice? I like

a good IPA. Tree House Brewing Co. is from this state. They're really good.



How big is your family? I have two daughters, Valerie (18) and Samantha (16), and my wonderful wife, Maryann. They were all here during the (U.S. Open) championship. My youngest works in the bag room here. That makes my day go by and puts a smile on my face. Without them, I couldn't have done this and been successful over the last four years.

I have to ask ... where is the E. J. Marshall platter now? Good question. The platter is at home because a friend of mine is building me a case for it, so I don't break it. I told him he has to help me protect it. It's waiting for the proper arrangement so I can hang it on my office wall.

Go back to the conclusion of the U.S. Open, when did you know they were going to make that presentation to you on national TV? I didn't know. I was as surprised as everyone else. Darin Bevard (USGA



// BEST ADVICE

"I LIKE TO KEEP IT SIMPLE. DON'T OVERTHINK THINGS. GO BACK TO THE BASICS IF YOU'RE STRUGGLING AGRONOMICALLY."

director of championship agronomy) kept checking in with me to make sure I was on time to get on the 18th fairway. He was really persistent. When I got to the fairway, he handed me the platter. But things were already rolling. He said, 'Hold this and look at the camera.' I didn't even have time to read it. ... The platter was given to me, but right on there, it says, 'Dave and his team.' The people around me made it happen — it was a true team effort to make it a successful championship.

How did you and the crew celebrate the conclusion of the championship?

We had a big celebration afterward at the grounds facility. We had our family, friends, industry partners and a lot of superintendents from the area. Everybody hung around, and we celebrated,

laughed, cried and hugged. It was a once-in-a-lifetime experience.

So you're a lifelong Boston guy?

What makes you say that? Can you hear my accent or somethin', Seth? I grew up 30 miles west of Boston, a small little town, and I've lived here my whole life. I went to UMass. Born and raised. I love it here.

What's your all-time favorite Boston sports highlight? Well, now I have a new one, and it took place in 2022. I grew up watching the Red Sox and the Celtics,

I go back to the mid-'80s watching with my father. It was phenomenal, I could go on and on. But the 2022 U.S. Open now takes it all.

As interviewed by Seth Jones, Aug. 10, 2022.

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11008557	Fame SC Fungicide 64 oz	\$1,453.50	\$395	27%	\$200	14%
11009500	Fame SC Fungicide 2.5 gal	\$6,408.50	\$1,100	17%	\$550	9%
11013671	Kalida Fungicide 64 oz	\$750.00	\$80	11%	\$50	7%
11013671	Kalida Fungicide 64 oz 4-7 units	\$750.00	Volume rebate: \$165	22%	Volume rebate: \$165	22%
11013671	Kalida Fungicide 64 oz 8+ units	\$750.00	Volume rebate: \$240	32%	Volume rebate: \$240	32%
11003880	Rayora Fungicide 2.5 gal	\$557.25	\$61	11%	\$39	7%
11003880	Rayora Fungicide 2.5 gal 6+ units	\$557.25	Volume rebate: \$195	35%	Volume rebate: \$195	35%
11014245	Serata Fungicide	\$440.00	Add'l 5% added to total fungicide rebate with a minimum 2-case purchase			

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11008351	Blindside Herbicide 0.5 lb bottle		\$12		\$8	
11008409	Dismiss NXT 10 oz	\$99.00	\$15	15%	\$10	10%
11008589	Dismiss NXT 60 oz	\$589.50	\$100	17%	\$65	11%
11008589	Dismiss NXT 60 oz 8+ units	\$589.50	Volume rebate: \$200	34%	Volume rebate: \$200	34%
11008357	Dismiss CA Herbicide 6 oz bottle		\$11		\$7	
11008474	Dismiss South Herbicide 1 pint		\$18		\$11	
11008475	Dismiss Turf Herbicide 6 oz bottle		\$11		\$7	
11008336	Dismiss Turf Herbicide 64 oz bottle		\$85		\$55	
11008464	Echelon Herbicide 1 gal	\$395.75	\$45	11%	\$30	8%
11008464	Echelon Herbicide 1 gal 16+ units	\$395.75	Volume rebate: \$100	25%	Volume rebate: \$100	25%
11008447	QuickSilver Herbicide 8 oz. bottle		\$18		\$12	
11008369	Solitare WSL Herbicide 3/4 gal		\$10		\$6	
11013862	Solitare WSL Herbicide 2.5 gal	\$222.75	\$25	11%	\$16	7%
11013862	Solitare WSL 2.5 gal 14+ units	\$222.75	Volume rebate: \$48	22%	Volume rebate: \$48	22%
11008482	Solitare Herbicide 1 lb jar		\$16		\$10	
11008522	Solitare Herbicide 4 lb bottle	\$526.00	\$58	11%	\$37	7%
11008590	Xonerate 2SC	\$493.50	\$54	11%	\$35	7%

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11008513	Aria® Insecticide 160 gram bottle		\$18		\$10	
11009495	Scion Insecticide 32 oz	\$144.50	\$15	10%	\$10	7%
11008459	Talstar® Professional Insecticide 1 gal		\$5		\$4	
11007753	Talstar® Professional Insecticide 30 gal		\$150		\$120	
11008457	Talstar® Select Insecticide (RUP) 1 gal		\$5		\$4	
11008521	Triple Crown Golf Insecticide (RUP) 1 gal	\$307.00	\$30	10%	\$20	7%
11008521	Triple Crown Golf Insecticide (RUP) 1 gal 12+ units	\$307.00	Volume rebate: \$45	15%	Volume rebate: \$45	15%
11008520	Triple Crown T&O Insecticide 1 gal	\$307.00	\$30	10%	\$20	7%
11008520	Triple Crown T&O Insecticide 1 gal 12+ units	\$307.00	Volume rebate: \$45	15%	Volume rebate: \$45	15%

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Highest single-unit rebate: **\$61**

Volume rebate per unit: **\$195**

Total rebate (@ 6 units): **\$1,170**



GET **ECHELON** FOR
\$83/ACRE
WHEN YOU BUY **16 UNITS**.

Highest single-unit rebate: **\$45**

Volume rebate per unit: **\$100**

Total rebate (@ 16 units): **\$1,600**



GET **SOLITARE WSL 2.5G** FOR
\$95/ACRE
WHEN YOU BUY **14 UNITS**.

Highest single-unit rebate: **\$25**

Volume rebate per unit: **\$48**

Total rebate (@ 14 units): **\$672**



GET **KALIDA** FOR
\$155/ACRE
WHEN YOU BUY **4-7 UNITS**.

Highest single-unit rebate: **\$80**

Volume rebate per unit: **\$165**

Total rebate (@ 7 units): **\$1,155**



GET **KALIDA** FOR
\$135/ACRE
WHEN YOU BUY **8 UNITS**.

Highest single-unit rebate: **\$80**

Volume rebate per unit: **\$240**

Total rebate (@ 8 units): **\$1,920**



GET **TRIPLE CROWN T&O** FOR
\$72/ACRE
WHEN YOU BUY **12 UNITS**.

Highest single-unit rebate: **\$30**

Volume rebate per unit: **\$45**

Total rebate (@ 12 units): **\$540**



GET **TRIPLE CROWN GOLF** FOR
\$72/ACRE
WHEN YOU BUY **12 UNITS**.

Highest single-unit rebate: **\$30**

Volume rebate per unit: **\$45**

Total rebate (@ 12 units): **\$540**



3. BOOST YOUR FUNGICIDE REBATE BY 5% WHEN YOU TRY SERATA

Buy two or more cases of Serata to increase your total fungicide rebate by 5%. Don't miss your chance to try this gamechanger for Pythium — and save big.

THE NEW MODE OF ACTION FOR PYTHIUM DISEASES. MEET SERATA FUNGICIDE.

You've heard the buzz, seen the trials, and heard from trusted researchers. Now it's time to stock up on the novel go-to choice for Pythium control.

Only Serata fungicide contains picarbutrazox — a compound from the new class of chemistry known as tetrazolyloximes — to disrupt pathogens' cellular membrane functions.

LEARN MORE AT WWW.SERATAFUNGICIDE.COM

Savings this simple won't last long.

Talk to your distributor today.

 **TRUE CHAMPIONS**
fmctruechampions.com

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Solutions	Package Sizes (Formulation Type)	Active Ingredient(s)	Tolerant Turf	Use Rates*		Target Weeds*	Application Timing & Tips
				Oz/Acre	Oz/1000 ft ²		
 Dismiss^{NXT} HERBICIDE	10 fl oz (Suspension Concentrate)	Sulfentrazone + Carfentrazone	Creeping Bentgrass, Perennial Ryegrass	5	0.12	Yellow Nutsedge, Kyllinga, Purple Nutsedge**	POST-EMERGE **Two applications
	60 fl oz (Suspension Concentrate)		Cool-season turf	5 – 10	0.12 – 0.23		
			Warm-season turf	6 – 15	0.137 – 0.35		
 Echelon^{4SC} HERBICIDE	1 gal (Suspension Concentrate)	Sulfentrazone + Prodiamine	Creeping Bentgrass, Perennial Ryegrass	8 – 12	0.184 – 0.275	Yellow Nutsedge, Kyllinga, Crabgrass, Goosegrass, Poa Annua	PRE-EMERGE/EARLY POST-EMERGE *Ask about our Echelon Herbicide Performance Assurance Program for Bermudagrass
			KY Bluegrass, Tall Fescue Warm- season turf	18 – 24	0.413 – 0.551		
			Bermudagrass*	24 – 36	0.551 – 0.826		
			St. Augustinegrass	18 lb 18	413 lb 0.413		
 Dismiss^{Turf} HERBICIDE	6 fl oz (Suspension Concentrate)	Sulfentrazone	Creeping Bentgrass	4	0.092	Yellow Nutsedge, Kyllinga, Purple Nutsedge**	POST-EMERGE Labeled for directed sprays in ornamental beds **Two applications
	64 fl oz (Suspension Concentrate)		Cool-season turf	4 – 8	0.092 – 0.18		
			Warm-season turf	6 – 12	0.137 – 0.275		
 Dismiss^{South} HERBICIDE	1 pint (Suspension Concentrate)	Sulfentrazone + Imazethapyr	Bermudagrass, Zoysiagrass, Centipedegrass, Buffalograss, Bahiagrass, Kikuyugrass	9.5 – 14.4	0.22 – 0.331	Purple Nutsedge, Yellow Nutsedge, Kyllinga, Tropical Signalgrass***	POST-EMERGE Not for use on St. Augustinegrass or Seashore Paspalum ***Used with Xonerate (see below)
 Solitaire[®] HERBICIDE	1 lb (Water Disp. Granule)	Sulfentrazone + Quinclorac	KY Bluegrass, Tall Fescue, Rough Bluegrass, Perennial Ryegrass	16 – 20.8	0.367 – 0.478	Crabgrass, Yellow Nutsedge, Kyllinga, Dandeloin, White Clover, Dollarweed, Ground Ivy	POST-EMERGE Not for use on St. Augustinegrass, Bahigrass, or Bentgrass
	4 lb (Water Disp. Granule)		Bermuda, Zoysia, Centipede, Seashore Paspalum, Buffalograss	16 – 32	0.367 – 0.735		
 SOLITARE[®] WSL HERBICIDE	3/4 gal (Water Soluble Liquid)	Sulfentrazone + Quinclorac	KY Bluegrass, Tall Fescue, Fine Fescue, Perennial Ryegrass, Rough Bluegrass	5.4 – 9 Quarts/Acre	4 – 6.5	Crabgrass, Yellow Nutsedge, Kyllinga, Dandeloin, White Clover, Dollarweed, Ground Ivy	POST-EMERGE Not for use on St. Augustinegrass, Bahigrass, or Bentgrass
	2.5 gal (Water Soluble Liquid)		Bermuda, Zoysia, Centipede, Seashore Paspalum, Buffalograss	5.4 – 10.7 Quarts/Acre	4 – 7.9		
 QuickSilver[™] HERBICIDE	8 fl oz (Emulsion in Water)	Carfentrazone	Cool- and warm-season turf	0.9 – 2.1	0.023 – 0.048	Broadleaf Weeds	POST-EMERGE Addition of a non-ionic surfactant (NIS) can improve control
				2 – 6.7	0.046 – 0.154	Silvery Thread Moss	
 Blindside[™] HERBICIDE	1/2 lb (Water Disp. Granule)	Sulfentrazone + Metsulfuron	Bermudagrass, Buffalograss, Centipedegrass, St. Augustinegrass, Zoysiagrass	6.5 – 10	0.15 – 0.23	Dollarweed, Doveweed*, Virginia Buttonweed*, Yellow Nutsedge, Kyllinga, Clover, Wild Violet, Ground Ivy, Spurge, Winter Annuals	POST-EMERGE *2 applications may be required Not for use on Bahiagrass, Kikuyugrass, Seashore Paspalum
 Xonerate^{2SC} Herbicide	12 fl oz (Suspension Concentrate)	Amicarbazone	Creeping Bentgrass	3 (up to 4 apps)	0.06 (up to 4 apps)	POST Poa Annua	Fairway and trees only
			Cool-season turf	3 to 6	0.06 – 0.14	POST Poa Annua	Apply 6 fl oz 2 appl. 21 days apart
			Bermuda-overseeded with ryegrass	8 – 9 (x2 apps)	0.18 – 0.21	POST Poa Annua	Apply 14 days apart
			Warm-season turf	9 – 14 (x2 apps)	0.21 – 0.32 (x2 apps)	POST Poa Annua Tropical Signalgrass	For Tropical Signalgrass in bermudagrass, apply spring or fall w/ Dismiss South (9 x 7.2 oz)

Solutions	Package Sizes (Formulation Type)	Active Ingredient(s)	Use Rates*		Target Pests/Diseases	Application Timing & Tips
			Oz/Acre	Oz/1000 ft ²		
	64 fl oz (Suspension Concentrate)	Fluindapyr + Flutriafol	12 – 17	0.25 – 0.4	Take-All Root Rot, Bipolaris leaf spot, Anthracnose, Large Patch, Spring Dead Spot, Brown Patch, Fairy Ring, Dollar Spot	Apply the high rate (17 fl oz/A or 0.4 fl oz/1000ft ²) preventatively at 14-28 day intervals when conditions are favorable for disease development.
	2.5 gal (Suspension Concentrate)	Flutriafol	32 – 62	0.7 – 1.4	Dollar Spot, Brown Patch, Anthracnose, Gray Leaf Spot, Spring Dead Spot, Summer Patch	Apply preventatively at 14-day intervals when conditions are favorable for disease development at the high rate. Apply on a 14-day interval for curative Dollar Spot. For Spring Dead Spot, apply 62 fl oz/A preventatively in the fall using two applications 21 – 28 days apart.
	1 pint (Suspension Concentrate) 64 fl oz (Suspension Concentrate) 2.5 gal (Suspension Concentrate)	Fluoxastrobin	8 – 16	0.18 – 0.36	Brown Patch, Fairy Ring, Summer Patch, Take-All Patch, Large Patch, Pythium Root Dysfunction	For spring diseases, apply Fame SC when soil temperatures at 2-in. reach 55-60 F.
	2.5 gal (Suspension Concentrate)	Fluoxastrobin + Chlorothalonil	Pints per acre: 4 – 16	Ounces per 1000 ft ² : 1.5 – 5.9	Anthracnose, Dollar Spot, Brown Patch, Gray Leaf Spot, Leaf Spot, Pythium Blight, Pythium Root Dysfunction	Fame +C combines systemic and contact active ingredients for effective control. For foliar diseases, use appropriate nozzle tip and spray volume to maximize leaf coverage. Under severe disease pressure, apply on 14-day intervals.
	35 oz (Water Disp. Granule)	Picarbutrazox	26	0.6 – 0.8	Pythium Root Rot, Pythium Root Dysfunction, Pythium Blight	Picarbutrazox, a new compound from a new class of chemistry the tetrazolyloximes, has translaminar activity and no known cross resistance between it and other oomycete chemistries, making it an ideal tool for pythium control and resistance management.
	1 gal (RUP) (Suspo-Emulsion)	Bifenthrin Zeta-Cypermethrin Imidacloprid	10 – 35	0.23 – 0.8	Controls 30+ pests including: ABW, White Grubs, Ants, Billbugs, Chinch Bugs, Fire Ants, Mole Crickets	RESTRICTED USE PRODUCT Controls both surface and sub-surface pests and also works as part of a rotational program. Treatment timings vary depending on cool- or warm-season turf and the target pest/ life stage.
	1 gal (RUP) (Suspension Concentrate)	Bifenthrin	5 – 40	0.33 – 1	Fire Ants (inc. quarantine), Billbugs, Chinch Bugs, Armyworms, Cutworms, Webworms, and more	RESTRICTED USE PRODUCT Long-lasting residual control when applied in temperate regions. Controls over-wintered annual bluegrass weevil adults for 3 to 4 weeks.

*ALWAYS READ AND FOLLOW LABEL DIRECTIONS. Consult product label for full and detailed target weed lists and use rates prior to using the listed products.

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