

HOLENOTES

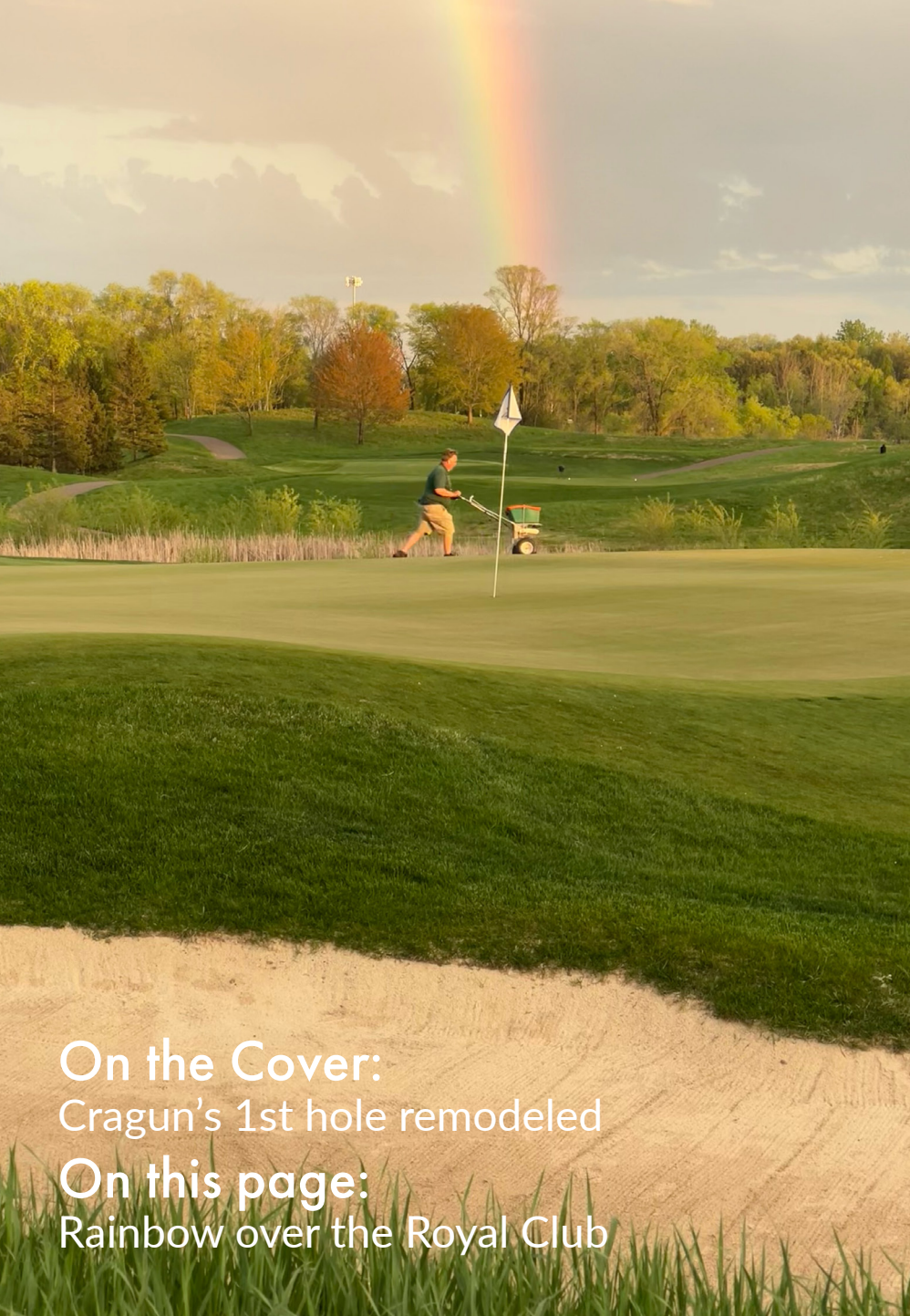
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Renovating
Cragun's

Biocontrol of
Japanese Beetle

Roll it Forward:
Adam Lesmeister



On the Cover:
Cragun's 1st hole remodeled

On this page:
Rainbow over the Royal Club

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HOLENOTES

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Presidential *Perspective*

Mike Sonnek, Royal Golf Club



*“She’s turnin’ on the heat
Ooooh it’s a little too much
She’s turnin’ on the heat
And it’s a hundred above”*
-Loverboy, “Hot Girls
in Love” 1983.

I’m quite certain the fellas from Loverboy were not referencing Mother Nature in this song but you get the point. It’s the time of year when we get a blast of heat from the gulf, and we all wished we worked in Grand Marais. Hopefully it’s not an extended blast, or a sign of things to come. Hopefully our courses, staff, and ourselves can handle the heat.

Great time last month at our outreach event at Austin Country Club hosted by Brandon Bergene. Great weather and great playing conditions. A big thank you to Brandon, his staff, and the team at Austin CC. We have several outreach events coming up this summer including a stop at a St. Paul Saints game! Get yourselves, your staff, and fami-

lies out for some socializing with your peers. After two years of being bottled up, it’s refreshing to have some social interaction.

June is a great month as us dad’s get some appreciation for Father’s Day. My kids are grown, so I’ve run the gamut of Father’s Days activities. Typically, some ice cream is involved. Family time is great, but there is something to be said for a comfy couch to relax on and watch the US Open. Is that too self-ish? I don’t think so. We don’t get an abundance of opportunities to kick our feet up and relax in the heart of the season.

In 2016 I started a new tradition for Father’s Day weekend. I signed up for Grandma’s half marathon in Duluth. My buddy Edd had run the marathon for years

and I finally committed to join him. My sister and niece had also participated the year before, so it turned into a family affair. Very cool to run along Lake Superior with the gorgeous views and in front of very supportive crowds. Great sense of accomplishment to push yourself that far.

The other event for the weekend is the Back to the 50's car show at the state fairgrounds. My neighbor is a bit of a car nut and has attended for years. When he invited me out, he told me he sets up a canopy, chairs, along with a cooler of beer. Took me about a half a second to say I'm in. Another great way to spend a summer afternoon. Listening to engines revving and the smell of burning rubber.

Good luck to everyone playing in the Don White matches! I was fortunate enough to be in one of Dr. White's last group



of students. A wonderful, humble educator. He had a big influence on my philosophies, in turf management and life. Keep it simple and don't over think it. A great tribute to have such a fun event named in his honor. I'll be back next month after the 4th of July and dare I say, the days starting to get shorter.

Take care all.

SE Exposure Golf Event
Austin Country Club, May 24, 2022

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Renovating *Cragun's* *Legacy Courses:*

By: Matt McKinnon with Joe Berggren



Cragun's Resort continues their construction project to remodel all existing 36 holes. When the project is finished, Cragun's will have 45 holes and an executive 9 holes which adds up to a grand total of 54 holes. The project was conceived in July 2020, by Dutch Cragun and Tom

Lehman as they sat on the patio having lunch. "Some brainstorming by Dutch and Tom turned into a weekend tour of the golf course and they came up with the plan," says Matt McKinnon. The project started 10 months later, and ground was broken in April of 2021.



Above: Blue Course #6 New hole ties into the green you see in picture
Left: Lehman Course #4 new green/hole

Currently the project is about 30% complete as 25 holes have been seeded/sodded. The team of Borden Excavating and Pratt's Excavating are doing all of the mass dirt moving on the new and existing golf course along with the two housing developments, while working together with Duininck Golf on the shaping. The team moved around 350,000 yards of dirt during the shaping of the golf course and housing development. Duininck Golf is handling the shaping, feature construction, irrigation, finish work, and

seeding. The new seed is then handed off to McKinnon and his staff for the grow-in process.

The project is not a true re-grass. "The project did not happen because of excessive poa, we don't have a lot of poa", McKinnon said. "This is a special piece of property to work on. We are excited to help the resort update their course and to get Matt some bunkers that will be more maintainable in the future." Judd Duininck said. Duininck Golf is sodding newly built tees, greens,



White Course #1 new green seeded Dominant Extreme 7

White Course # 1 remodel with new Sand Guard bunker liner. Plate compactor is not for the liner.



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and some large fairway areas, while larger areas will be seeded. “Much of the sod has come from onsite and has taken a lot of planning on where to remove it”, McKinnon said. The project is moving along quite quickly. “One area went from the old design to the new design, including a new green and was open for play in 60 days”, he said.

The bunkers are an exciting part of the project. Cragun’s is using the sand guard system from Porous Pave. The Porous Pave

website boasts that the product is highly permeable, durable, flexible and environmentally friendly. It will even work through the freeze/thaw cycle which can be challenging in the north country. The sand is getting replaced with Ohio’s best sand from Plaisted’s.

The new holes should see plenty of play as Cragun’s had 55,574 rounds on 36 holes/par 3 course in 2020 and 48,676 rounds on 27 holes/par 3 course in 2021. The grand opening will be in the spring of 2024.

Lehman Course #13 New hole Dormant seeded in November 2021





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Biocontrol of *Japanese Beetles*

By: Vera Krischik, Associate Professor and Extension Specialist, UMN
Carrie Deans, PostDoc, Department of Entomology, UMN
Michael Angstman, UG UMN

Our teams is looking for cooperators to locate the JB killing fungus in MN. Our team is looking for collaborators to determine if *Ovavesicula popilliae* is present in adult JB at different locations around MN. Every 2 weeks from July thru September, JB traps would be set up and removed after 24 hours. Cooperators will be first to receive soil inoculations of the fungus. Please take the survey and we will call those that want to cooperate. We are cooperating with the MGCSA, MN Golf Course Superintendents Association and MNLA, MN Nursery and Landscape Association on this research. Research is funded by a MN state LCCMR to the UMN.

[Japanese Beetle Collaborator Survey](#)

Biocontrol insects released to manage Japanese Beetles

Classical biocontrol is when predators, parasitic wasps, and pathogens from the ancestral home of an exotic insect pest is released to control the pests where it was introduced. Researchers searched for natural enemies of Japanese beetles in Asia. Two biocontrol agents of Japanese beetle, Winsome Fly, *Isocheta alldrichi*, and a wasp parasitoid,

Tiphia vernalis, were imported, quarantined, raised, and then released in the 1990's by MDA. Unfortunately, they were not effective and did not control JB populations. However, a native fungal pathogen was discovered in 1988 in Connecticut in the soil killing JB. The fungal pathogen *Ovavesicula popilliae* kills JB grubs in the soil and was found in low numbers in Minnesota so far at two locations, in Stillwater and the UMN Saint Paul campus.



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For the last ten years, the microsporidian fungal pathogen *Ovavesicula popilliae* was studied at Michigan State University in the lab of Dr. David Smitley. The fungus was released in five states, Arkansas, Colorado, Kansas, Kentucky, and Michigan. At 6 years post inoculation, JB grub numbers have dropped by 50%. See the graph below from Smitley 2020. This is a classical biocontrol program, where the fungus is released to become permanently established.

New UMN research to manage Japanese Beetles

For the long term, research is needed to survey greater MN for the presence of JB and the

pathogen, which so far was detected at two locations, in Stillwater and the UMN Saint Paul campus. In 2023 we will release the pathogen at 10 sites to encourage its spread. In addition, we will be researching the use of JB traps to spread the pathogen.

For the short term, integrated pest management (IPM) programs using pollinator friendly Acelepryn, chlorantraniliprole, and microbial insecticides will be developed that conserve pollinators and kill JB. Recent research showed that chlorantraniliprole, is highly toxic to larval and adult butterflies and is not a good choice for bee lawns that encourage pollinators and ground nesting bees. Instead



Left, Adult Winsome fly, *Isocheta aldrichi*, Family Tachinidae; Right, fly eggs on JB adult. Larvae will hatch, then feed, and kill the adult. Winsome flies were released by the MDA in 1998. Left, Whitney Cranshaw, bugwood.org; Right, Joshua P. Basham, bugguide.net



Left, Adult wasp, *Tiphia vernalis*, Family Tiphiidae; Right, wasp larva on a JB grub. Larvae will hatch, then feed, and kill the JB grub. Wasps were released by MDA in 1998. Photos, Dave Shetlar, Ohio State University



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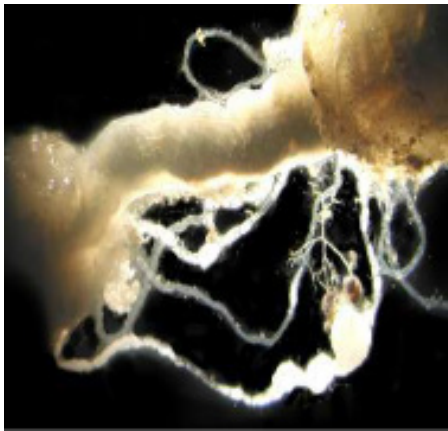


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Japanese beetle life history

Japanese beetles (JB) first arrived from Asia in 1917 in New Jersey and spread to Minnesota by 1990. Japanese beetles are invasive and reach high population numbers of adults that feed on flowers, leaves, fruits and grubs that feed on grass roots. When Japanese beetles and the European chafer populate a new area,

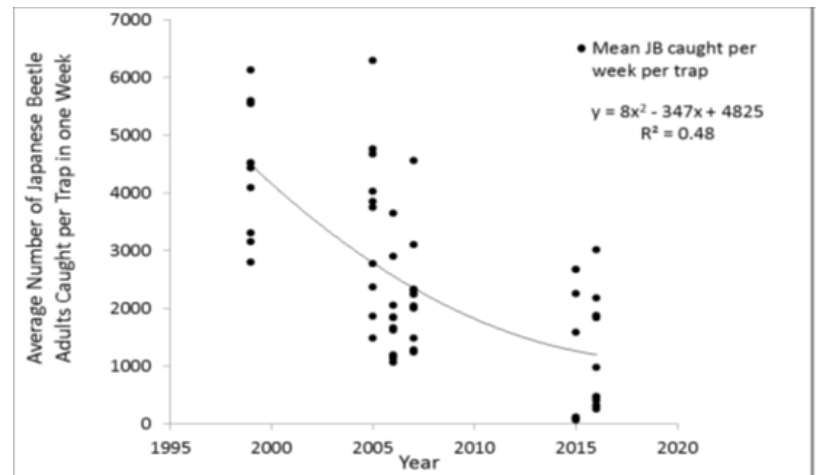
they undergo population increases for several years followed by a general population decline (Andreatis 1988). The population density does not bounce back to the level it was at during the initial colonization. One of the hypothesized factors that cause the population reduction over time is soil inhabiting pathogens. Each year, the US spends upwards of \$616 million to manage JB and replace damaged turf and ornamental plants. In Minnesota adults emerge from the soil in early July to feed, mate, and lay



Left: Dissected jb grub gut. Large beads are population of the fungus in the gut interfering with food absorption resulting in death. David Smitley, Michigan State University

Bottom Left: Japanese beetle adults blended and applied as slurry to the soil above JB grubs. Whitney Cranshaw, Colorado State University.

Below: Japanese beetle trap catches at ten golf courses in southern Michigan from 1999 to 2016. David Smitley, Michigan State University



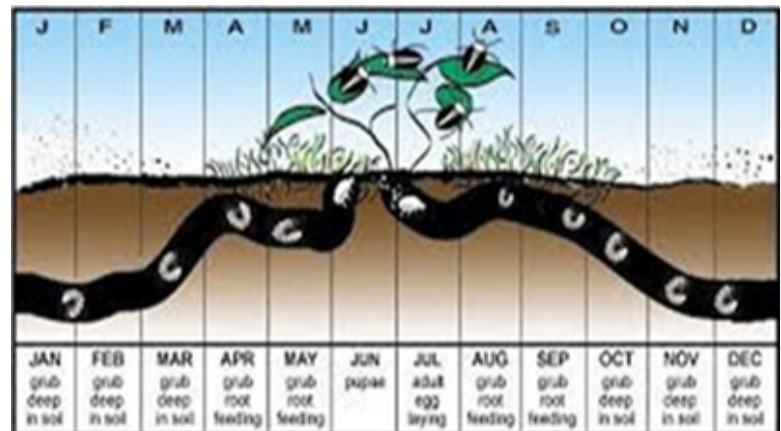
Left: Japanese beetle grubs grow by eating roots of irrigate turf.

Photo, Whitney Cranshaw, Colorado State University, bugwood.org

Bottom Left: Japanese beetle adult trap. Whitney Cranshaw, Colorado State University

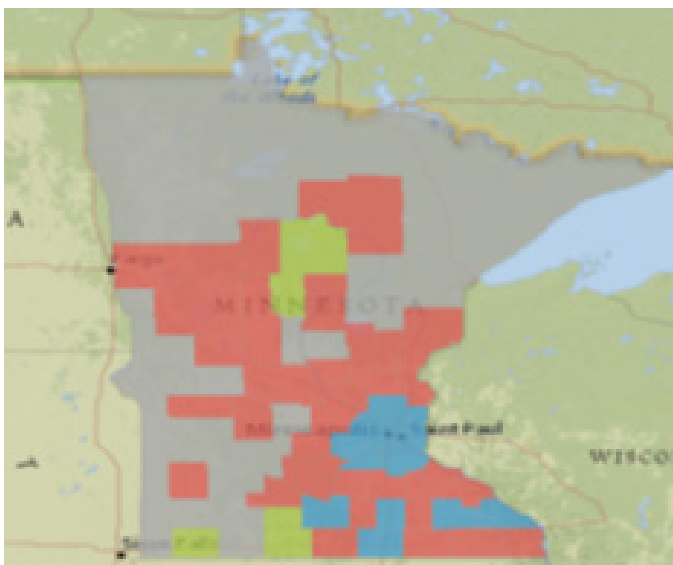
Below: JB life cycle in MN

<https://ncipmhort.cfans.umn.edu/sites/ncipmhort.cfans.umn.edu/files/2022-03/2021-Japanese-Beetle-Management-in-Minnesota.pdf>



eggs for around 6-8 weeks before they gradually begin to die off. Grubs live in the soil feeding on roots until the following July. JB beetles are a USDA APHIS quarantine pest, so shipments are restricted between infected states and non-infected states. Interstate plant shipments must be inspected and certified by the MN DA before they can be considered JB free. The states that are protected by the quarantine include Arizona, California, Colorado, Idaho, Montana, Nevada, Oregon, Utah, and Washington.

MDA Map of JB distribution across Minnesota



Blue abundant, red confirmed, and yellow reported. <https://www.mda.state.mn.us/plants-insects/japanese-beetle>

Insecticides to use to manage JB

Integrated Pest Management (PM) offers different tactics to manage pests, the last of which is conventional pesticides. Using pesticides in or around bee lawns can have negative non-target effects on beneficial insects and pollinators. This is particularly true as bee lawns attract and concentrate pollinators in local areas. Sprays of insecticides can drift into bee lawns and harm the bees directly through acute toxic effects, or the pesticide can be systemic, which means that the pesticide is translocated from leaves and roots to flower nectar and pollen. The harmful sub-lethal effects of pesticides on bees include reducing reproductive, navigation, foraging, and memory. Traditionally fungicides and herbicides on lawns were thought not to harm bees, but research has shown that not to be true.

Insecticides for managing Japanese beetle: Adult (A), Grub (G), friendly to bees Azadirachtin, botanical (A): Short persistence; provides control of damage for a couple of days.

Bifenthrin, beta-cyfluthrin, gamma-cyhalothrin, permethrin, pyrethroid (A): Persistence moderate-long; provides control of damage for about a week.

Pyrethrins, pyrethrins (A): Very short persistence; provides control for a day or two

Carbaryl, carbamate (A): When adults appear, fast acting, highly toxic to bees

Chlorantraniliprole, Acelepryn, diamide (A,G): Use from July until early September. Low risk to mammals and fish, NOT toxic to bees, toxic to butterfly adults and larvae.

Imidacloprid, neonicotinoid (A,G): Use from July until early September. Moderate persistence; provides control of damage for days-week. Moves systemically within plants. Low risk to mammals and fish, but is highly toxic to bees.

Clothianidin, neonicotinoid (A,G): Use from July until early September. Moderate persistence; provides control of damage for days-week. Moves systemically within

plants. Low risk to mammals and fish, but is highly toxic to bees.

Acetamiprid, neonicotinoid (A): Moves systemically within plants. Use from July until early September Moderate persistence; provides control of damage for days-week. Moves systemically within plants. Low risk to mammals and fish, but is toxic to bees.

Trichlorfon, organophosphate (G): Fast-acting, but susceptible to alkaline hydrolysis. It degrades very rapidly in very hard or alkaline water or in a high pH soil. Half of the active ingredients will be degraded in 30 minutes at a pH of 9. Do not lime your lawn just before or after treatment for the same reason. NOT recommended.

Chloroyrifos, organophosphate (G): Only available to golf courses. It is generally not considered a top choice due to the high binding ability of the active ingredient to the thatch. Also, it has health risk to applicators.

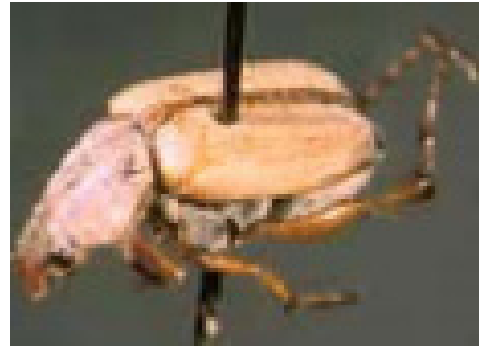
Milky spore disease (G): Caused by the bacteria *Bacillus popillii*



Adult Japanese beetle, *Popillia japonica*. Japanese beetles have two white rear tufts and five white lateral tufts of hair.



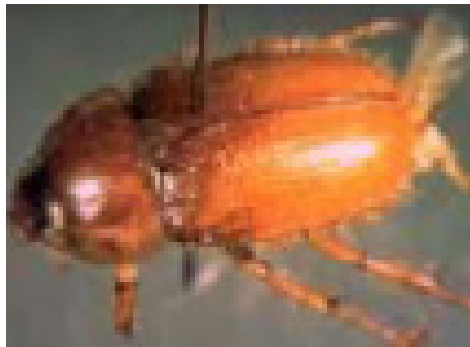
Adult False Japanese beetle, *Strigoderma arbicola*. False Japanese beetles lack the five white hair tufts along wing margin. Adults rarely seen.



Adult rose chafer, *Macrodactylus subspinosus*. Rose chafer are a light green - tan color with long legs. Adults found on plants.



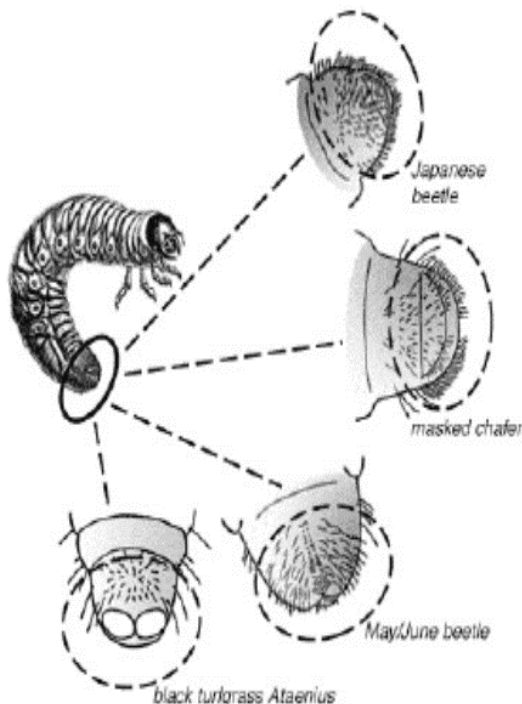
Adult May/June beetle, *Phyllophaga spp.* Adults found at lights.



Adult masked chafer, *Cyclocephala borealis*. Adults do not feed so not found at lights or plants.



Adult black turfgrass Ataenius, *Ataenius spretulus*. Smallest species found in turf with high organic matter.



Grub rastral patterns are used for identification. The hind end of the grub, its raster, contains sutures with hairs. JB has a small "V" shape suture with hairs. Clockwise from top are rasters of Japanese beetle, masked chafer, May/June beetle, black turfgrass Ataenius.

ae and is sold under the names of Japidemic Doom and Milky Spore. Recent university trials with these formulations have not reduced Japanese beetle grub numbers in turf.

Bacillus thuringiensis galleriae, Phyllom BioProducts grubGONE! and beetlegone! (A,G): Effective against grubs, bee friendly.

Identifying Japanese beetles

There are a number of related beetles in the family Scarabaeidae that feed on the roots of grasses. In Minnesota, JB is the worst pest, so you need to identify grubs to species as the life history varies and management is not the same for all species. A management program consists of identifying grubs to species, determining grub numbers, identifying thresholds, timing pesticide application to smaller grubs, and monitoring the treated area for results. Japanese beetle larvae or grubs are “C” shaped and live in the soil and feed on grass roots. Grubs can be identified to species by the pattern of hairs

on their brown hind ends (raster). Using a 10-power hand lens, you can see that the hairs on the raster of Japanese beetle form a small “V” shape just below the anal slit. Look for grubs in green areas, not brown irregular shaped areas. Round spots in turf are not indicative of JB grub feeding, but are more likely fungal pathogens. Japanese beetle females lay eggs in green, lush irrigated turf and avoid dry turf.

Direct requests to Vera Krischik, Department of Entomology, kriscc001@umn.edu, 612-625-7044.

Visit Krischiklab websites on IPM <https://pesticidecert.cfans.umn.edu/> and on IPM and pollinator conservation <https://ncipmhort.cfans.umn.edu/>, ID, tactics and more.



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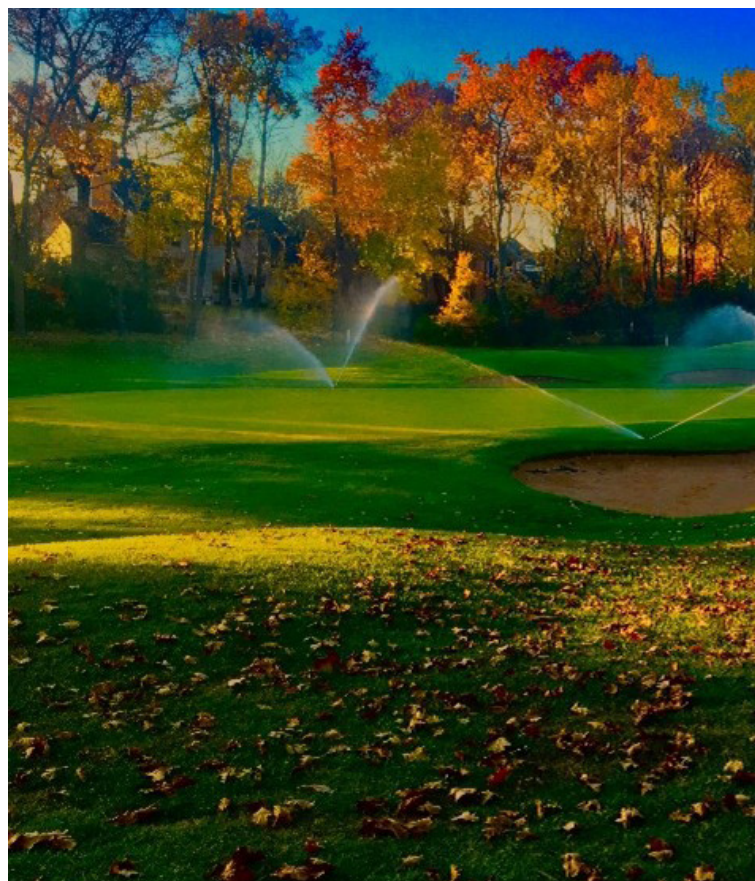
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Roll It Forward

By: Adam Lesmeister



I was introduced to the game of golf at the age of five by my dad. By the time I was about 10, most days he would drop me off at the golf course on his way to work and pick me up on his way back home. He would give me \$5.00 for some snacks and I would walk anywhere from 27-36 holes, with some range and putting sessions

in between. When I was 15, I had my first job on the grounds crew at Pomme de Terre Golf Course in Morris, MN. The first day on the job consisted of a weed whip, gas can, and no cart. I learned quickly how far a tank of gas went before I had to refill, and strategically made my way around the 1923, cot-



tonwood lined golf course. At the time I was planning on going to tech school for drafting and design, as I enjoyed my high school shop and woodworking classes. I just took the job at the golf course for the free golf membership, as I assume many of us in this industry did. I didn't even know you could



go to school and make a career as a golf course superintendent.

All my plans changed when I found out that a member of the grounds crew, Jake Miller, was enrolled at North Dakota State studying Turfgrass Management. Two short years later, I was enrolled in the turfgrass program at NDSU.

Between my junior and senior year, I took a summer internship at Hollytree Country Club in Tyler, TX. My brother lived in Tyler at the time, and wanted to convert me into a Texan, as he did 5 years prior. The next summer Hollytree had a Second Assistant opening, and I walked right into the position without having to apply. Not a bad start for a poor college kid trying to find his first job.

That first summer as the Second Assistant, we had 62 days in a row over 100 degrees, with no rain. I thought to myself, as I made laps around the golf course moving roller base sprinklers and hand watering greens; what the hell did I get myself in to? But you know what? I

absolutely loved it. Waking up in the morning as the sun was peaking up over the live oak and magnolia trees, knowing I was going to play on the golf course for 10-12 hours. Finishing out the day hitting a couple of bass ponds on property, as it was rare to see any golfers on the course after 3pm since it was always 100+ degrees. I loved all of it.

After 3 seasons at Hollytree, the now future Mrs. Lesmeister was missing Minnesota, as was I. I began my search for an assistant position in Minnesota. At the time (2013) landing a solid assistant position wasn't quite as easy as it is today. Especially having to do phone interviews from Texas. After 6 or so interviews with no luck, I found myself on the phone



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with a guy with a last name I didn't even know how to pronounce. After butchering it, I'm pretty sure I pronounced it Kazmer-chek, Dave Kazmierczak and I talked for an hour and a couple of days later, I had the assistant position at Prestwick Golf Club in Woodbury, MN. The 7 years I spent at Prestwick were some the best years of my life both personally and professionally. 9 out of 10 days I was excited to go to work. I was working with an awesome team that all had an immense amount of passion for the golf course.

Dave soon became more of a friend than a boss. I had a great relationship with the other As-

sistant Xando Leon, as he and I shared many of the same goals and visions for the course. And I was able to work with the best equipment manager I believe this industry has, Chad Braun. In the Fall of 2019, I had a great opportunity to get into the sales side of the industry. My dad was in sales his entire life, I was always interested in sales, and I had a minor in sales and marketing. Though it was a difficult decision at the time, as I absolutely loved working on the golf course, I have enjoyed every minute of this new career path with Clesens and Rain Bird. I still get to go out on various golf courses a couple times a week.

I've had the pleasure of meeting a ton of Superintendents, Assistants and other members of the turf industry in Minnesota and Wisconsin. And I get to do what I truly love to do daily; help people. Whether it be an issue they may be having, or helping them and being part of a master plan.

To sum all of this up. I got into this industry because; I love being outdoors. I love the first hours in the morning when the sun is coming up, the world is quiet, and you get to see the day come alive from a long night's nap. I love solving problems and seeing the results immediately. I love helping others solve prob-

lems and feeling like a part of their team to make their course better. I love being on the open road seeing parts of Minnesota and Wisconsin I never thought I would. I love meeting new people and learning more about them in both their professional and personal lives. I love being a part of an association that feels like an extended family at times. And I love golf. Everything from growing grass, playing the game, course design/architecture and the people.

I want to thank Dave for his friendship, kind words and nominating me to share my story. I am choosing Jim Snell to "Roll it





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Forward.” Jim and I first met at a MGCSA event back in 2014. We continued to run into each other at various association events and engaged in golf talk and personal talk as well. We both were long time Assistants looking to move into Superintendent positions. We found ourselves applying for some of the same Superintendent positions and would have great conversations about our goals and where we wanted to be. We have teamed up the last 3 years for the Don White Match Play event and have gotten to know each other very well.





Luck
Golf
Course

MGCSA Badgerland Exposure Golf Event
Luck Golf Course
Wednesday July 20th, 2022
Host: Kevin Clunis, CGCS

Only \$30 for 18 holes of golf, cart, and lunch!
Register you and your staff for a fun round of golf with
a casual two-man team format.
Proximity prizes available. Tee Times from 10:00.



Reinders



CLESENS

Non MGCSA members welcome
Register online at MGCSA.org

MGCSA FAMILY DAY

@ the St. Paul Saints

Sunday, July 31 st, 2022

Saints vs. Iowa Cubs

2:07 First Pitch

Join your fellow members and their families for a day at the ballpark!

Introducing: MGCSA Family Day!

\$15* - Member

\$14- Family (*kids under 2 do not need ticket*)

Register you & your family at mgcsa.org by July 1 st! Ticket quantities are limited, register early to reserve your spots! *At-cost event



GOLF COURSE MUSINGS

Share your strange, funny, and unique photos from your time on a golf course?
Send your images to chris@mgcsa.org.



Royal Golf Club's
afternoon hail
collection!

Get to Know 'em: *Collin Cannon*

By: Joe Berggren, Hole Notes Editor

FACILITY INFO

Golf Course: Grand Forks Country Club

Public or Private: Private

Number of Holes: 18

Fulltime employees: 4

Seasonal employees (not including full time): 15

Number of employees of entire facility at peak season: 70

Types of grass: Penncross Bentgrass/Poa greens, Alpha/T1 tees, Kentucky Blue/Poa fairways

Total course acreage: 160

Greens acreage: 3.6

Tee acreage: 1.6

Fairway acreage: 24

Rough acreage: 80

Driving range acreage: 10

Range tee acreage: 30,000 sqft.



Personal Turf Facts:

How many years have you been in your current position?

6

How many years have you been in the turf industry?

10

Where else have you worked?

Crow River Golf Club in Hutchinson, MN in college as grounds crew and internship at Bully Pulpit Golf Course in Medora, ND.

Turf School Attended (if any)?

North Dakota State University



Industry thoughts

What is one “master plan” thing you would like to change at your golf course?

Drainage on our “high” holes. 4-5 holes are extremely flat and have no where to drain. We have a current Master Plan to renovate. Also, irrigation upgrades are a top priority item.

What concerns do you have for the turf business and the future of golf?

Costs of equipment, pesticides, and supplies are rising too much too fast. Labor wages have also skyrocketed, and it can be difficult to compete with other businesses.

What is needed to bring more young professionals into the industry?

Higher pay, more/better benefits, more balance with work/family life.

What piece of equipment do you want? Not a need, a want.
Mini Excavator

In terms of industry costs (equipment, pesticides, labor, etc.) are they too low, too high or just right?

Equipment, pesticides, and labor have all risen to extremely high levels. I don't really see any of these coming down soon.

FUN FACTS

Have you ever met a celebrity? Who?

I got to golf at TPC Deere Run the Monday before the John Deere Classic began with Collin Morikawa. This was right as he began climbing the ranks in the PGA. I also got to meet Luke

Combs in 2021 in Grand Forks. He and his band played a round of golf at our club and in return, they provided my entire grounds crew with tickets to his concert that night.

What is your favorite vacation spot?

Any lake in Minnesota in the summer. Anywhere warm in the winter!

What is your favorite memory of starting your turf career?

I have a lot of favorite memories starting my turf career and many of them occurred at Bully Pulpit during my internship. I learned all aspects of golf course maintenance during my time in Medora. The scenery and wildlife were unbelievable and getting to wake up at dawn every day to that golf course was truly enjoyable. One memory was walk mowing tees on the badlands holes and always hoping you wouldn't drive the mower right off of a cliff!

What is your favorite job on the golf course?

I love getting on a rough mower on a Friday afternoon. I rarely ever mow and there is just something about putting headphones in, forgetting about how the week went, and tidying up the course for the weekend. I also thoroughly enjoy hauling an electric string trimmer around and touching up areas around the course.

What is your least favorite job on the golf course?

My least favorite job would have to be washing and squeegeeing silt from turf after a flood.

Have you played any famous golf courses? Which ones?

TPC Deere Run

Who is your dream foursome?
Tiger, Phil, and Collin Morikawa.

2021 or 2022... What a year! Would you like to comment on it?

The golf industry is booming. Our club struggled for years to get over 170 golfing memberships and we are now full at 300 golf memberships and 85 social memberships. The drought of 2021 was tough in North Dakota and proved that our dated irrigation system is ready for major upgrades. 2022 has now provided even more challenges as we lost our maintenance facility and almost entire equipment fleet to a fire. The golf industry is such a close-knit family and we have been extremely fortunate to have amazing equipment suppliers help us get what we need to operate for 2022.



*If you would like to participate in a future
Get to Know 'Em, please reach out to Editor
Joe Berggren at jberggren@golfthewilds.com*



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Nick White
Golf Course Superintendent



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Dollar Spot Brown Patch Anthracnose Gray Leaf Spot Snow Mold

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*Dollar spot, brown patch, anthracnose, gray leaf spot and snow mold were the five most common diseases according to a national survey among golf course superintendents.



Rush Creek Golf Club High School Field Trip

On May 17th, Matt Cavanaugh and his staff hosted high school students from the Anoka-Hennepin School District. The students learned about turfgrass, wetting agents and soils, golf course horticulture, equipment maintenance, and equipment operation. The students and chaperones truly enjoyed their experience and want to do it again with more students! Thank you to the Rush Creek Staff and all of our vounteers on that day!





Demonstrating Water Savings on Fairways Through Precision Irrigation

By: *Ryan Schwab (University of Minnesota), Chase Straw (Texas A&M University), Josh Friell (The Toro Company), Eric Watkins (University of Minnesota)*



There are many irrigation scheduling methods used on golf courses today, especially on fairways. Many superintendents have a pretty good idea of the soil moisture behavior of their fairways and implement some form of precision irrigation without much thought. Individual heads can have run times adjusted. A fairway may dry up quicker than others and receive more frequent “blanket” applications of water than others. Decisions could also be influenced by adopting technologies such as portable soil moisture sensors (SMS) or on-site weather station data. Whether between fairways or areas within a single fairway, soil moisture variability is inevitable, and the ability to capture this at a fine resolution can lead to an improved precision irrigation management plan.

Our group developed a free protocol for golf course soil moisture mapping in 2019 (<https://license.umn.edu/product/protocol-for-golf-course-soil-moisture-mapping>). This step-by-step protocol explains how to collect and map soil moisture of fairways. Most importantly, it teaches how to implement the information gathered to support irrigation decisions. Within each fairway, a superintendent can create and classify multiple irrigation management zones that correspond to the soil moisture variability and closest irrigation head. For example, all areas that tend to have a high water-holding capacity will be grouped together as a “wet” zone, regardless of their location on the fairway (**Figure 1**). By avoiding “blanket” applications and watering more site-spe-

cifically, a superintendent can practice precision irrigation with the hopes of conserving water.

A larger scale approach of this protocol was demonstrated over the 2020 and 2021 golf seasons at Edina Country Club with the help of Brandon Schindeler and crew. We were interested in the water use and the fairway quality of three different irrigation management strategies, each of which was assigned to three fairways on the course:

- SMS-based irrigation scheduling (using soil moisture sensors in three different management zones as determined by soil moisture mapping)
- ET-based irrigation scheduling (“blanket” applications of 60% evapotranspiration replacement)
- Traditional irrigation scheduling (“blanket” applications controlled by superintendent preferences).

SMS-based irrigation scheduling is similar to the aforementioned soil moisture mapping protocol, but more extensive. We broke each of the three SMS-based fairways into three irrigation management zones based on their soil moisture maps. Areas around each head were irrigation zones classified and watered as either “wet”, “moderate”, or “dry”. A Toro TurfGuard in-ground SMS was installed in representative areas of each irrigation management zone (for a total of three sensors per fairway). The Toro Lynx central irrigation controller was configured to record water use of all irrigation heads, grouped by irrigation management zone.



Figure 1. Locations of a “wet” irrigation management zone based on soil moisture mapping of a fairway.

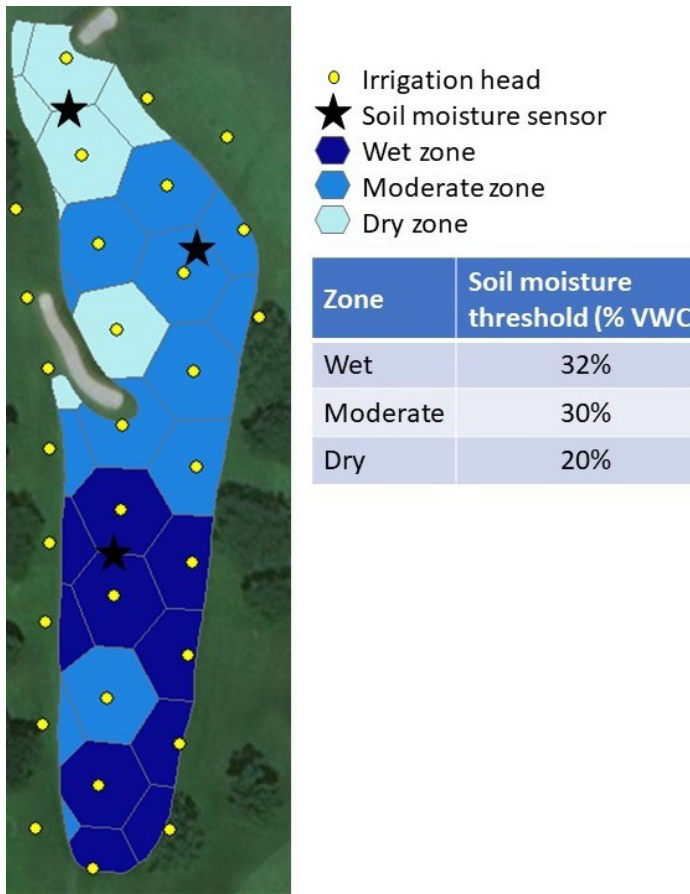


Figure 2. Soil moisture thresholds of each irrigation management zone.

To determine when to water the SMS-based fairway zones, we allowed each irrigation management zone to dry down until Brandon was no longer comfortable with the surface conditions. When we reached that point, the soil moisture at the Turf-Guard location of the struggling management zone was used as a threshold value to trigger an irrigation event. Water was withheld from the fairways receiving the SMS-based irrigation scheduling strategy until a zone dried down to its soil moisture

threshold. Each irrigation management zone had a different threshold value to maintain acceptable turfgrass quality (Figure 2). Once all thresholds were set, we began all irrigation scheduling and collected weekly spatial data of all fairways in the project.

Luckily, we were able to use the Toro Precision Sense 6000 to collect most of our georeferenced data for the nine fairways (Figure 3). This allowed us to map not only soil moisture variability, but also turfgrass stress and compaction. The visual quality of the creeping bentgrass fairways was logged using a nifty GPS phone application. To keep up with all the irrigation scheduling strategies, constant communication with Brandon was crucial. He gave us the on-site weather station and water consumption data throughout each week. Over a two-year period, we did four total runs, each of which was either 7 or 8 weeks long.

Pairing the water use numbers with the surface and soil moisture maps allowed us to answer two questions:

Does the SMS-based irrigation scheduling conserve water compared to the other irrigation management strategies? How does the creeping bentgrass respond to the different irrigation management strategies?

Significant water savings were achieved using the SMS-based irrigation scheduling strategy, which used the least water with an average weekly irrigation depth of 0.17 inches (**Figure 4**). Due to our humid summers, as well as the professionalism and talent of Brandon, the tradition-

al irrigation scheduling strategy used much less water (0.22 inches per week) than the deficit ET-based strategy (0.31 inches per week). Since Brandon was restricted to only “blanket” applications when watering, we’d expect a decrease in his water use if we allowed him to water more site-specifically. Our first run in 2021 required the most water use of all four runs due to a moderate drought in the Twin Cities.

Reducing water use is the goal, but hopefully this doesn’t come at the expense of fairway

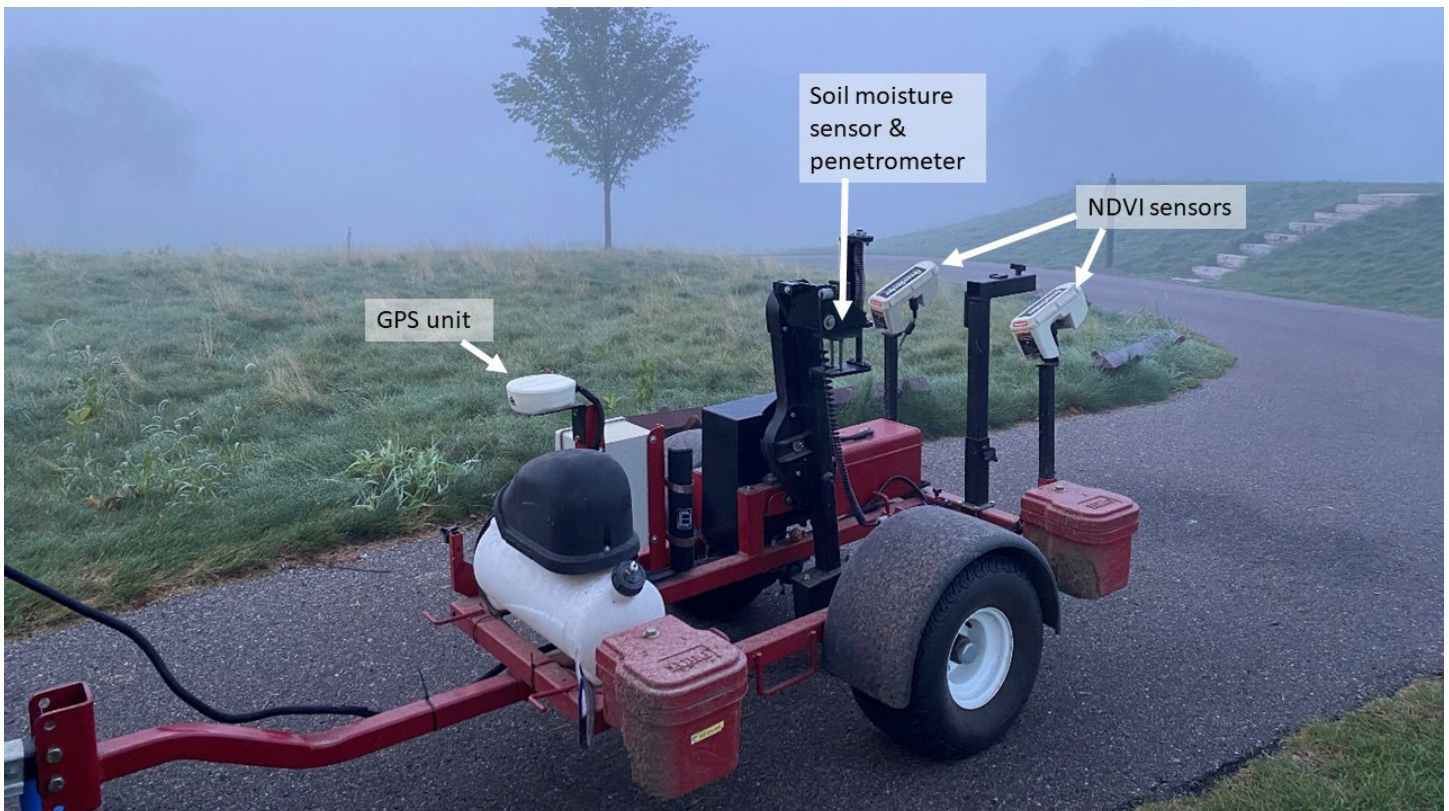


Figure 3. The Toro Precision Sense 6000 was used to collect georeferenced data for fairway mapping.

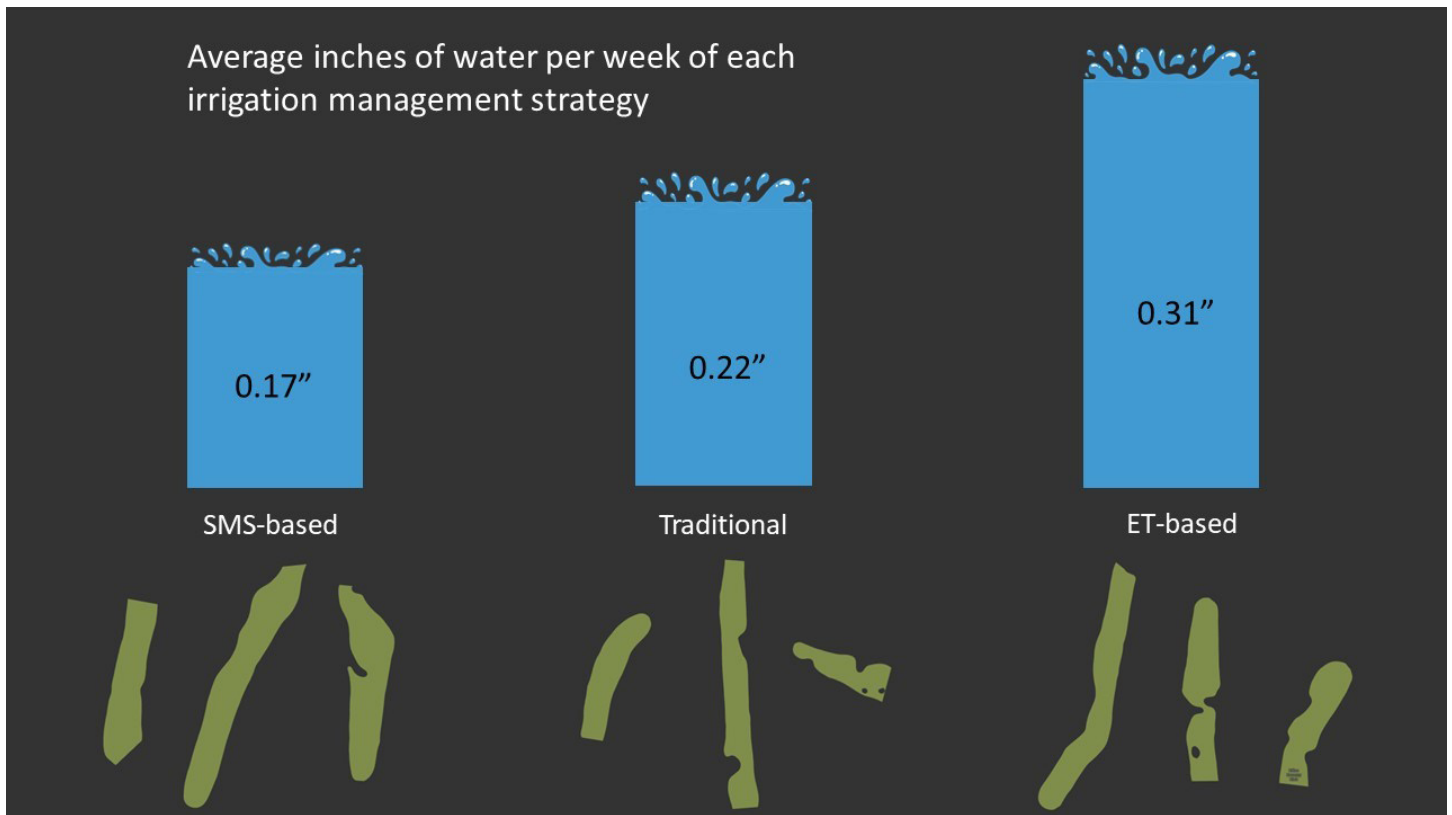


Figure 4. Water use of each irrigation management strategy in average inches of water per week.

quality. Either by walking the course or mapping our turfgrass quality ratings of each fairway, we observed a variety of factors that influenced our ratings (**Figure 5**). There were a handful of “hotspots” either on slopes or bunker edges that would typically flare up before our soil moisture thresholds were reached. This forced us to water these areas as needed to ensure our irrigation strategies weren’t impairing the function of the fairway. We also increased the watering depth of the SMS-based irrigation strategy from 0.2 inches in 2020 to 0.3 inches in 2021 whenever

soil moisture thresholds were reached, to try to avoid more frequent watering in dry areas. Turfgrass quality was also affected by annual bluegrass presence, compacted areas, or a combination of factors. We have yet to determine if our watering strategies influenced turfgrass quality ratings. This information will be shared once our analysis and interpretation are finished. Stay tuned.

Adopting technology for site-specific management can be a great partner to personal decision-making and preferences. Sometimes it’s nice

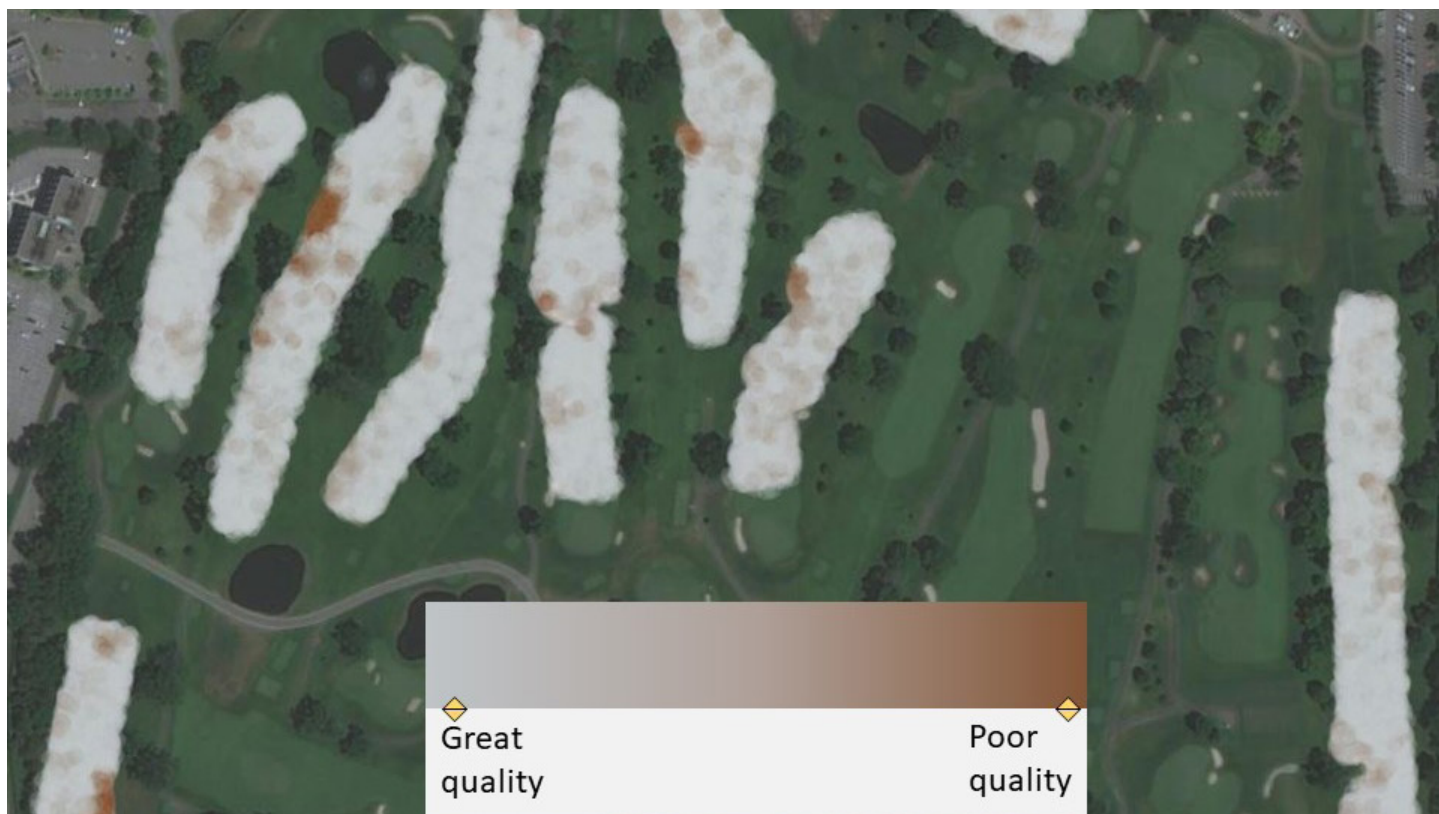


Figure 5. Spatial turfgrass quality of fairways during summer 2021.

to have numbers support to your practices. In this project we were able to demonstrate a way to take advantage of variability of data within fairways by pairing mapping technology with soil moisture sensors for precision irrigation.

There is plenty of up-front work involved, but once the system is ready, water and energy

savings are possible. Feel free to adopt our SMS-based irrigation strategy and make it your own. We would like to thank Brandon Schindele, Zach Stenstad, Rick Plemel, Andy Smith, and crew for their help, time, flexibility, and dedication to this project. We also thank the USGA and MGC-SA for funding this project and The Toro Company for allowing us to use their equipment.

*Follow the UMN Turf Blog
for project updates!*

From the *High Grass*

By: Chris Aumock

Did you participate in the 2022 Virtual National Golf Day? Was your voice heard supporting efforts effecting our industry? If not, why? Its important we are involved in these discussions about important issues affecting the future of our industry. I was there on our behalf, and you can be there with me next time.

We were advocating against SF 3283 (PACTPA). Among other things, this bill would allow for arbitrary bans on products currently banned in Canada and the EU. The EPA already has a vigorous and thorough review process that the golf industry is still supporting. This bill would also create an unfair patchwork of rules and regulations. One area of particular concern is the review of complaints. Any product that has a complaint filed against it, will be up for review by an administrator. If the administrator does not make a judgment in 90 days, that product can then



be arbitrarily deemed hazardous, and have its registration pulled. This process would not guarantee a full and thorough product review and would create unfair and unjust procedures.

Also of concern is the inclusion of localities abilities to defy existing preemption laws. We have heard this topic recently in Minnesota, now we hear it again in this bill. This could allow uninformed local governments and councils to supersede the already established and thorough state and federal regulations. Allowing cities to create their own specific rules regarding pesticide use, could lead to another situation of unfair business opportunities amongst neighboring facilities.

Along with opposing PACTPA, we were there supporting efforts involving H-2B visas and the PHIT Act. Simply put, the PHIT Act would allow HSA/FSA dollars to be used for recreational opportunities. The thinking being, there is so much focus on treatment for mental and physical health, that this could be an option for preventative action. Physical activity is known to support better physical and mental health. Golf could benefit from this by allowing more people to use these funds for the sport. They could even use the funds for golf spikes!

As for the H-2B program, we were discussing a returning workers exemption. Currently, there are not enough visas available for all the requested workers across the country. Even with additional visas having been released recently, there is still a need for more. This legislation would remove returning workers, who have you used the program in the past 3 years, from the visa cap. That cap is currently set at 66,000, leaving more visas available for new workers. There were 136,000 visas requested for the second half of

2022, even with additional released visas recently, the program is still about 35,000 visas short of nationwide requests.

The National Golf Day event allows us the opportunity to meet with our senators, representatives, and office staff to discuss legislative issues that are affecting our industry. Our voice is much stronger together, and it's up to each of us to take advantage of these opportunities. I was able to speak to five of our elected officials' offices, including: Sen. Klobuchar, Sen. Smith, Rep. Omar, Rep. Phillips, and Rep. McCollum.

Next year, we expect to return to the state capital and continue to support local legislation that will benefit our state professionals. Our current bills involving water allocation priorities made no progress this year, as expected. Going forward, this is a much larger issue, as there is an ardent desire to rework the entire statewide allocation priority process amongst some legislators. For us, we will continue to push forward with this legislation and are continuing discussions with relevant legislators regarding the best

pathway forward. We will be pursuing changes to the verbiage, to better support our broader industry and not single out golf, as we know our public perception is undeservedly poor and could undermine our intentions.

Our colleagues in White Bear Lake still face an uncertain future. Legislation protection existing permits failed to move forward at the end of the session. With no new ruling, these courses continue to lack clarity on their future water assurances. Our voices will be more crucial than ever. These metro courses are facing water assurance issues now. Last year, superintendents up north had their permits pulled. The situation is real, and it could affect us all sooner than we like. Now is the time to stand up and be heard! The MGCSA, along with our allies, will continue to push for water assurances at the capital. Our bills from this year will be improved and reintroduced again next session.

With all of this, please consider taking the efforts you can now. If you have not yet, look at the GCSAA BMP facility adoption

tool. These facility BMP's will be important tools for us as we discuss future legislation. BMP's and templates are how legislators and their offices speak. It's a language they can understand. Make these documents accurate to your site, do not just copy and paste without editing it. If these documents are to be useful, they need to be accurate and supportive of the realities of each site. When someone or a group comes looking for it, it will be too late if it is not fully considerate of your property.

Another opportunity to get involved is through the GCSAA Grassroots Ambassador Program. This program matches superintendents with their District Representative or State Senator. During this time of transition at MGCSA, several of these positions could be available for those who are interested. We have had two years without the chance to further these relationships, so now would be a wonderful time to get involved, and work to further our message with our elected officials.

If you believe that advoca-

cy is important to our industry and association, the time is now to get involved. The Day on the Hill next year will need to be our biggest turnout yet, because we must continue the message, and it relies on all of us standing together!

We have made progress over

the last decade and now is not the time to falter. We have previous boards and Jack to thank for our current standing. But now as we move forward, I will need you to stand with me. Not only because we are stronger together, but we have come too far now to relinquish any of our previous progress.

MGCSA NEW MEMBERS - *June 2022*

Jack Sams

C

Minnesota National Golf Course



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