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Hole Notes

The Official Publication of the MGCSA

Vol. 53, No. 7 August, 2018

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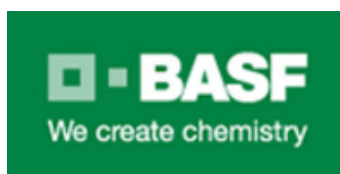
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August 20, The Championship at The Jewel
Host Doug Mahal

September 10, Badgerland Golf at Cumberland GC
Host Bryan Tahtinen

October 1, The Wee One at Brackett's Crossing CC
Host Tom Proschek

October 8, The Scramble at Medina Golf & Country Club
Host Erin McManus



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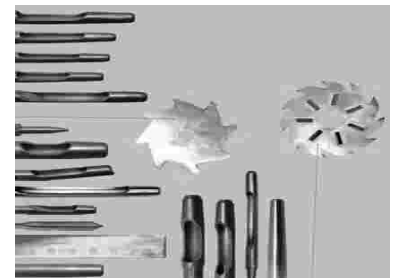
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Presidential Perspective

by Brandon Schindele, Superintendent Edina Country Club

The acorns are falling so that must mean fall is near or that we just have a new employee hazard on the course and someone is going to get a severe concussion if they sit under an oak tree for too long without a canopy on their cart. This year seems to have more acorns than a typical year...the things you notice when you work on a golf course.

I am sure many of you are preparing for some type of aerification activity soon and giving your turf a little “relief” from the stress of the summer. We completed ours the week of August 6th and it sure feels good to have that chore behind us. The warmer temps have let the grass heal in quick and by having the majority of the summer staff here it made a normally long arduous task not so unenjoyable.

During our week of punching

holes, I had a few members say to me, “You really do enjoy this, don’t you?” I explained that statement could not be farther from the truth. I told them I really despised aerification; it is a lot of work, a lot of hours, the staff is usually unhappy and ready to quit, and then the members’ satisfaction level is not very high. No one wants the golf course to look as good as possible more than I do. I do not enjoy aerification, but I understand it is a necessary evil that must be done if we want turf to perform at high level.

This got me thinking about communication and if we are not the ones telling our own story, then our audience will make up their own story and narrative based on the limited information that they have.

On August 9th the University of Minnesota / MTGF held the biennial Field Days at the TROE center and the morning session

was the typical format viewing the various research and NTEP trials with our colleagues from all disciplines of turf care.

New this year was a special afternoon session sponsored by the MGCSA, Met Council and the UMN. It was designed to bring in an audience of decision makers and people that can influence the direction that turf care goes and what we are able to do and not do in the future, or at a bare minimum, become either opponents or allies for us. I observed the various individuals from watershed districts, city administration and government positions, etc. and one of the most intriguing things that I saw was the open mindedness to listen to why we should be using drought resistant grasses, why rain monitors need to be mandatory on all irrigation systems, and various other items of research that are tough to argue against when science is on our side.

The other notable fact is that we, golf course turf managers, are

looked to as experts by the outside observer, perhaps even more so when they get a chance to converse and ask questions of us. What I have heard myself and plenty of times from Jack Mackenzie is that, "The Golf Course Superintendents really have their stuff together!!"

We as a professional group need to embrace this role as the experts in the future, however, this is nothing new that I am telling all of you. I do think that our audience can be more easily lost in this day of information and "fake news" at our fingertips quicker than any other time in the history of our profession.

Golf Courses are still a target for the uninformed to ban fertilizers, pesticides, and take away our access to water. Facts and science do not matter to some; the only thing that matters is that they get their own way and push falsehoods. We as a group have shown we will adapt when facts and science tell us that something is not good for the environment or the people that are in that

environment.

Rewind 20-30 years and think of the pesticides that were available and heavily used. Science showed that some were not a good idea, we adapted, and industry support provided alternatives. The sky did not fall!! Now we need to be the ones standing shoulder to shoulder with our colleagues at the University and use the good work they are doing by applying it to our golf courses.

So, I challenge everyone reading this article to seek out some information that was provided at field days and try to incorporate it even at the smallest level on your golf course, so you can show that you are evolving and adapting to the changing world of expectations. Are there areas on your course that you might be able to incorporate some fescue into, whether it is Fine Fescue or perhaps Tall Fescue? You might find the perfect spot for one of these lesser used grasses.

A couple of big events are on the horizon for the MGCSA:

The Wee One Tournament is at Brackett's Crossing on Monday, October 1st. Supporting our fellow colleagues is incredibly important and this is always a fun day at the end of the year.

The Scramble is at Medina Golf and Country Club on Monday, October 8th. This event goes to support two worthy causes; Turfgrass research and Scholarship opportunities for children and grandchildren of MGCSA members.

I know these events are bunched together and it might be difficult to take two Mondays to support the industry and play golf, but these are the dates that we are able to secure venues that drive attendance and make it feasible to have a tournament. Please plan accordingly and see if you can make it out for two Mondays of fun and golf.

Happy Hole punching everyone!!



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Monday September 10th, 2018

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***MGCSA and Non-MGCSA Area Superintendents
and staff are welcome and encouraged to attend this event***

Contact Jack MacKenzie, Executive Director MGCSA

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It wouldn't be the same without you

Roles > Tasks

Part One

By Chris Tritabaugh, Superintendent at Hazeltine National Golf Club

If you are a golf course superintendent, you would more than likely say you have a role at your facility. Your role, in the most simplistic manner, is to oversee the maintenance and upkeep of the golf course and grounds. Within your role, you have a series of tasks needing to be completed, daily, weekly, monthly or annually.

If the person to whom you report is a strong leader, then the determination of the tasks you need to complete comes from one of two things: 1) your knowledge of your role and what needs to be accomplished, or 2) observing and reacting to your work environment.

Ultimately, your role, providing the best golf course possible, is what determines the tasks you must complete. But what of our staff? Do they have defined roles, or are they 100% task oriented? Always waiting for your instructions, receiving, completing, and waiting again-like a dog playing fetch.

Defining roles on your team gets harder the further you work down through the hierarchy. A defined role for an assistant superintendent is pretty standard. So, too, are roles for a spray tech and irrigation tech. After these typical roles, definition may not be as clear cut, but it doesn't mean you can't define roles for nearly everyone, even seasonal staff.

Our staffs are comprised of a generation who want more than just a paycheck from the work they do. They want to know that what they are doing on a daily basis has meaning-they want a role. Why not give it to them? Imagine a team member talking to a family member about his/her job at a golf course. I'll use Hazeltine as an example: *"So where do you work?" — "Hazeltine National" — "What do you do there?" — "A little bit of everything. Mostly rake bunkers and push mow, but sometimes I get to mow fairways."* — *"How do you like*



it?” — “Its fun, the money is nice and I’m finished with work about the time my friends are waking up.” Now imagine the same team member talking with family or friends, but this time telling them about his/her role on your team:
“So where do you work?” — “Hazelton National” — “What do you do there?” — “They made me the leader of the team of high school kids doing most of the bunker raking and push mowing.” — “Wow, that sounds like a lot of responsibility. Its awesome they’ve put you in charge of a team like that.” — “I’ve

been there a couple of years and they felt I’d become a leader among the group of younger employees. This year they came to me and asked if I’d be interested in taking on this role.” — “How cool that a course like that would give you so much responsibility. You must have done great work to earn it.”

I made up the conversations, but the role concept is something we have implemented. Being handed a role, and the responsibility that comes with it instills a great deal of confidence in people, especially young people. Rather than

just completing tasks, they become part of achieving the result. When given the responsibility to oversee a result, it's human nature for them to want to improve their area of oversight through innovation and improved efficiency.

Handing team members a role makes the job of the golf course superintendent easier as well. Certainly there will be an initial investment as you establish expectations for each role. But I believe

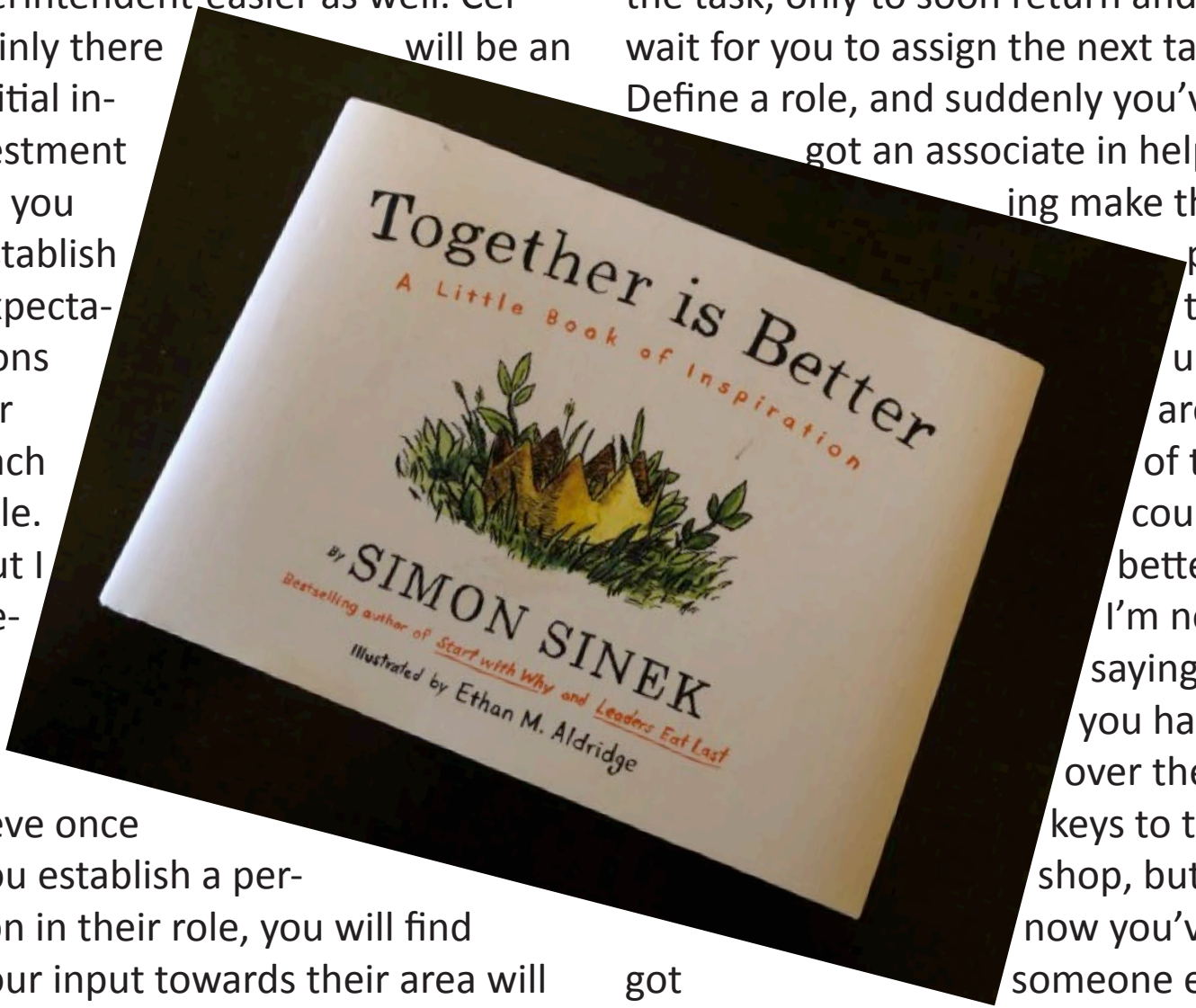
once you establish a person in their role, you will find your input towards their area will eventually narrow in focus to the point where it becomes occasional oversight and discussion of suggestions. Establishing employees

in specific roles is a win-win for the team member and the golf course superintendent.

“Give someone a fish, they'll eat for a day. Teach someone to fish, they'll eat for a lifetime.” Defining roles, versus assigning tasks is much the same. If you hand out tasks the employee will complete the task, only to soon return and wait for you to assign the next task. Define a role, and suddenly you've got an associate in helping

make that particular area of the course better. I'm not saying you hand over the keys to the shop, but now you've got someone else as invested in the final product as you are.

In conversation, I've often heard colleagues ask, “How do I get



my people to care about the course the way I care about it?” Defining roles is a great way to get your people invested in the product at the same level as you.

Beyond the obvious; what are some of the roles you might define in your operation? I believe anything you think or worry about as a superintendent can be defined as a role for a member of your staff. We do it with irrigation and we do it with spraying. How about moisture management on greens, course set-up, maintenance of the practice area? All of these, in my opinion, are roles you can define for a member of your staff.

Giving someone the oppor-

“When we tell people to do their jobs, we get workers. When we trust people to get the job done, we get leaders.”

The MGCSA membership wish to thank Hazeltine National Superintendent Chris Tritabaugh for his contributions to the Hole Notes magazine. Your support of the association is greatly appreciated.

tunity to develop intimate knowledge about a certain area of your operation allows them to “see it the way you see it”, and gives them a vested interest in the final product. Let them come up with and assign some of, or all of, the tasks within their roles. Let the definition of their own role determine their tasks, the same way your role determines your tasks.

Author Simon Sinek’s recent book *Together We’re Better* uses inspirational phrases on leadership and togetherness to tell a metaphorical story. Page 103 contains a phrase I thought was particularly relevant to this post.

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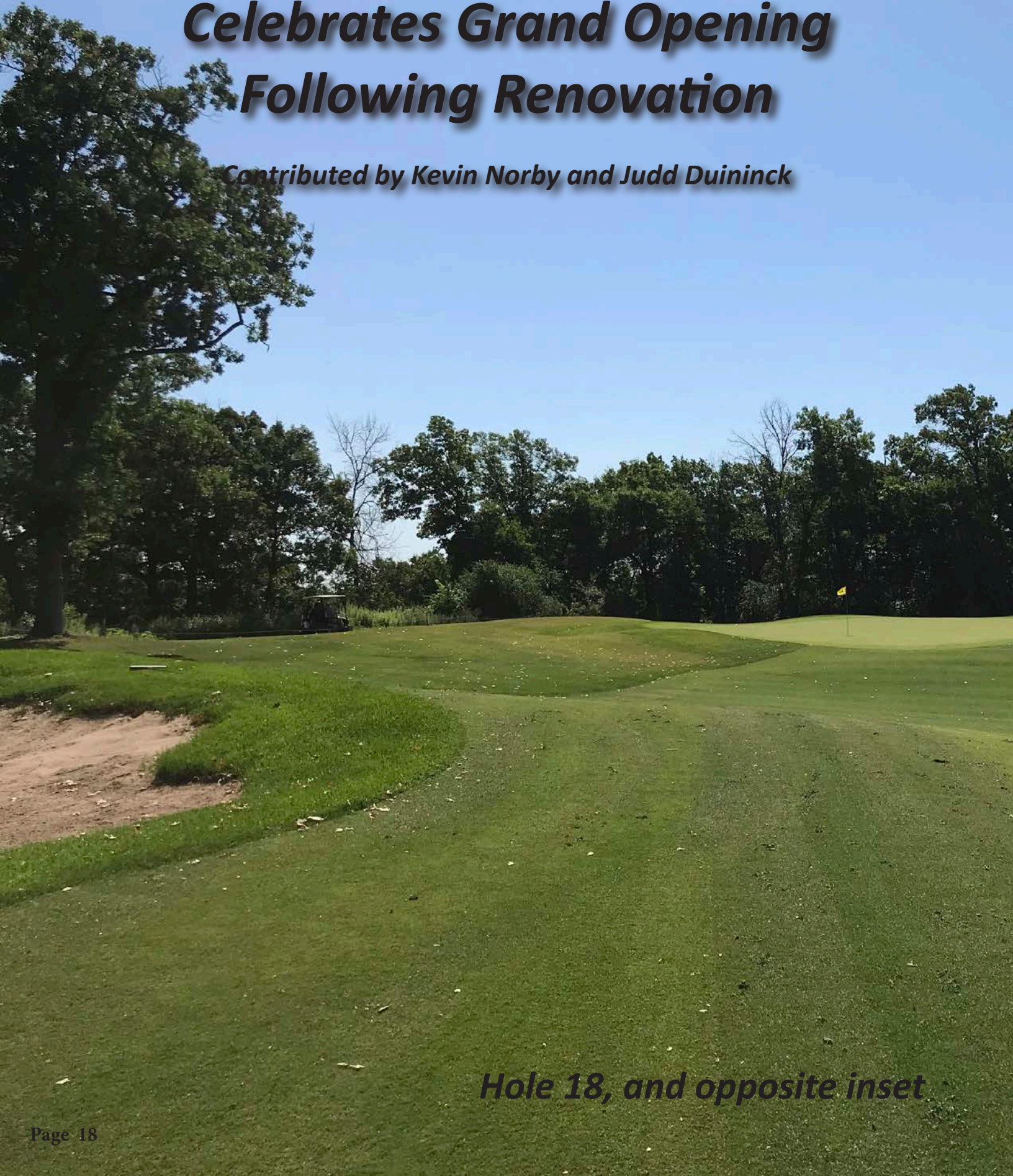
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Historic Theodore Wirth Golf Course Celebrates Grand Opening Following Renovation

Contributed by Kevin Norby and Judd Duininck



Hole 18, and opposite inset

Golfers in Minneapolis finally have a opportunity to play the newly renovated Theodore Wirth Golf Course. The original nine-hole course opened in 1916 as Glenwood Golf Course and was later expanded to 18 holes in 1919. The course was renamed to honor Theodore Wirth who was Director of Parks for the City of Minneapolis from 1909 to 1935. The course is one of five courses owned by the Minneapolis Park and Recreation Board.

The renovation involved the construction of three entirely new holes as well as a complete bunker renovation and installation of a new irrigation central control system. Golf course architect and ASGCA member Kevin Norby noted that his firm first looked at the project in 2011 when the Park Board asked him to explore alternatives for reducing the impact that winter activities were having on turf quality. Then, in 2014 the Loppet Foundation, the Park Board of expanding try skiing trails and constructing a new Welcome Center Adventure and mountain biking and a variety of winter activities. In May of 2017, Duininck Golf, a certified member of the Golf Course Builder's Association of American (GCBA), was brought in to perform the golf construction portion of the project.



According to Norby, “there was a lot of discussion and debate about losing the par 3 eighteenth hole. It was a beautiful example of a short golden-age par three.” As it turned out, aerial photographs of the original course showed another par 3 hole which had been abandoned in the 1960s. That hole was a short uphill par 3 with a blind approach and sur-

rounded by bunkers. Norby added. “we reinstated that hole but lowered it slightly to increase the green size and to improve visibility. The resulting hole is a really nice replacement for the par 3 eighteenth that was lost. “

Judd Duininck stated, “Despite this being a par three and not a large area, our crews had to be very cognizant with the hole proximity to Bassett Creek. The entire area slopes toward the creek and was going to be under construction and susceptible to erosion for an extended period of time. Our crews performed additional erosion control measures to protect the creek, our client, and ourselves from any catastrophes that may occur.”

The par 4 seventeenth hole was replaced with an entirely new 360 yard par 4 that will now play as the finishing hole. The hole doglegs slightly to the right with four strategically placed fairway and greenside bunkers.

The new greens were elevated and the bunkers and surrounds were



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designed to create a look which is consistent with the course’s 1920s styling. Norby said, “we spent a lot of time working on the shaping of the greens and greenside surrounds so they would match the style and character found throughout the rest of the course. We also renovated all of the existing bunkers to reduce their size and to provide a consistent gold-en-age look throughout the course.”

“The old irrigation system on the project proved to be the biggest challenge as there wasn’t much for irrigation mapping to work from. This means a lot of technical diagnostic work by our team. Having a knowledgeable and skilled irrigation crew was paramount to navigating through each hole that we touched to make sure everything operated properly upon completion. We are very happy with the end product.” stated Du-ininck.

Redesign Your Rough (and driving range): Implementing Conservation Practices in Low-Use Areas to Support Pollinators

By James Wolfin and Hannah Ramer, UMN Turfgrass Scientists

Issue:

The population status and health of pollinators has been a hot-button issue since the rise of Colony Collapse Disorder (CCD) a phenomenon observed in honey bee colonies where hives would suddenly and inexplicably lose their workers.

This occurrence was first described in 2006, and since this time

there has been an increase in research funding aimed at improving not just the health of honey bee populations, but native bee populations as well. This increase in research funding has been mirrored by an increase in public interest, with increased awareness of the status of honey bees and native bees occurring across the nation and across the globe. Due to



Bee lawn at Kenwood Park in Minneapolis, MN

importance of these pollinators to agriculture and the health of our ecosystems, combined with the public demand to improve pollinator conservation efforts, urban areas are now being explored as mediums where habitat management practices can be initiated.

One form of land cover that is being explored is turfgrass, which accounts for greater than 2% of the continental United States by area. Turfgrasses are specifically popular in urban and suburban communities, where they are commonplace in home lawns, store fronts, in parks, and in golf courses. In many

cases, turf lawns in golf courses are the largest green space in a community. While these turf areas already provide a number of ecosystem services such as carbon sequestration and the conversion of carbon dioxide into oxygen, it is still important to recognize that there are some disadvantages to having large areas of highly manicured lawns, like those seen on golf courses.

Two examples of this are that highly manicured turf lawns often require fertilizers that, if improperly managed, can cause excess nitrogen and phosphorous to be lost to nearby waterways due to runoff. Also



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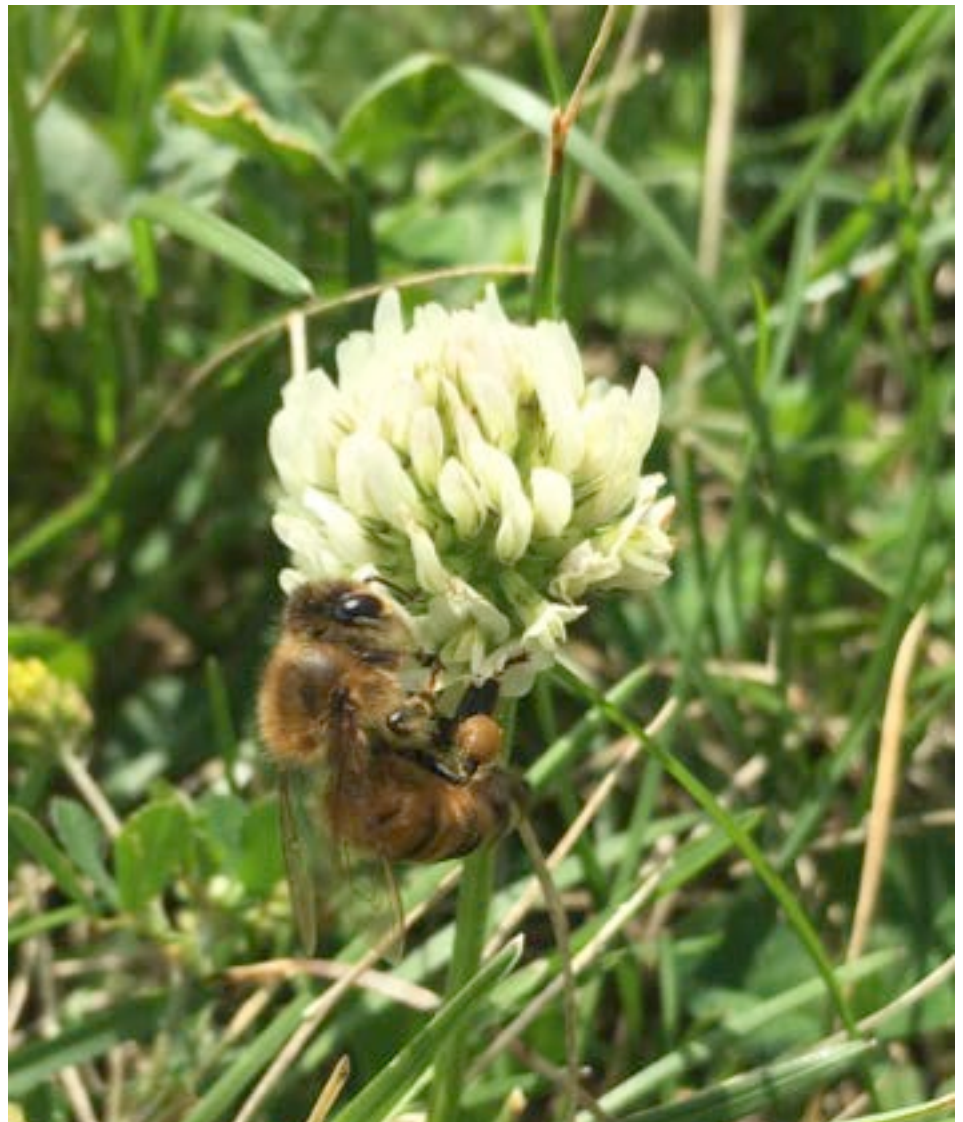
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turf lawns often tend to lack ecological function in terms of supporting biodiversity. Scientists at the University of Minnesota are trying to re-imagine how we design our lawns in order to combat these disadvantages. Rather than using the turf lawn as an area dedicated solely to aesthetics and human function, these researchers are trying to find a middle-ground for humans and bees, where the turf lawn can maintain its aesthetics and use as a surface for sport, while also providing high quality forage for pollinators.

This project, commonly referred to as the “bee lawn” project, aims to introduce low-growing flowers with high quality nectar and pollen to pre-existing stands of fine fescue (*Festuca brevipila*) or Kentucky bluegrass (*Poa pratensis*).

Action:

Bee lawns consist of a mix of turfgrass species and low-growing



Honey bee (Apis mellifera) on Trifolium repens

flowers that are able to withstand regular lawn management practices, specifically mowing. The first phase of developing bee lawns was determining what species of grass were best suited for co-establishment with flowers. To determine this, four species of grass were interseeded with a common lawn flower, Kura clover (*Trifolium ambiguum*). Research from this experiment suggested that turfgrass species with



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slower growing rates and thinner leaf blades like Kentucky bluegrass and the fine fescues allowed for a higher germination rate for the lawn flower, Kura clover. Golf course groundskeepers and superintendents can use this knowledge to help select areas that could be good candidates for floral enhance-

ment based on traffic and the turfgrass species that is present.

In addition to considering which grasses are able to perform well with lawn flowers within a bee lawn, it is also important to determine which flowers mix well with grasses within a bee lawn. In order for a flower to be considered

a good candidate for a bee lawn, the flower has to be able to establish in local soil conditions, bloom at a low height, preferably 3 ½ inches or less, withstand lawn management practices, namely mowing, and provide high quality rewards for pollinators in the form of pollen and nectar.

To determine which flowers were strong candidates for bee lawns, 8 different flower species were seeded into pre-existing stands of hard fescue (*Festuca bre-*



***Prunella vulgaris* flower within bee lawn**

vipila). All flowers were seeded at the same seeding rate via a dormant seeding in the fall. An emphasis was placed on finding native flowers that could co-establish with grasses, as six of the eight flowers seeded into the hard fescue grass were native species. Of the six native species that were examined, results suggested that only self-heal (*Prunella vulgaris*) and ground plum (*Astragalus crassicaucus*) were strong candidates for lawns.

These two species differ in the types of soil they prosper in, with the self-heal establishing primarily in clay-loam soils, and the ground plum establishing primarily in sandy soils. The two non-native flowers used in these surveys were Dutch white clover (*Trifolium repens*) and creeping



Bombus rufocinctus* on *Trifolium repens

thyme (*Thymus serpyllum*). Both of these flowers, while non-native, are not considered invasive and will not spread rapidly to the point where they will displace native plants or turfgrass species. Each of the two non-native flowers examined in these trials were found to be good candidates for bee lawns, and were



Lasioglossum halictid* bee on *Prunella vulgaris

able to establish in both clay-loam soils as well as sandy soils.

After selecting the grass species and floral species that are best suited for bee lawns, it is important to determine management practices that can be implemented in order to increase the number of blooms observed in an area that has been seeded. Two management strategies were evaluated to determine if the number of blooms

could be augmented by making alterations to a lawn area prior to seeding flowers.

The two strategies evaluated were scalping, where the turfgrass was cut to a height below one inch prior to seeding, and aeration, where cores of soil were removed from the ground prior to seeding. Scalping

was hypothesized to improve

germination rates by reducing the ability of grasses to shade out flowers that were attempting to germinate and establish. Aeration was hypothesized to improve germination rates because the removal of soil cores is said to improve the movement of nutrients within a lawn area, thus making more nutrients available to the flowers trying to establish within the lawn. These

management strategies were examined under both highly managed conditions, similar to those present on the greens and fairways of a golf course, and areas that receive less intense management, like the roughs and driving ranges of a golf course.

The number of blooms for clover, self-heal, and thyme were observed in response to four different management strategies, where a surface was either scalped, aerated, both scalped and aerated, or left alone (control). Results from these trials suggested that scalping, or scalping and aeration in combination, allowed for the greatest number of blooms, and that the lawn areas that were managed less intensively observed more blooms than the highly managed lawn area. This provides insight as to how golf

course managers should install bee lawns, and provides evidence that areas within the golf course that are managed less intensively like roughs and driving ranges are better suited for bee lawns. The improved bloom rates observed in areas with less management is especially impactful within the context of a golf course, as golf course managers and consumers are unlikely to want flowers within the highly used areas of a course, as these flowers can disturb the uniformity of the playing surface.

In addition to understanding what plants work within a bee lawn, it may also be important to golf course managers and golf course visitors alike to understand what bees can be served by incorporating a bee lawn into low-use areas of

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a golf course. Furthermore, some land managers may be limited in the number of flowers that they can afford, or the number of flowers they are willing to put into their lawn.

To investigate the diversity of bees that can be supported by bee lawns, eight turf lawns at parks in Minneapolis are being used as study sites, with parks separated into two groups, a control group, and an enhanced (experimental) group. The parks within the control group have only turfgrass and pre-existing stands of Dutch White Clover (*Trifolium repens*). Because clover is already common in lawn areas, these parks are meant to show the baseline level of bee diversity that golf courses can support by simply allowing clover to

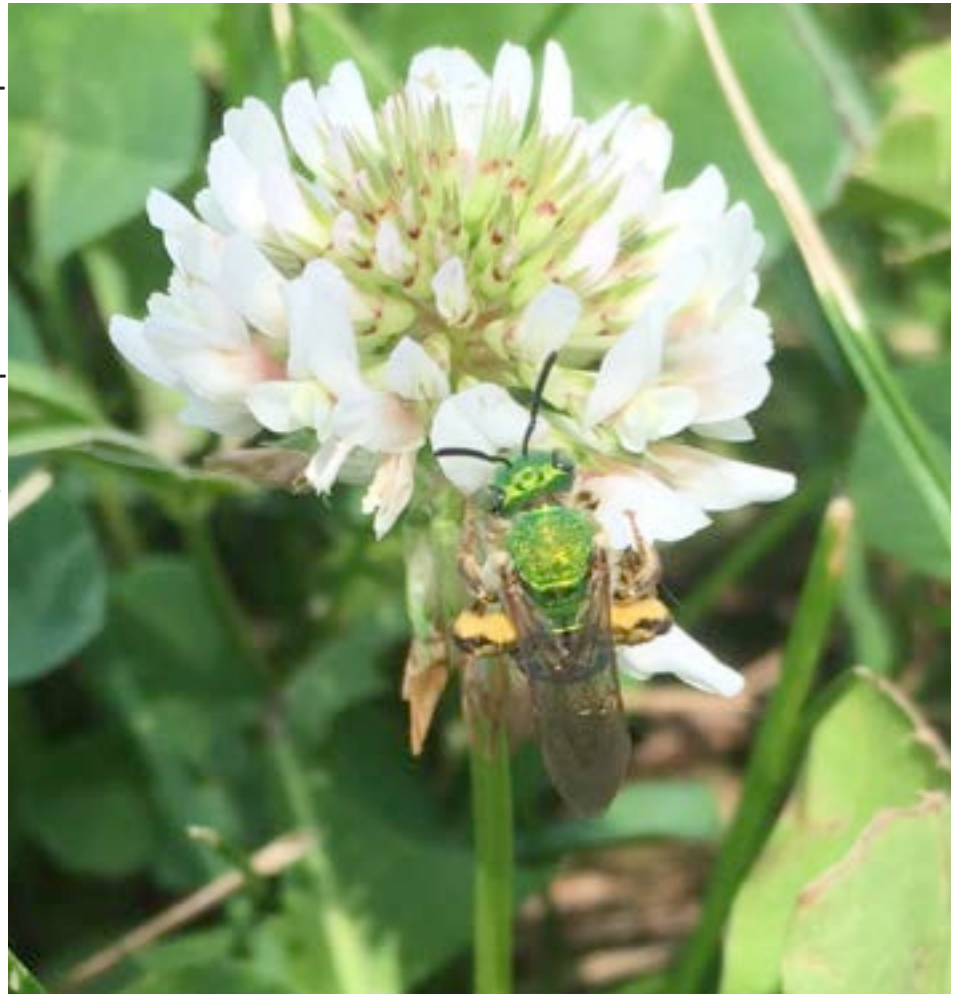
grow in lawns. Enhanced parks also had turfgrass and pre-existing populations of Dutch White Clover, but were also florally enhanced with seeds and plugs of four additional low-growing flower species (*Prunella vulgaris*, *Thymus serpyllum*, *Symphitrichum lateriflorum*, and *Core-*



***Thymus serpyllum* blooms within bee lawn**

opsis lanceolata).

Twenty-minute transect walks were conducted at each park once per week, where bees were collected off of flowers with a bee vacuum. Specimens were then pinned and identified to the species level. Preliminary results suggest that at least 46 species of bees in urban Minneapolis will forage on Dutch White Clover, and that enhanced flowering lawns may have the potential to support greater bee diversity than clover only lawns. When considering that there are only about 425 species of bees in the state of Minnesota, and that sampling was restricted to parks in Minneapolis, the 46 species of bees observed on bee lawns represents a high level of diversity that can be supported by simple land management modifications. This study provides insight on the value of lawn flowers and the potential for large turf areas, like golf courses, to serve as hot-spots for bee conservation.



Agapostemon sweat bee on Trifolium repens

Worldwide, there are 7 different families of bees, with 6 occurring in the United States. Of the 6 families that are present in the United States, bees from 5 of these families are observed on bee lawns. This includes both exotic bee species, like the European Honey Bee (*Apis mellifera*), and a whole suite of native bees including various bumble bees (*Bombus*), ground nesting bees (*Andrenidae*), sweat bees (*Halictidae*), leaf-cutting bees, and plasterer bees. Each of these bees play an extremely important

role within our ecosystems and communities. The most notable contribution of bees is through the pollination of agricultural crops, where honey bee pollination is estimated to be worth over \$15 billion dollars in the United States alone.

Wild bee pollination is estimated to be valued at a figure similar to this, and wild bees help to pollinate many fruits and vegetables that have become a staple in diets worldwide, including: apples, mangos, potatoes, onions, strawberries, and tomatoes. These bees also help to pollinate a variety of other agricultural crops like alfalfa and cotton. Outside of agriculture, the benefit of pollinators can be seen in our everyday lives, as honey bees and native bees alike help to decorate our communities by pollinating the various flowers and trees that make our communities beautiful. Many of these bee pollinated plants serve as sources of food for other insects, birds, and herbivores, making bees an essential part of any food chain. By supporting bees within our golf courses, golf course managers have the opportunity to bring nature home, and ensure a

thriving ecosystem within their local community..

Installation:

Bee lawns can be installed as either an overseeding, where lawn flowers are seeded over the top of a pre-existing turf stand, or as part of a turf renovation project, where unwanted turfgrass is removed, and replaced with a mix of either Kentucky bluegrass or fine fescue, the aforementioned bee-friendly flowers, and a starter fertilizer (fertilizer with phosphorous). Seeding for a bee lawn is recommended as a dormant seeding in the late fall, ideally when soil temperatures fall just below 40° Fahrenheit. This temperature is preferred because the soil is too cold for germination to take place, but not yet frozen. This helps to ensure that plants will not germinate and die in the winter, but instead they will be ready for establishment in the spring once the appropriate amount of degree days have been accumulated.

A spring seeding can be used, but is not recommended because the newly seeded plants would have to compete with pre-existing plants for space and nutrients.



Once seeded, irrigation is recommended once per day, for the first 30 days, to aid in root establishment. Before seeding, it is recommended that a groundskeeper or land manager scalps and aerates the area. After the first thirty days, no additional maintenance is required for bee lawns. Bee lawn flowers were selected specifically for their ability to bloom at low heights, so any lawn areas that grow past 2.5" before mowing should observe blooms.

Public Perceptions of Bee Lawns:

Our interdisciplinary research team recognized that it is important to pay attention to the ecological and the social and cultural importance of lawns. So, in addition to measuring bee diversity in the experimentally enhanced bee lawns, we also surveyed 502 park visitors at four parks in Minneapolis to explore their perceptions of flowering bee lawns. For most survey participants, 'flowering lawn' was an entirely new concept, so we designed the survey to include photos and information about bee diversity, the difference between bees and wasps, and how flowering lawns

were designed to provide nectar and pollen for bees. In addition to sharing educational information, this design allowed us to ask the same question twice, once before we shared the information and then again afterwards to see if the participant's answer changed. Here's what we found:

Aesthetics:

Traditionally, the image of an ideal lawn is lush and uniformly green, but by incorporating multiple species of colorful flowers, flowering bee lawns go against this cultural norm. Would this lead the public to view bee lawns negatively? Our survey results suggest just the opposite. When asked an open-ended question about what benefit flowering lawns could provide, aesthetics emerged as the most common theme. Participants said that flowering lawns 'are beautiful!', 'aesthetically pleasing', and 'make [our] neighborhood look nice'. Similarly, when asked how much they agreed or disagreed with the statement "I like the way flowering lawns look", 60% of participants strongly agreed and an additional 37% somewhat agreed.

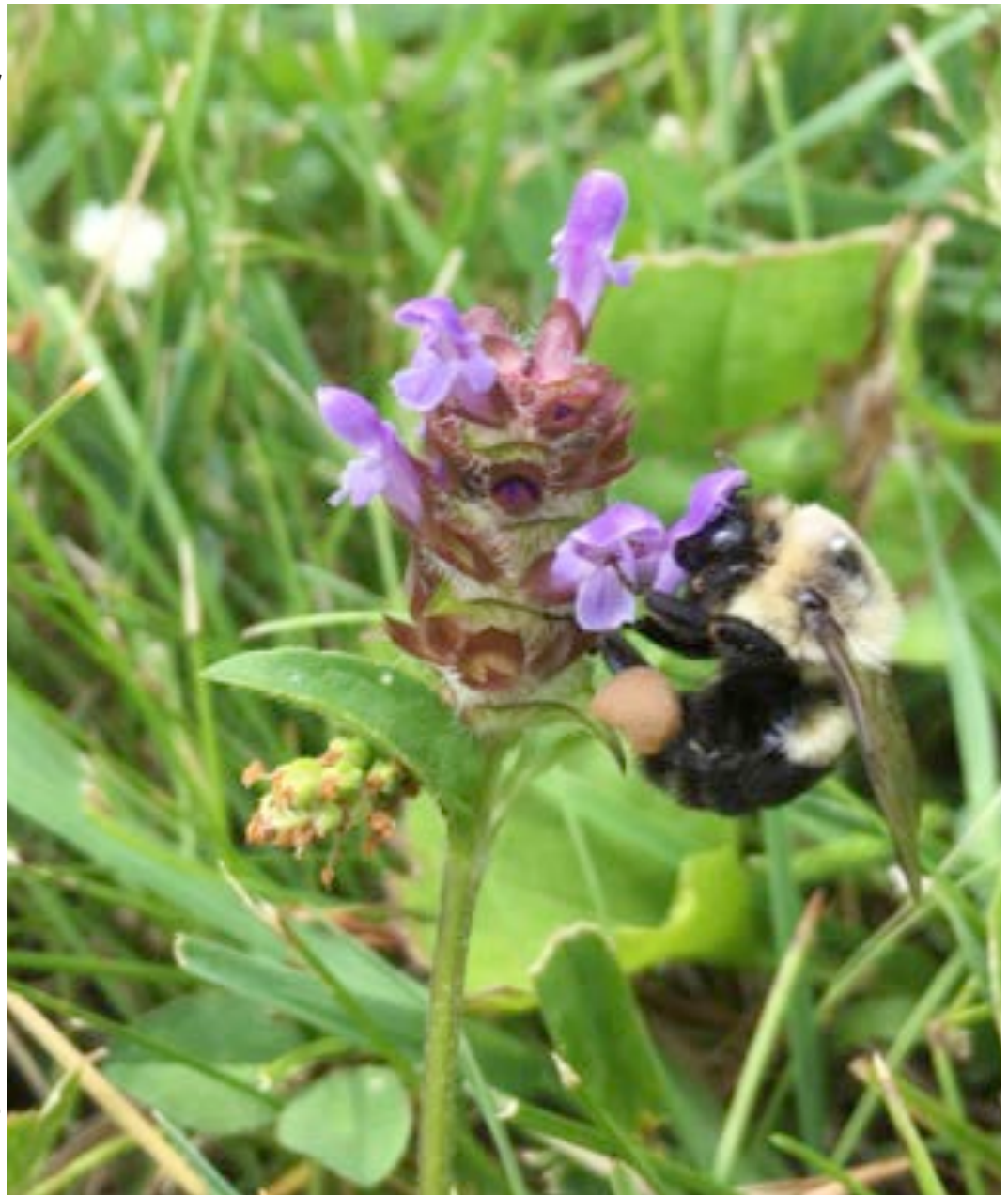
Bees:

Even before survey participants were informed that flowering lawns are intended to support bees, nearly a quarter of respondents mentioned bees as a benefit of flowering lawns and 12% mentioned pollinators more broadly. Interestingly, bees were also mentioned as a potential concern, though more than twice as many participants listed bees as a benefit than as a concern. Even after participants were told that flowering lawns were designed to provide bee forage, 66% said there would be no change in their level of concern about insect stings in a park with a flowering lawn, and an additional 7% said they would be less concerned. Despite some concerns about bee stings,

survey participants had positive attitudes towards bees: 66% said they like bees and 31% said they tolerate bees.

Overall support:

Flowering bee lawns were incredibly popular among our survey participants. When we first asked, 97.2% of respondents strongly or



Bombus rufocinctus on *Prunella vulgaris*.

moderately supported creating flowering lawns in Minneapolis parks. Then, after we shared information that flowering lawns were designed to provide pollen and nectar for bees, the proportion of strong support increased, though so did moderate and strong opposition. Overall, 95.4% moderately or strongly supported creating flowering bee lawns in parks. So, while learning that flowering lawns were intended to support bees lead to a small decline in support, flowering lawns were still extremely popular!

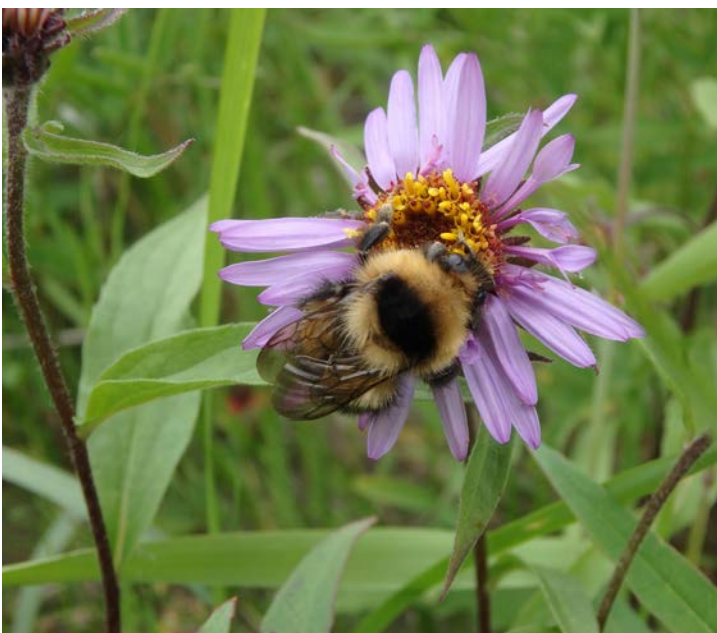
While we don't claim that our survey results are representative of Minnesota or even Minneapolis as a whole, the overwhelmingly high support for flowering bee lawns in our sample does suggest that

many people are open to biodiverse lawns. It would take more research to know for sure, but it may be that traditional lawn aesthetic is expanding to include colorful, bee-friendly flowers too.

Concluding remarks:

In recent years, golf has made great strides in improving the impact that golf courses have on our ecosystem. This is critically important in many urban and suburban neighborhoods, where golf courses are often the largest green space Golf courses in the community.

Golf course superintendents in Minnesota and throughout the country are incorporating low-input grasses and upgraded irrigation systems to reduce the resources that are expended on golf course maintenance. While this is a great start to revolutionizing how golf courses interact with the environment, there is currently a public demand to improve how golf courses interact with local ecosystems by supporting animals and wildlife, specifically in the form of pollinators. We believe that incorporating bee lawns into the low-use areas of golf courses like far roughs and driving



ranges provides golf courses with an easy and highly effective way to support their pollinators and honey bees.

Our bee surveys in local parks indicate that bee lawns support a great level of bee diversity, hosting over 40 species in Minneapolis parks alone, and our survey of park visitors show that there is overwhelming support to have bee lawns implemented in communities. Ultimately, we hope that bee lawns can serve as a land management strategy that both our bees and the public will appreciate, while causing minimal disturbance to the course and its players.

If you are interested in installing a bee lawn in your golf course, or would like more information on the matter, please contact James Wolfi at wolfi009@umn.edu

Hannah Ramer is a PhD student in Natural Resources Science and Management at the University of Minnesota, where she studies how people make decisions about the environment. Her dissertation research is focused on urban gardening policy and social movements

in Minneapolis. When not fielding surveys or combing the archives for her research, you can also find Hannah digging in her garden or pedaling around Minneapolis' trails.

James Wolfi is a masters student in the department of Entomology at the University of Minnesota, where he studies how low growing flowers in turf lawns can help to support native pollinators and honey bees. James is co-advised by Dr. Marla Spivak, of the native bee lab, as well as Dr. Eric Watkins, of the turfgrass science lab. When he is not out collecting bees, you can find James on the sports fields playing football and softball.

The MGCSA would like to thank Hannah and James for their dedication to enhancing our pollinator environment through turf lawn studies. By setting areas of the golf course aside to specifically provide for the pollinator population, the superintendent can increase the number of pollen foragers, as well as improve the perception that the golf course is excellent pollinator habitat.

Employee Problems - Finding Root Causes

Dr. Bob Milligan, Learning Edge Monthly

Think about how we handle non-personnel problems - a sick animal, a wilted crop, a dissatisfied customer. Even though we are all well trained to address these issues, we still often treat symptoms rather than taking the time to analyze the problem to determine the real or root cause.

What happens when we treat symptoms? Usually the solution we implement works temporarily at best. The problem soon returns. It is like taking a cough drop for a serious sore throat instead of going to the doctor. If we really want to fix the problem, we must determine the real or root cause.

I believe that the incidence of treating symptoms rather than determining and treating the real or root cause is higher for employee problems than for non-personnel issues like those referred to above. This error is common any time of the year,

but now with low prices, hot weather, harvest coming; it is even easier to quickly act based on a symptom.

Let's explore my observations from a recent vacation to understand the importance of seeking root causes. My wife and I greatly enjoyed a twelve-day group excursion (through Road Scholar educational adventures) visiting six national parks in the US and Canada from Grand Tetons to Yellowstone to Glacier to Banff. We stayed in six hotels/lodges and ate at numerous restaurants and cafeterias.

Although I did a great job of not working on this vacation, the occupational hazard of observing employee performance remained. Two points jumped out from those observations. First, there was great variation in performance among employees within each business. That is to be expected.

More importantly, though, there was a large variation in the level of employee performance between businesses. Employees in one cafeteria we frequented were uniform in their poor performance. By contrast every employee at the hotel we stayed at the last night was proactive in serving us and seemed to do everything perfectly, effortlessly, and with a smile.

Was this dramatic difference due to the quality of the employees at the two business? I think not! Instead, my observation is that the quality of the leadership and supervision was dramatically different!

The second observation concerns how those in our group responded to poor employee performance. Many were upset and blamed the employees. This is where my occupational hazard kicked in. I started thinking about WHY the employee performance was so poor. I was thinking about what leadership had failed to do that prevented employees from performing effectively.

Those who blamed the employees were reacting to symptoms. By ask-

ing WHY, I was looking for real or root causes.

Let's return to our poor employee performance cafeteria and look specifically at the cashiers. They were mostly unenthusiased, slow, and often incapable of pricing meals that were not entirely routine. Clearly, the easy conclusion from observing their behavior - the symptom - is that the cashiers were lazy, unwilling to focus, and unmotivated.

Let's further analyze what I observed and suggest some possible real or root causes:

- Motivation: The employees are in fact lazy and do not have sufficient self-motivation to perform. Although this is possible for individual employees, it is not likely the root cause for all employees. Let's look further.
- Staffing: The recruitment and selection processes were inadequate resulting in employees who do not possess the attributes - skills, knowledge, experience, attitudes - to succeed in this position. Unlikely, as these are entry level positions. Let's look even further.
- Training: The employees were

not sufficiently trained in menu items, pricing policies, and customer service. I believe this was a big part of the real or root cause.

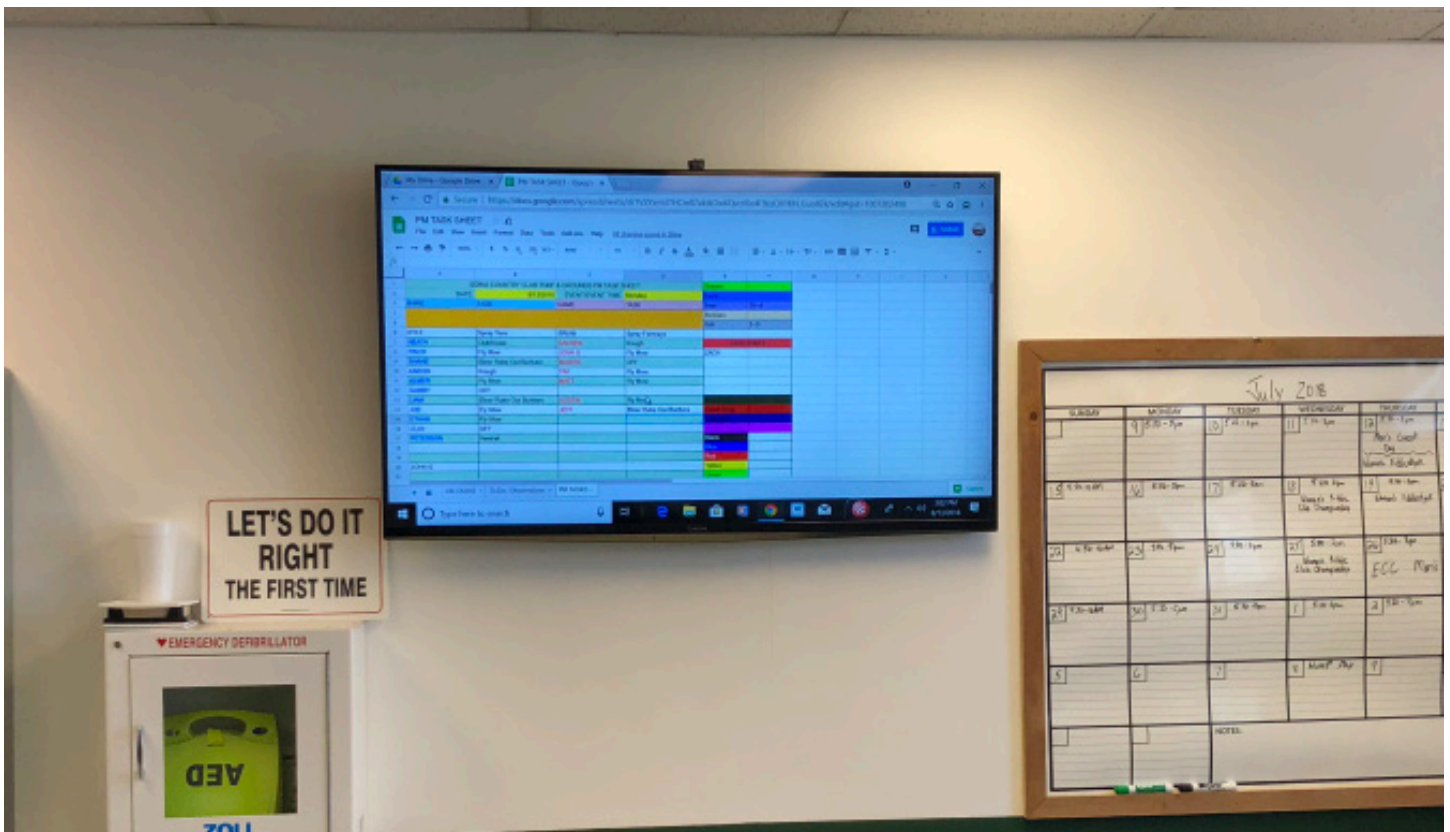
- Supervision: The employees were not being provided clarity - “chalking the field” - and feedback - positive, redirection, negative. I am certain this was a key root cause. The root cause of the poor supervision was likely lack of supervisory training.

- Authority: The employees had insufficient decision-making authority to effectively make needed deci-

sions. I saw this as cashiers often had to wait for a supervisor to authorize a charge.

In this example, I trust you have seen the power of identifying the real or root cause of employee problems. You have also seen several of the most common root causes for employee problems.

We conclude our discussion of employee problem root causes with three amplifications to assist you in determining employee problem root causes.



Does your crew know “what” is expected of them every day and all day long? Are they trained to be self-motivated and act upon your charges? photo: Brandon Schindele, Edina CC Superintendent.



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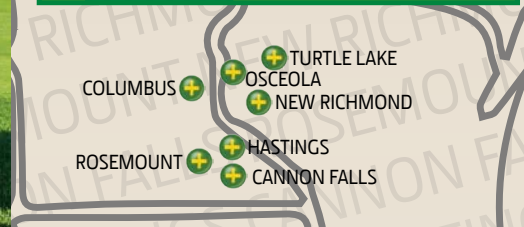
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1) The Fundamental Theorem of Attribution - a key tenant of organizational behavior, holds that when we as human beings are analyzing a problem we caused, we tend to blame the problem on the situation, not on what we did. On the other hand, when we are analyzing a problem someone else created, we tend to blame the person. For employee problems, the Theorem of Attribution is a powerful force keeping supervisors and leaders from seeking real or root causes. It is easier to treat the symptom,

blame the employee, than seek root causes that likely will lead back to the supervisors and leaders. 2) The determination of the root cause will dictate the required feedback. When the root cause establishes that the problem is caused by the situation, not the employee, a redirection feedback is required. With redirection feedback we provide the employee the training, feedback, authority, clarity, etc. needed to successfully perform. The conclusion that an employee problem is caused by the employee

should result in negative feedback. Negative feedback should be in the form of a choice: 1) change to meet expectations or 2) incur a specified consequence. As we have often discussed, one of the easiest ways to decrease employee trust in their supervisor is to provide negative feedback when the employee believes he or she should receive redirection feedback. Treating symptoms rather than root causes often creates this disastrous situation.

3) One word - WHY - was prevalent in our discussion of root causes. That is because the key to finding root causes is to ask WHY. Why did this problem happen? In fact a simple and effective tool for determining root cause is called "Five WHYs." Ask WHY until one or more root causes are found. It is called "Five WHYs" because a root cause is normally found by asking WHY five or fewer times.

A concluding comment: The next time you observe an employee problem, use the Five WHYs and the process we used in the cafeteria cashier example to determine the root cause or causes of the problem. Do not act hastily and respond to symptoms.

Full steam ahead,

Dr. Bob Milligan
Learning Edge Monthly
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The MGCSA membership wish to thank Dr. Milligan for his contributions to the Hole Notes Magazine.





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2017-2018 Snow Mold Control Evaluation: Marquette Golf Club – Marquette, MI

Kurt Hockemeyer and Paul Koch, Ph.D.
Department of Plant Pathology
University of Wisconsin-Madison

OBJECTIVE

To evaluate fungicides for the control of Typhula blight (caused by *Typhula incarnata*) and Microdochium patch (caused by *Microdochium nivale*) on golf course turfgrass.

MATERIALS AND METHODS

This evaluation was conducted at Marquette Golf Club in Marquette, MI on a creeping bentgrass (*Agrostis stolonifera*) and annual bluegrass (*Poa annua*) golf course fairway maintained at a height of 0.5 inches. Individual plots measured 3 ft x 10 ft and were arranged in a randomized complete block design with four replications. Individual treatments were applied at a nozzle pressure of 40 p.s.i using a CO₂-pressurized boom sprayer equipped with two XR Teejet AI8004 VS nozzles. All fungicides were agitated by hand and applied in the equivalent of 1.5 gallons of water per 1000 ft². Granular applications were made by evenly spreading a pre-weighed amount of product over the designated plots. Early applications were made on 12 Oct 2017 and late applications were made on 6 Nov 2017. The experimental plot area was not inoculated. Snow cover was present from mid November through late April, a total of approximately 170 days. Disease severity, turf quality, and color were measured on 30 Apr 2018. Disease severity was visually rated as percent area affected, turfgrass quality was visually rated on a 1-9 scale with 6 being acceptable, and chlorophyll content (turfgrass color) was rated using a FieldScout CM 1000 Chlorophyll Meter from Spectrum Technologies, Inc. (Aurora, IL). Treatment means were analyzed using Fisher's LSD method and are presented in Table 1.

RESULTS AND DISCUSSION

Nontreated controls averaged 99% disease, indicating extremely high disease pressure. On average about 75% of the disease present was caused by *T. ishikariensis* and 25% was caused by *M. nivale*. Any treatment providing greater than 90% control under these circumstances performed exceptionally well, and there were a surprising 22 treatments that met this standard. In addition, any treatment providing greater than 80% control in this trial will provide good control under most environments, and there were another 10 treatments that met that standard. Turf quality and turf color mostly reflected disease severity, though visible phytotoxicity was observed with treatment 72.

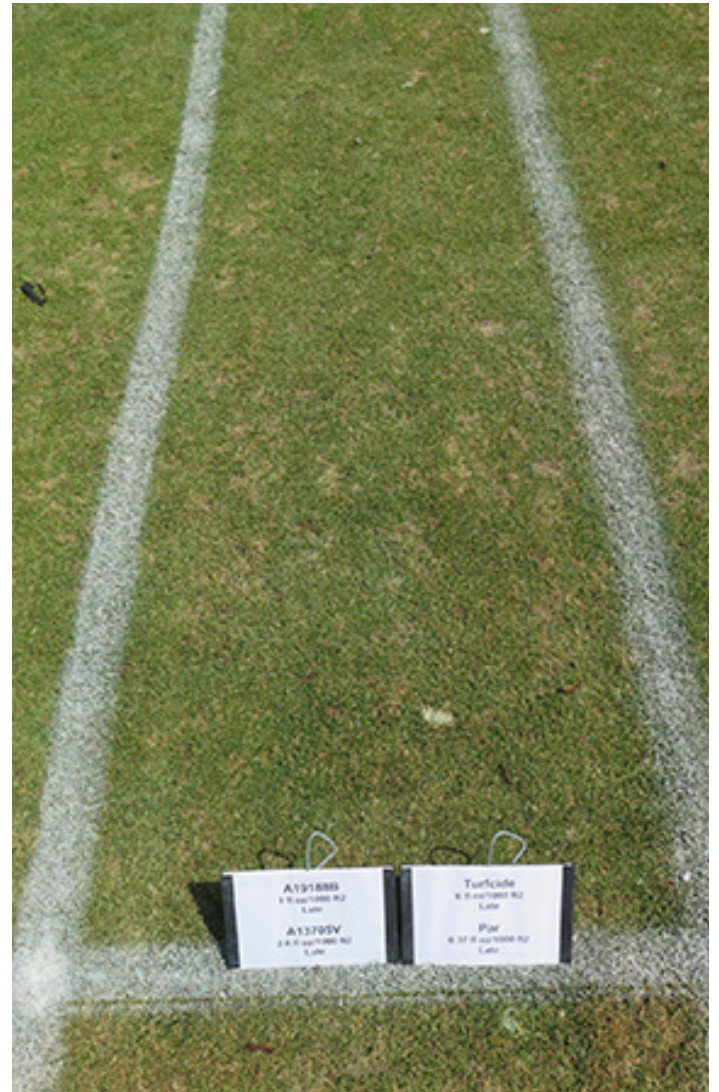
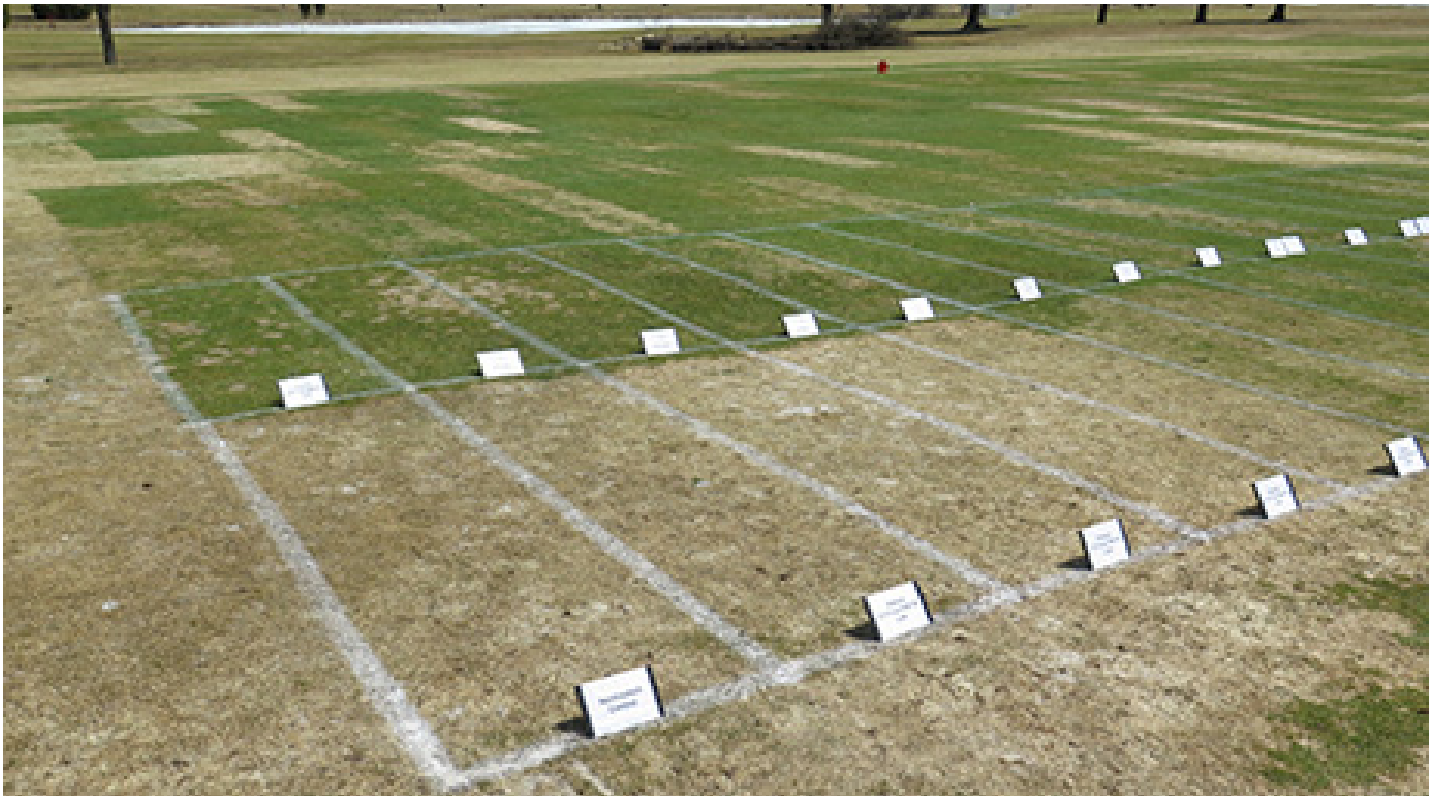


Table 1: Mean snow mold severity, turf quality, and turf color were assessed on April 30, 2018 at Marquette Golf Club in Marquette, MI.

	Treatment	Rate	Application Timing ^a	Disease Severity ^b	Turf Quality ^c	Turf Color ^d
1	Non-treated control			99.0a	1.0q	77.8OPQ
2	Kabuto	0.5 fl oz/1000 ft ²	Late	98.0a	1.0q	78.0OPQ
3	Kabuto	1.0 fl oz/1000 ft ²	Late	97.0ab	1.0q	77.0OPQ
4	Kabuto	1.6 fl oz/1000 ft ²	Late	98.0a	1.0q	72.8Q
5	Tekken	3.0 fl oz/1000 ft ²	Late	99.0a	1.0q	75.5PQ
6	Interface	6.6 fl oz/1000 ft ²	Late	52.5ijk	3.5j-m	136.3q-A
7	Tartan	2.0 fl oz/1000 ft ²	Late	62.5ghi	3.0lmn	123.8x-F
	Interface	3.3 fl oz/1000 ft ²				
8	Daconil Weatherstik	5.5 fl oz/1000 ft ²	Late	10.0r-y	5.8b-f	181.0abc
	Interface	6.6 fl oz/1000 ft ²				
	Mirage	2.0 fl oz/1000 ft ²				
9	Daconil Weatherstik	5.5 fl oz/1000 ft ²	Late	4.8u-y	6.5abc	189.5a
	Interface	6.6 fl oz/1000 ft ²				
	Tartan	2.0 fl oz/1000 ft ²				
10	Trilogy	5.57 fl oz/1000 ft ²	Late	25.0m-s	4.5g-j	159.8d-o
11	Dedicate Stressgard	0.94 fl oz/1000 ft ²	Late	85.0a-e	1.5pq	101.3G-N
12	Dedicate Stressgard	1.89 fl oz/1000 ft ²	Late	63.8ghi	3.3klm	122.0y-G
13	Dedicate Stressgard	0.94 fl oz/1000 ft ²	Late	52.5ijk	3.5j-m	130.3u-D
	Medallion	0.544 fl oz/1000 ft ²				
14	Dedicate Stressgard	1.89 fl oz/1000 ft ²	Late	6.3t-y	6.0a-e	177.5a-e
	Medallion	1.09 fl oz/1000 ft ²				
15	Dedicate Stressgard	0.94 fl oz/1000 ft ²	Late	28.8l-q	4.8f-i	145.3m-w
	Medallion	0.82 fl oz/1000 ft ²				
16	Dedicate Stressgard	1.89 fl oz/1000 ft ²	Late	4.0v-y	6.8ab	176.0a-f
	Medallion	1.64 fl oz/1000 ft ²				
23	Dedicate Stressgard	1.89 fl oz/1000 ft ²	Late	22.5n-u	4.8f-i	146.8l-w
	Daconil Weatherstik	5.5 fl oz/1000 ft ²				
25	Dedicate Stressgard	1.89 fl oz/1000 ft ²	Early/Late	25.0m-s	4.8f-i	156.3f-q

^aEarly treatments applied on Oct 12, 2017 and late treatments applied on Nov 6, 2017

^bMean percent diseased area assessed on Apr 30, 2018.

^cQuality was visually assessed where 1 = dead, 6 = acceptable, 9 = dark green.

^dColor was assessed using a FieldScout CM1000 Chlorophyll Meter from Spectrum Technologies, Inc.

Table 1(cont): Mean snow mold severity, turf quality, and turf color were assessed on April 30, 2018 at Marquette Golf Club in Marquette, MI.

	Treatment	Rate	Applicatio Timing ^a	Disease Severity ^b	Turf Quality ^c	Turf Color ^d
26	Oreon	10.0 fl oz/1000 ft2	Late	10.0r-y	5.5c-g	163.5b-n
	Foursome	0.5 fl oz/1000 ft2				
27	Oreon	10.0 fl oz/1000 ft2	Late	6.0t-y	6.3a-d	172.0a-i
	Foursome	0.5 fl oz/1000 ft2				
	Daconil Weatherstik	4.0 fl oz/1000 ft2				
28	Oreon	10.0 fl oz/1000 ft2	Late	7.5s-y	6.0a-e	163.5b-n
	Foursome	0.5 fl oz/1000 ft2				
	Daconil Weatherstik	5.5 fl oz/1000 ft2				
29	Oreon	10.0 fl oz/1000 ft2	Late	6.8t-y	6.3a-d	174.5a-g
	Foursome	0.5 fl oz/1000 ft2				
	Secure	0.5 fl oz/1000 ft2				
30	Concert II	5.5 fl oz/1000 ft2	Late	4.3v-y	6.5abc	180.8a-d
	Turfcide	8.0 fl oz/1000 ft2				
	Foursome	0.5 fl oz/1000 ft2				
31	Concert II	8.3 fl oz/1000 ft2	Late	1.0xy	7.0a	168.0b-k
	Turfcide	8.0 fl oz/1000 ft2				
	Foursome	0.5 fl oz/1000 ft2				
32	Instrata	7.0 fl oz/1000 ft2	Late	82.5a-f	2.0n-q	97.8I-O
	Instrata	7.0 fl oz/1000 ft2				
33	Turfcide	8.0 fl oz/1000 ft2	Late	3.0wxy	7.0a	180.5a-d
	Foursome	0.5 fl oz/1000 ft2				
	Foursome	0.5 fl oz/1000 ft2				
34	Tartan	1.0 fl oz/1000 ft2	Late	65.0f-i	2.5m-p	108.5E-L
	Interface	3.0 fl oz/1000 ft2				
35	Tartan	1.0 fl oz/1000 ft2	Late	0.5y	7.0a	173.3a-h
	Interface	3.0 fl oz/1000 ft2				
	Turfcide	6.0 fl oz/1000 ft2				
36	Tartan	1.0 fl oz/1000 ft2	Late	4.3v-y	6.5abc	166.8b-l
	Interface	3.0 fl oz/1000 ft2				
	Turfcide	8.0 fl oz/1000 ft2				
37	Insignia	0.7 fl oz/1000 ft2	Late	40.0j-n	4.0i-l	151.3i-u
	Turfcide	8.0 fl oz/1000 ft2				
	Foursome	0.5 fl oz/1000 ft2				
38	Insignia	0.7 fl oz/1000 ft2	Late	2.3wxy	6.8ab	184.0ab
	Oreon	8.0 fl oz/1000 ft2				
	Foursome	0.5 fl oz/1000 ft2				
39	Nivales T	1.5 fl oz/1000 ft2	Late	41.3j-m	4.0i-l	134.5r-B
	Echo Dyad ETQ	6.5 fl oz/1000 ft2				
40	Nivales T	1.5 fl oz/1000 ft2	Late	13.8q-y	5.3d-h	155.8f-q
	E-Pro ETQ	9.0 fl oz/1000 ft2				
41	Nivales	2.0 fl oz/1000 ft2	Late	33.8l-p	4.3h-k	142.5n-y
	E-Scape ETQ	4.7 fl oz/1000 ft2				
42	Insignia	0.7 fl oz/1000 ft2	Late	1.5xy	7.0a	172.0a-i
	Maxtima	0.6 fl oz/1000 ft2				
	Turfcide	4.0 fl oz/1000 ft2				
	Daconil Ultrex	5.0 oz/1000 ft2				

^aEarly treatments applied on Oct 12, 2017 and late treatments applied on Nov 6, 2017

^bMean percent diseased area assessed on Apr 30, 2018.

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Table 1(cont): Mean snow mold severity, turf quality, and turf color were assessed on April 30, 2018 at Marquette Golf Club in Marquette, MI.

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43	Insignia	0.7 fl oz/1000 ft ²	Late	3.8v-y	6.5abc	162.3c-n
	Trinity	1.0 fl oz/1000 ft ²				
	Turfcide	4.0 fl oz/1000 ft ²				
	Daconil Ultrex	5.0 oz/1000 ft ²				
44	Navicon	0.85 fl oz/1000 ft ²	Late	67.5e-i	3.0lmn	113.3C-J
45	Fame T	0.67 fl oz/1000 ft ²	Late	11.8q-y	5.5c-g	153.8g-s
46	Fame C	5.9 fl oz/1000 ft ²	Late	37.5k-o	4.3h-k	142.5n-y
47	Fame	0.27 fl oz/1000 ft ²	Late	20.0o-w	5.0e-i	140.8o-z
	Banner MAXX	1.4 fl oz/1000 ft ²				
48	Fame	0.36 fl oz/1000 ft ²	Late	15.0q-y	5.3d-h	150.3j-v
	Banner MAXX	1.9 fl oz/1000 ft ²				
49	Fame	0.27 fl oz/1000 ft ²	Late	8.8r-y	6.0a-e	171.0a-j
	Mirage	0.78 fl oz/1000 ft ²				
50	A21664A	0.8 fl oz/1000 ft ²	Late	37.5k-o	4.0i-l	144.8n-x
	A17856B	1.0 fl oz/1000 ft ²				
	Par	0.36 fl oz/1000 ft ²				
51	A21664A	0.8 fl oz/1000 ft ²	Late	6.8t-y	6.3a-d	179.5a-d
	A17856B	2.0 fl oz/1000 ft ²				
	Par	0.36 fl oz/1000 ft ²				
52	A15457K	0.236 fl oz/1000 ft ²	Late	8.5r-y	6.0a-e	169.8a-j
	A17856B	1.88 fl oz/1000 ft ²				
	Par	0.36 fl oz/1000 ft ²				
53	Instrata	11.0 fl oz/1000 ft ²	Late	26.3l-r	4.8f-i	136.3q-A
	Par	0.36 fl oz/1000 ft ²				
54	A19188B	1.0 fl oz/1000 ft ²	Late	10.0r-y	5.8b-f	181.3abc
	A13705V	2.6 fl oz/1000 ft ²				
	Medallion	2.0 fl oz/1000 ft ²				
	Par	0.36 fl oz/1000 ft ²				
55	A13705V	2.6 fl oz/1000 ft ²	Early	85.0a-e	1.8opq	121.8y-H
	A19188B	1.0 fl oz/1000 ft ²	Late			
	Par	0.37 fl oz/1000 ft ²	Late			
56	A15457K	0.24 fl oz/1000 ft ²	Late	5.5u-y	6.3a-d	180.5a-d
	A13705V	2.6 fl oz/1000 ft ²				
	Medallion	1.88 fl oz/1000 ft ²				
57	Par	0.37 fl oz/1000 ft ²	Late	4.8u-y	6.5abc	182.0abc
	A19188B	1.0 fl oz/1000 ft ²				
	A13705V	2.6 fl oz/1000 ft ²				
	Turfcide	6.0 fl oz/1000 ft ²				
58	Par	0.37 fl oz/1000 ft ²	Late	16.3p-y	5.3d-h	170.0a-j
	A19188B	1.0 fl oz/1000 ft ²				
	A13705V	2.6 fl oz/1000 ft ²				
	Daconil Weatherstik	5.5 fl oz/1000 ft ²				
	Par	0.37 fl oz/1000 ft ²				

^aEarly treatments applied on Oct 12, 2017 and late treatments applied on Nov 6, 2017

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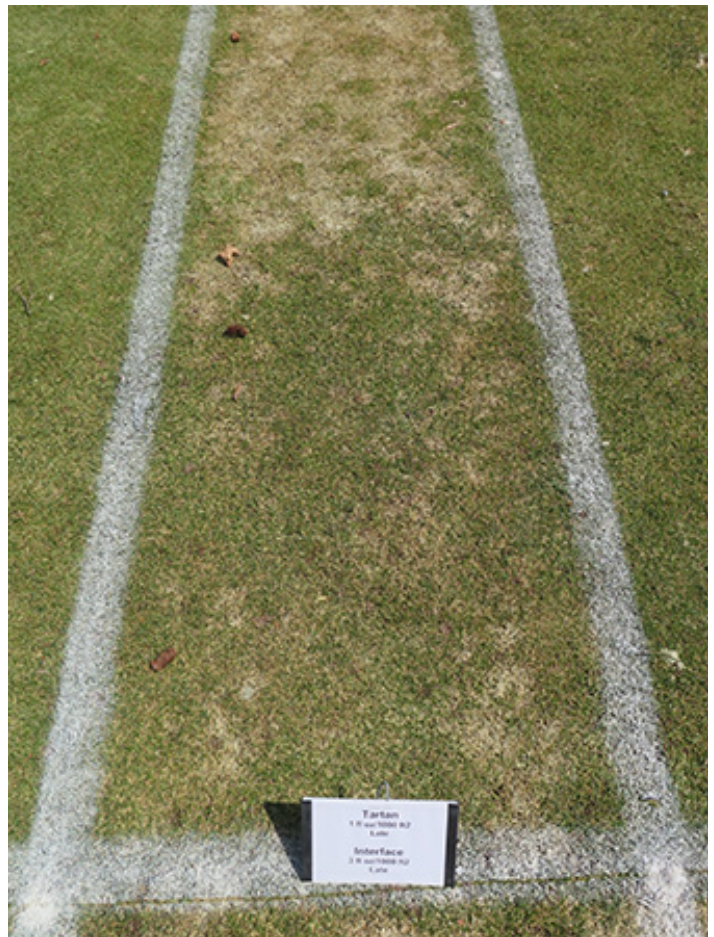
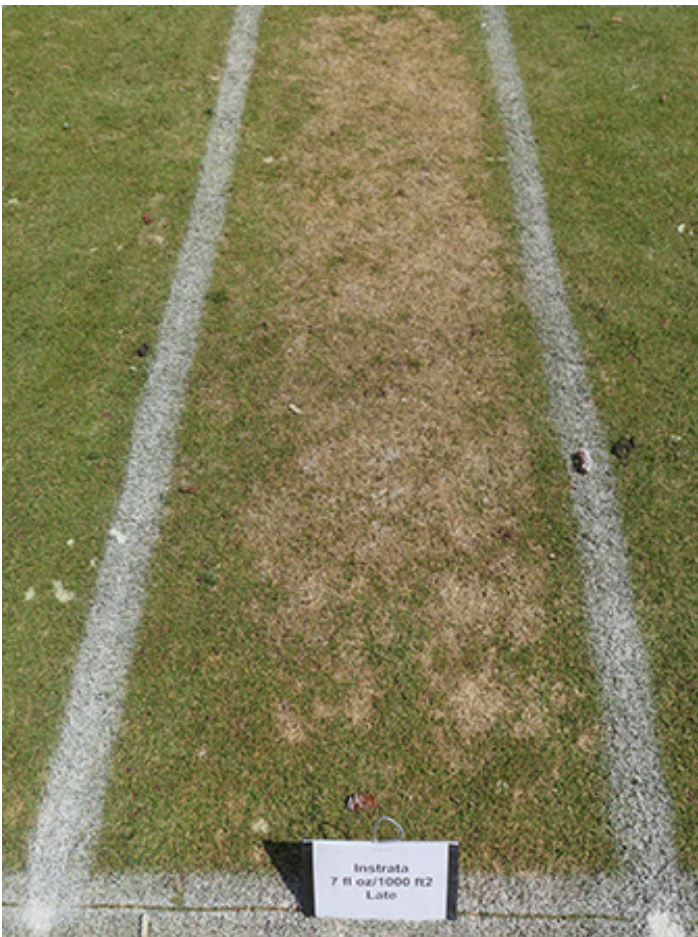


Table 1(cont): Mean snow mold severity, turf quality, and turf color were assessed on April 30, 2018 at Marquette Golf Club in Marquette, MI.

	Treatment	Rate	Application Timing ^a	Disease Severity ^b	Turf Quality ^c	Turf Color ^d
59	A19188B	1.0 fl oz/1000 ft ²				
	A13705V Par	2.6 fl oz/1000 ft ² 0.37 fl oz/1000 ft ²	Late	33.8l-p	4.3h-k	150.3j-v
60	A13705V	2.6 fl oz/1000 ft ²	Early			
	A19188B	1.0 fl oz/1000 ft ²	Late	40.0j-n	4.0i-l	140.0o-z
	Banner MAXX	2.0 fl oz/1000 ft ²	Late			
	Par	0.37 fl oz/1000 ft ²	Late			
61	AND12147	6.67 lbs/1000 ft ²	Late	21.3o-v	5.0e-i	132.3t-C
62	Anderson's 3-Way G	4.24 lbs/1000 ft ²	Late-2 Apps	57.5hij	3.5j-m	147.8k-w
63	Anderson's 3-Way G	6.66 lbs/1000 ft ²	Late	71.3c-h	2.5m-p	117.3A-I
64	Traction	1.3 fl oz/1000 ft ²	Late	13.8q-y	5.3d-h	163.5b-n
	26/36	4.0 oz/1000 ft ²				
65	Traction	1.3 fl oz/1000 ft ²	Late	11.3q-y	5.5c-g	169.3a-j
	26/36	8.0 oz/1000 ft ²				
66	Traction	1.3 fl oz/1000 ft ²	Late	80.0b-g	2.0n-q	91.0K-Q
	Spirato	0.5 fl oz/1000 ft ²				
67	Pinpoint	0.31 fl oz/1000 ft ²	Late	82.5a-f	2.0n-q	100.8H-N
	Tourney	0.44 oz/1000 ft ²				
68	Pinpoint	0.31 fl oz/1000 ft ²	Late	53.8h-k	3.5j-m	129.0w-E
	Tourney	0.44 fl oz/1000 ft ²				
	Daconil Ultrex	5 oz/1000 ft ²				
69	Medallion	1.88 fl oz/1000 ft ²	Late	70.0d-i	2.8mno	110.3D-K
70	Propiconazole 14.3%	6.5 fl oz/1000 ft ²	Late	55.0h-k	3.3klm	102.0G-M
71	Chlorothalonil 720F	5.5 fl oz/1000 ft ²	Late	95.0ab	1.0q	78.8OPQ
72	QP PPZ/Fludi	4.4 fl oz/1000 ft ²	Late	10.5r-y	5.5c-g	133.0s-C
73	Medallion	1.88 fl oz/1000 ft ²	Late	18.8p-x	5.0e-i	145.5m-w
	Propiconazole 14.3%	6.5 fl oz/1000 ft ²				
74	Medallion	1.88 fl oz/1000 ft ²	Late	80.0b-g	2.5m-p	104.0F-M
	Chlorothalonil 720F	5.5 fl oz/1000 ft ²				
75	Chlorothalonil 720F	5.5 fl oz/1000 ft ²	Late	26.3l-r	4.5g-j	138.3p-A
	Propiconazole 14.3%	6.5 fl oz/1000 ft ²				
76	Chlorothalonil 720F	5.5 fl oz/1000 ft ²	Late	18.8p-x	5.0e-i	151.3i-u
	Medallion	1.88 fl oz/1000 ft ²				
	Propiconazole 14.3%	6.5 fl oz/1000 ft ²				
77	Intaglio	11.0 fl oz/1000 ft ²	Late	62.5ghi	3.3klm	107.3F-M
78	Mirage	2.0 fl oz/1000 ft ²	Late	88.8abc	1.3q	94.0J-P
	Daconil Weatherstik	5.5 fl oz/1000 ft ²				
79	Mirage	2.0 fl oz/1000 ft ²	Late	92.5ab	1.0q	88.8L-Q
	Secure	0.5 fl oz/1000 ft ²				
80	Mirage	2.0 fl oz/1000 ft ²	Late	96.8ab	1.0q	80.3N-Q
	Velista	0.5 fl oz/1000 ft ²				

^aEarly treatments applied on Oct 12, 2017 and late treatments applied on Nov 6, 2017

^bMean percent diseased area assessed on Apr 30, 2018.

^cQuality was visually assessed where 1 = dead, 6 = acceptable, 9 = dark green.

^dColor was assessed using a FieldScout CM1000 Chlorophyll Meter from Spectrum Technologies, Inc.

Table 1(cont): Mean snow mold severity, turf quality, and turf color were assessed on April 30, 2018 at Marquette Golf Club in Marquette, MI.

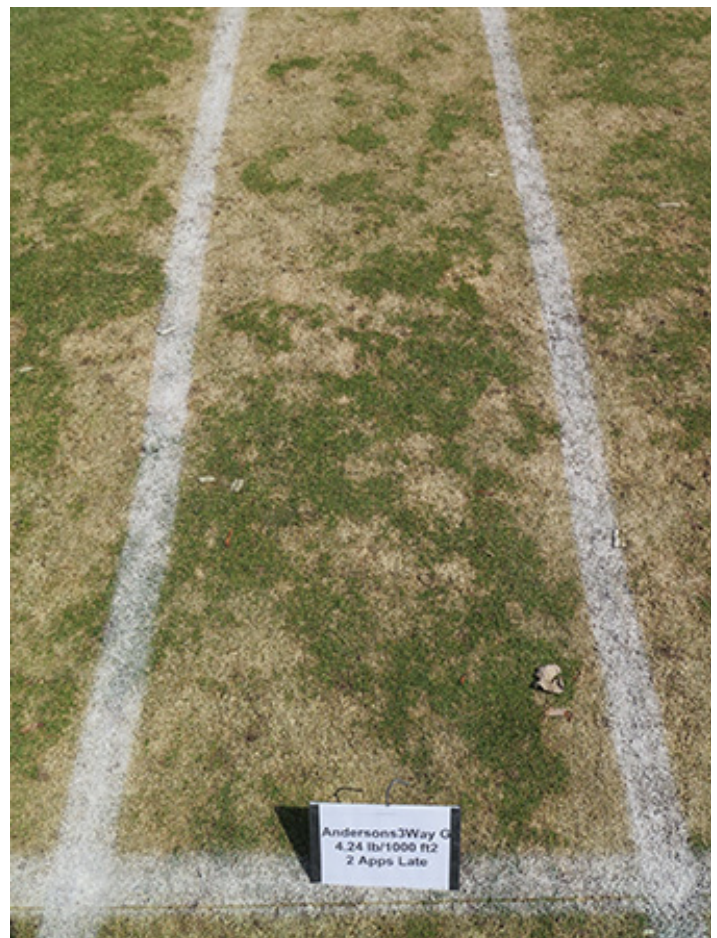
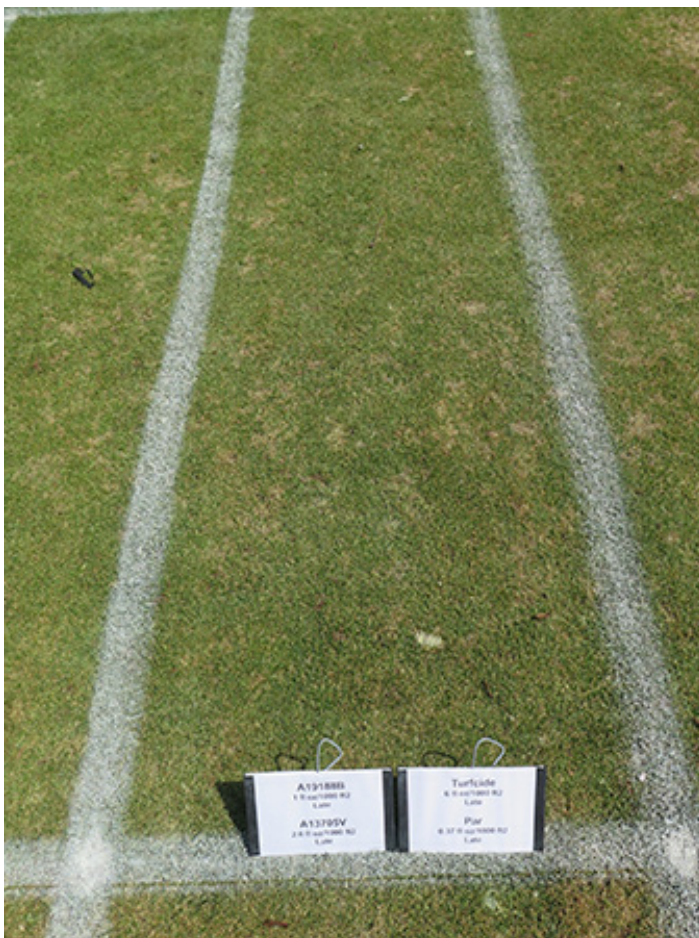
	Treatment	Rate	Application Timing ^a	Disease Severity ^b	Turf Quality ^c	Turf Color ^d
82	Propiconazole 14.3%	2.0 fl oz/1000 ft ²	Early	26.3l-r	4.8f-i	130.0v-D
	Civitas Pre-Mixed	8.5 fl oz/1000 ft ²	Early			
	Iprodione	4.0 fl oz/1000 ft ²	Late			
	Chlorothalonil 82.5%	5.0 oz/1000 ft ²	Late			
	Civitas Pre-Mixed	17.0 fl oz/1000 ft ²	Late			
83	Iprodione	4.0 fl oz/1000 ft ²	Early	43.8jkl	4.0i-1	120.8z-H
	Chlorothalonil 82.5%	5.0 oz/1000 ft ²	Early			
	Civitas Pre-Mixed	8.5 fl oz/1000 ft ²	Early			
	Propiconazole 14.3%	2.0 fl oz/1000 ft ²	Late			
	Civitas Pre-Mixed	17.0 fl oz/1000 ft ²	Late			
LSD P=.05				17.78	1.01	21.19

^aEarly treatments applied on Oct 12, 2017 and late treatments applied on Nov 6, 2017

^bMean percent diseased area assessed on Apr 30, 2018.

^cQuality was visually assessed where 1 = dead, 6 = acceptable, 9 = dark green.

^dColor was assessed using a FieldScout CM1000 Chlorophyll Meter from Spectrum Technologies, Inc.



To see all of the test plots visit the [UW TDL Website](#).

Thank you Dr. Koch and the TDL for your support

*South Eastern
At Valley Hi
Thank you Hos*



ern Exposure gh Golf Club st James Bastys



MGCSA Southeastern EXPOSURE Golf Event





In Bounds

by Jack MacKenzie, CGCS

“So what have you done for me lately?”

Such a passive/aggressive way to provoke almost any individual,

yet easy to laugh off as just a conversation icebreaker. I recall a member, where I used to work, who would throw this line at me quite frequently. In his mind, I am sure, the phrase was simply an overused passage meant to catch my ear. Yet it did hurt my ego to have to explain what I had been doing for the course, and less directly, him, for quite some time.

It upset me as I thought that I had been obvious in my attempts to toot my staff’s and my own horn through providing a great playing surface. Didn’t my direct actions speak louder than words? Likely not, as everyone, and I mean everyone, is so very busy with the

minutia of their own lives they can hardly witness all that is going on around them. In hind site, which is so darn clear, it really was up to me to fess up and share my accomplishments loud, clear and well beyond what I thought apparent.

So... what have you done for me recently? Or more directly, what have you done for your industry recently?

In my mind’s eye I see crossroads coming ahead. Golf will traverse them someday and I hope to be retired by the time it does. Where will the industry find qualified staff to manage the turf? Where will courses find ‘unqualified’ staff to operate their line trimmers? What will happen when the state suffers a prolonged water crisis or the ag industry sinks enough irrigation wells (they have priority for water)you’re your seemingly endless water resources simply dry up physically or

disappear due to suspension of the water permit?

An effort to limit the bumps in the crossroads will be necessary to sustain the business as we currently know it. The time to examine and react to the impending challenges is right now. And the strongest muscle behind protecting the golf turf management industry is reading this column right now. It is you!

Staffing will grow as a giant problem. If you haven't experienced a difficulty yet, just wait a few more years and you will be pulling your hair out attempting to replace retiring seniors or youth moving on to their "grown-up" careers. Demographically we just are not 'producing' as many kids as we used to.

An option? H2B workers. In my past life I had a mighty fine crew of Amigos who I loved, respected and missed tremendously when my HR "Guardian Angel" questioned them for their legitimacy. More than half of them disappeared overnight and

the team dwindled quickly in the months ahead. Unfortunately the H2B program has limited offerings due to seasonality and the number of potential employees allowed into our country.

The fix? YOU have to write letters, make phone calls and attend opportunities to speak with your national legislators and make your concerns their mandate. The GCSAA has a quick link upon their website with your contacts and current "hot" issues including the H2B issues.

What about luring youth to your property as part-time employees through high schools, church groups and civic organizations? I fully appreciate that they are not legally allowed to operate specific pieces of equipment at a young age (again, write your national legislators), but if you don't hook them early with menial tasks, you will have lost them when it comes time for them to sit upon a mower. Really, how old were you when the turf bug stung you? Not in your twenties!

Last spring I taught a couple classes for the Forest Lake High School Environmental Science program and also talked to the Environmental Club. Following the presentations I was asked about careers in the golf industry and invited to present at the 2019 job fair. Have you asked your community school if you can participate in their job fair?

Recently Sam Bauer, Marlin Murphy (Superintendent at Stillwater CC and instructor at Anoka Technical College), and I discussed educational opportunities for future golf course managers. Oh, they are out there at UMN Crookston, the University of Minnesota St. Paul Campus and ATC, but without mentors (you) guiding young individuals into the field, the seats will remain empty. And with the vacancies will disappear your future assistants, spray techs and even equipment managers. Now is the time for you to get off your bum and recruit tomorrow's superintendents, before they begin flipping burgers.

Water in Minnesota is going to be a

precious resource before you know it. Virtually all golf courses (priority six and non-essential users) are dependent upon an irrigation system to sustain their business model. However, only seven percent of agricultural destinations are currently supplementing Mother Nature's rainfall. What will happen when crop pricing dictates ground and surface water be used for ag irrigation? Remember, agriculture is based on consumer need, i.e. food, and is a priority three, "essential" user.

What have you done to protect your most valuable resource? Have you read the MGCSA Minnesota Irrigation Efficiency Guide? Have you talked to your hydrologist about water suspension and alternative sources? Have you reached out to your local legislator for a visit at your course to discuss your concerns?

Last week I had a brief chat with DNR Water Supplies and Conservation Director Carmelita Nelson. She indicated that the DNR would soon

be re-writing the drought management rules to better serve the state. Will you be present to demand water for your golf course as a viable community small business and not a playground for the wealthy? Can you articulate your courses' positive impact upon the watershed, pollinators and wildlife? Can you discuss carbon sequestration and oxygen generation benefits of the turf you manage? The MGCSA will have a seat at the stakeholder's table per my demand to Carmelita, however more is better when it comes to advocacy.

Okay, I get it. Many of you are tired of me harping on your responsibility to the industry. Unfortunately, and truth be told, if you don't do something about the future of this great business then it will look a whole lot different twenty years from now. Although I am an active representative on your behalf, voices in concert are much easier to hear than a lone cry. Please consider writing your legislators, meeting with your local hydrologist, participating upon

the community's watershed citizen action committee or even presenting at your local church.

Blow my mind, and tell me the next time we meet what YOU have done for the industry recently.

***It has been said
this industry
wouldn't be the
same without
you. Please lend
your support to
the future of golf
course turf
management
with positive
actions today.***