

progeny comprising the mapping population to estimate locations on the chromosomes, numbers, and effect of dollar spot resistance genes using molecular markers.

Currently more than two hundred barley, oat and rice Restriction Fragment Length Polymorphism (RFLP) anchor probes are being screened using the two parental DNAs. These probes which are segments of DNA obtained from barley, oat and rice, are used to find homology or similarity with the DNA of the bentgrass clones. The molecular markers or probes serve as landmarks on the chromosomes to help us find the location of the disease resistance genes and a large number of them are arranged on the chromosome to form a linkage map.

In our lab, the probes or markers tested so far hybridized or combined with and detected abundant polymorphisms or difference in both bentgrass DNAs, indicating their potential transferability between the species. Thus all the necessary tools and expertise are already in place to successfully create the linkage map in bentgrass. The linkage map, the data obtained from field and greenhouse inoculations of the progeny plants, and a statistical software program will be used to help researchers create durably resistant cultivars using multiple resistance gene markers obtained through QTL (Quantitative Trait Loci) analysis. QTL means a statistical correlation between the disease resistance genes and the molecular markers. These molecular markers linked to QTL will help the breeder to select the plants from the population which have disease resistance genes for the dollar spot pathogen. This is called marker-assisted selection and it will help to speed up the breeding process of developing resistant cultivars/lines.

No other research groups have yet studied race-specific interactions in clones, cultivars, and species

using multiple isolates of the dollar spot pathogen. If any race-specific interactions are noted, results from the experiment using multiple isolates from eleven VCGs can be used to analyze whether the QTLs for disease resistance are similar or different for different isolates.

What is the potential benefit of our work?

Our research program incorporates molecular and genetic methods, plant pathology, plant breeding, and quantitative genetics. This is important because every year, public health concerns due to synthetic chemicals applied on golf courses and other grassy areas are significantly increasing worldwide. Development of dollar spot resistant bentgrass cultivars would considerably decrease the need for fungicide application on bentgrass. In many cases, molecular markers are available for marker-assisted selection of novel genes such as disease resistance. However, markers for resistance to dollar spot and other turfgrass diseases are currently unavailable. By pairing markers with novel resistance genes, producers and private industry will be able to access

the germplasm diversity held within the public sector in improved forms well into the 21st century. This marker-assisted selection can result in higher gain from selection than phenotypic selection, or trying to select plants through visual comparison of the disease. The linkage map will also be useful to other researchers on this topic in the future, as our map will be becoming the reference map, and they will be able to compare dollar spot and other turfgrass disease resistance QTLs with our QTLs.

Who will directly gain from our work?

These research results will help turfgrass breeders to speed the selection process by using molecular markers, with the ultimate goal of developing disease resistant breeding lines and cultivars. Ultimately, golf course superintendents, private seed companies and anyone using bentgrass will receive nearly immediate benefit from the development of disease resistant cultivars. In the end, the amount of fungicides used for the control of dollar spot will be dramatically reduced. ♣



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Annual Report From Autumn

By **Monroe S. Miller**, Golf Course Superintendent, Blackhawk Country Club

Members of the WGCSA are an interesting group of people with varied and diverse interests. Lots of different things happen to them during the year, and we are meeting our clear obligation to recap and report on some of the more interesting ones. So here goes.

Every season has its oddball events and strange happenings, but none could top what happened at The Round Hill Golf Club in southeast Wisconsin this past summer.

A foursome of club members was playing the seventh at Round Hill. The fairway is parallel to the shop yard and separated from it with a section of cyclone fence. The shop yard is to the right of the hole and since most people hit the golf ball right, more than a few balls end up in the shop yard. A group of the RHGC golf course staff were watching the foursome

on the seventh, leaning on the fence with their fingers hooked in the large links, about shoulder high. They were facing the tee when Mr. Day hit his ball. It headed for them and seemed it would fall inside the fence, although very close to them.

Instead the ball bounced once on the unirrigated rough, through a link in the fence and into the back pants pocket of one of the guys!

He was surprised and told Mr. Day, when he came over, "that was a hole-in-one!" as he gave him back the ball.

Carl Johnson and Duane Owen, superintendents at the Deepdale Golf Club and the Strawberry Point Country Club, respectively, frequently golf together and are as competitive a pair of golf players as you will find. At our July WGCSA match play meeting (on the 18th) Johnson won his match with Owen, in the dark, on the 22nd hole, despite Owen's hole-in-one on the 163-yard thirteenth with a blind green up over a hill.

There were Old Munichs all around, on Johnson, and a surprising number of WGCSA guys hung around to see the outcome.

Duane is still mad.

Speaking of golf at our WGCSA meetings this past year, Shorty Frey and Wiffey (Wilfred) Keene had duplicate score cards for the nine-hole round at Peppermint Falls in June.

Here is what they looked like:

Hole	1	2	3	4	5	6	7	8	9	Total
Par	4	4	3	4	4	3	4	5	4	35
Shorty	5	4	3	5	6	3	5	6	5	42
Wiffey	5	4	3	5	6	3	5	6	5	42

Wiffey insisted they didn't cheat, but everybody was suspicious since they were in the same foursome. But in fact they didn't even realize what had happened - golf and arrangements chair Jack Hazen noticed.

Oh, one more note from the WGCSA monthly meetings, or more specifically, the May meeting when Al Golden took a magnificent 44 on *one hole* at Sunnydale CC by hitting 21 balls into the water. Bogey Calhoun, Steady Eddie Middleton and Scottie Fennimore were sympathetic at first, but after 10 balls were rolling around helplessly on the ground in laughter!

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Jimmy McDonald challenged Weird Al's athletic skills in September when he dropped 17 into Lake Montrose at the 4th hole at White Pines Golf Club. Jimmy's the golf course superintendent who, at the same meeting, hit a fairway shot which went straight up into the air and landed *behind* him. It was a shot Bobby Brue couldn't execute in his trick shot act!

Arnie Danielson, A.J. Soberg, Frankie Doring and Jack Field are golf course superintendents in northeast Wisconsin. They are also a well known musical group - The Turfgrass Boys Bluegrass Band. We all thought it was great two years ago when they recorded a CD, but this year topped everything they have done.

They were invited to appear on Garrison Keilor's *Prairie Home Companion* radio program, broadcast live from the Fitzgerald theater in St. Paul, Minnesota. We all listened between five and seven p.m. on Saturday and they sounded really good.

I asked Arnie about it and he shrugged his shoulders and said, "Garrison's very tall."

While we are on the subject of music, a couple of other talented superintendents - Hans Lien and John Bobsen - won the silo singing contest held during the World Dairy Expo in Madison. I went since it is close and can testify that that was one cool competition. What a sound they made in the big empty concrete room.

Ray Zeier successfully defended his punkin' chuckin' contest title in Moscow, a small village in Iowa county. Ray is the superintendent at Addington Golf Club, tucked in the hills of southwest Wisconsin. He's a real champ.

Tim Meisner learned to yodel since our last report a year ago, and the golf players at the New Bern Golf Course can hear him practicing while he is mowing fairways.

Similarly, Louis Rutlin superintendent at Royal Vale CC, took time last winter to attend an auctioneer's school. He had a couple of small auctions this summer; Tom Morris attended one and reported that "he is slow and he spits too much."

Val Bruner, Roxbury Country Club's golf course superintendent, hit the tractor pulling circuit on weekends this past summer and can boast of 24 full pulls with his 1954 Oliver Super 88. Val pulls in the antique tractor division. Congratulations.

Bogey Calhoun talked Tom Morris, Steady Eddie Middleton, Scottie Fennimore and me to attend what

he called "a great outdoor food fair and fundraiser" in a small northern Illinois town. We were all suspicious, especially Tom.

"Why would you want to go south of the border when there is so much going on here in Wisconsin?" he asked Bogey.

"You'll have a great time, so quit worrying. I'll even drive," Calhoun said.

Turns out he lassoed us into attending the town's 24th annual turkey testicle festival.

"I am going to kill you," Tom threatened Bogey as we pulled into town.

"Hey, they deep fry 350 pounds of turkey testicles and almost 2,000 people show up for the meal," Bogey said, grinning ear to ear. "They taste like chicken. You will love 'em, TM."

Bogey ponied up the \$4 cover charge for the five of us. The problem is each four ounce serving of turkey testicles cost another three bucks.

I gagged at the thought of it. Tom refused to buy any, so Bogey worked on him for about 30 minutes before Tom would try any. He actually liked them.

I tried a bite and almost immediately headed to the edge of the park fence to spit it out. Everybody else obviously enjoyed eating them, even though they are high in cholesterol and all sorts of other things that are bad for your health. In other words, if you are health conscious, turkey testicles shouldn't be on your menu.

I had a pork sandwich and we all have some good Wisconsin beer. We won't soon forget the turkey testicle festival even though, except for maybe Bogey, we won't actually be attending again.

Herbie Pennick had a close call at his course (Parkstone CC) this summer. He saw a sandhill crane on the course that was struggling, probably from a wing injury of some sort, and immediately called the DNR from the shop to report the problem.

After the call he took care of a few details in the



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shop and then headed onto the golf course. Just in time, as it turned out.

It was lunch time and some of his fine Mexican employees had captured the crane and were about to let blood and butcher it for lunch.

Herbie was aghast. "You can't eat that," he yelled.

"¡Oh sí, they are muy bueno!" José said with a broad grin.

It turned out well in the end. Herbie got the point across, the DNR picked up the crane to return to the International Crane Foundation in Baraboo and from the latest report, it is recovering nicely.

Herbie bought lunch for the boys at Kentucky Fried Chicken that day.

Stash Golonka had an excellent summer at the Miners Point Country Club. Despite the heat and drought, playing conditions were superb. There was one exception, however, and it got him in a Cushman box full of trouble.

There was a considerable amount of planning put into a club-wide - men, women and kids - glo ball tournament. Stash was well aware of it, to the point of sitting in on one of the planning meetings.

But on the night of the tournament, he forgot to set up the irrigation for a later start. Right on the button, when the course was full of people, sprinkler heads started popping up everywhere. With flow management there was no way for a player to anticipate where the next head would pup up and start turning.

It was chaos. The cell phones were hot, but Stash has three teenagers and no call waiting. By the time a call made it through and he could get to Miners Point, the glo ball tourney was over.

He survived, but nobody at the club has really forgiven him. Needless to say, he now has call waiting. And he has set his sights on a very small pay raise.

Ronnie Larson, the redoubtable course superintendent at the venerable Sylvan Crossing Country Club, experienced a shocker this summer. The clubhouse maintenance guy called him to see if anybody from Ronnie's staff could give a hand changing filters in the big rooftop air conditioning units.

It was a heavy mowing day, so Ronnie figured, "What the heck, I'll go help him myself." So he did.

They accessed the roof through the attic and were walking to the air conditioners when they stumbled onto the bar manager, in a chaise lounge chair. Sunbathing. Au natural. Buck naked. Nude as a newborn.

Of course, Ronnie and the janitor were startled. "I've been in locker rooms since grade school phy ed," Ronnie said, "so seeing another male 'out of uniform'

is nothing new. But this was a shocker."

Ronnie called him a sicko and a pervert, chased him back into the house and made it clear he wouldn't be using the roof of the grand old clubhouse for tanning. As Ronnie said, "you won't catch any of my employees naked on our shop roof."

Bowen Bromley won the annual WGCSA "When Will Winter Be Over?" contest last March. The contest is sponsored by Chuck Dahlek, superintendent at the Ayrshire Country Club. Chuck welded up a substantial tripod with a pretty good spread among the three legs of the tripod. A heavy weight hung from the center pivot. Chuck plants the tripod in the middle of the big pond on the golf course after it freezes (obviously). When the ice under any one of the legs melts, the whole rig tips over. The tip over date defines the end of winter!

WGCSA members place bets (one date allowed) on what the date of the tip over will be. It costs \$20 to place a bet. The winner gets a crisp new sparkler (\$100 bill) and the balance goes to turfgrass snow mold research at the UW - Madison.

That pretty much does it. We had the usual triumphs with golf tournaments, guest days, club competitions and the like. We also had our difficulties with the weather, machinery and budgets. But it seems the oddball events are what we will recall from any particular year. And this year was memorable, indeed. ♣



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Fall Inter-Seeding

By **Kevin L. Hensler**, ITM Specialist, O.J. Noer Turfgrass Research and Education Facility, University of Wisconsin-Madison

If you're inter-seeding *Poa annua* fairways with creeping bentgrass this fall, maybe you should reconsider. Superintendents throughout Wisconsin and the north-central region attempt to stem the invasive tide of *P. annua* on their fairways by throwing bentgrass seed at the problem. But how successful has inter-seeding been for those practicing it? Multiple research projects quantifying inter-seeding say it is probably not a viable option at this time, at least not in *P. annua* turf.

Most research has centered around the traditional seed establishment periods of spring and/or

fall. The problem is that these periods also coincide with environmental conditions favoring *P. annua* populations over creeping bentgrass. Research done at the University of Minnesota many years ago documented the population dynamics of creeping bentgrass and annual bluegrass throughout the seasons. *P. annua* held the competitive edge during periods of moist cool conditions (spring and fall), while creeping bentgrass populations took the advantage as summer became warmer and drier. Summer heat and drought coincides with a declining competitiveness in *P.*

annua populations, as the turf growth gradually slows and plant density decreases.

To be effective, inter-seeding bentgrass needs to be accompanied by somehow pre-stressing the existing annual bluegrass population. Existing turf needs to be rendered less competitive in order to give new seedlings a chance to establish. Herein lies the biggest impediment (competition) to successfully establishing a creeping bentgrass population within a *P. annua* fairway. A secondary problem is the amount of carbohydrate reserves within each seed

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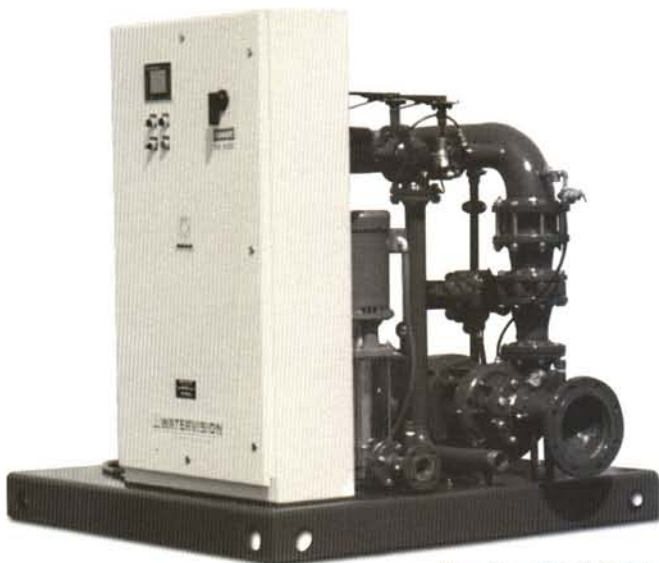
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