way to have work related to the outdoors."

Upon graduating from UW-Oshkosh in January 1999, Steve was quite sure that he wanted to go on to graduate school. "My girlfriend (now his wife) was thinking about a graduate career, too," Steve explains. "She was looking at Virginia Tech for mycology, the study of fungi. Just by chance her advisor, Dr. Orson Miller, mentioned to her that there was such a thing as turfgrass pathology and that they had one of the best people in the country at Virginia Tech.

"I thought about that," Steve continues. "That field really seemed to encompass all of my interests in plants, soil, and the environment. And I really love to golf. So I looked up Dr. Couch and discovered that, Wow! he really was one of the experts in the field. I contacted him and he agreed to take me on as a graduate student. And the rest is history. Before Dr. Miller's suggestion, I didn't even know there was such a thing as turfgrass pathology. I knew I wanted to earn a Masters degree, but I didn't quite know in what field."

Steve was honored to be able to work with Dr. Couch. Why was he chosen over other candidates? "I really don't know," he answers. "It might have been that I came from Wisconsin. He always talks about how strong Wisconsin is in plant pathology. And maybe because of my grades; I graduated with honors from UW-Oshkosh. And I did a research project on prairie grass. That might have been another reason."

At Virginia Tech...

Steve moved to Virginia in January of 1999, started working for Dr. Couch in May, and began as a graduate student in September. He worked as a research assistant all through his four years at Virginia Tech.

The main reason it took him a little longer than usual to get his masters degree is because he ran into a dead end with his first research project. "Originally I started studying Septoria leaf spot," Steve explains. "That's a disease that comes and goes every two or three years. There aren't a whole lot of isolates of it available. After about a year and a half of looking for isolates on turfgrasses - I found it on other things, but not turfgrass - we decided I'd best go in a different direction. The funny thing is, that next spring after I had decided to switch over to a different project, there was *Septoria* everywhere.

"My next project was with *Leptosphaerulina*," Steve continues. "I worked on that fungus because, Number 1, the experts disagreed on how many species there are in the genus. And, Number 2, they disagreed on whether or not it was pathogenic to turfgrass. Those were the two focuses of my masters project and thesis."

For the first part of his study, using molecular biology, Steve sided with previous researchers who split the genus *Leptosphaerulina* into several species. For the second part of the study, he inoculated both healthy plants and plants that had been artificially stressed. "The fungus was not able to infect and colonize even the plants that were stressed to the point that they were senescent (dying). That indicated that *Leptosphaerulina* isn't even a senectophyte of turf," Steve points out.

"Dr. Couch coined the term 'senectophyte,'" Steve explains. "This is a pathogen that can only attack leaves that are in the process of senescence. The plant is suppressed to the point where things that are normally not a problem become a problem. *Leptosphaerulina* isn't even that. Because it is often found on dead grass, many have assumed that it was causing the death, but it wasn't."

How does it feel to discover you've been working on a pathogen that doesn't even affect turfgrass? "At first I felt negatively about it," Steve answers. "But then I looked at it again. If superintendents are spraying because they think *Leptosphaerulina* is a problem, they're wasting their labor and money. And now that they know it isn't causing turfgrass disease, they can look further for the real cause of their problems. So it is a positive outcome."

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If you've never heard of *Leptosphaerulina*, don't feel bad. "To tell the truth, a lot of people haven't heard of it," Steve admits. "It's something that pathologists talk about more than turf growers. They've always wondered about it because they see it on dead grass. It was a genus that hadn't really been worked on, which is one of the reasons Dr. Couch chose it for me to study."

Working with a legend...

Steve knows that he was fortunate to be able to work with the legendary Houston Couch. "I cannot say enough good things about him," Steve says. "He is ***the man*** in turfgrass pathology. I'll go anywhere in the country and mention his name and superintendents will know him because they've heard him talk at a seminar or they've read one of his textbooks. He's been an authority in the turfgrass industry for almost 50 years, and he's still working.

"He's not just a great scientist," Steve continues. "When he talks, he makes it interesting. He tells all kinds of stories. And there are about 50 things he'll say at just about any talk. 'Death eating a cracker' to refer to something that doesn't look good. 'Katie, bar up the door.' 'The greatest thing since sliced bread.' 'Toodle-oo, caribou.'

"He relates well to superintendents," Steve adds. "He understands that scientists sometimes overload superintendents with information that's contrary to how they have to grow grass. For example, we tell them not to cut the grass too short while their clientele is telling them to cut it shorter.

"Dr. Couch is a great mentor. He's almost like a dad to me," Steve admits. 'He has a genuine concern for all of his students. He takes it personally if a student isn't doing well in his class; he asks himself how he can be a better teacher for that student."

Steve defended his thesis in January 2003. He continued to work in Dr. Couch's lab until he moved to Madison and began working at the TDL on May 1. His official graduation date is in May of this year.

"The hardest part about me moving to Madison is that my wife, Rebecca, will be staying at Virginia Tech until at least December," Steve points out, adding that she is working toward her Ph.D. in mycology. "It will be tight money-wise and tough on us personally, but we both realize it's the best thing for both of our careers. Once she finishes at Virginia Tech she has some post-doc opportunities here in Madison."

Steve is quick to sing his wife's praises. "She would like to teach and do research, and she's very strong in

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both. There are many times I wish I had her talents. She's just the best. She just won a university-wide award for graduate teaching. And she will be teaching a class this fall at Virginia Tech because her advisor is retired."

Plans for the TDL...

At the time Steve is interviewed for this article, he has not yet moved to Madison. But he does know a few things about the O.J. Noer Research Center. And he has plans for his new job at the TDL. "I've been to the TDL a couple of times. It's a top-rate facility. It's set up really well. The TDL has everything I need to make diagnoses," Steve says.

Steve has hit the ground running this May by timing his arrival with the beginning of the growing season. "The best thing I can do at first is to do a really great job with diagnosis and be really responsive to the needs of golf course superintendents, other turf professionals, and home owners," he says. "That's my Number 1 goal. Then I'll start worrying about taking on more goals."

To be responsive to his clientele, Steve wants to communicate aggressively. "I realize that there are jobs hanging on a diagnosis," he says. "If I get a sample that can't be diagnosed the first day, I'm going to definitely give the superintendent a call and let him know why it's delayed - like when we have to incubate it. I'll also tell him what I think the problem might be."

There are different ways to pay for the services of the TDL. One way is to pay a fee for each sample — $50 for a telephone report and $75 for a written report. Another way is to sign a contract, pay a fee early in the year, and be able to send in a set number of samples during the year. The highest contract level is $1,000 per year which includes an on-site visit, and ten diagnoses. Contract holders also receive several extra benefits, first of which is a report of all of the turfgrass research that is performed at the university. The report includes plant breeding, cultivar evaluations, turfgrass management research, as well as fungicide, herbicide, and insecticide efficacy trials.

For the contract holders, Steve would like to develop an e-mail list serve whereby he can send out disease alerts. These alerts would come when the lab gets a lot of samples with the same problem from one area of the state, or when the conditions are just right for a disease to crop up.

"I'd also like to update the web site because it hasn't been done for a while," Steve points out. "I'd put the disease alerts here, too, for those who aren't contract holders. I will be holding disease workshops on an annual basis at which all of the contracted superintendents and turf professionals can hear about the most important diseases, how to control them, how to manage spraying problems such as resistance - things like that. And I'd like to give them a chance to actually look under the microscope to see what it is we do here.

"And in the fall I'll be working with Dr. Jung to set up research projects that are pertinent to Wisconsin," Steve adds. "We'll listen to what the superintendents are saying about problems they're having and hopefully be able to initiate a research project to work on those problems."

As director of the TDL, Steve is an employee of the University. His position is partially supported by grants through Dr. Jung and partially through the fees that the lab receives. "That's another goal of the TDL - to become self sufficient," Steve points out. "We want to get our name out there, get enough clients so that we can fund the whole operation. I'm looking into the possibility of generating more revenue by expanding our services to nearby states such as Minnesota, which doesn't have a turfgrass pathologist right now."

Having worked with golf course superintendents in the past, Steve has great respect for them. "Superintendents have a very stressful job," he believes. "Most people think it's easy to grow grass. But they have to manage a crew and always be in contact with the greens committee which rarely is happy. Plus they have to grow the grass and deal with problems associated with that. They have to be very professional in many different aspects. A lot of people don't give them enough credit.

"I don't know if I'm cut out to be a superintendent," he adds. "I think I'll stick with the disease aspect of growing grass."

Good idea, Steve. Turfgrass professionals in the state are glad to have you in their corner!

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Velvet Bentgrass as a Potential Turfgrass?

By Jin-Joo Bae and Dr. Geunhwa Jung, *Department of Plant Pathology, University of Wisconsin-Madison*

I started my study of Horticultural Science in Korea. When I was an undergraduate in the Department of Horticulture, I was interested in ornamental plants. For my Masters degree, I studied the regeneration of cyclamen and *Gypsophila paniculata* using tissue culture. During the course of my graduate work in Korea, I became interested in plant breeding and genetics using molecular techniques. When I joined Dr. Jung's lab, I knew little about turfgrass and its diseases. However, I have come to enjoy the study of turfgrass, especially velvet bentgrass species. In this article, I would like to tell you why velvet is an untapped gem of a turfgrass and briefly discuss my research project.

Velvet bentgrass, *Agrostis canina* (L.), is a cool-season, extremely fine-textured grass that creates the smoothest playing surface of all turfgrasses. Velvet bentgrass naturally occurs throughout all of Western Europe to Eastern Asia and in a portion of North America where there are temperate-oceanic climates such as those of New England and the Pacific Northwest. There are two kinds of subspecies, ssp. *canina* and ssp. *montana*. *A. canina* ssp. *montana* is now recognized as the species *A. vinealis*. When we say velvet bentgrass, we mean *A. canina* ssp. *canina* which is a typical diploid (by definition, an individual with two sets of a basic genome). On the other hand, *A. vinealis* is an autotetraploid, which doubles the diploid chromosome set. Triploid hybrids between these two species confirm that *A. vinealis* is an autotetraploid of *A. canina*. A longer, more pointed ligule and a shorter palea distinguishes it from other species of *Agrostis*. In every textbook and paper, velvet bentgrass is described as forming the most beautiful turf surface due to its fine texture and high shoot density. Also, according to an article from the Bulletin of the USGA Green Section written by Monteith, J.Jr. and K. Welton in 1932, ten professional golfers at Arlington Turf Gardens in Virginia recognized velvet bentgrass as the best putting surface.

Although people regard velvet bentgrass as the most visually striking turfgrass, most golf courses have chosen creeping bentgrass (*Agrostis palustris*) instead of velvet. Velvet bentgrass fell out of favor with turf managers nearly 50 years ago due to its higher maintenance inputs. There was a reason why people thought velvet bentgrass needed high maintenance. For an explanation, I will use the example of the velvet bentgrass cultivar "Kingstown" which was bred through an inbred selection from "Piper" and released by Drs. C.R. Skogley and J.A. DeFrance at the University of Rhode Island. It was a lighter green than many other bentgrasses and seemed to demand excessive fertilization and watering. Consequently, this management style resulted in heavy thatch, disease development, and *Poa annua* encroachment which led to the loss of velvet at many turf sites and the misconception of velvets as high maintenance turf. In addition, unreliable seed production reduced velvet bentgrass usage.

Velvet bentgrass does not do well in germplasm collections and preservations. However, the University of Rhode Island made an effort to collect germplasm and breed cultivars. After much work, Dr. Skogley released the variety "SR 7200" in cooperation with Seed Research of Oregon. "SR 7200" shows traits such as excellent disease resistance to dollar spot and drought-tolerance that are superior to all other bentgrasses as well as improved seed yields compared to previous velvets. Recently, Rutgers University has been working to develop velvet bentgrass. They are collecting the germplasm of velvet bentgrasses

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from many old golf courses in New York, Connecticut, and New Jersey and have developed new experimental velvet bentgrass lines. They have been evaluating those experimental lines with reduced input requirements.

Sport Turf Research Institute in Bingley, England and Rutgers University compared the new velvet bentgrass materials to other bentgrasses. Their results are as follows:

1) Velvet bentgrasses are the most visually striking turfgrasses and velvet greens are the smoothest, truest, fastest putting surfaces of all bentgrasses.
2) Due to their extremely high numbers of shoots per unit area, velvet bentgrasses have the finest texture of all the turfgrasses. The density of velvet bentgrass is much greater than creeping bentgrasses and higher than equivalent stands of *Poa annua*.
3) There is much color diversity in the velvet bentgrasses ranging from very bright, lime green to darker shades of green. "SR 7200" shows a striking dark green color.
4) Velvet bentgrasses are tolerant to many stresses including drought and especially shady conditions. Also, velvet bentgrasses are highly tolerant to low temperature. It has been thought that high temperature has limited velvet. But there is significant evidence that indicates a much higher degree of high temperature tolerance than was previously thought.
5) Velvet bentgrasses are generally highly resistant to most turfgrass diseases. It is well known that "SR 7200" has excellent resistance to dollar spot and brown patch. There is some evidence that mature turf shows high resistance to *Pythium* sp. diseases.
6) Velvet bentgrasses are well-adapted to low nitrogen fertility programs. This trait helps prevent *Poa annua* infestation because *Poa annua* needs high levels of nitrogen fertilizers.
7) Although velvet bentgrasses are adapted to relatively low soil pH levels (5.0-5.5), they persist and perform well at slightly acidic levels of 6.0-6.5.
8) Velvet bentgrasses are much more accommodating of low mowing heights than what was once thought. Velvets perform very well at any heights from as low as 0.120" (3.00 mm) for tournament-grade velvet bentgrass greens to 0.560" (14.00 mm) for fairways.

It is apparent that velvet bentgrass has a decided advantage over other bentgrass species. However, there is no report on genetic variability among velvet cultivars, breeding lines, and clones in their susceptibility to pink snow mold (*Microdochium nivale*) which is a major disease of turfgrass and economically important turf disease in North America. Therefore, my research focuses on the genetic analysis of pink snow mold resistance in velvet bentgrass using DNA marker technology.

Pink snow mold is a common disease in later fall and early spring in areas where cool-season grasses are adapted. The environmentally sound way of controlling this disease is to develop resistant cultivars. However, little research on pink snow mold has been conducted in turfgrass. Almost no effort has been put into developing velvet cultivars resistant to pink snow mold. As the first step of my research, one hundred forty velvet clones from various sources (cultivars, breeding lines, and Plant Introductions) will be screened for their differential reactions to different pink snow mold isolates collected throughout Wisconsin. The velvet clones consist of 5 plants from each of 19 breeding lines from Seed Research of Oregon, 6 PIs (Plant Introduction) from the U.S. National Plant Germplasm System (NPGS), 2 commercial cultivars ("Vesper" and "Bavaria"), and a seed collection of Dr. Mike Casler, University of Wisconsin-Madison.

Once resistant and susceptible velvet clones for pink snow mold are selected as parents, they will be crossed with each other in order to develop a population segregating for pink snow mold resistance which will be utilized for genetic analysis of the resistance.

Velvet is of interest to breeders and geneticists because of its low maintenance turf, multitude of benefits, and diploid characteristics with which it is genetically easy to work. I hope my research will help stimulate genetic research on velvet bentgrass species and accelerate a breeding process of developing disease resistant cultivars or breeding lines with the help of molecular marker technology.

Great Start to the 2003 Season

By Dustin Riley, *Golf Course Superintendent, Oconomowoc Golf Club*

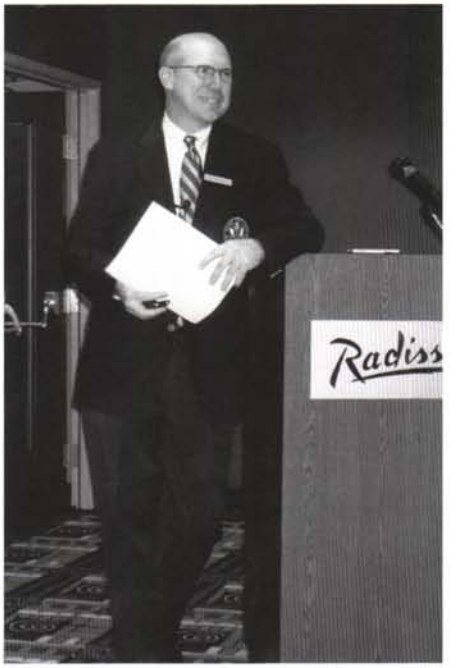
In the past, the Wisconsin Golf Course Superintendents Association has held its Spring Business Meeting in Fond du Lac in early March. The WGCSA Board of Directors utilizes the spring meeting to jump-start the season by educating attending members and providing the "state of the association." However, this year a unique opportunity was presented to the WGCSA. The USGA was scheduled to hold their regional seminar in Wisconsin also this spring. In attempt to provide a most valuable educational experience, the WGCSA and the USGA joined forces and presented a joint USGA Regional & WGCSA Spring Business Meeting. Due to the "joining of forces", old traditions have been broken to accommodate both parties. The date and location were changed.

On Tuesday, March 11th, 2003 the USGA Regional Conference and WGCSA Spring Business Meeting was held in Pewaukee. The USGA arranged an education-filled morning designed to target golf professionals, golf course superintendents, and their respective guests. This joint meeting provided opportunities for golf professionals to learn a little about turfgrass management concerns, and also a chance for golf course superintendents to learn about USGA matters.

Dr. Chris Williamson, University of Wisconsin-Madison, presented *"Managing Earthworms and Other Insect Pest for Flawless Fairways."* Although earthworms are living proof of healthy soil, high populations can interfere with a golf course superintendent s intentions on producing a perfect playing surface. Dr. Williamson presented a history of data that earthworm populations could be affected by chemical applications targeting other pests. Since earthworms are beneficial organisms, Dr. Williamson concentrated his presentation on a non-chemical approach to discouraging high populations of earthworms. Extending a topdressing program into fairway acreage has become one of these alternative approaches. Producing a surface layer of angular sand has been shown to reduce earthworm populations. The sharp edges of the angular sand are believed to injure and irritate earthworms. University studies have recently begun to look at other products that may produce the same desired effect as angular sand. One of those products is "Black Jack" a coal slag byproduct. However, these studies are very new and the chemical and physiological properties have yet to be determined.

John Spitzer, a physicist who is the USGA Technical Director, gave a very informative lecture on equipment testing.

Bob Vavrek, Agronomist, USGA Green Section, NC Region provided the second turf related talk concerning *"Green Covers: Benefit or Boondoggle."* Bob provided several instances in which green covers could or could not have worked. Turf winterkill can occur through several processes



Jim Reinhart, USGA Executive Committee member, lectured on the activities of the USGA Foundation.

Bob Vavrek and Chris Williamson were on the WGCSA eductational program.