

involved or if they have paid the entry fee (\$100), have not actively pursued full certification. Yet, in many states, the Audubon Programs are actively embraced by government agencies as a means of insuring environmental quality when a new facility is proposed.

Many golf courses throughout the country continue to face public opposition to pesticide and fertilizer use. Several communities in California have banned the use of most pesticides and this trend is actively underway in New York. The turfgrass industry has responded by mounting significant lobbying efforts to combat the legislative agenda of advocacy organizations. At the same time, the industry faces new pest problems such as bentgrass deadspot and gray leafspot that require substantial pesticide inputs to maintain expected quality.

### Another Level

Millions of dollars have been invested to research the environmental fate of applied chemicals. These studies attempt to determine the role that specific management practices may play in minimizing off-site movement and often use EPA concentrations to evaluate success. In general, these levels are established from toxicological research that determines concentrations that might cause human health concerns. But what if the levels we have been using were harmful to other species vital to aquatic ecosystems?

Environmental researchers from Canada published an assessment of nitrogen pollution influence on amphibians in a 1999 issue of *Environmental Health Perspectives*. The paper is a review of available water quality information for the Great Lakes region of the US and Canada. Of the over 8,000 water-quality samples collected in areas surrounding the Great Lakes, 20 percent of them were found to have concentrations that cause sublethal effects in amphibians. Nitrate levels as low as 2.5 ppm have been shown to affect amphibians.

The nitrate in the water appears to disturb the digestive process in tadpoles in a way similar to the mechanism in humans. The nitrate is converted by the bacteria in the infant's gut and then severely restricts the blood's ability to become oxygenated. There is a significant lack of information available on the toxicity levels relative to the different amphibian species, including influence on the predators and prey.

The review did not point the finger at the turfgrass industry, but rather pointed to the need to understand the influence of wastewater treatment, livestock, precipitation, and fertilizers on nitrate pollution. Clearly, as major users of fertilizers for turfgrass areas such as golf courses, we must be aware of best management practices to minimize off-site movement. In addition, turf is an important vegetative buffer and biofiltration system to protect sensitive aquatic habitats. Now is the time to think about the bigger picture before another crisis occurs.

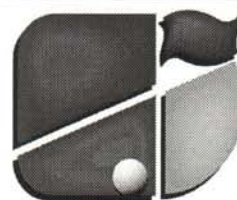
### What's Next?

Kenna and Snow end the chapter in the ACS Symposium Book saying, "The USGA, and the game of golf, need to keep asking questions and looking for new ways to maintain golf course grasses. More important, efforts should be increased to educate the golfer about environmental issues." The importance of these points cannot be overstated, yet I am regularly amazed at how many in our industry feel that the environmental crisis is over. I sense complacency among organizations and industry leadership that image, labor issues, and expected turf quality are greater challenges since they know the results of the USGA studies.

There is nothing more important to the well being of the game of golf and our industry than environmental quality. Yes, the data is encouraging that as far as we can measure, there appears to be little negative influence, yet as we continue to ask questions we find new answers. At the same time, we need to look at course management. Should we plant ryegrasses where gray leaf spot is going to be a problem? Can we justify intense pesticide use for new pest problems? Are we creating these problems from the conditions we create? Why do the golfers appear no more involved than they were a decade ago? Why isn't every course in the Audubon Program?

As the human population grows, the concern for environmental quality will be even greater. As an industry, we cannot rest on our laurels. We must be vigilant in our efforts to inform golfers about the price of what they are demanding. In some cases, we may not know exactly, but shouldn't we err on the side of caution? The amphibian study is only one aspect of what we are a part of, as Carson states in *Silent Spring*, "the fabric of life, on one hand delicate and destructible, on the other miraculously tough and resilient, and capable of striking back in unexpected ways."

*Editor's Note: Former UW-Madison professor Frank Rossi presented these remarks at 2001 USGA Regional Seminar presentation. They are reprinted with permission from the author.* ♻



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# 2001 Ends As Another Warm Year

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



Almost 50 consecutive days of above-normal temperatures in October, November and early December kept the Wisconsin landscape snow free and her lakes open and unfrozen nearly until Christmas. Snowmobiles weren't running, skiers were not skiing and skaters weren't ice skating unless it was indoors. But Wisconsin golfers were still playing up until Christmas (and after). I heard some talking of the possibility of playing golf in all of the twelve months. "A bit premature," I suggested to them. I am convinced the unseasonably warm weather affected attendance at our Wisconsin Golf Turf Symposium.

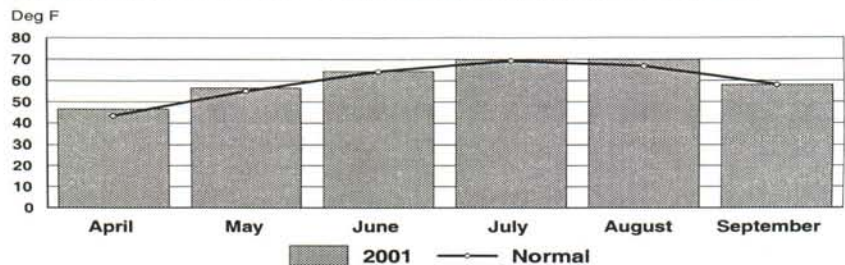
Variability in the weather has been almost startling in recent times. November 1998 was the 10th warmest; in 1999 it was the fourth warmest November; and this past November of 2001 was the warmest on record. Yet consider that we were snowed under in the autumn and early winter of 2000, recording an impressive 40" of snow by New Year's Day, 2001. December of 2000 was our snowiest December on record and the fourth coldest recorded. Big

swings to the extremes, I'd say.

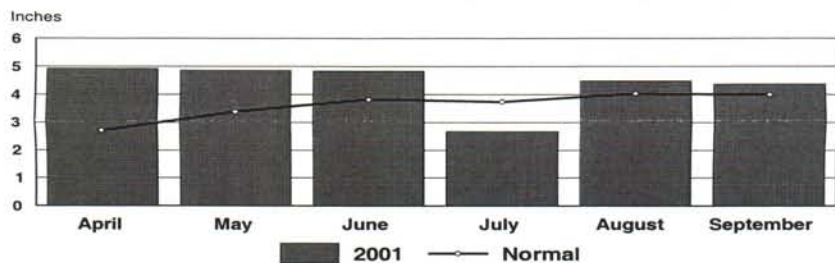
The lack of snow and the warm weather to this point are fairly widespread across the state. Snow removal equipment sales lagged, exacerbating an already weak Wisconsin economy. And the mild weather and rain caused concern about snow mold materials on the ground and required some courses to retreat in anticipation of snow in January, February and March. Who knows about that yet?

What a year the one just completed was. From the heavy snow of late fall/early winter to an April that brought too much rain and almost no sun, it seemed golf 2001 would never get going. We didn't dry out much in May and June. It should have been no surprise that July and August were brutal – hot and humid but little or no rain – and golf courses in the state suffered significantly as a result. But the –ber months sort of made up for the misery and gave us

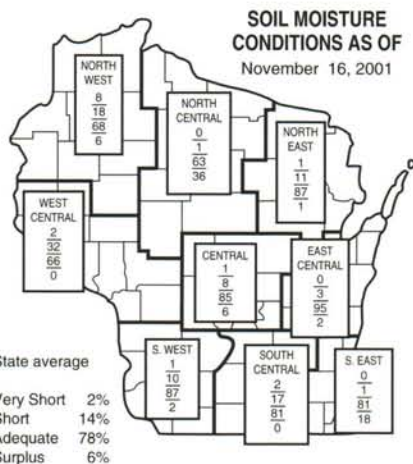
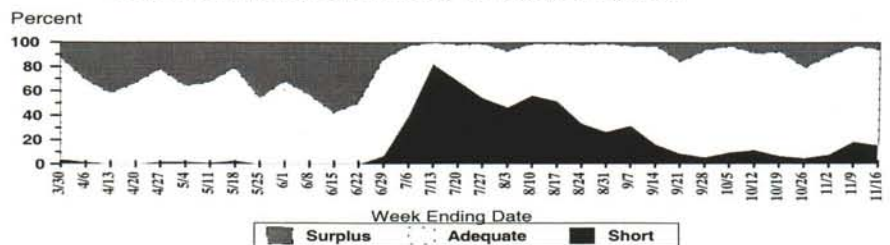
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gering fall.

Data and graphics from the great Wisconsin Agricultural Statistics Service tell the story best and are recorded here for posterity.

I don't see as much of the nighttime sky as I did back when we had a manual irrigation system, but there were many reasons of late to catch some celestial majesty.

This fall gave us the first full Halloween moon since 1955 – 46 years. And it won't occur again until 2020. That full moon is known as the Hunter's Moon, the first full moon after the Harvest Moon.

Then, in the first half of November, we were treated to comets running across the night sky and an absolutely spectacular display of northern lights (the aurora borealis). Astronomers say the show was one of the best ever this far south.

Finally, on New Year's Eve, if you looked above the full moon early in the evening when it was in the eastern sky you could see the planet Jupiter. It was also a beautiful sight.

The economy is suffering and affecting nearly every American one way or another. In Wisconsin we are facing a huge deficit that will require significant spending reductions (not more taxes as some misguided politicians are suggesting).

The downturn hit home when we read of Briggs and Stratton cutting even more staff, both union and salaried positions.

There was some good news, however, when Toro announced it was moving some manufacturing work to Tomah next year as it closes its plant in Evansville, IN. If I am not mistaken, they make their Multi-Pro sprayers at Evansville.

A good friend of mine (and former green committee chair) practices law in Madison and sent me an interesting clarification from the IRS on

the question of depreciation of golf course land preparation costs. It was two pages long and written in a language that clearly requires special training to understand. But the bottom line was (according to Len) USGA spec greens have a tax advantage over push-up greens because some of the costs of construction (or reconstruction) are depreciable. Push-up greens are considered land preparation and not depreciable.

Now you know!

The successful American military effort in Afghanistan has led to a number of stories about land mines and how civilians and GI's are being injured by them that makes the following story more pertinent to people like us.

Somsak Thepsutin, a cabinet minister in charge of tourism in Thailand, said his country is working on building a 27-hole golf course linking Thailand, Laos and Cambodia with nine holds in each of the countries. The proposed site is 400 miles northeast of Bangkok in an area littered with land mines. Said Thepsutin: "Yes, the area is booby-trapped, but it is a piece of cake for three countries to solve."

Land mines would most definitely be a new maintenance problem for most of the golf course superintendents I know!

The subject of the recently completed Symposium, new and emerging pests, brought to the forefront the battles we have ahead of us with some disease and some insects. The gypsy moth is especially troubling.

The state program is managed by Steve Millett and for years the lab was next door to our shop. Couple those details with the caterpillar found on our golf course last summer and you will know of my particular interest and fear.

But, somehow, there always seems to be hope. Here, as so often happens, the hope comes from our

land grant college, the University of Wisconsin – Madison. UW – Madison scientists in CALS have found an antibiotic that may help kill gypsy moths.

In a series of experiments, a team of scientists from the Departments of Entomology and Plant Pathology have found that the antibiotic zwittermicin A enhances the lethality of *Bacillus thuringiensis* (Bt), a bacteria that is routinely sprayed in the Wisconsin gypsy moth control program.

The discovery was made by grad student Nichole Broderick, who is studying the microbial ecology of the gypsy moth gut. The research, it is hoped, will provide insights that will permit scientists to devise even more effective methods to kill insect pests.

The faculty involved are Dr. Ken Raffa of Entomology and Plant Pathology Professor Jo Handelsman. Dr. Handelsman discovered the antibiotic zwittermicin.

In our shop we have shifted gears, reviewed lessons learned from last year, and are moving headlong toward the new golf season. EXPO is over and the GCSAA conference and show is next on the agenda.

See you there! ♪

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# Symposium Moves Forward in 2001

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

I cannot recall ever looking forward to a Wisconsin Golf Turf Symposium more than I did to the 2001 edition of this almost sacred educational event among Wisconsin golf course superintendents. And, like most of those I have visited with, I most surely was not disappointed.

Two things excited me – the venue and the program. The American Club in Kohler is Wisconsin's only five-star hotel, and we had the chance to enjoy the entirely pleasant facility at an almost unbelievable price. Rarely ever will any of us experience such quality in service and facilities and great food. A/V equipment worked like it was supposed to, chairs were comfortable, rooms were elegant and the selection of restaurants was singular.

The program, *Emerging Problems and Pests*, attracted a roster of excellent speakers, most we know and one we met for the first time.

Dr. Peter Dernoeden made his first trip to the Symposium whereas all of the other lecturers had made previous appearances: Stan Zontek, Jeff Carlson, Mark Kuhns, Clark Throssell, Chris Williamson, John Stier and Bob Vavrek. Our WGCSA panel members were superb – Mike Lee, Gordy Waddington and Jerry Kershasky all know what they are talking about.

Stan returned to Wisconsin to recognize his honorary membership in the WGCSA – “to give something back to Wisconsin.” The keynote speaker sets the stage for the other Symposium speakers, and Stan spoke of the larger trends in dealing with new golf turf prob-

lems. His key points from my notes were these:

1. We are entering into a period of extremes in weather – drought, flooding, heat (1999 was the warmest year in the last century) and cold. We are learning to manage golf turf in these extremes and clearly we need the healthiest turf possible to be successful in the extremes.

2. The management bar is rising in golf turf. Even the rough needs to be perfect these days. Green speed is in the forefront of golf demands, and all across the country courses are required to provide speeds in the 9' – 10' range.

3. New stress problems are becoming common very quickly: mechanical stress, disease problems (bentgrass dead spot, anthracnose, bacterial wilt, gray leaf spot, fairy ring), earthworms, hyperoides weevil, water quality, nematodes, algae, moss, et al.

4. People problems are beginning to affect almost all golf courses –

finding quality help, adequate pay and benefits for employees, and even more frequent and severe vandalism.

As always, Stan complemented his lecture with some great slides that amplified his message.

Dr. Dernoeden focused his lecture on three diseases – basal rot anthracnose, bacterial wilt, and bentgrass dead spot.



**First time Symposium speaker Dr. Peter Dernoeden, a faculty member at the University of Maryland.**



**Bob Vavrek does yeoman work for the Symposium – committee member, panelist and speaker.**



**Mark Kuhns travelled to Kohler for The Baltusrol Golf Club in New Jersey to discuss his aggressive tree removal program.**



GCSAA Director of Research (and former Purdue professor) Clark Throssell.



Wisconsin's Dr. Chris Williamson talked about the status of Japanese beetles and gypsy moths in our state.

Anthracnose was first described in the 1950s in England, and today it is on its way to becoming one of golf turf's most severe diseases. It is found in both *Poa annua* and bentgrass, but it most serious on *P. annua*, especially when the later plants have been weakened. The disease is aggravated by low cutting heights, double cutting, low levels of nitrogen, grooming, top-dressing, rolling, and vertical mowing. In other words, all of the practices we use to satisfy green speed for players work to encourage the



Kris Pinkerton received a past president's plaque from a grateful WGCSA membership.

disease. Weather extremes have been detrimental as well.

Preventing an outbreak involves the use of Daconil along with a penetrant fungicide, syringing rather than night-time watering, avoiding any severe management procedures, spoon feeding fertilizer, and moving traffic around by cup placement. *This disease may be uncontrollable with fungicides only.* The implication clearly is we will have to do some serious communication with our players should we experience a severe outbreak of anthracnose.

Bacterial wilt is familiar to golf course superintendents of my generation. It was found in C-15 bentgrass about 20-25 years ago in Chicago and diagnosed by Dr. Joe Vargas of Michigan State. The electron photomicrographs of plugged vascular bundles were spectacular. It is back, and conditions that encourage anthracnose do the same for bacterial wilt. And, of all things, it is spread by mowing.

Finally, for the first time for many of us in the audience, we learned something about *Ophosphaerella agrostis* – spring dead spot in bentgrass or bentgrass dead spot. To date, it is found only on young greens.

Chris Williamson, Extension turfgrass entomologist at the UW – Madison, spoke about two problems far too many of us are becom-

ing familiar with – gypsy moth and Japanese beetles. On our course we had some serious injury from Japanese beetle grubs, even in areas that were treated. Biological and cultural controls will not work with this pest and we are forced to use insecticides for control. This insect was exported to the U.S. from Japan in 1916 and found in Wisconsin in the early 1990s.

Gypsy moths were officially reported in Wisconsin in 1995, despite their introduction into America (Medford, MA) in 1869. Biological and cultural controls have a chance with this insect pest. Dr. Steve Millett is in charge of the Wisconsin gypsy moth program; there is comfort in knowing it is in capable hands.

We have been blessed in Wisconsin with clean water for use on our golf courses, but population pressures may change that. GCSAA's Clark Throssell returned to the Symposium and gave an enlightening lecture on water quality issues, a subject many of us are poorly informed about.

He spoke about salt control, sodium hazards, carbonate/bicarbonate levels, toxic levels of certain ions, and the importance of water sampling.

This was the second year for a revised format that has a full day on the second day of the Symposium. It is started with a

breakfast buffet. Bill Roberts, past president of both the WGCSA and the GCSAA, drove up from his new home in Chicago and told us of changes in his life. He has gone from golf course superintendent to attorney, and Bill traced the path he followed that got him to such a radical career change. For old friends like me, he is still the same articulate, humorous and hard working man we knew when he labored in Stevens Point. He is a little gray at the temples, but who wouldn't be after working through law school while fully employed. He is now an Illinois assistant state's attorney in suburban Chicago. The work is interesting; "you can't make up stories like the ones I see each day," Bill told us.

Bill was introduced by Jeff Spence, sales manager of Milorganite. Jeff has earned our respect for carrying on the Symposium traditions we value so highly. He spoke of comparison between the 1941 and events of 9/11. O.J. Noer had written of WWII and the loss of members to the armed forces, budget reductions and turf maintained in "standby conditions." Jeff's remarks were reassuring.

The educational session for the second day began with a moment of silence in memory of Dick Buetel who passed away from cancer last fall.

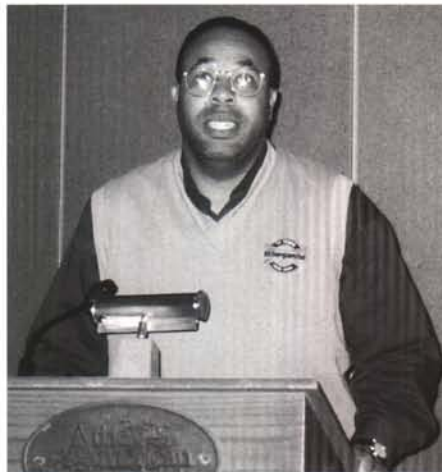
Panelists Stier, Zontek, Vavrek and Dernoeden worked the subject of specialty products (frequently referred to as "snake oils"). It is a tough subject to discuss. There are usually many claims made about these products, substantiated mainly by testimonials and rarely by university research. Bob Vavrek was skeptical of such products and recommended a benefit vs. cost approach. He acknowledged you can sometimes see a benefit but the cost is almost always high.

John Stier's recommendation was a thorough and close scrutiny of scientific data and a study of research statistics. He warned that the number of marginal products might increase due to FFQPA of 1996, which does not mandate any

registration requirements.

Peter Dernoeden suggested requesting data from two or more universities, preferably one that is either local or regional. He strongly expressed that in his opinion it is not possible to manipulate soil microbe activity in greens and suggested higher levels of soil microbe activity isn't always good.

Jeff Carlson spoke before the Symposium a few years ago when he was the golf course superintendent at the Widow's Walk golf course in Massachusetts, a Mike Hurdzan design. He came this year as superintendent at the Vineyard Golf Club on Martha's Vineyard. It is an all "organic" golf course and he was hired in 1998 to help with the permitting process (Wildlife



**Jeff Spence has provided strong leadership in keeping the Symposium traditions intact.**



**Jeff Carlson, golf course superintendent at the Vineyard Golf Club, an "organic" golf course.**



**New WGCSA president David Brandenburg and UW-Madison turf-grass pathologist Dr. Geunhwa Jung.**



**UW-Madison Professor John Stier discussed his view of quick fix products.**





Good friends Tom Schwab and Jim Krieger both gave a big "thumbs up" to the American Club.



The distinguished panel of Vavrek, Stier, Dernoeden and Zontek.



Panelist and Kohler host Michael Lee.



"Pure pleasure" was how many of us felt to see and visit with Bill Roberts again.

Grow-In and Consulting). The golf course site is a 225 acre abandoned development that has been argued about for years and finally became a reality, likely due to Jeff Carlson's guidance. He had an instructive and interesting story to tell.

Mark Kuhns' previous appearance as a Symposium speaker was as the golf course superintendent at Oakmont. He returned as the Baltusrol Golf Club superintendent, and he discussed tree removal programs. Shade is a really tough turf problem (trees are tall hardwoods, according to Penn State's Dr. Tom Watschke!) and tree removal can be emotional for golf course players. Mark's advice is to develop a plan that involves participation of the green committee and your golf course architect. He suggested working toward a benchmark of eight hours of sunlight, and giving weight to air movement, game strategy, shade, and to the original look of the golf course.

WGCSA colleagues Lee, Waddington and Kershasky worked as a panel discussing cultural practices and play. Mike talked about the concept of a phantom crew – "never seen and never heard" – with play starting at 7:00 a.m. and staff rolling at 5:00 a.m. He carried

that concept through to green and fairway aerifying.

Jerry addressed the issues surrounding labor and productivity, the critical importance of communication, and the structure of the workday. He has found value in hiring enough summer employees that time off isn't an issue when requested. He explained his program of eight hours of pay for seven uninterrupted hours of work, a program made successful by the facts that productivity drops 50% when golf players are present and the last hour of the day isn't very productive anyway. Jerry has some unique solutions that merit consideration by many of us.

Gordy Waddington is a practical, down-to-earth golf course superintendent who shared his management approach at the Country Club of Wisconsin. He embraces the CCW goal of maximum revenues, which leads him to constantly ask, "how much can we do with less?" He cross trains all of his employees for their maximum value and offered the key message: "be flexible."

The Symposium wouldn't be the same if we didn't have Bob Vavrek, our USGA Green Section agronomist, summing up the lessons learned from the speakers. The



Steve Zontek served well as Symposium keynoter and panel moderator. He is a valued friend of Wisconsin superintendents we do not see often enough.

responsibility requires that Bob keep good notes, and he has the ability to distill the day and a half program into a 45- minute summary. He always does a nice job.

The move to Kohler was a very significant one. I think it will take a couple of more years to determine if location will greatly expand attendance. This year, the season hadn't ended by November 13th, not even in northern Wisconsin. Irrigation systems were not blown out, snow mold materials had not been applied in many cases, and players in some quarters were still expecting some services. Those factors may have affected attendance.

Everybody but one person raved about The American Club; that lonely dissent came from a colleague who wanted windows to look out of. But to a person otherwise, the compliments were rich. Jim Krieger thought the facility was "almost unbelievable. The flowers are even real!" And John Jolin echoed the sentiments of many when he said, "If the Symposium returns to the American Club next year, my wife will come along!"

I'm with John. ♻️



Sheboygan sits on the shore of beautiful Lake Michigan. Shown here is the breakwater and lighthouse. A visit to the city must include a stop at the John Michael Kohler Arts Center.




Veteran WGCSA members Carl Grassl and Roger Bell discuss the Symposium after the Association election.



Green grass in a Sheboygan park should have been either tan or snow covered. It was evidence of a long season.

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