

(Continued from page 19)

soluble and SRN as compared to just soluble or SRN. I've examined this from a theoretical basis and have concluded that in many instances uniformity of turfgrass response is not improved by blending the two together. Hence, the practice seems to be based more on unproven assumptions than actual research.

I have an exchange student from the Netherlands working with me this summer. He's conducting a field trial in which bentgrass responds to urea and IBDU alone and in combination are being recorded. While its too early to present the results of his research, the data do clearly show there are overlapping periods of response to the two N sources and responses to each source are additive. We have just made the third application for the season and are now sorting out the responses to this application from residual responses to the two previous applications. We'll be reporting the results of the study at a later date and will then be in a good position to answer your question.

Regardless of which fertilizer materials are in a blend, there is something that has to be kept in mind when using any blended fertilizer. If the fertilizer materials in the blend are not closely matched with regard to particle size and density there is no way you can achieve uniform application of each of the materials in the blend. Uneven distribution of the various N sources means loss of much of the advantages of the blend. It's quite possible you've seen the consequences of this without realizing it. It takes the form of uneven turfgrass color as you near the time for another application. Areas that were fertilized with primarily soluble N have begun to yellow while areas that received mainly SRN still have good color.

*Q: We built a number of new features a few years ago —greens and tees. The surfaces were seeded to Penncross creeping bentgrass and all the surrounds sodded to Kentucky bluegrass. Those surrounds, in many areas, have almost entirely been taken over by the bentgrass. It's a miserable situation—disease, thatch and fluffiness. They are about impossible to mow at 1.5 inches.*

*Any suggestions? Is there a selective herbicide that will remove bentgrass from other perennial grasses? I cannot bear the thought (or expense) of resodding. JEFFERSON COUNTY.*

A. Let's hope someone comes up with that herbicide soon. Until they do, we're going to have to live with the fact that creeping bentgrass becomes very aggressive when mown at the height of other turfgrasses. In my research plots at the Cherokee Country Club creeping bentgrass has almost completely taken over 10 to 12 feet of adjacent Kentucky bluegrass in just four years. In talking with Dr. J.B. Beard last fall about some of the pitfalls to avoid at the O.J. Noer Turfgrass Research and Education Facility, he recommended that all creeping bentgrass plots be separated from other grasses by gravel or paved roads and mowers never be allowed to travel from the bentgrass to other areas without being thoroughly hosed off first.

Thus, the answer to your question is not a pleasant one. In lieu of the magic herbicide, you're going to have to live with the aggressiveness of the creeping bentgrass as long as you can, then resod.

*Q: There is a lot of excitement around Wisconsin about the Noer Facility finally coming on line. Are the industry's expectations too high or do you and your faculty colleagues share the same excitement and anticipation? FOND DU LAC COUNTY.*

A: If you'd asked this question two months ago my answer would have been very different from today. Completion of the building had been on hold for nearly 8 weeks while the demise of the now infamous barn on the site was resolved. Thanks to some very adroit maneuvering on the part of Tom Harrison, the last two months have seen a flurry of activity at the Noer Facility. All of the farmstead buildings are nowhere to be seen, the entire building site is graded pavement installed, the building landscaped, sub- and topsoil replaced on experimental areas and the demonstration and research areas seeded and mulched. Are we excited and full of enthusiasm? You bet!

There is, however, a deep concern on our part that we will find it difficult to live up to industry expectations. We hope you will be patient. As of this moment, replacements for Gayle Worf and Bob Newman have not been hired. Even when these people do come on board, they'll need time to map out a research program, find financial support for their research and locate topnotch graduate students. I'm just hoping that when they are ready to roll the irrigation system will be installed and operating.

We have taken the opportunity of soil movement to establish plots where we can study the effects of compaction during construction on nutrient and pesticide runoff and leaching losses from turf. Blocks of Kentucky bluegrass, turf-type tall fescue, creeping red fescue and perennial ryegrass have been seeded for testing of new mowing equipment being developed by Prof. Frank Fronzak in the Mechanical Engineering Department here at the UW-Madison. Tom Salaiz and I plan to get started on putting in various demonstrations later on and will be participating in the National Tall Fescue Trials.

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Just in case anyone is wondering, management of the Noer Facility is in very capable hands. Tom Salaiz has demonstrated time and time again over the past couple of months what a capable young man he is. On some days he's had to deal with as many as four different contractors simultaneously. He has had to make many on-the-spot decisions, coordinate all the work going on and make sure everything is being done as we want it. He, like the rest of us, is looking forward to the day when research becomes the number one priority of the Noer Facility.

Finally, let me share with you something that happened at the Noer Facility earlier this summer. I gave a visitor from Penn State a tour of the place at a time when everything was at a standstill. After the tour and a sharing of our plans with him, he declared the Noer Facility to be "state-of-the-art and second to none in the country".

*Q: The pH of the fairway soil on our golf course is slowly rising—a tenth of a pH unit every 5 years or so. Someone suggested it was the hard water we use for irrigation. Could that be true?*  
VERNON COUNTY

A: Definitely. I'm surprised the pH hasn't risen faster. Home lawns in the Madison area commonly have pH values of 7.5 to 7.8 within 5 years or so after establishment. If you draw a line on a state map from approximately Marinette to Baraboo and then back up to St. Croix Falls, the area to the south is underlain by limestone. Consequently, the ground water in the area is loaded with calcium and magnesium. In essence, everytime turf in the area is irrigated with well water the soil is being limed.

*Q: For some reason, my fairway fertilizer requirements for the 1991 season have dropped dramatically. I'm going to end up using 1.0 to 1.5 #N/M less than my average for previous years.*

*I'm on a heavy aerification program. Could it be that the soil that I've been bringing up to the surface is nutrient rich and reducing the N requirement? Or could it be the greatly improved rooting I've noticed? DANE COUNTY.*

A: Aerification and better rooting may well be involved. Anytime soil is disturbed, there is a temporary flush of microbial release of N from organic matter. Aerification may also be reducing fertilizer N loss via denitrification. However, I'd venture to say that weather has had as much to do with the better fertilizer N response as anything else. First, we had June weather in May. This greatly increased response to the dormant Milorganite you applied last season. Then we had July weather in June. The high temperatures greatly slowed turf-grass growth rates and, consequently, the amount of fertilizer N used. The net result has been longer term response to fertilizer than you're accustomed to seeing.

To back up my answer, I've seen the same thing in my unaerified research plots. Creeping bentgrass last fertilized with fall IBDU or dormant Milorganite still has acceptable color. In fact, where I did apply some N two weeks ago, the color improvement was barely noticeable. In another experiment, this time with Kentucky bluegrass, I simply skipped the normal July N application because it wasn't needed.

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## What's the rush to open all these new courses?

By Rob Schultz

For one year, Jeff Parks had the University of Wisconsin golf course all to himself. It was like taking care of an infant. Young and vulnerable to all kinds of disease and bad elements, the golf course needed, and received, 12 months of tender loving care before the world was turned loose on it this summer.

That wasn't the case at Geneva National, Trappers Turn, Lawsonia Links and Brown Deer Park. Geneva National and Trappers Turn only got a few months of TLC before they opened. Lawsonia Links new 9-hole layout and Brown Deer's re-seeded greens and fairways only got a few weeks of TLC.

You'll see a huge difference between the UW course and the others if you walk all of them today. More important, you'll probably still notice the difference a few years from now.

I feared for Brown Deer—one of the state's best, and busiest, public courses—because it was still pocked and soft just one day before it re-opened.

Trapper's Turn opened with two or three of its greens full of more soil and mud than grass.

Lawsonia's new 9 had a horrible washout problem and hadn't seeded all of its holes yet this spring. But that didn't deter it from opening in July.

And everybody has said that Geneva National will be a pretty good course...someday. But it's hardly up to snuff now because it opened too early.

All of those aforementioned courses will be good ... someday. They'll be everything their marketing people are bragging about ... someday. But it probably won't be next year or the year after. And it's all because they opened too soon.

The reason for quick grand opening is simple. Money. Owners are shelling out anywhere from \$1 million to \$8 million to build these courses and they need to start seeing some returns. But opening too quickly is penny wise and pound foolish.

Unfortunately, golfers get bad feelings about these courses and don't come back. First impressions play a big factor

in golf and when greens don't have grass or your ball imbeds so deep in a soft fairway that you can't find it, you're not going to walk away impressed.

One of my neighbors ran over to my house a few days ago to complain about Trappers Turn. I write a golf course review column for my newspaper that's similar to the restaurant reviews you read in many other papers' feature sections. My neighbor demanded that I play Trappers Turn and rip its guts out in my column.

My neighbor's complaint wasn't as much the fact that Trappers Turn wasn't in good shape, it was that he had to pay the full greens fee to play it.

"They want to open it too soon? Fine," said my neighbor, who is a good golfer and plays about 100 rounds a year. "But then they should charge us half-price. I talked to the general manager there and he didn't agree with me. I told him I'm never, ever going to come back there. And I won't."

I knew exactly how my neighbor felt. I had a similar experience when Lawsonia opened its new 9-hole layout early in the 1980's. I couldn't believe they opened it so soon because the fairways were devoid of grass. It was fun to marvel at the incredible beauty, but you couldn't help getting disgusted at the bad bounces from the spots on the fairways and around the greens that never filled in.

So I never played those 9 holes until two or three years ago when they became close to the quality of the older 18. But there are still some bald spots on that newer layout today.

What all this means, and it's hard to believe I'm saying this, is that the UW did something right when it built its golf course. It has been packed to the rafters every day during a summer that has been either too wet or too dry. That one-year grow-in period was wise insurance because the greens and fairways still look good despite taking a horrible beating.

The state of Wisconsin has been blessed in recent years with an influx of

some new courses designed by some of the world's best architects—Arnold Palmer at Geneva National, Andy North at Trappers Canyon and Robert Trent Jones, Jr. at the UW.

But the layout doesn't mean beans if the owners don't let it grow in correctly. I'm one of those golfers in this state that the tourism bureau loves because I'll travel just about anywhere to play a good course. I eventually will make the rounds to play Lawsonia's new 9, Geneva National and Brown Deer Park again ... in about five years.

## Big Jobs Call for Big John



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# PHOTO QUIZ

By Monroe S. Miller

All year long you guys have done a lousy job on this exam feature. The Essay Contest from the last issue netted zero submissions; as the instructor, I was greatly disappointed.

Rather than continue being upset with your poor grades, I'm taking a new tact in this QUIZ war between instructor and students. (The instructor WILL win!)

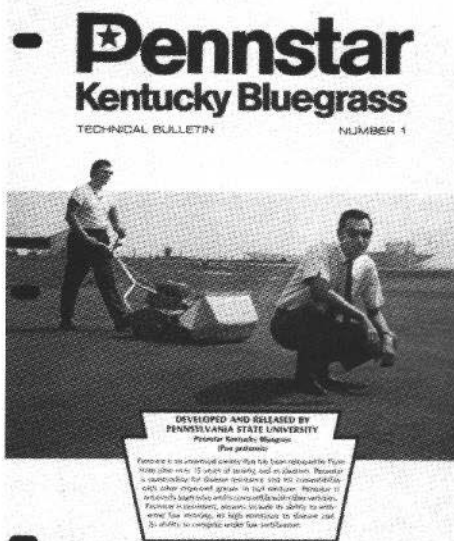
This tact violates every principle and precept of education. Since you are

poor students, I am going to make the exam easier.

A lot easier. It is a photo quiz. Each of the following pictures features individual(s) with strong ties to Wisconsin and the Wisconsin Golf Course Superintendents Association. If you don't do well on this quiz, the discipline meted out by this instructor will be serious and severe.

Look carefully back into the far reaches of your memory and see how many people you can identify. Thanks to Danny Quast, Skip Wilms, Tom Harrison, Wayne Kussow and Al Næs for their help in assembling these pictures for your enjoyment!

Good luck in the quiz. A lot of you need it. The answers, by the way, can be found on page 37.



1. The person you are to identify in this picture is NOT Dr. Duich. Taken over twenty years ago, the subject in question here has, like the rest of us, gained a pound or two.



4. Don't let the full head of hair fool you in trying to name this former WGCSA president.



2. This picture was taken in January, 1977 and represents the Turf and Grounds Management students at the UW-Madison for the second semester 1976-1977 academic school year. How many of them can you identify? A number of them are WGCSA members.



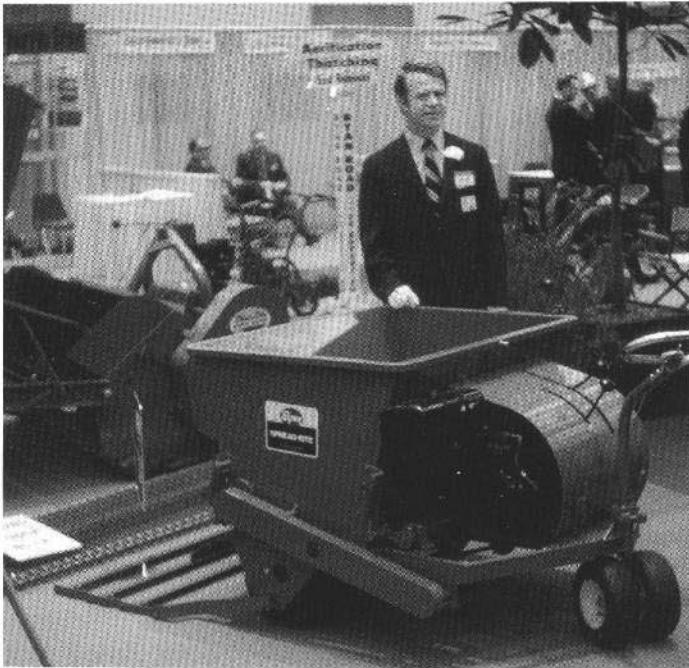
5. This all-American boy scout went on to become president of the WGCSA. Name him.



3. This skinny fellow is a Wisconsin golf course superintendent. Love those sideburns!



6. This Wisconsin man was one of the world's all time best turfgrass experts. He will live forever in the heart of the WGCSA.



7. Taken over twenty years ago, this picture features a past president and a past vice president of the WGCSA. Who are they?



8. The man shown in this photo is no longer a golf course superintendent, but his son is. Name the man with white bucks and the bow tie.

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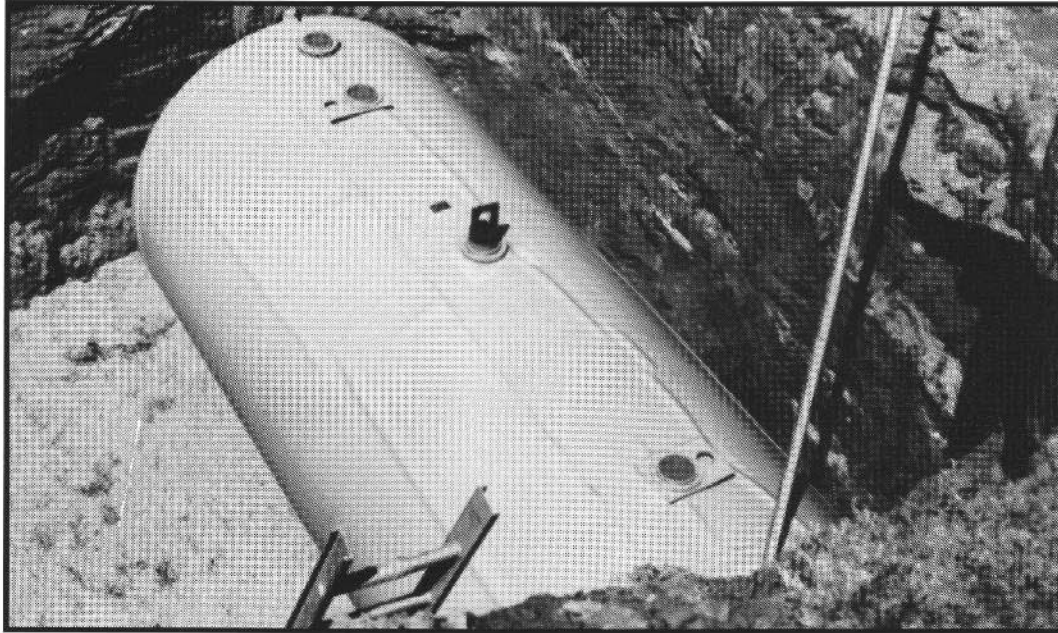
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# Greenhouse Evaluation of Three Creeping Bentgrass Varieties

By James C. VanHerwynen

As new turfgrass varieties are marketed, questions arise as to their agronomic characteristics, disease susceptibility, and response to management practices. The bentgrass varieties of different geographic origins respond to differences in nutrition, their growth characteristics in general, and their susceptibility to pythium.

The creeping bentgrass varieties grown were Penncross, National, and SR 1020. Penncross represents an older variety with northeast U.S. origin. National and SR 1020 are relatively new varieties. National was developed from plants selected on Canadian golf courses. SR 1020 has its origin in plants from southwestern U.S. golf courses.

The three bentgrasses were grown for a total of 70 days in the greenhouse in pots of a commercial 80:20 sand:peat mix. Bulk lots of the mix were treated with 0, 60, or 120 lb P/A applied as monocalcium phosphate and 0, 100, 200 lb K/A applied as potassium phosphate. The fertilized soil was air-dried for 6 days and samples removed for testing. The mix was then potted, compacted to 1.4 g/cc, moistened to its field capacity of 14.2% and seeded. Nitrogen in the form of a urea solution was then applied at the rates of 0.075, 0.15, or 0.30 lb N/M. The N applications were subsequently repeated bi-weekly.

At 62 days after seeding (DAS), the pots were transferred to a plastic canopy where daytime maximum temperatures ranged from 85 degrees to 95 degrees F and the relative humidity from 65% to 85%. Each pot was then inoculated with a pythium inoculum provided by Dr. Gayle Worf.

## Results

Observations from the study were first averaged over the data from the bentgrass varieties to see the general effects of the N, P, and K treatments. As indicated in Table 1, increasing the rates of all three nutrients decreased initial plant emergence ratings taken 4 DAS. These adverse nutrient effects lessened day-by-day, disappeared almost completely for N and P by 7 DAS, but remained at the highest K rate. In going from 100 to 200 lb K/A, the final impact was a 36% reduction in bentgrass emergence ratings taken 7 DAS. After 7 days, changes in bentgrass emergence were imperceptible.

The N, P, and K applications had no effects on % groundcover color (Table 1). Color ratings increased slightly with increasing N levels, but even the 0.075 lb N/M applied bi-weekly gave excellent color. Nitrogen was the only nutrient that increased clipping weights.

Many more treatment differences became evident when the performances of the individual creeping bentgrass varieties were examined. Significant differences were found in emergence rates, groundcover, color, root weights, verdure, tissue N, P, and K concentrations and pythium infection. Only clipping weight and tissue %P did not vary among the three bentgrass varieties. (Table 2)

Table 2.

Characteristics of three creeping bentgrass varieties averaged across three levels each of N, P and K.

Chacteristic	Variety			Duncan's LSD
	Penncross	National	SR 1020	
Emergence rating at 7 days	3.0	2.8	3.2	0.2
% Ground cover at 44 days	55	48	59	3
Color rating; 15 and 32 days ave.	7.7	8.1	8.3	0.2
Clipping weight-mg/pot; 34 and 39 days ave.	90	89	89	NS
Root weight-mg/pot; 44 days	528	368	411	145
Verdue-mg/pot; 44 days	401	373	538	81
Tissue analysis				
%N	5.20	5.28	5.45	0.12
%P	0.85	0.84	0.80	0.06
%K	2.31	2.46	2.51	0.07
Pythium infection:				
% of pot				
2 days	9.2	15.0	5.8	3.9
3 days	51.0	72.1	41.7	12.7
4 days	82.6	91.4	69.3	9.6

Table 1.

Averaged responses of three creeping bentgrass varieties to N, P, and K.

Nutrient and level	Initial emergence rating	Ground cover	Color rating	Clipping weight
		%		mg/pot
<b>N-lb/M/2 wks</b>				
0.075	3.3	54	7.9	90
0.150	2.7	54	8.0	88
0.300	1.4	58	8.2	105
<b>Soil P-lb/A</b>				
40	2.9	52	-	87
101	2.7	49	-	91
164	1.5	55	-	94
<b>Soil K-lb/A</b>				
70	3.8	55	-	90
170	3.2	57	-	95
276	1.4	55	-	94
Duncan's LSD	0.5	6	0.2	10

Among the 19 sets of observations recorded in this study, there were only four instances of significant fertility x variety interactions. Thus, the general situation was one in which all three creeping bentgrass varieties responded similarly to increasing levels of N, P, and K. The exceptions to this were emergence ratings made at 6 and 7 DAS, % tissue K and the initial infection by pythium.

The fertility x variety interaction in the 6 and 7 DAS emergence ratings arose because only Penncross responded to the highest N rate and only SR 1020 responded to phosphate applications. That response was an increase in emergence at the 60 lb P rate and suppressed emergence at the 120 lb/A P rate. In the case of the interaction in tissue %K, the primary cause was failure of Penncross to show a K response while National and SR 1020 had significantly higher tissue K concentrations at the 100 and 200 lb/A K rates than at the zero rate.

Initial pythium infection levels also displayed a significant fertility x variety interaction. This is of particular interest because it suggests that there were varietal differences in how nutrition predisposes bentgrass to pythium infection. Initial pythium infection in SR 1020 was not affected by N rate while Penncross and National infection levels increased markedly when the N rate went from 0.15 to 0.30 lb N/M bi-weekly. In direct contrast, increasing K levels had no influence on initial pythium infection of Penncross and National but increased the extent of initial infection in SR 1020 by 10%.

## Discussion

The adverse effects of fertilization on creeping bentgrass emergence were not expected. Although application rates of 120 lb P/A and 200 lb K/A may seem excessive, these equate to 6.0 lb P<sub>2</sub>O<sub>5</sub> and 5.5 lb K<sub>2</sub>O/M mixed throughout the 80:20 rootzone mixture. A standard practice is to rake starter fertilizer into the soil just prior to seeding. Assuming this fertilizer is incorporated into the soil to a depth of no more than one inch, then the highest P and K rates used in application of 1.6 lb P<sub>2</sub>O<sub>5</sub> and 1.46 lb K<sub>2</sub>O/M. This causes one to question whether or not emergence of bentgrass might not be improved by doing one of two things: (1) do not apply starter fertilizer until some time after emergence; or (2) incorporate the starter fertilizer to a greater soil depth.


The bentgrass responses to N, P, and K were considerably less than expected. The N rates were selected on the basis that application of 0.2 lb N/M on a bi-weekly schedule is a common practice. The P rates were based on reports in the literature that soil test P levels up to about 120 lb P/A are required for rapid turfgrass establishment. The maximum K rate elevated soil test K to only 276 lb K/A. This is certainly not an excessive amount from a plant, soil or leaching perspective. All indications from the present study were that 0.075 lb N/M applied bi-weekly, 40 lb soil test P/A and 70 lb soil test K/A were adequate for establishment of the three bentgrass varieties grown. While it is always dangerous to extrapolate greenhouse data to field situations, this study does raise some questions regarding what constitutes adequate N, P, and K rates during the establishment phase of creeping bentgrass.

As for the three creeping bentgrass varieties themselves, SR 1020 certainly merits field testing with the thought that it may be a good alternative to Penncross. Indications from this greenhouse study were that SR 1020 establishes more quickly, has better color, good root development, high verdure to combat invasion by broadleaf weeds and *Poa annua*, and superior resistance to pythium. Furthermore, all of these

advantages may be realized at reduced N and K rates. The SR 1020 consistently had higher tissue N and K concentrations at all rates of N and K application. This suggests that SR 1020 may be more efficient than Penncross in terms of nutrient utilization.

Finally, a common assumption is that high N rates increase the susceptibility of bentgrass to pythium. This study indicated that the assumption is a valid one as far as Penncross and National are concerned, but is not true for SR 1020. Increasing the fertilizer N rate 4-fold from 0.075 to 0.30 lb/M bi-weekly did not alter the outstanding ability of SR 1020 to resist pythium. Management-wise, this means that much less attention need be paid to fertilizer N rate as the pythium season approaches when SR 1020 is being grown.

*EDITOR'S NOTE: Jim is a May 1991 graduate of the UW-Madison Turf and Grounds Management Program. He is employed as assistant golf course superintendent at the Kenosha Country Club. He spent a year at Blackhawk Country Club in Madison and six years at North Shore Golf Club in Menasha prior to that.*



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# One Tough Summer

By Monroe S. Miller

I wouldn't necessarily call the summer of '91 a bad summer, but the title above does seem apropos. Miserable fits nicely, too. Fortunately, from the golf player's standpoint, Wisconsin golf courses were in excellent playing condition this summer.

The weather was terrible. In our town we cannot recall the last time we had a slow, gentle and generous rain. We've had gully washers, violent storms, enormous wind damage several times and insufferably hot temperatures. The humidity was almost always high, the disease pressure was equally unrelenting and our crew was weary by mid-August. So was I.

Maybe the worst feature was how steady the worst weather was; we just didn't seem to get a break until late July.

And that break only lasted for a few days into August. The payback came at August's last week—days and days into the 90's with no rain.

From what I could tell from conversations at our summer meetings, the dry weather was in southern Wisconsin, eastern Wisconsin, up through the Fox River valley and on toward Green Bay. I understand southwestern Wisconsin also experienced some extremely dry weather. It seemed western Wisconsin was the area of our state where the rainfall was generally more plentiful during the season. And they had an early summer span that was dry.

The summer probably seemed so long simply because it was. It was summer when it should have been spring. Based on endless clues given by plant life, the acceleration has been anyway two weeks. I based by estimate on turf rooting—it was not what it should have been from mid-July forward. Even the tomatoes in my garden, grown from seed planted directly in the garden soil, matured bright red real early.

By late July, articles were appearing in the city papers that compared 1991 summer conditions with those of 1936, the mother year of the all-time worst, hottest and driest summer.

Another thing you'll be able to say about the summer of 1991 is that each part of the state had these sometimes wild conditions, but at different times. Visits I had with colleagues often seemed like they were coming from locations thousands of miles from where I was working. It was weird.

Isn't it terrible to wish your life away? But that is exactly what I was doing most of the time this summer. You know, wish a deep sigh, saying, "Man, I wish July and August would end." Chad and I were saying that on the Fourth of July and I am willing to bet we weren't the only ones in the state thinking those thoughts.

Hurrah for fall!

Despite a slow start, thanks to bureaucratic meddling, the NOER turfgrass research facility is making a mark.

The formal dedication of the university Ridge golf course included remarks by many notables. Among them was the University's chancellor, Donna Shalala.

She's new to the game of golf but is learning it quickly; she is an excellent tennis player and a good athlete. Chances are good she'll get hooked on our game.

Her comments about the golf course and its value were all positive and upbeat. And then, to my surprise, she observed how appropriate it was that a turfgrass research facility had been built right next to the golf course, a reminder of how important the NOER CENTER will be to the citizens of Wisconsin.

That was on July 1st. At the University of Wisconsin Board of Regents meeting on July 12th the subject of the NOER facility and turfgrass research came up again, surprisingly.

New regent David Hirsch took an active role at his first Regents' meeting. He was particularly outspoken at one time when he scolded regent Ruth Clusen. She had questioned the educational value of the university's new 18-

hole golf course.

Hirsch quickly pointed out that 15 acres of the land were being used for research on turfgrasses.

Someday I hope to have a chance to thank regent Hirsch. Maybe, at the same time, I'll point out to regent Clusen that University Ridge was built with private, donated money.

This year's growing season was one of the best for all of our trees, including those on our golf courses.

UW-Madison forestry professor Ray Guries has said that the mild winter of 1990/1991 and the warm and wet and early spring made for a very leafy year for our trees. They have experienced a lot of growth. Some tree trimmers have expressed the belief that the trees have 25% more leaves than in normal years.

This prosperity can be both good and bad. As we've seen with all the violent weather, tree damage has been heavy. Some believe excessive growth can lead to excessive damage in severe storms. That seems to have been borne out, to some extent.

The good is yet to come, however. It is just around the corner—autumn color. Experts are predicting some spectacular leaf color this fall. The leaves may stay green a little longer and fall a little later. But they will be beautiful.

I am very anxious for that to happen—it will be the frosting on the best time of the year in Wisconsin.

Did you see the last issue of *GOLF COURSE MANAGEMENT* magazine? Obviously, staff writer Mike Falkner was in Wisconsin for several days this summer.

He spent a lot of time in Kohler at Blackwolf Run and in Madison at University Ridge, the NOER CENTER and the UW Madison campus.

Mike also was with Russ Weisensel for a considerable time, visiting about  
*(Continued on page 31)*

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