Drought Grip Loosens (Continued from Front Page)

Record high temperatures across the state were becoming commonplace. Conversations this reporter had with turf equipment and supplies distributors indicated their sales of both machinery and pesticides were slow. Reports surfaced of Bull's Eye's problem, of golf courses digging deeper wells and irrigation equipment failures. They made it obvious this summer was going to be remembered for its misery for a long time.

The Fourth of July holiday tradition of fireworks was set aside, except for professionals launching displays from safe and designated areas. More and more we heard about the greenhouse effect and what it was doing to our climate. Rainfall remained sparse and spotty throughout the state, and few areas were prosperous. The jet stream, and thus our normal rainstorms, were moving up the west coast and into Canada, then down east of the Great Lakes. This left our area and the others in between dry and sunny and hot.

A tragic natural event like this one brings on not only a lot of theoretical explanations but many possible solutions as well. Some suggested cloud seeding. The clergy suggested prayer. Grass and forest fires started to crop up as environmental damage increased. Wind erosion of our soil in some places became serious. Water restrictions on Wisconsin citizens became commonplace. As July slowly moved on we read of unscrupulous traders profiting from the misery of farmers through crop speculation. Advice on health was available everywhere - wear loose-fitting clothes. drink plenty of liquids, avoid too much direct exposure to the sun, get plenty of rest, etc. Health officials became more and more concerned about the stress factor in the lives of those directly affected by drought. That concern most certainly included Golf Course Superintendents and their employees. And still, long range forecasts offered no relief in sight.

Discussions began in July over the question of whether this was just an agricultural drought or a meteorological drought. Obviously, a meteological drought is much more serious and results in the lowering of water tables, streams and rivers and reservoirs. Some believed we are staring a meteological drought in the face. Although a few rain showers fell around the state, it was a record-breaking month for heat. In Madison — I've not had enough time to track anywhere else — 14 of July's 31 days had a high temperature of over 90. And the precipitation was well below normal for the month.

As this is written in early August, the weather changes normally associated with this time of year are becoming visible. Some parts of the state are experiencing a little rain. There are some areas that are now actually back to normal because of heavy rain. Even though this isn't true for my place of work, there still is a sense that maybe the worst is over. The brutal heat remains; however, the calendar tells me that soon this will be moderate, too.

The final chapter for 1988 is yet to be acted out. We will recover from this year, no doubt. The nagging question, the one that should worry everyone, is whether or not the weather of this year portends of long term adverse summers. But we must wait on that answer, too.

By Michael Semler

Is The Greenhouse Effect Here?

Palm trees may be coming to the Midwest. No, I am not talking about a new breed of palm trees; I am talking about actual desert conditions taking over the nation's mid-section, our precious corn and wheat belts.

As the drought of 1988 continues and daily temperatures in the 90's become the norm rather than just heat waves, there seem to be ominous signs of what may come in the near future.

What we are experiencing now may be due in part to the Greenhouse Effect, a process by which man-made and natural gases trap solar heat in the earth's atmosphere causing a global warming. The effect will be felt worldwide, not just here in the Midwest.

The greenhouse effect is, in some scientists' minds, only a theory. However, many scientists are convinced its effects are inevitable in the near future.

In its simplest form, the theory states that as carbon dioxide and many other gases in the earth's atmosphere are increased, these gases will change the earth's climate. Like panes of glass in a greenhouse, CO₂ allows most solar radiation to enter the atmosphere, but inhibits infrared rays reradaited by land and bodies of water from escaping into space. As the CO₂ accumulates, enough heat may be trapped to gradually warm the atmosphere.

If these greenhouse gases continue to increase at the current rate, the earth's mean temperature could rise 2°F to 7°F by the next century. That would make global temperatures warmer than at any time during the past 100,000 years. Global rainfall patterns could shift, bringing heavy rains to previously arid regions and drought to productive farmlands in the Midwest.

Since the Industrial Revolution, increased production of CO_2 and other gases, such as nitrous oxide, from the burning of fossil fuels has made the shroud of greenhouse gases even denser. This denser shroud captures more of the earth's excess heat, causing a gradual warming. Some scientists contend that this gradual warming can be seen in the last century where worldwide temperatures have risen by 1.2°F, compared with a natural variation of only 0.4°F. They believe this warming has been sufficient enough to warrant it as a harbinger of the greenhouse effect.

Other scientists note that global temperatures and climates move in broad historical patterns of warming and cooling that last tens of thousands of years. Astronomical cycles, volcanoes, the interplays of deserts, oceans and cloud cover can effect the density of the greenhouse cover. Thus, they believe there is insufficient evidence to specifically label the greenhouse effect as the culprit of this current warming.

Whether the greenhouse effect is here or not, these scientists calculate that global temperatures could rise between 3°F and 9°F by the year 2050. If that happens, we can expect hotter, drier summers with eventual glacier and polar ice cap melting, and a subsequent rise in the sea level by several feet. By then, increased CO₂ production and widespread deforestation will cause an increasing role in the atmospheric heat-up.

James Hansen, an atmospheric scientist who heads NASA's Goddard Institute, testifying before a congressional committee said, "It's time to stop waffling and say that the evidence is pretty strong that the greenhouse effect is here." Even scientists who believe his testimony is premature hope it will stir up some worldwide support to start conserving energy and cut back on the use of fossil fuels. The alternative, nuclear power, may be less pleasant to many, but is the only capable replacement for fossil fuel power plants and thus, preventing the onslaught of the greenhouse effect.

The Computer Corner



Budget Time

By Dennis Thorp

It's that time of year again, and our hard-working superintendent, John Q. Grassmanager, is ready to get to work on this annual task. First the necessities: a fresh cup of coffee; radio tuned to a favorite station; and the "Do Not Disturb" sign on the door. Next, turn on the computer and bring up the spreadsheet with last year's budget. The first item of business is to change the date from "88" to "89", making sure that the spreadsheet understands that in this case the numbers are used as "labels" and not values. That simple concept had sparked many an angry outburst when the spreadsheet had behaved "unpredictably" for him, until one of his children had explained what he was doing wrong.

Then move the cursor to the block that has the line item totals and multiply it by the increase in the Consumer Price Index (CPI). For our hypothetical budget we will use 3.5%, so we will be multiplying by 1.035. Next, copy the increase formula over the whole range of budgetary lines, push the F9 key to recalculate the entire spreadsheet, and send the result to the dot matrix printer. Now it's time to put your feet up, sip the coffee and examine the first draft. Elapsed time: Five minutes.

Next our hero saves this first draft as "BUDGET89", after making a note of the proposed total, erases BUDGET 89 from the RAM and brings up another spreadsheet "LNGTRM88". File names can be up to eight characters long. This file is used to chart the relationship of the budget totals to increases in the CPI over time. John has been at this particular course for ten years, and even though he has records that go back thirty years farther, the previous superintendents had followed no discernible pattern when preparing budgets, and their figures were only used for historical interest. He added a new line for the current year's CPI and proposed 1989 budget total. A push of the F10 key brings up the new graph including the latest figures. Because of John's good management,

the CPI line has been going up at a slightly faster rate than the budget line. This next year might be the time to make a slight correction. Hitting the "ESC" key, John goes back to the numbers and increases the proposed 1989 budget total by several thousand dollars. Another push of the "F10" key and a new graph is displayed. This brings the two lines much closer together. After making note of this new figure and saving the worksheet as "LNGTRM89" and erasing it from RAM, "BUDGET89" is recalled. Since each line item is also listed as a percentage of the total, entering the new value for the total and recalculating distributes the increases to all the line items. He then sends this to the letter quality printer. Totally exhausted by this ten minutes of work, John decides his coffee needs to be warmed up.

While waiting for the printer to finish. John thinks back to the first budget he prepared, more than 20 years before, when he was just out of college, and on his first job. The previous year's budget was no help, as the board wanted a complete break with the past, and an upgraded program. That one had been worked out in pencil on a yellow legal pad, and he had turned it in that way, erasures, sweat stains and all. The board had ripped it to shreds and returned it to him for further work. Several revisions and a few weeks later, a budget was finally accepted. Unfortunately, it was more the board's vision than his. Over the years, he got better, but not much faster. Typing the final version got a better reception, but he never would be a fast or accurate typist. Once he even had a budget rejected because of mathematical errors.

At this point, the 1989 budget increase is at 5.5% instead of the original 3.5%. Now he is satisfied with the total and only needs to adjust a few of the categories to get to the final version. As he examines the revised draft, some thoughts come into his mind. Maybe this is the year for his big raise. Might as well make that category 10%. "You can't get it if you don't ask," he figures. Also, if he gives the board something easy to cut, maybe they won't look as closely at some of the other categories. New equipment is another category that could use some extra money. That new flail mower deck would really come in handy. They had been very lucky on equipment repairs and disease problems, so maybe a 2.5% increase would be adequate for these categories.

Two weeks later, the board has reviewed the proposed budget and approved everything except his raise. They put that at 6% and distributed the other 4% to other categories. The new construction project had also been reviewed and approved. The charts and graphs he had been able to show the board helped to convince them to move in the direction he wanted. Status reports for the current year were also accepted, and they authorized moving some unspent funds into other categories.

It hadn't always been like this. The computer had come with the new irrigation system, five years before. For the first two years, it had mainly gathered dust and it was only after attending a lecture at the national convention that he had really become interested in exploring the potential of the machine. A former employee had designed the first budget spreadsheet and a spreadsheet that he had downloaded from TURFBYTE had given him many more ideas. Now he could even write a passable "macro". Even though his job was accurately described as "keeping the grass green," he found that the computer made getting his ideas approved by the necessary committees a lot easier. They seemed to be more impressed with reports if they came from a computer.

The preceding example shows just a few of the possibilities of an electronic spreadsheet. Having taught many people to be proficient in their design and use, from students and secretaries to successful business people, one consistent problem has shown up. People refuse, for some reason, to spend a couple of hours reviewing the *TUTORIAL* disk that comes with the program. I used to get a lot of calls asking me to solve some problem someone was having with a spreadsheet. Those calls dropped by 90 percent after I started asking those people if they had reviewed the disk. If the answer was "No," then I referred them to the proper section of that disk. Teaching people to be self-sufficient in finding answers to their own questions was better for all of us.

One question that was submitted from the readers was on selecting the "best" word processing program. Since, as I mentioned in a previous article, my wife and I use different word processing packages, there is no "best" program. There are literally hundreds of these packages on the market and most of them have some merit. The choice really is a matter of vour personal preference and knowing the limits of your hardware. It will be necessary to do some reading and shopping. The ones that are termed "easy to learn" may turn out to have very few of the "nice to have" features that make word processing such fun. First point: All programs will perform identically when it comes to entering text; it is only in the editing, storage

and recall phases that differences will show up. Nice to have features include a thesaurus and spelling checker.

Find out how "big" the program is. Will it all fit on one disk? How much RAM is required? Does it require a hard disk for efficient operation? My opinion is that all programs perform better on a hard disk and those of you who have had to sort through a pile of floppy disks to find one that you need, will probably agree with me. Also, floppy disks do get dirty and will eventually fail. Hard disks will eventually fail also, but generally have a much longer life. How do you make backup copies of files? The one I use makes a backup copy every time I update a file. This feature has come in handy more than once. The most miserable feeling in computing is to know that somehow your one and only copy of a file has become unusable. That is a mistake that users generally only make once, but be confident that everybody has done it at least once. Some, two or three times. Next, check out a book store to see which programs have become popular enough to have an aftermarket book written about them. If there are no books on the program that a software vendor has been raving about, beware. Being a pioneer has advantages, but it is always lonely. These books are generally very helpful. For some reason, good programmers are not good at writing instructions on how to use their programs. Talk to other superintendents. It is always nice to have someone to talk to when things go wrong, as they inevitably will. Invest some time in making the choice, rather than investing the time in regretting your choice later. Note: In twenty seconds, the computer checked this whole document and corrected three typos. It won't correct context, for instance when I type *the* when I meant *then*.

We've all been struggling, trying to survive the 1988 season, but I appreciate the time that has been given to discuss with me ideas for this column. Keep the cards and letters coming, folks.

Next month: Project Management software.





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Wisconsin Soils Report



Color Responses to Fall and Dormant Nitrogen

By Dr. Wayne R. Kussow

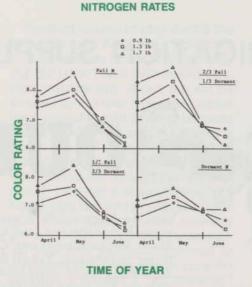
After three years and a like number of research proposals, the Wisconsin Fertilizer Research Council has agreed to provide some funds for turfgrass research. And why not? The money comes from a hidden 10° per ton tax on fertilizer sold in the state. By my estimates, turf managers have unknowingly contributed around \$5,000 to the Fertilizer Research Fund every year for the past several years. This year's \$5,376 contribution is being combined with \$2,575 from the WTA to begin a 3-year investigation of the significance of fall and dormant nitrogen in turf management.

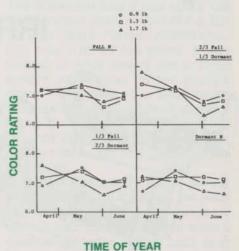
The treatments in this study basically consist of three annual rates of N applied on a conventional schedule (no N after September 15) as contrasted with 40% of the annual N applied in the fall, as dormant N, or as a graded combination of fall and dormant N. These treatments are being applied on an old fescue-Kentucky bluegrass turf at the Yahara Hills Golf Course and on a new seeding of Penncross creeping bentgrass at the Cherokee Country Club.

One measure of a successful fall N program is the spring coloration of turfgrass and the duration of acceptable color. A basic premise of fall fertilization is that it delays the time when N must be applied the following season until air temperatures are 80°F or more. Under these circumstances, shoot growth response to N is curtailed and root die-back does not occur early in the season. The expected result is a turf that is better prepared to withstand the heat, moisture and disease stresses of summer.

Yahara Responses

Spring coloration of the fescue-Kentucky bluegrass blend was excellent to excessive, depending on the rate of N applied and when. As shown in figure 1, the most spring coloration occurred when 2/3 of the N was fall applied and 1/3 was a dormant application. The least color development was observed when all of the N was applied to dormant turf (not quite true in 1987





NITROGEN RATES

Fig. 1. Spring color ratings of fescue-Kentucky bluegrass treated with fall-dormant nitrogen.

- snow fell on green turf last year! The application date was November 21).

The apparent interactive effects of N rate and time of application on spring coloration were rather striking. For example, a fall application of 0.9 lb N gave essentially the same amount of greenup on April 13 as did a 1.7 lb dormant N application (Fig. 1).

Although the amount of spring coloration observed varied with the rate and time of N application, the duration of acceptable color (a color rating of 7.0 or greater) did not vary by more than one week over the entire series of treatments and did not extend beyond the end of May.

Cherokee Responses

Spring color responses of the creeping bentgrass to the fall-dormant N treatments were much less than those observed with the fescue-Kentucky bluegrass (Fig.2). However, the effect of time of application on the degree of color development was the same at both sites. Namely, the 2/3 fall 1/3 dormant N application gave the most spring color development and was followed in order by 1/3 fall 2/3 dormant, all fall and last, all dormant.

Fig. 2. Spring color ratings of Penncross creeping bentgrass treated with fall-dormant nitrogen.

Unlike what was observed at Yahara Hills, the duration of spring coloration at Cherokee varied substantially with the rate of N application. Whenever the 1.7 Ib N rate provided notably better color than did the lower N rates, the N seemed to be depleted very rapidly and bentgrass color ratings of less than 7 occurred as early as May 17 (Fig. 2). In contrast, application of 0.9 Ib N entirely in the fall or 1.3 Ib N entirely dormant provided satisfactory bentgrass color until June 15, the date on which additional N was applied.

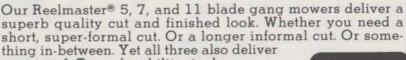
Comments

The turfgrass color responses reported here have to be interpreted cautiously, in part because last spring's weather was anything but typical. Another reason for exercising caution is the fact that turf requires time to respond fully to management practices. It is not until year two of this study that we will begin to quantify the impact of the N treatments on fall root growth and retention the following spring, on shoot growth rates throughout the season and on other indicators of turf quality.



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The Sports Page



The votes are in, they've all been tallied and it's time for the results of the first annual Sports Page golf course awards.

The awards are in honor of those who suffered through the long, dreary, hot, humid summer and kept their chins up, or down as the case may be, while maintaining their courses.

Best fairways (public) during the drought: Mascoutin Country Club in Berlin. Outstanding. I played this course in late June when the state hadn't seen a drop of rain for a month and my drives were only getting two or three bounces before coming to a screeching halt. I wasn't skying my drives, either. Mascoutin's fairways also were cut down and beautiful. No bushiness here. If you hit your ball in the fairway, you got an excellent lie.

Best greens (public) during the drought: Lake Shore Municipal in Oshkosh. OK, OK, I might be a bit prejudiced because I grew up and worked there and always thought Lake Shore's greens were the best around. But I played Lake Shore in early July about 5 p.m., the temperature was still around 90 degrees and the greens were soft, true and quick. What else can you ask for?

Best fairways (private) during the drought: it was hard to pick a winner because I played quite a few private courses this summer and most were in excellent condition. But the edge has to go to Blackhawk Country Club, with Maple Bluff a close second. Blackhawk gets the edge because I played better there. How's that for an objective vote?

Best greens (private) during the drought: Tuckaway Country Club. It was mid-July when I played Tuckaway and the greens were just getting primed for the Greater Milwaukee Open. I've never putted on faster greens anywhere in this state. Plus, they were soft and true. They are a putter's dream. No wonder the pros love to play in the GMO. Scariest course to play during the

drought: Lake Arrowhead. I played it in June and they hadn't banned smoking. But I didn't even think about smoking. Anybody who knows me will be amazed by that little fact. I was just too plain scared to light a match because it was so dry and brittle. Lighting a match in a fuel dump seemed safer. I played other courses where smoking was banned and thought the rule was stupid. I felt like a 14-year-old when I had to duck behind a tree to get a quick puff. I kept waiting for the cigarette police to come 'round with a siren wailing from their Cushmans, primed to confiscate my Merits. But at Lake Arrowhead, I thought a "no smoking" rule should have been mandatory.

Scariest course to play during the drought, a moonsoon, or a perfect 80 degree sunny day: Blackwolf Run. My foursome lost 36 balls during an 18-hole round. (I lost three.) Everyone in my group usually breaks 100, most break 90 and some occasionally break 80. But nobody broke 90 when we played it. I was the only one to break 100. (I shot a 90 from the back tees with a triple bogey on that dastardly 18th hole.) It was a humbling experience.

The funniest (and sickest) sight during the drought: One of the members of the esteemed media who played at Blackwolf Run during Media Day couldn't make it to the bathroom so he just hung over one of Pete Dye's fabulous railroad tie creations and deposited his feelings about the course on some stones below. A footnote to the story: The GMO's media day was sponsored by; Waste Management. Do you think the Blackwolf Run folks gave the GMO a call?

Now you see the drought, now you don't: This award goes to wonderful Lawsonia Links. The older east and west courses took the drought hard. The fairways and greens were great, but like most courses, it was hard-pan alley if your shots went awry. The new south course, however, was like an oasis. It sets lower than the other nines and was lush and green everywhere. It was a sight for sore eyes during the drought. I thought I was back at Hilton Head again.

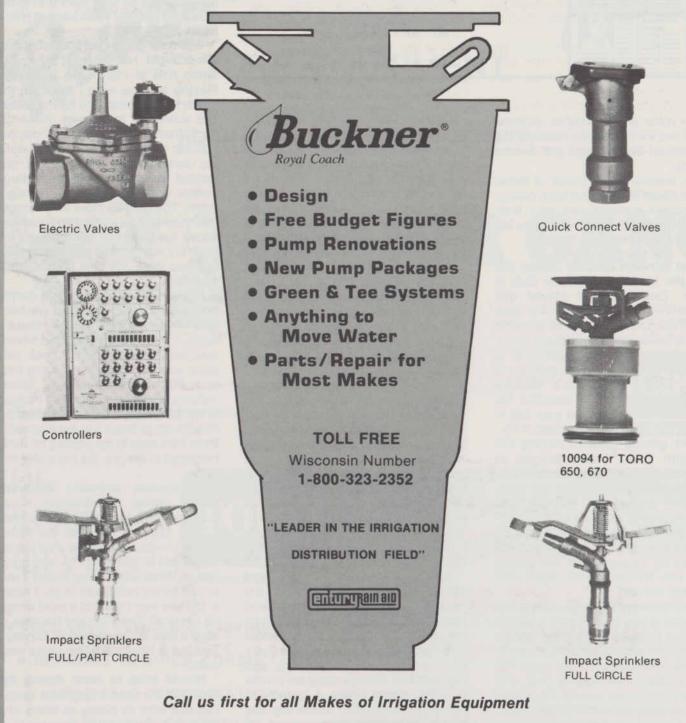
Weirdest golf hole I played during the drought: No contest. It's the par-3 fourth hole at Plum Lake in Saynor. Playing with my wife, I stood on the fourth tee and searched for the green. The scorecard said it was about 130 unobstructed yards in front of me, but I couldn't find it. Finally, I started walking, searching for the green. It was located in what looked like a huge meteor crater about 35 feet straight down. The pin was three times longer than normal and it still didn't stick out above the ground. I almost aced the hole; my wife, a beginner, got her first par ever there. We both liked it. But it was weird.

Hottest place in the world during the hottest day of the year: The back nine of The Springs. Ugh. I played it when it was 102 degrees and when I reached the valley on the back nine there was no wind, just searing heat and 90 percent humidity. Turkey vultures circled over me as I trudged down the fairways. When I reached the clubhouse, at about 3 in the afternoon, three cars were in the parking lot. They belonged to the pro, the pro's wife and me.

Worst-case scenario becomes reality during the drought: Norsk Bowl in Mount Horeb. This is no joke. I hit a 475-yard drive on the Norsk Bowl's unwatered fairways. And I didn't hit the ball all that well. The next question is: What was I doing there? I was forced by my neighbors to go. I hated it. Did you ever try to cut a sand wedge off cement? Then you get the idea of what it was like to chip off its fairways. The Norsk Bowl's bowling alleys were softer.

Nicest folks to meet during the drought: It's been a long time since I had met folks as classy as those who work at Golden Valley Country Club just outside Minneapolis. Bernie Sturm is the general manager at Golden Valley and he treated me to a day I'll never forget. First-class treatment upon arrival, friendly conversation, first-class treatment while playing a tremendous Tillinghast golf course and a friendly send-off. What else can you ask for?

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The Sports Page (Continued from Page 17)

Bernie even sent me a thank-you note for coming up to play Golden Valley. I felt like a heel because I hadn't sent him one back. Bernie, I hope you read this. Thanks a million. You're a great guy.

Best sand during the drought: The Springs. I was in seven of them early in the summer and made six sand saves. Wonderful sand.

Worst sand during the drought: The Springs. I was in six of them during that 102 degree day and I either skulled or dubbed each shot out of them. Horrible sand.

Worst shape during the drought: Brent Fullwood.

Person in the best mood during the drought: Monroe Miller. This column is about a week late and he hasn't hollered at me yet. I'll call him on the hottest days, his equipment will be failing, but you can bet he'll be cheerful. Monroe, don't chop this out of the column. And I didn't write this so you wouldn't be mad at me for handing this in late.

QUAST ADDRESSES TURF STUDENTS AT INDUSTRY SEMINAR FOR 13TH CONSECUTIVE YEAR

"It's an exciting time to grow grass, and a great time to get into this business," said Dan Quast, superintendent at the Milwaukee Country Club. Quast was speaking to 38 top graduating turf students from the U.S. and Canada during the annual College Student Seminar, May 22-25, sponsored by Jacobsen Division of Textron Inc.

"You've got the best of times ahead of you," Quast told the future superintendents and sorts turf managers. "The knowledge and tools are so much better today — it makes the job more enjoyable. Turf equipment and chemicals are better today than they've ever been in my career."

Danny discussed management of people as well as turf, and gave the students a few pointers for success. "If you're dedicated and have a professional attitude toward the job, you'll go far," he said. Quast has donated his time and expertise every year for the past 13 years to participate in the 21-year-old annual seminar. How many current WGCSA members attended the Jacobsen seminar while college students? Undoubtedly, quite a few.



Milwaukee Country Club superintendent Dan Quast responds to a student's question during the open-panel discussion that concluded Jacobsen's 21st annual College Student Seminar. Who's that guy to Danny's left?



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