

Fig. 3 Effects of air and soil temperature on the root and shoot growth of cool-season turfgrasses.

(Fig. 3). The reasons for this are two-fold. One is the effect of temperature on net photosynthesis. The other is the fact that roots must compete with shoots for photosynthate. As air temperatures rise, net photosynthesis declines and eventually a point is reached where virtually all net photosynthate goes toward shoot growth. The end result is not only a cessation of root growth, but an actual decline in the size of the root system. In fact, research suggests that it is not unusual for turfgrass root systems to decline an average of 60 percent by weight during the heat stress periods of July and August. No wonder it's so difficult to prevent wilting on a 95°F day in August! Not only is plant demand for water exceptionally high, but this water has to be absorbed by one-half or less of the number of roots that were present earlier in the season.

Before continuing with the main theme here, let me digress for a moment. On a hot, clear day in late summer, have you ever experienced extensive turfgrass wilt even

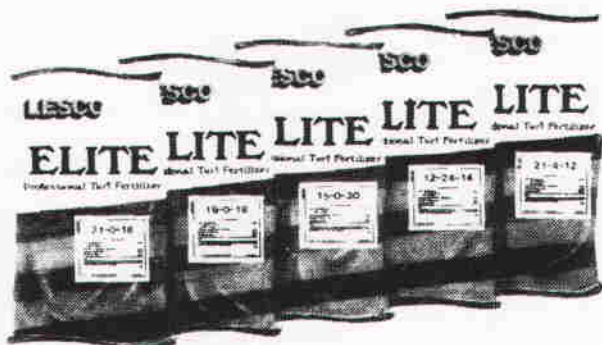
though the soil is very moist and additional water only seems to lead to more wilting? If so, you've seen the effects of oxygen stress on water absorption by the roots. Roots need oxygen to respire and unless they are respiring, they are incapable of absorbing water fast enough to prevent wilting. Under these circumstances, withholding irrigation and thereby allowing for drainage and restoration of a properly aerated root environment is the only logical course of action to follow.

Roots lost during the heat stress periods of July and August will not be restored until net photosynthesis increases as a result of a decline in air temperatures and a more favorable balance exists between photosynthesis and respiration. This, then, is why fall is a crucial period for turfgrass. But regrowth of root systems is not the only reason. Growth conditions that favor root development also favor rhizome, stolon and tiller bud development. Fall is also the period for restoring carbohydrate reserves in turfgrass plants and for an adequate level of hardening to occur prior to the onset of winter.

Inadequate, excessive or improperly timed fall fertilization of turfgrass can curtail any or all of these processes. When this happens, the results are readily predictable; extensive winter injury from cold or disease, noticeable thinning of the turfgrass stand, slow spring regrowth and recovery from injury and reduced tolerance to heat and water stress the subsequent summer.

Proper fall fertilization of turfgrass is clearly one of the keys to maintaining top quality turf on a sustained basis. The next article in this series will focus on using the information in this article to define what constitutes a sound fall fertilization program for turfgrass in Wisconsin.

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(Continued from page 1.)

facility. It will not be connected in any way with the golf course maintenance operation. The faculty involved in turfgrass research contacted their colleagues around the country for suggestions in creating a turfgrass research facility. Additionally, they've visited many of them and also have drawn from their own experience and expertise. As a result of these investigations, the following budget has been developed:

50'x100' metal building, finished	\$205,000
Sewer (septic system)	15,000
Water supply (well for building only)	20,000
Parking area (paved)	40,000
Landscaping (donated)	N/C
Contingency	20,000
TOTAL	\$300,000

The cost of the building, based on criteria recommended by faculty, was determined by an architect. A civil engineering firm determined the septic system cost, and a highway engineer estimated the cost of the parking lot. A contingency fund is

simply smart business. It should be evident that the \$300,000 goal is close to what we will need.

As the old saying goes, "our ducks are all in a row", and we are ready to proceed on this exciting project. Successful completion of the Noer Center will be a landmark accomplishment in the turfgrass industry in Wisconsin, one that will be of immense benefit to the golf courses and golf players in the state. It will require help from EVERYONE and that fact will make our success even more meaningful.

Let's get to work!

GEOFFREY CORNISH HONORED BY UNIVERSITY OF MASSACHUSETTS

Wisconsin's good friend from New England, golf course architect Geoffrey Cornish, has been extended a high honor by his alma mater, the University of Massachusetts. During spring graduation ceremonies Geoffrey was granted a doctorate degree in letters and sciences. And he was in powerful company. Governor Mario Cuomo from New York and Governor Michael Dukakis from Massachusetts also received the honorary degree. Geoffrey makes his home in Amherst, also the home of the University of Massachusetts.

Geoff has won a special place in the hearts of Wisconsin golf course superintendents. His visit to Milwaukee to address the Wisconsin Golf Turf Symposium 3 years ago was memorable for us. And there is still praise for the excellent design seminar he presented with Bob Graves this spring. We are fortunate to have had access to these opportunities to learn from one of the best golf course architects of all time. Geoff and his lovely wife, Carol, also make it to Madison on occasion to visit their lifelong friends, Professor and Mrs. Ted Kozlowski. Dr. Kozlowski is a well known botanist on the UW-Madison faculty.

Congratulations to Geoffrey for this well deserved honor. We in Wisconsin couldn't be happier for Dr. Cornish!

And speaking of Geoffrey Cornish, I'm happy to report that the new, 1987 revised, 4th printing of his book *The Golf Course* is just off the press. This

book, co-authored with Ron Whitten, is extremely popular all across America. The authors are continually updating information after each printing so changes can be incorporated in subsequent editions.

The latest is, as you might expect, better than ever. Ron and Geoffrey both feel they have not done justice to Wisconsin (Ron's ancestral state) and her golf courses, and are specifically asking all of us to forward them information regarding our golf courses. They seek the names of designers, whether or not a named golf course architect. For example, last year I sent them xerox copies of the remodeling plans drawn by A.W. Tillinghast for our golf course in 1937. The new edition of the Cornish and Whitten book includes that work by Tillinghast!

The fourth printing of *The Golf Course* is now available in bookstores at a variety of prices. Also, you can get it directly from W.H. Smith Publishers, Inc. Get enough people to go together and purchase 6 or more copies and you'll be able to buy it at a *greatly* reduced price. If you want to go this route for a new edition (they are *super* gifts) contact:

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No Golf Course Superintendent's library should be without this marvelous and informative book.

Speaking of The Noer Center What's New With The UW Golf Course?

The WGCSA has an interest in the proposed UW golf course because that property will be the site of the O. J. NOER CENTER for TURFGRASS RESEARCH. Also, the WGCSA connection to this project goes back to 1984 when seven members of the WGCSA were appointed by the Chancellor of the Madison campus to study the feasibility of that project. Their report was exceptionally well done and answered many questions that needed addressing at that time. Since then a lot has happened. The Bobby Jones firm was selected to design the golf course, plans have been developed and approved by the University and officials connected with the project are confident that it will soon become reality.

Ed Hopkin, a golf course committee member and campus planner, feels progress is on schedule and that construction might begin by late summer or early fall.

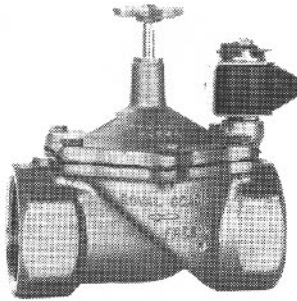
Two significant hurdles remain. First is the need to raise another \$400,000 to round out the estimated \$4,000,000 needed to complete the golf course. UW Foundation President Bob Rennebohm expects that the \$400,000 will be in hand by July 1.

The other work to be completed is approval by the state Legislature to proceed with construction. That also is expected, provided the final sum of money is raised. They are working out details for approval from Town of Verona and Dane County zoning officials.

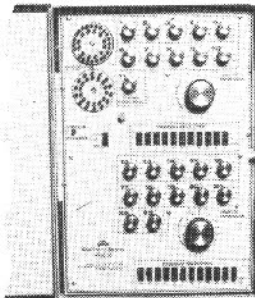
Scheduled for a 1989 opening, the UW golf course is expected to be one of the midwest's finest.

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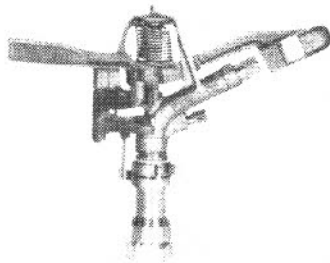
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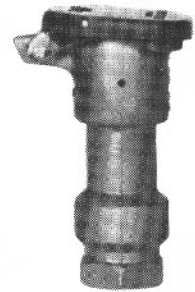
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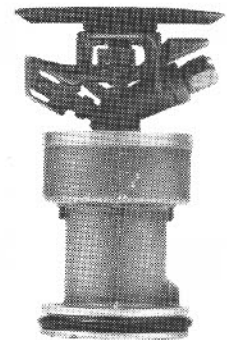
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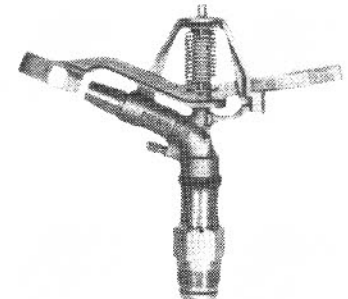
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CELEBRITY GOLF IN WISCONSIN

Every season Wisconsin Golf Course Superintendents are host to a number of celebrities who travel to our state to play golf. Usually they are here to participate in charity events, but of course we also see a lot of well known and famous golf players when Ray Knapp has the GMO at Tuckaway each year.

Two tournaments stand by themselves in terms of the names they attract. Although scheduling problems used to set the GMO in competition with the British Open, the recent date change has helped in that regard. Witness the fact that last year's tournament field included Jack Nicklaus. I can still remember hearing Rob Schultz talk about his personal interview with this living legend of golf. The GMO has certainly spoken well for golf in Wisconsin and the excellent job done by Ray Knapp keeps them coming back each year.

The other golf event that serves to bring a lot of well known political figures, entertainment stars and sports heroes to our state is the Lombardi Tournament that North Hills Country Club plays host to each year. Bob Musbach's golf course has seen the likes of former President Jerry Ford, Bob Hope, Bart Starr and James Gardener tee the golf ball up to help raise money for cancer research in Milwaukee. The fine playing conditions of North Hills and the magic of the name of the former great coach of the Green Bay Packers draws not only participants but many spectators as well. "The Lombardi" is a permanent fixture of the celebrity golf scene in Wisconsin each year and gives an example of how golf "gives back" to our society.

By the time you read these words, Bill Roberts will have had a tournament that featured many of the names that really brought televised golf to where it is today. Probably the most famous to play the SENTRYWORLD links has been Arnold Palmer, a participant in a previous event. This year Bill was able to watch the likes of Gary Player, Orville Moody, Miller Barber,

Bob Charles, Dow Finsterwald, John Brodie, Tommy Aaron and Roberto DiVincenzo play in this public event.

There are plans for two Madison charity celebrity golf tournaments this summer. 1986 was the first of what appears will become an annual event—the Ray-o-Vac/Andy North Invitational Tournament. Tom Harrison and his crew had fun watching last years field and expects even more fun this year. The proceeds from the August tourney go to Wisconsin Special Olympics - last year's contribution was \$30,000. Scheduled to play this year are Indiana University basketball coach Bobby Knight, former Calgary Flames coach Bob Johnson, former Milwaukee Bucks coach Don Nelson, Ernie Banks, Jim Bakken, Rick Barry, Otto Graham, Wayne Embry, Gordie Howe, Jim Taylor, Steve Yoder, Oscar Robertson, Bob Lanier and Willie McCovey.

The first Madison Charity Golf Classic, featuring former National Football League players, will be held on August 21 at Blackhawk Country Club. The 18-hole scramble tournament is one of many events held near the 26 NFL cities. The winner of the team tournament advances to the Super Bowl of golf in Callaway Gardens, Georgia in March of 1988. Proceeds will go to the Boy Scouts of America and the UW Hospital Pediatrics Unit.

Elroy Hirsch, president of the local chapter of the NFL alumni association, reports that 33 players (one for each fivesome) will participate. Ex-players already signed up are Ken Stabler, Gale Sayers, Paul Warfield, Jerry Kramer, Fuzzy Thurston, Ray Nitschke, Pat Richter, Larry Mialik and Elroy. The tournament preceeds by a day the Packer/Redskin game in Camp Randall.

Its seems that there are ample opportunities to see some of America's favorite people play golf this summer. Call one of the WGCSA members hosting a tournament — I'll bet you could get a prime parking spot — at his shop!

—MSM

"Golf, uniquely among games, has no defined pitch or court and much of its charm derives from the variety of countryside over which the golfer directs his erratic progress."

—Peter Dobereiner

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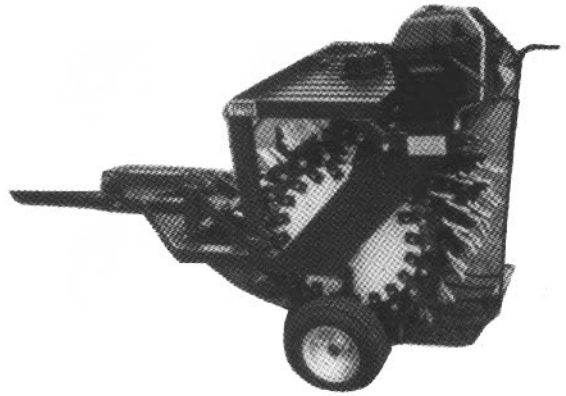
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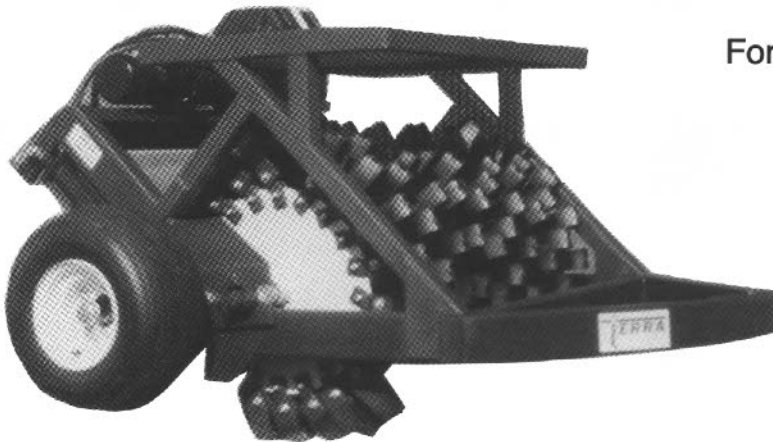
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WGCSA Meeting Roundup

By Michael Semler

The WGCSA held its first monthly golf meeting on the 27th of April at Janesville Riverside Golf Course with a total turnout of close to one hundred Wisconsin Golf Course Superintendents and guests. A warm and windy day greeted the golfers. A finely conditioned golf course, provided by host Superintendent Bruce Schweiger, helped create an enjoyable atmosphere for all of the participants.

The Wisconsin Turfgrass Association gained nearly three hundred dollars because of the large attendance and because of the donation of half of the cart fees by Riverside Club Professional, Ken Johnson. It is hoped that attendances and the donations to the WTA will keep up to these levels.

An excellent dinner was provided by the Elk's Club. Following this, WGCSA members and guests were able to enjoy a talk from Mr. Steve Bernard on the topic of spin grinding. Mr. Bernard provided some good insight into the theory and practice of spin grinding. His talk

also sparked some spirited questions and answers afterwards.

The first place winners in the four-man, two-ball bestball event were: Brad Wagner, John Hegge, Jim Knapp and Eric Larsen. Closest to the pin winner was Dick Evenson. Long driver winner was John Feiner, and the shortest drive winner was Ric Lange. The longest putt of the day was made by Bob Graunke.

The WGCSA thanks Bruce Schweiger for a great day and all of his time and effort to make it a success.

The rain held off for the second monthly meeting of the WGCSA held on May 18th at Reedsburg Country Club. Host Superintendent Ric Lange provided a well-manicured golf course for all of the members and their guests to enjoy. After a fine lunch at the clubhouse, 56 golfers took to the links and braved the oncoming rain.

Once again, the WTA gained valuable research money from the donation of one-half of the cart fees by club pro-

fessional Dan Hillcoat and from having such a large turnout by the WGCSA members.

An excellent dinner preceded our guest speaker, Mr. Jim Spindler of the Milwaukee Metropolitan Sewerage District, who gave a short talk and a film on the principles of water movement in the soil. The question and answer period ended another fine meeting of the WGCSA.

The winners in the days' four-man scramble event were the foursome of: Bill Roberts, Roger Bell, Craig Peterson and Mike Semler. The longest putt of the day was made by Dewey Laak. The longest drive was made by Bruce Worzella. The closest shot to the pin was made by John Krutilla, and the shortest drive of the day was made by Joe Kessenick.

The members and guests of the WGCSA thank Ric Lange and Reedsburg Country Club for their time and effort to provide us with another monthly meeting.

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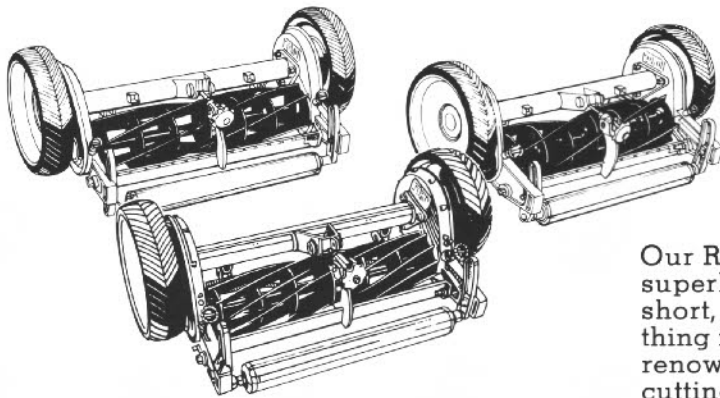
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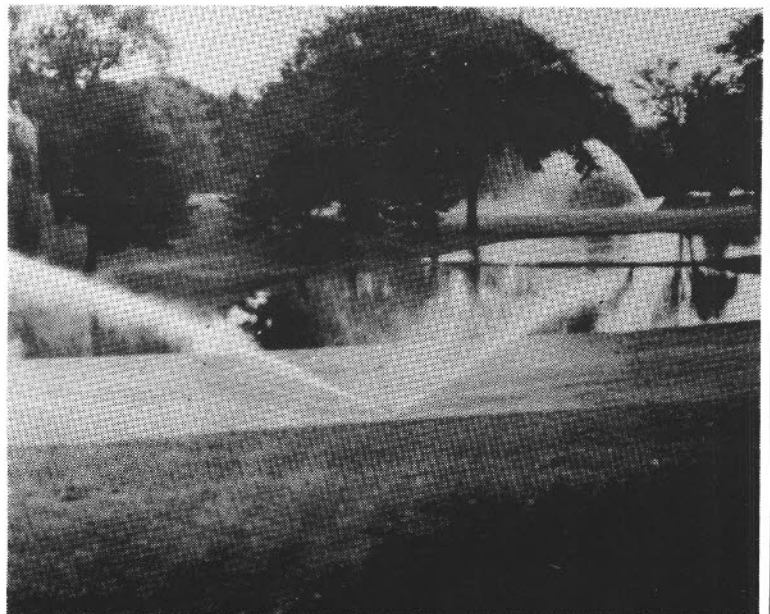
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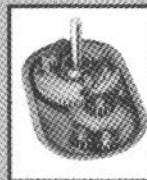
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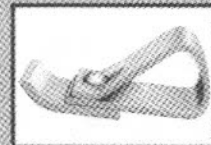


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