

sixties his attention turned, in the seventies, to the golfers in his family. Gene has three sons and six daughters. he became one of the state's most avid fans and could be seen at golf tournaments all over the state following his sons, Bill and Jim. To this day he follows Jim, Bill, Grandson Steve and Daughter Kathy with binoculars or movie camera in hand. Kathy won the 1984 Girls' State High school Golf Championship.

Gene's life work has also had an impact on the family. Son Bill is the Superintendent at Brandon Municipal Golf course and Jim, who worked with Gene on most of the courses he built, has a landscape and sod business in Sioux Falls. Jim also has built his own 9-hole Executive Course in Brandon and hopes to open that in June of this year. Son Dan and four of Gene's daughters are involved with lawn care and landscaping in Sioux Falls.

The South Dakota Golf course Superintendents' Association at their annual meeting in March awarded Gene with the outstanding service award. Congratulations, Gene, on a long and distinguished career. You have made a great contribution to golf.

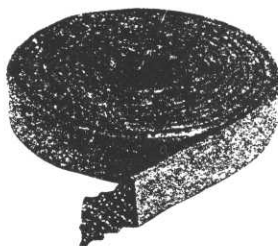
## PREPARING FOR TURF STRESSES IN 1989

by **JAMES M. LATHAM, Director**  
Great Lakes Region  
USGA Green Section

Golf course superintendents must have more opportunities to learn than anyone in golf or in the turfgrass industry as a whole, and rightly so because there are so many facets of the game which demand their attention. In the gentler days, greens were everything as long as a golfer could drive a peg into the tee and the fairways were cut once or twice a week. Those days are gone forever and some Turf Advisory Service visits today are more involved in bunker quality than putting quality. What a fine compliment to those superintendent's turf managing abilities.

Even so, we still do not know how to grow grass without leaves. Ultra close mowing does a great job of defoliation which reduces the photosynthetic potential of the turf. It is necessary, then, to determine the minimum TRUE mowing height for the turf species and cultivar involved. Some cultivars were selected under a quarter-inch height of cut. Bench settings are the published part of the story and vary from machine to machine. The only

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**BLADE TIP SPEED:** 4580 ft./min. (52.1 MPH) (84 km/h) @  
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**PULVERIZATION METHOD:** 5" flail blades with exclusive  
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gauge we have is the consistent trueness of line and the drag on a ball as it rolls after being struck. Putting consistency is greatly enhanced by light and frequent topdressing, the control of fertility and good water management. Fertility control should be the most easily managed factor. We have the information on nitrogen release patterns of most sources and should be able to plan accordingly. Every nitrogen component of blended fertilizer must be taken into account when programming applications through the growing season, since their conversion to nitrates may depend on soil temperature, soil moisture and soil air (the source of oxygen needed for the conversion of ammoniates to nitrates). Vargas has pointed out the depletion of soil oxygen after sulfur application to near-anaerobic soils. Its conversion to sulfate depletes the soil oxygen further and then anaerobic bacteria convert the sulfates to sulfides which results in the formation of black layer. He suggests the application of nitrates as a source of oxygen for the anaerobic bacteria. This nitrogen, of course, will be lost as a gas through the process of denitrification under anaerobic conditions. Would not the same oxygen demand occur during the nitrification of ammonium nitrogen in the soil? The point here is a constant need for a supply of oxygen in the soil for these and other biological processes in the soil. This is a reason why high sand content greens performed so well last summer. Water percolated through the profile readily, pulling air into the non-capillary pore spaces as they drained.

These are fine points, to be sure, but as long as we are dealing with defoliated turf we need all the help we can get. There are few black or white options. For instance, at what point does shade become a limiting factor? Or, how much wind movement is necessary across a putting surface for best moisture and heat dissipation?

It is now mandatory to exert maximum control of the controllables. Sand quality is easily determined by sieving and particle size distribution can be specified. This is a simple and direct situation. The success of straight, uniformly sized sand topdressing has been widely demonstrated since Madison proposed it in 1974. Organic additives are another story, and are bothersome.

Peat bothers me because of the tremendous variation possible in the sources. The amount of detrimental non-organic material can vary widely within a very small area in a "mine." Clay, silt and very fine sand content can be amazingly high in peats that "look" and "feel" good. The only judge of quality is a rather detailed laboratory test. In construction, quality control is possible because purchases are in large, checkable lots. In year-to-year topdressing, though, some change is inevitable.

We cannot argue with the success that many superintendents have had with sand/peat topdressing, even though an 80/20 mix is not 80/20 after the little peat balls are dragged or mowed off. (Perhaps that loss is beneficial.)

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Research projects and experiences during the 1988 season have clarified a few points for 1989 consumption:

1) Regardless of the weather conditions in May and June, Summer Patch treatments should begin when soil temperature at a 2" depth reaches 65°F. A second application should follow in a month. The Michigan state trials showed Rubigan, Bayleton and Banner to be very effective fungicides. Dr. Vargas feels that Banner may also be effective with slightly later applications.

2) Dr. Shearman at Nebraska believes that on days when it is evident that syringing will be needed, it should begin just before noon so that the water droplets on the turf will dissipate the heat via evaporation during the period when solar radiation is at its peak. This will reduce the amount of heat reaching the turf, thus minimizing heat build-up.

3) Relative humidity levels are extremely important as the temperatures rise and when the soil is adequately moist. Evaporative cooling is minimal when atmospheric moisture is high, so general irrigation may be more harmful than beneficial. Daytime hand watering (or just syringing) the high spots when needed is a better idea. Making wet soil even wetter has no cooling effect 0 it just reduces the

soil oxygen supply. Even the most sophisticated irrigation system is incapable of solving all the water problems on undulating terrain. That's when quality management shows its value.

In the future we must give more consideration to the grass plant as a whole and its interactions with the rest of the environment. The more that we reduce any factor limiting growth, the better the turf can withstand the cultural stresses which we inflict. That future is now.

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## OFF THE TOP OF MY HEAD

**GREG HUBBARD, CGCS**  
Editorial Chairman

"Those flawlessly manicured ultra green playgrounds where polite people in pastel outfits chase little white balls are encountering hard scrutiny from environmentalists."

*Audobon Magazine, Nov. '87*

Dr. Elliot Roberts presented a fine discussion on organic fertilizers at our April meeting in New Prague. He stressed the importance of carbon, commonly found in organic materials, in turfgrass growth and how organisms in the soil encourage this process. These bio-activators, such as bacteria, fungi, and algae, help determine the proper equilibrium for optimal plant health. As influenced by man's introduction of pesticides, fertilizers, and adjuvants, this micro-climate, when in balance, al-

lows for proper growth dynamics. When these tiny plant and animal populations become unbalanced, however, trouble in turf begins. Predominance of one species over others disrupts the soil's equilibrium; the grass plant suffers. Dr. Roberts could see many new naturally occurring products on the market within the next few years which would help keep the turf dynamics equation in balance, lessening man's direct intervention in the natural order.

As I listened to his talk, visions of an organic approach to turfgrass management danced through my head. Already, new technology has developed many products like Turftech, polysaccharide-producing single cell plants, which aid soil aggregation and water penetration. Bacteria for frost control at orange groves (or even golf greens) is almost a reality. Besides adding another tool in our turfgrass management arsenal, maybe these biological approaches will reduce the pressure from concerned citizens and environmentalists over the use of manmade chemicals on the golf course. With the introduction of natural organic materials, our golf courses could become safer and better places not only for those who work and play there, but also for those who enjoy its surrounds. Assuming that these new natural products become a practical reality, some of the criticisms of turfgrass management practices may be tempered and diminished.

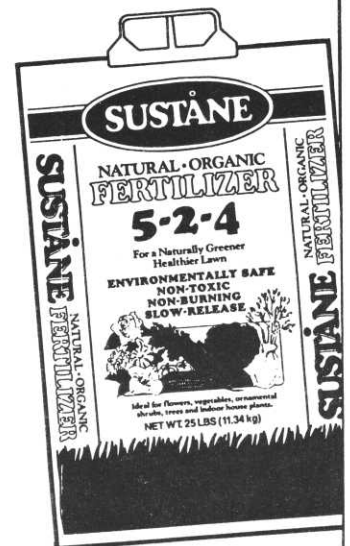
One thing is certain. As golf courses come under closer

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## INDUSTRY NOTES

### *News From MGCSA Associate Members*

scrutiny, we must respond in a responsible manner to these concerns. Already, legislation relating to Community Right to Know laws is around the corner. Based on Employee Right to Know principles, this law could have great impact on golf courses. Posting requirements for chemical applications and re-entry restrictions, similar to those in the lawn industry, may become the rule. Are you ready to close your course after chemical applications? Can you effectively post your premises? How will these proposed laws affect your golf course on a financial and operational basis?

These questions and others are still to be answered. Natural biological control of turfgrass health may have some impact on reducing criticism of golf course management techniques, but until they become a reality, we must use our present tools effectively and properly. As golf course superintendents, we should welcome the criticisms and concerns of people like the Audobon Society and actively seek solutions to their problems. Their insights and observations could lead to new approaches in golf course management. Our concerns should be in concert. After all, we live, work, and play here too.

**E-Z-GO Golf Cars** has announced our exclusive Lifetime Warranty on all our new 1989 gasoline and electric golf cars. Golf cars are warranted to be free from defects in materials and workmanship for as long as the original purchaser or lessee has the car. This warranty includes both parts and labor!

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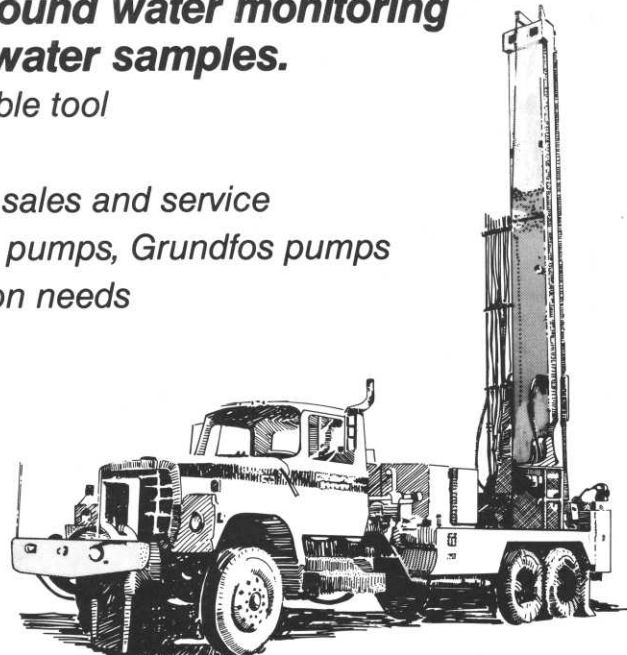
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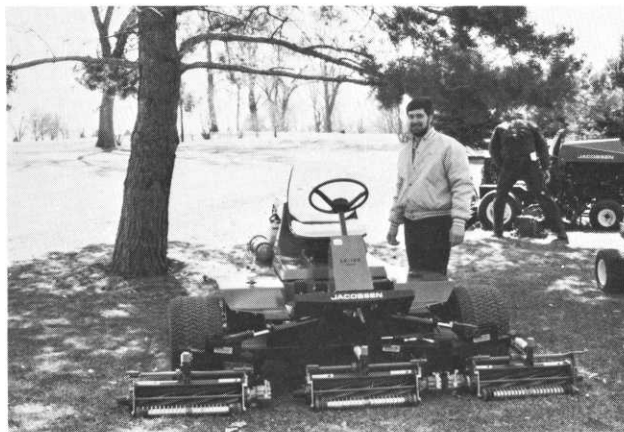
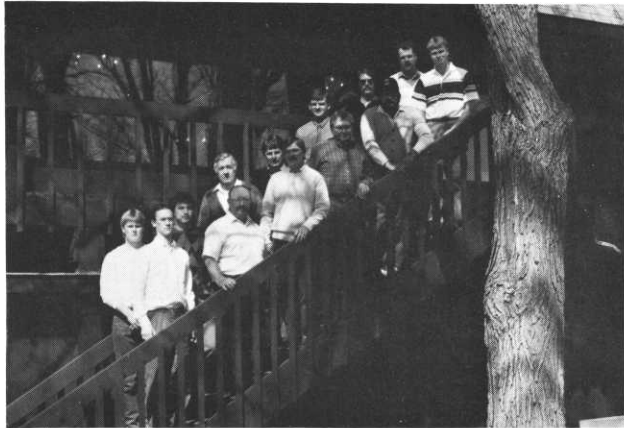
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**CHILDREN** - Ariana, age 4; and Kit, age 2.

**CLUB AFFILIATION** - Stillwater Country Club, 4 years.

**PAST EMPLOYMENT HISTORY** - Assistant Superintendent **Wedgewood Valley Golf Course**, Woodbury, MN, 1982 to 1985 (during construction); grounds staff, **Stillwater Country Club**, 1977 to 1982.

**EDUCATION** - B.S. in Physical Education, **St. Cloud State University**, 1981; Turf Management degree, **Anoka VTI**, 1983.

**INTERESTS** - Hockey, Racket Ball, Canoeing in the **BWCA**.

**COMMITTEE ASSIGNMENTS** - Arrangements Committee.

**COMMITTEE GOALS** - To provide speakers of current interest at our monthly meetings.

**PAST MGCSA POSITIONS** - Research Committee.

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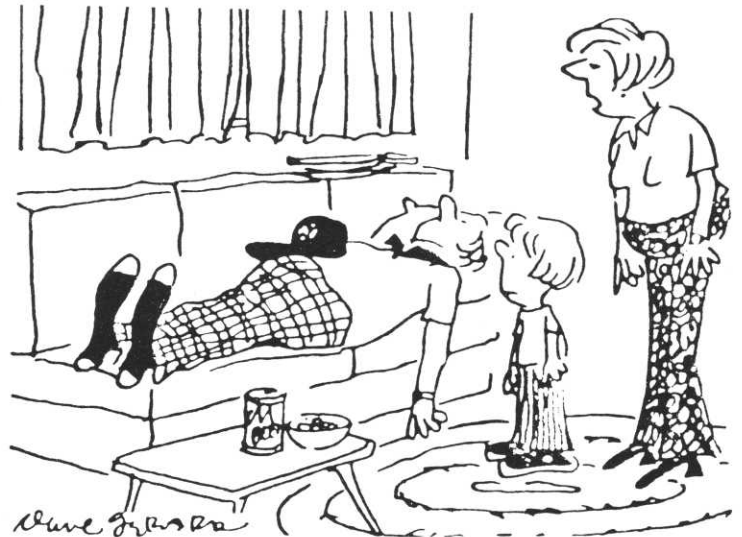
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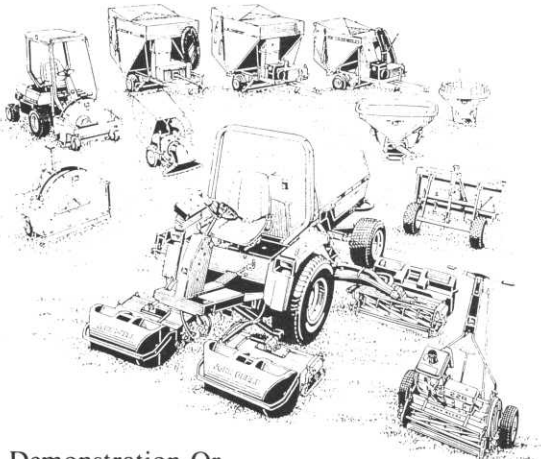
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*Gene Zuckerman*

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