

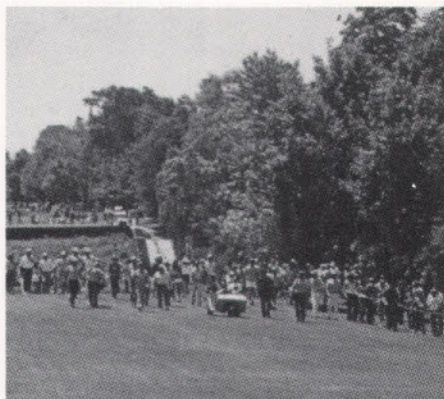
The first sign of celebrities is seen as early as Thursday night. Packers, both current and former greats, Hollywood movie and TV stars, Bucks, Brewers and other pro athletes from the midwest come to register and to play a few holes.

Friday a special par-3 event is held for all participants and corporate sponsors. It is this day that the last of the grooming takes place. Mounds, bunkers, fairways are all given that last minute inspection. Friday night the gallery ropes and corporate hole sponsor signs are put up. Concession stands are built by the clubhouse maintenance crew. Details like the hanging of the flower baskets around the exterior of the clubhouse add a special touch of color. The three local television stations broadcast their sports segments live from select vantage points in and around the clubhouse grounds. The grand old lady is putting on her Sunday best.

On Friday night the big top is used for the first time as it houses a fund raising dinner and auction. (Wisconsin Turf is a regular contributor to this event.) The Menomonee Falls Police and Fire Departments set up temporary offices in the grounds maintenance shop. They tour the golf course through the night to ward off the ever present threat of vandalism.

Saturday starts early, usually around 4:30 a.m. Greens are cut and traps are given that final touch of perfection. About 7 a.m., the first of the crowd begins to show up. Course marshals are enlisted and directed to their respective holes. Caddies arrive from other courses. The first five-some tees off promptly at 8 a.m. and the play of the day is a team scramble tournament. Each team consists of a celebrity and four sponsors. Celebrities are paired with teams through the blind luck of a draw. If you could bet on the favorite team, put your moeny on Lynn Dickey's team as he or Greg Koch are always in the running for team champion.

Our work for the day is only half completed at this time. Clean up starts as soon as the event is over. It is our challenge to return the course to a point of condition that it appears as if nothing happened, barring the gallery scars of



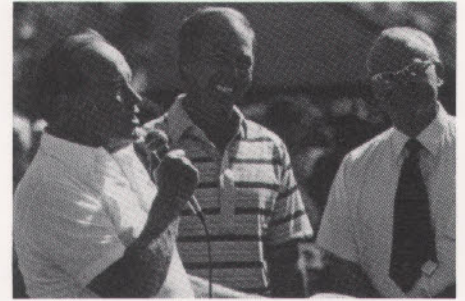
The colorful caddies and crowds, the beautiful North Hills course make the Lombardi an event to enjoy and remember.

trampled turf.

Crowd size is proportional to the number of big name Hollywood stars and athletic greats present. Bob Hope, Henry Aaron, Ernie Banks, Phil Donahue, Bob Uecker, Mickey Mantle, Mclean Stevenson, Fred McMurry, George C. Scott are just to name a few. Even Past-President Gerald R. Ford added to his reputation by unfortunately knocking a drive off from someone's skull. Crowd size can range from 5,000 to 20,000 spectators. 400 cases of beer, 650 dozen hot dog buns, 1,600 pounds of brats and hot dogs are consumed in a matter of six hours.

The event winds down with a large raffle. Trips, cars, boats and

For the second and final time we punch the clock to bring in the



Bob Hope, Bart Starr and Woody Hayes pause on the 18th green and thank the fans for their great support.

microwaves are raffled off with the proceeds all going into the kitty for the Cancer clinic.

gallery ropes, stakes and signs. All concession stands are torn down and those large dumpsters now seem too small. The parking lot and clubhouse grounds are cleaned and hand watered down to give them that clean fresh appearance.

The highlight of the event for the sponsors is the grand ball held on Saturday night. This is an appreciation dinner for those who participated, the celebrities and sponsors. It is worth the price of admission alone just to watch the limousines return with their well dressed patrons. The state of dress or in some cases undress makes me wonder about the old saying that it's the clothes that make the man. This definitely doesn't apply to some very lovely ladies in attendance.

As the name Lombardi symbolized hard work and sweat to the Packers of the "Glory Days," it also means tiresome sweaty long days to the various personnel of the North Hills Country Club. The legend lives on in the name of a golf tournament. A tournament that serves a dual purpose by forcing use into a race with a deadline but at the same time creating a standard by which our grooming practices are compared to for the rest of the golfing season.

I personally feel every golf course should have a tournament in which all the stops are pulled out to put on the best show possible each year. Our membership sacrifices their course for one weekend every season, but benefits in the long run for the rest of the season due to the crews' new personal standard of dedication and commitment toward excellence.

I wonder if the coach would be proud?

Jed Allan	TV
Paul Coffman	Packer
Robert Colbert	Movies/TV
George Cumby	Packers
Lynn Dickey	Packers
Coach Mike Ditka	Chicago Bears
Michael Douglass	Packers
Tom Dreesen	TV
Jim Fitzgerald	Honored Guest
Tom Flynn	Packer
Earl Gillespie	WITI-TV6
Ron Hallstrom	Packer
Jim Hampton	Movies/TV
Elroy Hirsch	UW
Fred Holliday	TV
Jim Irwin	WTMJ
Greg Koch	Packer
Herb Kohl	Honored Guest
Harvey Kuenn	Former Brewers Mgr.
Larry McCarren	Packers
Tom Miller	Packers
Mark Murphy	Packers
Leslie Nielsen	Movies/TV
Jim Paschke	WITI-TV
Jane & Lloyd Pettit	Honored Guests
Randy Scott	Packers
James B. Sikking	Hill Street Blues
Hank Stoddard	WTMJ-TV
Bob Schnelker	Packers/Offen. Coord.
Jan Stenerud	Minn. Vikings
Tom Sutton	WISN-TV
Johnny Tillotson	Entertainer
George Wallace	TV
"Stormy Weather"	Entertainers
Rich Wingo	Packers
Steve Yoder	UW/Basketball

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Bill Anderson	Bill "Red" Mack
Zeke Bratkowski	Max McGee
Willie Davis	Elijah Pitts
Boyd Dowler	Dave Robinson
Jim Grabowski	Bob Skoronski
Doug Hart	Bart Starr
David Hathcock	Fuzzy Thurston
Ron Kostelnik	Jim Weatherwax
Jerry Kramer	Willie Wood

# RECORD NUMBERS VISIT KETTLE-MORAINÉ GOLF CLUB FOR WGCSA'S JUNE MEETING

Longtime WGCSA members were searching their memories to try to recall the last time over 90 people attended a regular monthly meeting. Almost 75 individuals played golf, a great compliment to Dewey Laak and his staff. They rolled out the "red carpet" for the meeting and it was appreciated by all in attendance.

The event was new to WGCSA meetings and was divided into two flights — 16 and under and 17 and over. The goal was to play around the golf course and avoid all hazards (OB, water, sand, bunkers, etc.). The 16 and under winners made it all the way around the golf course without hitting a ball in any hazard. Three members tied for first place, and the tie was broken by the low net. Erv Graf placed first, host Dewey Laak was second, and Mike Lees took third place. The 17 and over winner was Dennis Robinson who also made it all the way around the course without hitting any hazards. Second place was taken by Dave Beale, who made it 17 holes. Gil Bergdahl placed third and made it 13 holes before finding a hazard with his golf ball.

The flag event winners were as follows:

Long drive, 16 and under: Paul McKenzie

Long drive, 17 and over: Charlie Shaw

Long putt: Bill Sell

Closest to the Pin: P. Shaw

A highlight of the evening was the excellent talk given by Russ Weisensel, Executive Director of the Wisconsin Agribusiness Council. Russ updated the group on the pesticide situation in Wisconsin. If he had a message, it was that those affected by legislation proposed at the local or state level must participate in hearings on that legislation. He also made it abundantly clear that there is never any relief from the assault by environmentalists and others to

regulate (and eliminate) pesticides and their use. Russ is a very interesting, colorful and polished speaker. His background includes experience as a farmer and as a two term legislator in the Wisconsin Assembly. These, coupled with his many years as the Director of the Agribusiness Council, qualify him as the eminent spokesman for the varied business of agriculture in Wisconsin. His appearance was a rare treat and everyone was grateful for the opportunity to listen to him. The WGCSA is a member of the Wisconsin Agribusiness Council.

Horst Distributing very kindly provided the prize for the June raffle drawing — a Jacobsen string trimmer. It was won by Beloit's Don Ferger, who commented, "My wife will enjoy using this!" This month's raffle raised just over \$300.




Russ Weisensel, Executive Director of the Wisconsin Agribusiness Council.



Ron Schumacher presents Don Ferger the prize from June's raffle.



Part of the overflow crowd at the June meeting.



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# WISCONSIN'S ANDY NORTH WINS U.S. OPEN!

By Randy Smith

Congratulations to Andy North on his second U.S. Championship win. This one came as he was the only player under par for the tournament with a 279 score for the four days on the par 70 Oakland Hills golf course in Birmingham, Michigan.

North's first U.S. Open Championship came in 1978 at Cherry Hills in Denver, Colorado. The year prior he won the Westchester Open in Westchester County, New York. With this win, he becomes one of only 15 players to have won the U.S. Open two times since its inception in 1895, and joins Hale Irwin and Lee Trevino as the two active players on the tour to have done so.

Andy grew up in the Madison area and started his golfing career under the coaching of his father Stew North and Nakoma golf professional Lee Milligan. He played golf and graduated from the University of Florida. Following that joined the pro tour and returned to Madison, again as a member of the Nakoma Golf Club, periodically "working out" with Golf Pro Allan Mitchell.

Since the Open, Andy's commitments elsewhere have included outings at Elkhart and Fort Wayne, Indiana and in Wilkes-Barre, Pennsylvania. These delayed the homecoming festivities in Madison. On Thursday, June 20th, Governor Anthony Earl lead an official "welcome home" ceremony at the State Capitol Building and declared it "Andy North Week." Other awards were given by Alderman Ronald Trachtenberg, Dane County Executive Jonathon Barry, and the Greater Madison Chamber of Commerce Executive Director and UW Alumni Association President Robert Brennan.

A small ceremony was also held at the Nakoma Golf Club by Mayor Joe Sensenbrenner. A victory celebration is being planned by Nakoma for Andy when his schedule will allow.

Aside from the strenuous tour responsibilities, Andy finds the time to be an active member of our

Green Committee at Nakoma. He adds a dimension that can only help us with his knowledge of the game and his experiences on golf courses throughout the world. One example came at a green committee meeting last year after we had installed several thousand feet of "french drains." Our committee basically wanted us to backfill the top 6" with a sand/soil mix and seed or sod over them. Most of us that have dealt with these drains before know that the effectiveness of surface drainage is drastically reduced, even necessitating reopening them to every four to five years. Andy's presence and comments that most tour courses

have these drains and they are left open to the surface with free lift from them simply made the decision for the committee allowing us to gain full benefit from the 12,000 feet of new drainage.

It is a pleasure being associated with this fine gentleman and we wish him the best in the future. We thank him for his determination and accomplishment in furthering the importance of golf. Hats off also to his wife Sue and daughters Nichole and Andrea for their strong support and sacrifices necessary for one to take on the tasks to strive for the perfection in one's profession.



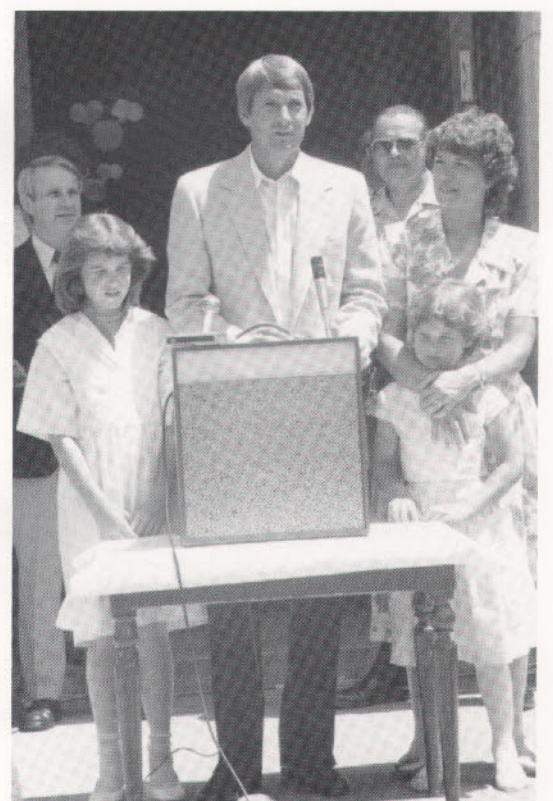
Superintendent Randy Smith and son Guy, congratulate Andy at Nakoma.



Madison Mayor Joe Sensenbrenner honors Andy North at Nakoma Golf Club.



Randy and Andy discuss the win.

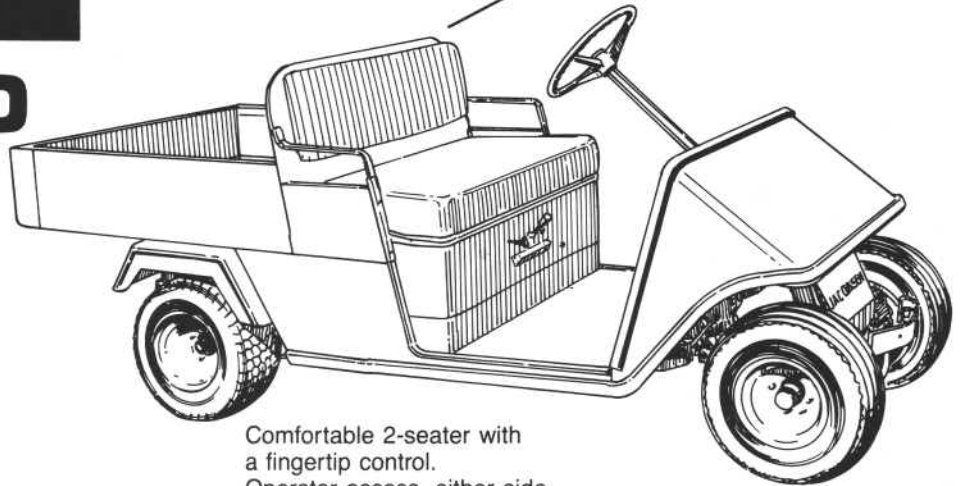


Andy with his wife Sue, Nichole (left) and Andrea (by mom). Governor Earl is in the background.

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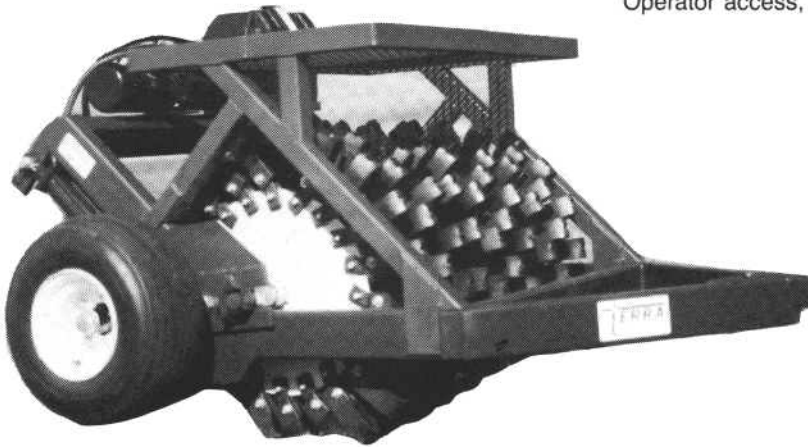
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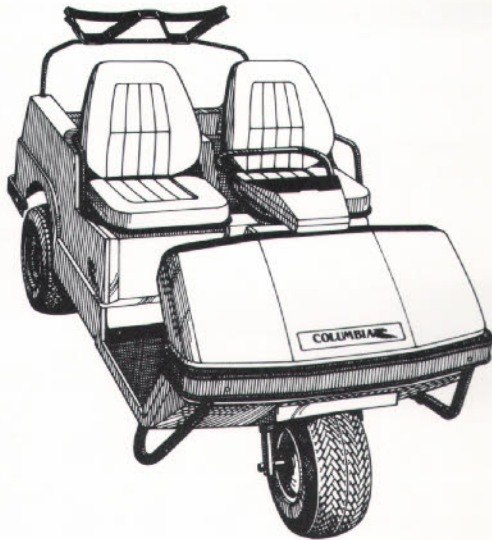
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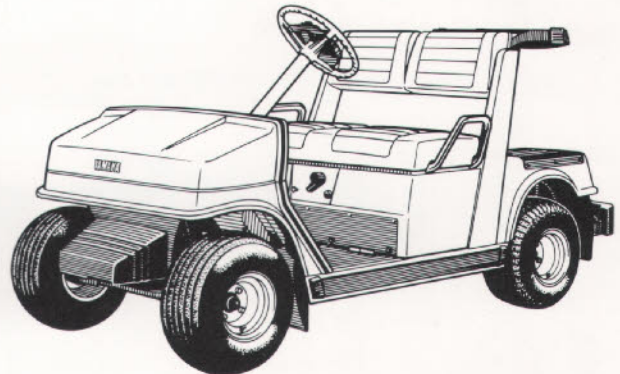
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**Thank you,**

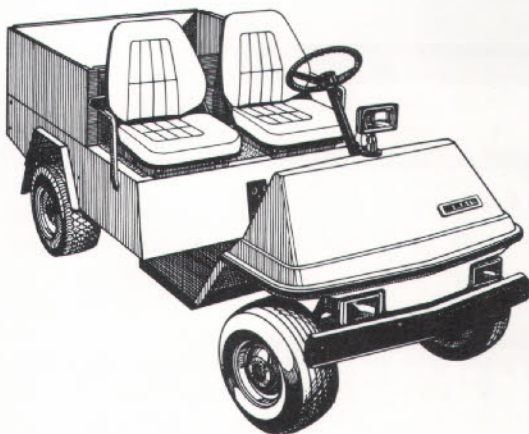
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# The Basis for Turfgrass Nutrition Management

By Dr. Wayne R. Kussow

Among the 16 elements for turfgrass growth and development, 13 enter the plant via the root system. Only carbon and oxygen are derived from air and even much of the oxygen and all of the hydrogen needed comes from water absorbed by the roots. Thus, the nutrition of turfgrass is very much dependent on what happens in the rooting zone.

Mathematical modeling of nutrient uptake by a variety of crops has clearly shown that the quantities of nutrients taken up are primarily dependent on three factors:

1. The concentrations of nutrient ions in the soil solution at any given moment;
2. The capacity of the soil to replenish ions removed from solution by the plant roots; and
3. The amount of water present in the soil.

Understanding what controls soil solution concentrations of nutrient ions is, therefore, the basis for turfgrass nutrition management. This knowledge allows us to make rational judgments regarding the development and modification of fertilization programs and to anticipate and diagnose nutritional disorders. Let us briefly examine what controls solution concentrations of ions of nutrients of greatest importance in turfgrass management.

## Nitrogen

Plant availability of nitrogen applied to turfgrass is controlled by several loss mechanisms and the rate of entry of nitrogen into soil solution in the form of ammonium and nitrate ions. The positively charged ammonium ions are retained in soil by being attracted to negatively charged soil colloid surfaces while nitrate remains entirely in solution and moves with soil water. The latter is the reason why surface application of nitrogen is so effective — nitrate ions readily move downward into the rooting zone of turfgrass.

Losses of fertilizer nitrogen may occur before or after entering the

rooting zone of turfgrass. Urea, if allowed to remain on the soil surface for 24 hours or more, is subject to loss via volatilization of gaseous ammonia. The problem arises because urea undergoes enzyme hydrolysis that converts the urea to ammonium carbonate and raises the pH at the site of application. Should the pH exceed about 7.3, ammonium ions are converted to gaseous ammonia and are lost to the atmosphere. The amount of nitrogen lost varies with the moistness of the soil surface, the rate of hydrolysis of the urea, soil pH, and soil surface temperature. Losses of one-half or more of the nitrogen in urea have been reported. Obviously, chances for significant loss are greatest on soils with pH greater than 7.0.

Fortunately, urea is highly water soluble and volatilization loss of ammonia only occurs at the soil surface. Irrigation with one-fourth inch or more of water after fertilization with urea moves the material into the soil where volatilization loss no longer occurs.

Turfgrass utilization of nitrogen from slow-release fertilizers such as ureaformaldehyde (UF), sulfur-coated urea (SCU), isobutylidene diurea (IBDU), and Milorganite primarily depends on rates of release of the nitrogen as ammonium and the fate of the ammonium released. Release of ammonium from IBDU is largely controlled by the solubility of the product, from SCU by the rate of leakage of urea solution through cracks and micropores in the sulfur coating, and from UF and Milorganite by the rate of microbiological decomposition. Moisture supply and soil temperature affect all of these processes to varying degrees.

Once in the soil, ammonium ions are rapidly converted microbiologically to nitrate ions unless the soil is very dry, has a pH of less than 5.5, or is at a temperature substantially below 85°F. Nitrogen in the form of nitrate is subject to loss via leaching and denitrification. Any movement of water deeper than the rooting zone of turfgrass inevitably results in leaching loss of nitrogen. Irrigating to wet no more than three-fourths of the rooting zone is a sound nitrogen management practice.

Denitrification is the chemical and microbiological conversion of nitrate to gaseous forms of nitrogen that are lost to the atmosphere. The process occurs to some extent in all soils, but is greatly accentuated by the presence of excess moisture and the associated lack of aeration. It is for this reason that impeded drainage and soil compaction often greatly reduce the effectiveness of nitrogen fertilizers.

The amounts of fertilizer nitrogen lost from soil by way of leaching and denitrification increase with increasing concentration of nitrate in the soil solution. In contrast to the soluble nitrogen fertilizers, slow release materials generally maintain lower solution concentrations of nitrate. Hence, when leaching or denitrification of nitrogen is a problem, slow release fertilizers typically prove more effective than soluble nitrogen fertilizers.

## Phosphorus

Phosphorus enters the soil solution in the form of negatively charged ions. These ions are quickly and extensively adsorbed on soil mineral surfaces. The amount of phosphate ion remaining in solution is very low and it is the adsorbed phosphate that is the major plant available source of the nutrient.

Plant availability of the adsorbed phosphate depends on how strongly the ions are bonded to soil colloid surfaces. This, in turn, relates to the composition of the soil and how much of its phosphate adsorption capacity has been satisfied through fertilization. As a general rule, the finer the texture of soil, the greater its phosphate adsorption capacity and the greater the amount of fertilizer needed to satisfy plant requirements for the nutrient. Soil pH values below 5.5 and above 7.5 further increase soil phosphate adsorption capacities and decrease phosphate availability.

The greater the extent of satisfaction of the phosphate adsorption capacity of soil, the more readily available the phosphate is to plants. However, except in sands with their typically low phosphate adsorption capacities, it is generally impractical, ill-advised, and unnecessary to load

up a majority of the adsorption sites with phosphate.

Three principles govern the management of phosphorus for turfgrass. First of all, soil testing is the only means for accurately assessing how much phosphate a particular soil needs. Secondly, it is soil reactions that control plant availability of fertilizer phosphate. As long as more than 50 percent of the phosphorus applied is water soluble (true of most turf fertilizers now on the market), it makes no difference what source or chemical form is applied and whether it is applied dry or in liquid form. Finally, because soil solution concentrations of phosphate are generally so low, the nutrient is highly immobile in soil. Even with repetitive surface applications phosphate typically does not penetrate soil more than a fraction of an inch. This stratification of phosphate has important implications regarding sampling of turf soils for analysis and establishment of new turf. Incorporation of phosphate into soil to a depth of six inches or more prior to seeding or sodding is the only way of assuring an adequate phosphorus supply in at least a major portion of the rooting zone.

### Potassium

All potassium fertilizers readily dissolve in water, releasing the potassium as a positively charged ion that quickly distributes itself among three forms in soil. A small portion remains in solution, some may become strongly bonded on so-called potassium fixation sites on minerals, and the remainder is attracted to negatively charged cation exchange sites. It is the latter that constitutes the bulk of plant available potassium in soil.

Fixed potassium is not readily available to plants and soil fixation capacity must be satisfied before exchangeable potassium levels can be increased and plant needs for the nutrient satisfied. Soil potassium fixation capacities vary from essentially zero to several hundred pounds and depend upon the types and amounts of minerals present. As in the case with phosphorus, soil testing is the only efficient means for addressing how much fertilizer potassium is needed in a given soil to saturate potassium fixation sites and build exchangeable potassium to levels

appropriate for turfgrass.

Potassium is intermediate between nitrogen and phosphorus in terms of its mobility in soil. With repetitive surface applications, fertilizer potassium eventually moves downward in soil into the rooting zone of turfgrass. The rate of downward movement of potassium varies with the cation exchange capacity of soil, whether or not this exchange capacity resides primarily on mineral or organic colloids, and soil pH. High pH, sand-based golf greens are notorious for the rapid rate of potassium movement through them. On the other hand, movement in fine textured soils is slow and amendment with potassium to depth of several inches prior to the establishment of turfgrass is an important management practice.

### Secondary Nutrients

Calcium, magnesium, and sulfur constitute this group of essential plant nutrients. Calcium and magnesium are of concern only when turfgrasses are grown on sandy, low organic matter, low pH soils. Sulfur, on the contrary, can be limiting and impart poor color to turfgrass.

Sulfur resides in soil primarily in the organic fraction. Microbial decomposition of the organic matter releases sulfur in the form of the negatively charged sulfate ion. Sulfate, in a manner analogous to nitrate, is very mobile in soil and leaches easily. Natural inputs of sulfur continuously occur in the form of sulfates and sulfuric acid in rain and snow. The amounts involved vary widely, but are notably higher at locations downwind from urban or industrial centers. Additional sulfur comes as a minor or trace constituent of various fertilizers and pesticides.

Due to the multiple sources and highly variable quantities of sulfur that turf may receive during any given year, it is very difficult to predict when and where deficiencies may occur. The soil conditions typically associated with sulfur deficiency include sandy texture, low organic matter content, and isolation from urban or industrial centers.

### Micronutrients

The essential micronutrients include iron, manganese, copper, zinc, boron, molybdenum, and

chlorine. Of these, only iron is of broad concern and this concern pertains mainly to high pH soils. Plant availability of iron is lowest in the pH range of approximately 7.2 to 8.5. In this pH range, iron deficiency is most likely to occur under one of two sets of circumstances. One instance is on soils with low organic matter content, low total iron content, and high aeration. These conditions promote formation of highly insoluble iron oxides. The second circumstance is poorly drained soils that contain calcium carbonate. Here the problem is accumulation of bicarbonate ions that interfere with plant uptake of iron.

Deficiencies in turfgrasses of manganese, copper, zinc, and boron are rare to non-existent in Wisconsin. Low soil content is a prerequisite for deficiency and must be in combination with soil conditions that minimize the plant availability of the small amounts present. Soil pH near neutrality and high organic matter content are two such soil conditions. Molybdenum and chlorine deficiencies have never been confirmed in turfgrass.

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**WISCONSIN SECTION  
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The **GRASSROOTS** is a bimonthly publication of the Wisconsin Golf Course Superintendents Association. Editor and Publisher — Monroe S. Miller, Blackhawk Country Club. Business Manager — Danny H. Quast, Milwaukee Country Club. Printed in Madison, Wisconsin by Kramer Printing. No part or parts of the **GRASSROOTS** may be reprinted without expressed written permission of the Editor.



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Geology, began a campaign for a state soil in 1972. When asked by skeptics "Why do we need a state soil at all?", Dr. Hole would respond with "Because soil is the basis of all life. Without the soil, there could be no sugar maple, no robin and no badger." His one-man campaign for the Antigo silt loam was finally won in 1983, when the Legislature was finally persuaded by logical thinking.



Francis D. Hole, far left, and Fred Risser, second from left, played an important role in having Wisconsin Governor Anthony Earl, seated, declare Antigo silt loam the official soil of Wisconsin.

## ANTIGO SILT LOAM — THE STATE SOIL OF WISCONSIN

The Antigo silt loam was named the official state soil of Wisconsin by an act of the State Legislature in 1983, a declaration intended to remind state residents of the vital importance of our soil resources.

Selected to represent the more than 550 different soils in Wisconsin, the Antigo silt loam is a light-colored, well-drained productive soil. It was developed in silty material underlain by gravel on nearly level glacial outwash plains. The remains of plants and the

great numbers of creatures that live in the ground enriched this soil with organic matter during the centuries of its development under northern hardwood forests. Antigo silt loam is a versatile soil, supporting chiefly dairy, potato and timber production.

Unlike the robin or the badger or the sugar maple, the Antigo silt loam is unique to Wisconsin. It is found in scattered locations along a 200-mile strip across the north central part of the state, from Langlade to Polk counties. It is named after the city of Antigo.

Dr. Francis Hole, a UW-Madison professor of Soil Science and of

## W.T.A. 3rd Annual Summer Field Day

The 1984 WTA Summer Field Day was a huge success. Over 250 Turf Management Specialists attended last year's field day. This year's event promises to be bigger and better than ever. Many new exhibitors will be demonstrating their products this year. The site at Camelot Country Club south of Fond du Lac affords a great deal of space for "hands on" demonstrations of all types of turf equipment.

Several researchers have set up extensive turf projects at Camelot this spring. There will be extensive seed plots by Dr. Bob Newman, disease plots by Dr. Gayle Worf and soil fertility plots by Dr. Wayne Kussow.

Please mark Tuesday, August 27, 1985 on your calendar. Send in the attached registration form before August 24, 1985 if you wish to attend.

LOCATION: Camelot Country Club  
½ mile East of Hwy 41 on Hwy 67  
Lomira, Wisconsin

DATE: Tuesday, August 27, 1985

TIME: 9:00 A.M. — 4:00 P.M.

FEES: \$30.00 — Non-member at door  
\$25.00 — Non-member pre-registered  
\$25.00 — Member at door

\$20.00 — Member pre-registered  
(\$15 for each additional person attending with the organizational member)

Please fill out and return the attached registration form to: Wisconsin Turfgrass Association  
500 Kensington Drive  
Madison, WI 53704

NAME \_\_\_\_\_ No. Attending \_\_\_\_\_

COMPANY/ORGANIZATION \_\_\_\_\_

ADDRESS \_\_\_\_\_

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