



AFFILIATE

# Turf Times

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The newsletter from the Northern Michigan Turf Managers Association

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## Family and Job



President Jeffrey Holmes

A Turfgrass Manager is one who makes a commitment to oversee the maintenance of a property. This person has several areas that he must be knowledgeable in; for example, turfgrass management, personnel management, equipment repair, irrigation systems, purchasing abilities and the list goes on.

One of the most important areas that was left out is the family and spouse. Someone who is in the turfgrass industry cannot make a total commitment to the job without having total support from their family and spouse.

It is a fact that several families have had to change their plans due to unpredictable circumstances that arise at work. This situation is sometimes too common in the turfgrass industry. Mother Nature is one key element that will dictate change as well as all the other areas of responsibility.

The situations and circumstances vary for each job and family. It could be the day that the entire family is going on a picnic, but low and behold an irrigation line lets loose. Being the committed turfmanager you're going to have to stay and repair the line before the picnic will begin. This is where you need to balance the system in your environment and make it work.

One should always remember to commend and thank the people behind you that give support and encouragement. It may be a simple "thank you for understanding" or a bouquet of flowers, maybe even a special trip for the entire family.

The person that is going to be the winner in the end is the one who can be devoted to his family and meet the expectations of the job.

## McMullin leads MTF into the 90's

Fritz McMullen, CGCS of the Forest Lake CC in Bloomfield Hills, was chosen by Michigan Turfgrass Foundation board members to lead the Foundation into a new decade. Meeting during the Michigan Turfgrass Conference, board members unanimously elected McMullen as its new President. He succeeds Kurt Thuemmel who completes a very successful two years in office. McMullen's initial priorities as President include the establishment of a golf course mechanics school at MSU and the appointment of an Environmental Turfgrass Specialist to help meet the concerns of the 90's.

Serving with President McMullen will be Jim Bogart, Turfgrass, Inc. who was elected Vice-President for 1990. Re-elected by board members for this year were Gordon LaFontaine from Lawn Equipment Co., Executive Secretary; Kurt Kraly of Wilkie Turf, Recording Secretary; and Jeff Gorney of J. John Gorney, Inc., Treasurer. In addition, Dave Longfield of Garland Golf Club was appointed to assist the Treasurer.

McMullen's election followed the annual Michigan Turfgrass Foundation meeting during which the Foundation membership re-elected all four incumbent board members. Dave Longfield will serve a second term representing the Northern Michigan Turf Manager's Association while Tim Doppel continues as lawn care representative. Also re-elected were Ron Juip of the Sod Grower's Association and Kurt Kraly as an at-large board member.

# Executive Summary

Paul E. Rieke  
Crop and Soil Sciences Department  
Michigan State University  
Prepared for the Michigan Turfgrass Foundation

## SAND TOPDRESSING

Sand topdressing of greens has been quite widely accepted on golf courses in Michigan. In a sand topdressing study begun in 1981 at the Hancock Turfgrass Research Center, we have demonstrated the necessity of following the prescribed program carefully to prevent development of layers. This means 2-4 cu ft of sand every 2-4 weeks, depending on growth rate of the grass (consider this every 4 weeks during slow growth periods and every 2 weeks during spring and fall). Once a sand topdressing program has begun it is essential that it be followed regularly. If soil layers are allowed to develop this will create problems with rooting or drainage at some future time. Topdressing programs are building the soil for the future so they must be done correctly the first time. In other studies where organic matter has been added to the sand, greens turf quality has been higher than when sand was applied alone. These studies are continuing to determine the long term benefits of adding organic matter to the sand.

## CULTIVATION

Core cultivation (aerification) studies have been continuing. Results indicate both hollow and solid tines can be used with vertical operating units to loosen the soil for turf. The solid tines have been particularly useful (usually 1/4 inch tines) during summer to open the soil to permit water infiltration with little disruption of the playing surface. When there is need to bring soil to the surface hollow tines are required, of course. For relief of deep compaction the use of larger vertical operating aerifiers which penetrate deeper into the soil has proven effective loosening soil and improving turf response.

## FERTILIZER STUDIES

A long term study on potassium fertilization demonstrated the need to apply potash frequently on intensively used turf growing on sands (as greens and tees). Unlike loams and clays, sandy soils have little cation exchange capacity to hold potassium, so it is wise to apply potash at least monthly. Potash has proven very important in maintaining wear, stress and disease tolerance.

Adequate phosphorus should be applied to all turfs. The need for phosphorus can be determined by soil tests, but we have demonstrated on plots and have seen in the field that phosphorus deficiencies have developed on both golf course greens and on home lawns where phosphorus had not been applied.

Applications of flowable sulfur resulted in color and growth response on Kentucky bluegrass growing on a clay loam subsoil. These responses have been evident up to one year after application. Other sulfur materials gave limited responses or none at all. No significant effect on pH occurred from either 10 or 20 pound per 1000 square feet treatments. The pH on this site was 7.2-7.5. The study is continuing.

## TURFGRASS VIDEOS

A set of 6 videotapes on turf management tips was jointly developed by the Michigan Turfgrass Foundation and the Cooperative Extension Service at Michigan State University. These videotapes range in length from 14 to 26 minutes and

have been widely accepted for training seasonal employees as well as for use in formal and informal education. Videotapes are available from the Michigan Turfgrass Foundation.

## ACKNOWLEDGEMENT

Major financial support for these and other research projects was provided by the Michigan Turfgrass Foundation. Financial support was also provided for some travel and soil analysis expenses as we served the turf industry in Michigan through our Cooperative Extension Service activities. This support from the Michigan Turfgrass Foundation is vital to these programs and is gratefully acknowledged.

## Book outlines environmentally sound turf management

To address growing concerns related to current pesticide application practices, the Golf Course Superintendents Association of American in conjunction with the Environmental Protection Agency, is reprinting *Integrated Pest Management for Turfgrass and Ornamentals*, a compendium of articles on "IPM". GCSAA is underwriting the cost of reprinting the book in order to ensure its availability to golf superintendents and other turfgrass managers.

The book contains articles that explain how to avoid unnecessary use of chemicals by advocating careful monitoring of pesticide applications. By stressing the judicious use of pesticides and herbicides through an IPM philosophy, golf superintendents can reduce their reliance on chemicals in maintaining their courses.

The book will be available May 7 through the GCSAA Office of Government Relations. Cost is \$10 for GCSAA members and \$12 for non-members.

## Course Superintendent testifies on golf's environmental impact

Speaking about the environmental safety and benefits of golf courses, William R. Roberts, CGCS, an officer of the Golf Course Superintendents Association of American (GCSAA), testified before the Senate Environment and Public Works Subcommittee on Toxic Substances.

As part of the hearing on the use, regulation and potential health risk of commercially applied chemicals on turfgrass, Roberts' testimony highlighted two areas in which GCSAA is considered to be the industry leader:

*Research Into the Effect of Turf Chemicals on Groundwater* - An independently conducted, GCSAA-funded study completed on Cape Cod, Mass., showed that virtually no turf chemicals move through the soil structure into groundwater and that golf courses which employ best management practices in their application of turf chemicals can greatly minimize the risk of potential groundwater leaching.

*Education Programs* - The membership of GCSAA is responsible for preserving the delicate balance of the golf course environment and, to that end, has developed a highly structured educational and certification program for its members.

## Leaching of Lawn Pesticides Little Threat to Groundwater

Reports about the condition of our groundwater reach us everyday through the newspaper, radio and TV news. It's good to finally hear about something that is not threatening our groundwater. Scientists at Ohio State University have found that there is little or no downward movement of pesticides applied to lawns and golf courses.

Dr. Harry D. Niemczyk and Adam A. Krause say their findings could help allay concern that lawn care chemicals are leaching into soil and contaminating groundwater. They are based at the University's Ohio Agricultural Research and Development Center at Wooster.

"Whether on 'Geraldo' or on '60 Minutes,' people have been saying that pesticides applied to turfgrasses are getting into the groundwater," says Niemczyk, a professor of entomology. "Our data say that's just not true."

Niemczyk says there was little of no leaching of pesticides in the studies they conducted in the field.

To determine the downward movement, or vertical mobility, of the pesticides, Niemczyk and Krause applied six herbicides and nine insecticides to turfgrasses in separate, one-year experiments.

Niemczyk says they found that almost all the pesticide residues remained in thatch, a layer of organic matter at the soil surface, if thatch was present in the turfgrass.

If thatch was not present in the turfgrass, most residues stayed in the top 2.5 centimeters of the soil, he says.

The herbicides tested were benefin, trifluralin, pendimethalin, bensulide, oxadiazon and chlorthal-dimethyl. Insecticides tested were isofenphos, diazinon, trichlorfon, ethoprop, chlorpyrifos, isazophos, fonofos, carbaryl and benidocarb.

"We wanted to find out what happens when pesticides are applied to turfgrasses," Niemczyk says. "Very few studies have been conducted on how these materials behave once they are applied."

Credit: *The Bottom Line*, Spring, 1990

## Beating the midseason doldrums



David Little, CGCS

Well, here we are with the first two holiday weekends behind us and well into the start of our tourist rush.

Hopefully, we all have had the time to get our courses to the standards we expect and have only the routine maintenance doldrums to look forward to for the next few months. This is a tough time of the year for myself, I get tired of the same routine day after day.

It can be a very boring time for the people doing your maintenance at the course too. This is a good time to add a little variety to your schedule and let your staff try their hand at some different tasks. Motivation is also

hard to accomplish, but prepping your course for the many visitors you're going to have is something to shoot for. It's always good to have a goal to aim toward. Peaking your turf's health, color and playing condition is your responsibility. You also have to peak your staff's attention to what they are doing. Try and let them understand it's not just how smooth and fast the greens are but how well the whole course looks. Keep things neat. Picking up trash, small branches and brushing away grass clippings all help keep things looking good. Verbal wages help during this time of routine maintenance. It is always nice to know that someone notices the effort you put into your work.

Let your help know they are part of a team not just someone out on the back nine cutting grass. Let them take part of the credit for your course's condition if possible.

Keep cool and stay green.

## Golf courses show strong compliance with pesticide regulations

About 97 percent of U.S. golf courses that employ members of the Golf Course Superintendents Association of America (GCSAA) have at least one licensed pesticide applicator on staff, according to the findings of a recent survey.

To address concerns about pesticide use, GCSAA recently conducted the survey to gauge the degree of compliance with federal and state pesticide applicator regulations among professional golf course superintendents.

"These results provide strong evidence of our members' commitment to safety and sound ecological practices," said Tom Akins, GCSAA Government Relations manager. "GCSAA strongly supports the position that only properly trained and educated personnel should be allowed to purchase and apply restricted-use chemicals. Even though most golf courses don't apply any restricted-use materials, we are pleased that the survey shows that an overwhelming majority of our membership has taken this extra step. This supports our long-held belief that golf course superintendents are among the best educated and most thoughtful users of agricultural chemicals in the country."

Of the 1,157 superintendents who responded to the GCSAA survey, 1,061, or about 92 percent, hold valid pesticide applicator licenses for the state where they work. Another five percent who are not licensed themselves have someone on their staff who is licensed.

Certification for pesticide application is done in compliance with the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA). Section 3 of FIFRA states that any pesticide classified by the Environmental Protection Agency (EPA) "for restricted use only" must be applied by or under the direct supervision of a certified applicator. It is up to each state to implement its own certification guidelines and programs as long as they comply with FIFRA.

"The importance of training and certification to individual communities really ties into the concept of 'Think globally - act locally'" said Akins. "The survey showed that individual superintendents take seriously their commitment to the environment and are working hard in communities throughout the U.S. to make sure that their operations are as safe as possible."

## Attention NMTMA Member

You belong to an organization that is currently over 250 members. Let's keep our organization growing. Please share the following information with a crew member, assistant, mechanic, greenchairman, owner or fellow superintendent. (Someone who is interested in professional turf management.)

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### Letters to the Editor

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Share your thoughts and feelings about our organization or the industry in general.

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# Professionalism and

# The Golf Course Superintendent

Credit: Long Island CGSA "The Hole Nine Yards", March, 1990

The Golf Course Superintendent comes across the term "Professional" on a regular basis. Whether it be watching professional football, basketball, baseball or hockey players compete or watching the Golf Professionals compete on the PGA Tour, it is a word that comes into view quite often.

The word profession as defined in the American Heritage Dictionary is "an occupation or vocation requiring training in the liberal arts or the sciences and advanced study in a specialized field." The word professional when used as a noun according to the American Heritage Dictionary is "one who has assured competence in a particular field or occupation."

The term professional, when it applies to the Golf Course Superintendent, is a combination of both previously mentioned definitions. One who has training in the sciences through advanced study (hands on experience and continuing education) in a specialized field (golf course maintenance) which creates an assured competence in that particular field. It sounds like nonsensical rhetoric but it really does make sense.

**TO BE VIEWED AS A professional** by your club or employer requires different sets of circumstances in varied situations.

Some clubs want to see their Golf Course Superintendent clad in golfing attire without a trace of grime or grit on them. Fine. Other clubs or companies want to see their Golf Course Superintendent dressed in jacket and tie and carrying

out only administrative duties from his office while delegating other responsibilities. This is fine. Some clubs want to see their Golf Course Superintendent dressed in blue jeans, wearing sneakers or the like, and not minding one bit if he had to jump in and help out in certain situations on the golf course. This is fine also. Each situation is different and one is no more professional than the other.

**IN BEING CONSIDERED A professional** by your peers or employers there are some definite requirements. While at your place of employment to be always clean shaven, hair neatly combed or brushed, teeth clean, and dressed as neatly as the situation dictates is of utmost importance.

When representing your club at a Golf Course Superintendents meeting or at an educational seminar it is important to wear a jacket and tie or a jacket with a golf shirt at minimum. Looking good never hurts in these situations.

While attending board or green committee meetings always dress as the situation dictates. Some clubs have laid back dress requirements at those functions, others don't. Dress accordingly.

Being considered a professional by your employers obviously will hinge a great deal on your finished product, the golf course. Producing the best quality golf course possible with the particular funds available while always giving one hundred percent effort in all categories will gain the respect of most people.

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# The search for the *perfect creeping bentgrass*

Credit: Golf and Sportsturf Magazine, April, 1990

AN ENTIRE GENERATION OF golf course superintendents has now worked without having to manage vegetative creeping bentgrasses. Ever since the release of Penncross in 1955, seeded creeping bentgrasses have dominated greens construction and renovation. The vegetative C-Series bents, including Arlington, Cohansey, Congressional, Toronto and Washington, are almost never found in architects' specifications anymore.

South German and Seaside bents, the only seeded options to the C-series for years, have also been largely replaced by Penncross. No other single turfgrass variety has dominated the golf industry as long or as widely. Developed at Pennsylvania State University, Penncross has become the standard by which all bentgrasses are judged today. For more than 30 years, the university's Dr. Joseph Duich has monitored its production by the Penncross Bentgrass Growers Association of Oregon and marketed by Tee-2-Green Corporation of Hubbard, OR.

During this period, superintendents have adapted maintenance to enable Penncross to withstand varied growing conditions on golf courses across the country, green speeds of eight to ten on the Stimpmeter, and mowing heights as low as 1/8 inch. They have begun using it on fairways and tees to force out annual bluegrass and provided a dense playing surface just 1/2 inch high. The reputation of thousands of superintendents has been based on how well they maintain not just their greens, but Penncross.

So understandably the introduction of a number of new varieties of creeping bentgrass over the past few years has been received by superintendents with a certain amount of reluctance. The prospect of changing varieties is unsettling to many who have mastered the establishment and care of Penncross. Nevertheless, the process of experimentation and reevaluation has begun and will continue into the '90's.

It was Duich himself who introduced the first serious competitor to Penncross in 1978, Penneagle. Since he had helped Dr. Burton Musser develop Penncross, Duich was more familiar than anyone else with its characteristics. He spent 18 years crossing and evaluating more than 150 bents in research plots in the United States in the United States and Canada before selecting Penneagle.

ONE OF THE CRITICISMS of Penncross was its aggressiveness. This trait was beneficial when it came to quick establishment, recovery from injury, tolerance to high and low temperatures and competing with *Poa annua*. The downside was the rate at which it developed thatch under typical high rates of nitrogen, water and pesticides.

(Continued on Page 10)

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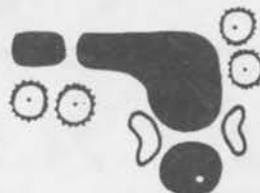
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# Deep tine aerification

Greetings, fellow turf managers! I trust that this time of year finds everyone's hectic schedules in full swing.

Although you probably don't think much of aerification at this time of year, I would like to pass on some information about deep tine aerification we did here at Lost Lake Woods.

We decided on deep tine aerification because of a shallow root system and poor percolation. The root systems were about one and one-half inches in depth, with a heavy clay-based soil underneath.

The drill type aerifier was chosen over the punch type aerifier because it caused less compaction in the aerification holes. The punch type tends to glaze the sides of the aerification holes and compact the bottom somewhat. The drill type aerifier had a maximum depth of ten inches, and the spacing was 4" x4". I was surprised that the aerifier didn't cause as much disruption on the greens as the Ryan GA-30 we use regularly. It covers about one-half of the square footage per hour as the GA-30. The drill brought a small amount of soil to the surface, which had to be removed because of the amount of clay in it. With this removed, and a light sand top-dressing applied, the greens putted quite well the same afternoon. Within a week of aerification there were almost no signs of aerification.

The process was done on April 20th and now, two months later, the root system is down around 4". Percolation has been improved. These greens also hold shots better than they did before the aerification.

The greens will be aerified for two more years, and then evaluated at that time as to whether or not to continue the program.

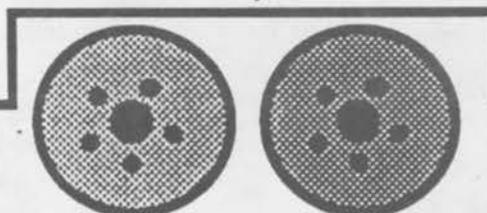


Brian Holmes

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# The search for the *perfect creeping bentgrass*

(Continued from Page 6)

From working with superintendents, Duich knew that the thatch question could be resolved through adjustments in maintenance. By lowering nitrogen levels, light verticutting, core aeration, and more precise irrigation, Penncross' aggressiveness was manageable. Furthermore, by controlling thatch, the superintendent also had better control over diseases.

In Penneagle he discovered a bent that was slightly less aggressive yet could still compete successfully with Poa. He also felt that the variety's more upright growth habit was suitable for tees and fairways, in addition to greens. In 1978, Penneagle was released as a broad-use bentgrass adapted to a large portion of the country.

**AT THE SAME TIME, DUICH** was evaluating another bentgrass specifically for greens. He had crossed a bent found on a green at The Country Club in Shaker Heights, OH with nine other attractive selections in his plots at Penn State. After a second phase of selection involving 90 more parent plants, he picked out one and sent seed samples to more than 100 different golf courses and universities under the tag PSU-126.

Feedback from these sites showed that the bent was more aggressive than Penneagle but less aggressive than Penncross. It also had an upright growth habit with very fine leaves. These two traits produced a green surface with little to no grain.

Superintendents also reported that the upright growth, narrow leaves, and high density reduced the need for verticutting, was more drought tolerant, and withstood high temperatures and humidity better. After 20 years of work, limited supplies of PennLinks were available in 1987.

The demand for seeded creeping bentgrass began to exceed supply in the '80's despite production increases of 50 percent during some years. Construction of new golf courses, use of bentgrass for fairway turf, and conversion of bermudagrass greens to bent in portions of the South and West forced buyers to plan years in advance. Superintendents in these areas became concerned, got organized and asked their state turf research specialists to step up breeding and development work on bentgrasses.

Dr. Richard Skogley at the University of Rhode Island had for decades preserved and cared for some of the oldest plots of bentgrass in the country. Dr. Reed Funk at Rutgers managed a highly productive turfgrass breeding program with numerous improved perennial ryegrasses, Kentucky bluegrasses and turf-type tall fescues to show for it. Dr. Robert Kneebone at the University of Arizona had established bentgrass maintenance trials beginning in the '70's, as had Drs. Roy Goss and Stan Brauen at Washington State University in Puyallup. All these men played a role in the development of new seeded creeping bentgrasses released in the last five years.

**THE INSATIABLE DEMAND FOR** creeping bentgrasses in the U.S. and in developing foreign golf markets were recognized by a number of seed marketing companies. They began to sponsor bentgrass breeding research at universities in the early '80's. Among them were International Seeds, Inc. of Halsey, OR; Jacklin Seed Company of Post Falls, ID; and Seed Research of Oregon, Inc., in Corvallis, OR. While these companies were basically starting from scratch with bentgrasses, the universities they approached had been working with them for more than a decade.

International selected a dark-green, semi-erect creeping bent that had exhibited strong drought tolerance and resistance to dollar spot in the plots at Rutgers for nine years. To test its tolerance to heat and humidity further, seed was sent to North Carolina State University and the University of Georgia in 1985.

After two years of trials, the bent called Cobra was judged to have dark winter color with comparable density, speed of establishment and texture. The first commercial quantities of Cobra were sold in 1988. International also markets Emerald, a variety of European origin best adapted to northern climates with low heat and humidity.

Jacklin found the bentgrass it was looking for at Washington State University. After 18 years of evaluation, Brauen selected one particular creeping bentgrass that was darker than others, had a dwarf, upright growth habit and fine texture. It had exceptional resistance to take-all patch, a common problem in maritime climates which predisposes bents to invasion by Poa. The disease is difficult to cure and is a considerable problem in the Pacific Northwest and a growing problem on the East Coast.

The original parental material for the new bentgrass called Putter came from golf course greens in five different New England states. Because of its dwarf growth habit, Putter covers the ground following seeding slightly slower than Penncross, according to Gayle Jacklin, but still forms a full stand within four weeks of planting. When overseeded into a putting green, she adds, it outcompetes many other bentgrass varieties yet its vertical growth rate is relatively slow.

Seed Research also seems to have taken a regional approach to bentgrass selection. Providence, a variety developed in cooperation with the University of Rhode Island, has demonstrated resistance to dollar spot and brown patch as well as cold tolerance. Its upright growth habit and fine texture are credited with eliminating grain in greens. Wear tolerance, recuperative ability, and fast establishment are tied to Providence's aggressiveness and strong tillering.

**THE DARK GREEN VARIETY** is the result of a breeding program which began in 1965 with the collection of plants from old putting greens throughout the Northeast and those taken from trails at the university dating back to the 1920s. In 1982, the nine most promising selections were placed in a putting green trial. Two years later, the best five were planted in a polycross nursery. After two more selections, the first certified seed was harvested in Oregon in 1988.

Seed Research's second bentgrass, SR 1020, comes from a program at the University of Arizona designed to identify bents best adapted to Southwestern conditions. Kneebone collected material from old golf greens in Arizona, California and South Carolina to create his plots in 1971. Five years later, the best 26 were planted and maintained under putting green conditions without applications of herbicides, insecticides or fungicides.

(Continued on Page 12)

# Professionalism and The Golf Course Superintendent

(Continued from Page 5)

**BEING VIEWED** A professional by your fellow Golf Course Superintendents has its own set criteria. Participation at the local level is of utmost importance. Involvement at the board level, on a committee, at monthly meetings, hosting monthly meetings, and contributing when asked are all vital in being considered a professional. Everyone's involvement in our local Association will only help solidify our being viewed as a group of professionals. So get involved, its only going to help.

The Golf Course Superintendents involvement with available continuing education is a must in becoming a professional. Through GCSAA regional seminars are offered. They are excellent and you're missing out if you don't participate. Local Golf Course Superintendents associations offer educational seminars with varied topics. Try to participate, they are excellent also. And above all, local Golf Course Superintendents associations monthly golf/educational meetings are on going and excellent. When speakers are present they are usually excellent and interesting. I learn more at times just talking with my fellow Golf Course Superintendents about related problems than I do in many other situations, educational or other. Having five or six Golf Course Superintendents sit down and discuss whatever comes to mind can be a tremendously educational experience.

**ANOTHER PART IN** being considered a professional is in how you treat people. Always treating your employees with respect and dignity will show in their work on the golf

course. Your ability to communicate with golfers and members at your club while treating them with respect will help insure your being viewed as a professional. Having a solid line of communication with the Commercial people in our industry, for they are very important people, is a must.

Remembering that it is a two way street is important, and to give them a chance when warranted. Sometimes it works out other times it doesn't. At least you tried and they will respect you and view you as a professional for it.

In conjunction with the aforementioned subject matter, to be viewed as and to become a professional, four matters are of the utmost importance.

**FIRST, YOU MUST ALWAYS USE** common sense. Taking unnecessary chances and not thinking things through are examples of not using common sense. Second., one must become adept in the art of people management. Properly communicating with people from all levels of society is a must in succeeding as a Golf Course Superintendent. Third, you must be or become educated. Whether you are a two or four year college graduate, a holder of an educational certificate, a holder of a Masters degree, or a person who is involved with continuing education as a Golf Course Superintendent, becoming educated and continuing to be educated is vital.

Fourth and last is participation. To be considered a professional you must have participated or are participating now on a local level. Remember, everyone's involvement on a local level will solidify our being viewed as professionals. Get involved. You'd be surprised how it will help.

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# The search for the *perfect creeping bentgrass*

(Continued from Page 10)

By 1982, five clones maintained a dense stand with good quality and color. They originated from golf courses in Phoenix and Tucson, plus one from Clemson University. The first certified seed of SR 1020 was harvested in Oregon.

Some of the characteristics of SR 1020 include dark color, fine texture, upright growth habit, better heat and drought tolerance, and improved resistance to Pythium blight and powdery mildew. It can be maintained successfully in full sun or moderate shade.

These are the major players in the seeded creeping bentgrass market today. Superintendents and golf course architects are very aware that choosing the right variety for their projects is more complicated than it was just five years ago. While all these bents have been used on golf courses, the amount of university data comparing all varieties is limited and short-term.

"CERTAIN VARIETIES OF CREEPING bentgrass are better adapted to specific environmental conditions," explains Virginia Lehman, research associate for Dr. Milt Engelke at the Texas Agricultural Research Center in Dallas. Engelke has been engaged in bentgrass heat- and drought-resistance research at the center since 1985. The work was sponsored by the United States Golf Association and bentgrass Research, Inc., a group made up of southern golf course superintendents.

"You really need three to five years of data based on a wide range of different conditions to draw any conclusions," adds Lehman. "Our work has been targeted at heat and drought resistance. There are many other conditions that need to be studied."

Texas A & M is one of 18 universities cooperating in the National Turfgrass Evaluation Program (NTEP) bentgrass trial managed by Kevin Morris at the USDA Research Center in Beltsville, MD. The first test plots were seeded last year at test locations across the United States and Canada. NTEP has carried out similar research in the past for Kentucky bluegrasses, perennial ryegrasses, and fescues. The first bentgrass data will be available in April 1991.



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# Top Dressing

by Judith Ferguson Gockel, Agri-Systems of Texas, Inc.

**DID YOU EVER** wonder what an earthworm might think about topdressing practices on our golf courses? If you haven't, then maybe it's time to take a closer look.

Topdressing for putting green maintenance is an almost universal practice; it is used to true up the putting surface and to help prevent thatch buildup. In recent years, topdressing programs have also been used to increase putting green speeds. If it is done with care and follows some simple guidelines, topdressing can also modify the basic structure of the green. This will improve water handling capacity and add to the life and health of the green and the turfgrass on it.

Topdressing practices are a major reason for the success or failure of new greens. With adequate basic construction and an informed superintendent, a new green can have a predictable life of 20 years or more. Without these fundamentals, the same green can be in serious trouble within a year.

**ALTHOUGH TOPDRESSING IS** used widely, the how and why of its function are often misunderstood. We were not aware of the wide variance in practices until recently, when our laboratory developed a new technique for analyzing rates of field infiltration. The method involves using three-inch PVC pipe to take a profile of the green through the seedbed, intermediate layer, gravel, and into the subsoil beneath the green. The tube is submitted whole, tightly packed to prevent movement of the contents. After doing the infiltration test in the pipe, we cut it open to try to determine the reasons for its behavior. In a startling number of cases, it is apparent that topdressing practices have created the problems we've found. There are cores that look like appetizing Viennese tortes, made up of many layers of differing sands and soils, and cores that have been dubiously blessed with every commercial topdressing of the past 15 years, one after another. We find poor greens topdressed with superb materials, and great greens smothered with the cheapest filler available. We have found we can count layers like the rings in a tree and determine when the course changed superintendents, when the budget crunch came, and the year of the big flood, blizzard, or drought. We also see greens that have been maintained to perfection, are very successful regardless of their age. While it is possible to have problems with the best built and maintained greens the problems are usually more manageable and involve less brinkmanship on the part of the superintendent to correct.

To understand why correct topdressing practices are so important, it is necessary to think about the growth patterns of turfgrass and to have a basic grasp of water movements in soils.

Where distinct layers of materials exist in a profile, grass roots make a little effort to grow through one layer and into the next. If the roots have as much as an inch of one material to grow in, however poor it is, they will not cross into another layer even though that layer may have optimum growth medium characteristics. We often see well-constructed seedbeds with an inch of a different but equally good topdressing. The turf can usually be peeled off like a rug at the interface, because the layers aren't bound together by a network of roots. Where shallow root systems exist, turfgrass is vulnerable to problems from many sources.

**NOT ONLY DO** layers affect the root systems directly, but there is a further problem with water movements through textural barriers. To visualize this involves understanding the way a perched water table works. The perched water table, which is, incidentally, the basic principle upon which the USGA recommended method of greens construction is based, affects all soils. Simply put, the original research demonstrated that water remains within one layer until that layer is saturated. Then it drains into the next, which again must be saturated before it can release excess water.

As layers of top dressing materials different from the basic green are built up, they create additional perched water tables and cause unpredictable consequences. Relatively small variations in soil content and particle distribution can produce significant differences in the interaction of these materials.

Once these principles become clear, choosing appropriate materials for topdressing becomes simpler.

New greens should be topdressed initially with the same mixture of materials they were built with. Thus, in building a new green, plan during construction to set aside a supply of construction material adequate to topdress for at least two years. It is prudent to make sure the supplier will have the identical sand available in the future, and keep a supply of the organic material used construction for an indefinite period.

After a period of time, which will vary greatly in individual cases, the roots will begin to provide enough organic materials to meet their own needs for retaining water and for cushioning from the abrasion of heavy traffic. Because this is a gradual process, once by observing the root zones regularly can you know when you reach the point for a gradual cutback in the organic component. This is done best by looking at the root systems regularly. A cup cutter is a good tool to use for this examination. Go to an average area on the green and cut the deepest cup possible. Carefully extract the plug from the cut and look at the roots. In an ideal situation, the material around the roots is very similar to that below, and the roots themselves are plentiful and have a plump, healthy look. There should be no compacted area developing, nor any indication of unusual moisture retention. The topdressing problem is ideal if these criteria are met.

**IF THE TOP TWO** to three inches of the core are hard and the root system scanty and weak, the organic component is very likely inadequate, and there may be an excess of silt and clay. It will be necessary to use aerification with core removal, and topdress with a clean sand of a similar type combined with about 10 percent organic material to correct this development. If the soil is becoming spongy, the organic material should be cut back gradually over several topdressings until pure sand is being used.

The same technique should be used for problem analysis on older greens. It is an excellent means for determining the history of the green; an informed superintendent can often see what he is dealing with more quickly through this method than with any other single tool at his disposal.

A variety of conditions may be discovered in an old green. There may be layering from multiple topdressing.

(Continued on Page 14)

# Top Dressing

Continued from Page 13

**THIS CONDITION CAN BE** relieved to some extent by aerifying several times, removing cores, and topdressing each time with a clean sand in the medium to fine size range. This technique will be helpful if the layer is less than three inches deep.

Problems may appear in the form of a spongy upper layer, perhaps resulting from on-site mixing during construction, which has left excessive quantities of organic material in the upper portion of the green. This is more difficult to correct, although the same basic technique may be tried. It is sometimes necessary to remove the sod and remix the seedbed before real gains can be made.

The upper layer may be hard and compacted, indicating an excess of silt and clay in the topdressing material, often in combination with very fine sand. Here again a very clean medium to fine sand may be employed in conjunction with aerification. It can be helpful to add up to 10 percent peat-moss in this instance.

Beyond the top three inches or so, it is almost impossible to make significant changes in the green's behavior using topdressing modifications. New technologies developing in some areas may make it possible to modify most of the seedbed. Time and experience will give us a better idea of their long-term effectiveness.

**A CURRENT TREND**, which has caused many problems, is the building up of a sand layer on top of greens that are basically soil in order to improve putting speed. While it is possible to modify the greens in this manner, it should be

done gradually over a couple of years rather than in an abrupt changeover. The modifying sand should be selected and mixed into the existing topdressing in a ratio of about 25 percent of volume. This material should be used several times and then further divided into a 50/50 proportion for several more topdressings. Continue increasing the quantity of sand in the topdressing until roughly a two-inch transition layer has been built up. This slower procedure allows the soil and sand to blend well enough for water to be moved as if there were no change. The infiltration rate will be that of the soil portion of the green, of course. Regular aerification should be done throughout the transition period, and cores should be removed each time.

If the original material of which a good green is built becomes unavailable for topdressing purposes, it is crucial to locate the closest possible substitute. This can be done by taking the particle analysis of the original sand to area sand suppliers to seek a match. Fortunately, similar sands are often available from the same area. Locating a close substitute will allow a continuing successful topdressing program. Regular examinations of the seedbed using this core sampling technique are helpful in becoming aware of problems before they develop into serious conditions. Success or failure often takes place on the worm's eye level.

Topdressing is more than a filler. It plays an active part in keeping good greens good, golfers happy, costs down, and aggravations to a manageable level. These are goals well worth pursuing.

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Top: A great audience with standing room only.

Left: Dr. Joe Vargas addressed the group on the topic "Snow Mold Control".

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Top to Bottom: MTF Founders Society-- Dave Longfield, Bruce Wolfrom and Kimberly Olson. Roger Mech from the DNR talks about Gypsy Moths and Tent Caterpillars and Dr. Trey Rogers speaks about green speed.

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# Mechanic's Corner

by Dan Stratton, Crystal Downs C.C.

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## 1990 CALENDAR OF EVENTS

### JULY

- 19 NMTMA at the Rock, Drummond Island, *Speaker - Kathy Antaya*
- 19-22 British Open, St. Andrew's, Scotland *ESPN/ABC*
- 20-22 Ameritech Senior Open, Grand Traverse Resort, *CBS*
- 26-29 Buick Open, Warwick Hills Golf and Country Club, Michigan
- 30 GAM Championship Qualifying, Michaywe Hills

### AUGUST

- 9-12 PGA Championship, Shoal Creek GC, Alabama *ESPN/ABC*
- 10 GAM, Club Relations Day, Bay City CC
- 13 NMTMA at Fox Run Golf Club, *Speaker -Mike Hlywa, No. Michigan Pump- "Petroleum Storage"*
- 13-15 GAM Championship, Travis Pointe
- 24-26 Michigan Bell Showdown (Skins Game), Grand Traverse Resort
- 30 MTF, Michigan State University, Field Day

### SEPTEMBER

- 10 Michigan Superintendent's Championship, Timber Ridge
- 14-16 Greater Grand Rapids Open, Elks Country Club
- 17 NMTMA at High Pointe Golf Club *Speaker- TBA*

### OCTOBER

- 1 Michigan and Border Cities Benefit Day, Several Clubs Participating
- 1 West Michigan Golf Course Superintendent's Association Benefit Day, "Highlands" Grand Rapids Elks CC
- 2 NMTMA at Gaylord CC, Annual Meeting/Supts. Championship
- 8 Mid-Michigan Turf Association Benefit Day, Flint Golf Club

### DECEMBER

- 1 MMTA Annual Christmas Party, Garland Resort

