**MGCSA Superintendents were asked:**

**What is the policy at your course regarding Employee Play?**

At Tanners, we allow employees to play Mon - Fri at anytime as long as there is an open tee time available. They will be treated as a paying customer and carts are available for $10 for 18. On weekends, they may not make a tee time before noon. As for caddies, I sprayed for them along time ago and haven't seen them since.

- Kevin Clunis CGCS
  Tanners Brook GC
  Forest Lake

We don't have caddies but I do encourage employees to play golf. Some play in golf leagues which has been a great communication tool. Those particular employees are good golfers and can answer some questions from golfers on maintenance practices. The only restriction is to use common sense on weekends so as not to take up prime tee times. They are reminded that they should set an example on the course in regard to rules, etc.

- Tom Johnson
  New Richmond GC
  New Richmond, WI

Employee play is critical to the success of our operation. My operators in season are primarily retirees who do an outstanding job but aren't doing it for $8.50 an hour; they are doing it for the ability to play a solid course for free once or twice a week. I also have weekend only guys who do every other weekend for range and golf privileges. The cart staff and rangers, etc. have the same deal but don't seem to get in our way very often. I can honestly say we don't have any abusers here at Prestwick and the pro shop does a good job of managing employee play. They fit them in on the tee sheet as they seem fit. It works here, and as long as rules are set and communication is solid between maintenance and the pro shop there are few issues.

- Dave Kazmierczak
  Prestwick GC
  Woodbury

We've been having issues with caddy play (Thursday's before member play) over the past couple of seasons. My recommendation has been to allow them to play in the evenings, this way they won't (literally) dig up our greens, and since they don't fix ball marks or rake bunkers-well, at least we can prepare the course prior to member play the following day. Does the forwarded email from my pro sound accurate? How do you then spray, or conduct course maintenance if caddies are able to play Monday AM's? We are closed Monday's AM prior to our weekly outings, which allows us to spray, topdress, etc. Also, does anyone monitor the caddies when they play (conduct/course etiquette)?

- Ben Just
  Midland Hills Country Club
  St. Paul
Microbiology of Turfgrass Soil

By DR. WILLIAM A. TORELLO
Pro Turf Consulting

Turfgrass soils vary considerably in physical and chemical composition. However, regardless of their properties, most contain a vast array of living organisms, ranging from larger creatures such as earthworms and insects, to microscopic invertebrates, bacteria, fungi, actinomycetes, yeasts, algae and protozoa. All of these organisms affect turfgrass health in important ways. However, perhaps the most important and least understood are the bacteria, fungi and actinomycetes.

Microorganisms occur in turfgrass soils in extremely high populations, making soils among the most dynamic sites of biological activity in nature. Many people assume that some turfgrass soils, such as those with high sand content or those that have received high doses of pesticides, lack microorganisms. This is untrue. Regardless of the soil type, texture or history, abundant microbial populations are present. (However, microbial activities may be lower and certainly are different in sandy soils or those that have been treated with pesticides.) Considerable diversity exists among turfgrass-soil microorganisms. It probably is safe to say that more biological diversity exists among the microorganisms in an ounce of soil than in the entire Amazon rain forest.

This diversity is important in the maintenance of optimum soil and turfgrass health.

Important microbial activity in turfgrass soils

Microorganisms perform a variety of functions, many of which are extremely important to the health of a turfgrass stand. Chemical, physical and biological factors strongly affect their level of activity as well as the kinds of microorganisms present. Factors such as soil pH, fertility, organic matter, moisture, temperature, soil porosity, and turfgrass species and cultivar all are important. As a result, anything that alters these factors also affects microbial activities. When management practices affect microbial processes in a negative way, we generally see the indirect effects as reduced plant health and vigor. When practices have a positive effect on microbial populations, we often see improved turf vigor, stress tolerance and pest tolerance.

The Concept of the Rhizosphere

Much of the microbiological activity in soils takes place in close association with turfgrass roots. In the course of their normal growth and development, turfgrass roots release a variety of organic compounds into the surrounding soil. This exudation creates a soil environment—the rhizosphere—that stimulates microbial activity. Because of root exudations, the rhizosphere is a carbon-rich environment. This carbon supplies much of the energy for the microorganisms there. The types and amounts of carbon compounds that turfgrass roots release vary according to turfgrass species and environmental factors and help determine the types and numbers of microorganisms that inhabit the rhizosphere. In the absence of plants, soils have limited available carbon to support microbial growth. Much of the carbon in soil is in the form of humus, which already is in a highly decomposed state resistant to further decomposition. Therefore, microorganisms rely heavily on plants to supply most carbon needs.

As microbes decompose root exudates and other forms of introduced carbon (such as from organic amendments), these materials become part of the humus fraction of soil.

Bacteria Predominate

Of the microorganisms present in turfgrass soil, bacteria occur in the greatest numbers and are perhaps the most diverse in their morphology and physiology. Bacteria are small single-celled organisms that reproduce rapidly by simple cell division, producing huge numbers of cells in a short time. Under favorable conditions, bacteria may divide every 20 minutes. Conceivably, then, one bacterium could give rise to 1,000,000 bacteria in 10 hours! However, the size of each cell is quite small, usually not more than 1 or 2 microns (0.00004 inch) in length. For the explosive growth of bacteria to occur, an array of carbon sources must be available. The metabolic transformation of these carbon sources produces a number of by-products. The resulting soil chemical changes may be vast and are why bacteria can be such significant microorganisms in the turfgrass environment. Bacteria require water to grow and reproduce, so soils with chronically low moisture limit their survival.

Although many bacteria are saprophytic (they primarily live on decaying organic matter), some are endophytic (they live inside healthy plants, usually in roots). A few can cause diseases in plants, animals and humans, but those that occur in turfgrass soils are either saprophytic or endophytic. In either case, they usually are good competitors with plant pathogens and, therefore, can minimize damage from plant-pathogenic fungi. Bacteria that play a role in nutrient transformations in soil and in direct plant-growth promotion are particularly important. Bacteria within the genera Azotobacter, Azospirillum, Enterobacter and Klebsiella are efficient, free-living, nitrogen-fixing organisms. That is, they take nitrogen from the atmosphere and convert it to a form that plants can use. Although research has shown that they can significantly contribute to the nitrogen nutrition of Kentucky bluegrass, their effect on other turfgrass species and under different fertility regimes is not well known. However, they undoubtedly have the potential to substantially contribute to the nitrogen economy of a turfgrass stand.

Many of these same bacteria naturally produce hormones that stimulate plant growth. Bacteria in the genera Bacillus, Pseudomonas and Azospirillum are particularly well known for their growth-promotive effects. Azospirillum spp. are efficient at stimulating root growth and promoting seedling establishment, whereas Pseudomonas spp. possess pathogen-suppressive properties. Bacteria also are important in organic-matter degradation. These organisms play a key role in maintaining the delicate balance between thatch accumulation and degradation, and, to some degree, you can manage them. In fact, several preparations of thatch-degrading microorganisms or the enzymes they produce are commercially available.

(Continued on Page 23)
Microbiology -

(Continued from Page 22)

available. Some of these are useful in thatch - maintenance programs, whereas others - for reasons that are not always clear, fail miserably. Check with other turf managers to see what has succeeded in conditions similar to yours, and keep in mind that the dynamics of thatch-degrading microorganisms are not fully understood. Some bacteria impact turfgrass health by controlling turfgrass pathogens; these occur in all types of turfgrass soils. Their effects sometimes go unnoticed, but they can have a huge impact on disease development. In some cases, high populations of these bacteria are responsible for what we call suppressive soils. These are soils where conditions are ideal for disease development and the pathogens are present, but no disease develops because of the activity of bacteria. These bacteria inhibit turfgrass pathogens by competing for resources, producing antibiotic compounds or, occasionally, acting as fungal parasites. Because these bacteria are saprophytic, large amounts of organic matter - topdressings or direct soil amendments - usually are beneficial to their populations. Many of these biological-control bacteria occur in particular types of organic matter such as composted material. In fact, the application of compost has been an effective alternative to fungicides in some instances. Similarly, several companies now market bacterial preparations as fungicides.

**Fungi-friend and foe**

Fungi account for the greatest amount of living biomass in turfgrass soils. Fungi are best known for their pathogenic activities in turfgrass, because they cause nearly all economically important turfgrass diseases. However, pathogenic fungi represent only a small proportion of the total fungal community in soil. The vast majority are beneficial to plant health. The genera of fungi present in turfgrass soils include Penicillium, Aspergillus, Trichoderma, Gliocladium, Fusarium, Mucor and Mortierella. Unlike bacteria, fungi grow in filamentous form and reproduce with spores. Fungi obtain their energy for growth primarily through the decomposition of organic matter. Generally, fungi are more prevalent than bacteria in soils of pH lower than about 5.5, whereas bacteria tend to predominate in soils with higher pH. Because fungicide use is common on golf course turf, the composition of fungal communities in these soils can vary dramatically, depending on the type, rate and frequency of fungicide applications to that site. Aside from their roles in disease and organic-matter decomposition, some groups of soil fungi perform more specialized functions in the rhizosphere.

Mycorrhizal fungi are specialized parasitic fungi that form unique symbiotic associations - mycorrhizae - with plant roots. In mycorrhizal relationships, the fungus benefits from the carbon the plant provides, while the plant benefits from the increased phosphorus nutrition and water availability that the fungus supplies. Research has confirmed mycorrhizae on both bentgrass and bluegrasses, although little information is available on the benefits and detriments of mycorrhizae in these grasses. As with other fungi, mycorrhizal fungi are sensitive to several commonly used fungicides. Some of the better known fungi in turfgrass ecosystems are endophytic fungi. These typically are found in the seeds and leaf sheaths of nearly all turfgrass species. Commercial exploitation of endophytes has been successful with perennial ryegrass, tall fescue, hard fescue, chewings fescue and creeping red fescue. Although endophyte-enhanced creeping bentgrasses and Kentucky bluegrasses are not yet commercially available, development is ongoing, and release of such varieties may not be far off.

**Actinomycetes-turf's antibiotics**, one of the least known and most poorly understood groups of soil microorganisms, are the actinomycetes. These microbes apparently are more closely related to bacteria but grow more like a fungus. Although their populations in some soils can be quite high, their growth rates are much slower than other soil microorganisms. Much of the smell unique to high-organic-matter soils comes from the volatile compounds actinomycetes produce. Actinomycetes typically are more abundant in dryer soils high in organic matter or in high-temperature soils. As a group, they are not tolerant of low soil pH (less than 5.0). They grow best at temperatures ranging from 80°F to 100°F. The major genera of soil actinomycetes include Streptomycyes, Nocardia, Micromonospora and Actinoplanes.

**These organisms are best known** for their ability to produce several industrially and medically important compounds. Many antibiotics important to human and animal medicine come from soil actinomycetes. Like the fungi, actinomycetes rely on organic matter for their nutrition. In particular, they are well-adapted to the decomposition of the more resistant plant polymers such as cellulose, hemicellulose and lignin, as well as the fungal and insect polymer chitin. Because of this, actino-

mycetes play a major role in the formation of humus in soils. Like some bacteria, actinomycetes help suppress soil-borne turfgrass diseases. Many of the antibiotic compounds of actinomycetes affect the growth and development of pathogenic fungi. Composts are particularly rich in pathogen-suppressing actinomycetes. The beneficial effect of amending soils with composts is partly due to the disease-suppression properties of actinomycetes.

**How to Maximize Microbial Activity**

The challenge to the turfgrass manager is to become an expert not only in the management of what everyone can see above ground, but in the management of beneficial soil microorganisms to maximize turfgrass health. In general, all practices that promote a vigorous, healthy turf stand will also maintain high levels of microbial activity. The following strategies are particularly useful: * Use organic amendments composed of readily available carbon. Avoid sphagnum peat because it does not support adequate microbial activity. Reeds edge peat, composted animal manures, and composted sludges are preferable. * Maintain soil moisture at constant levels, never allowing the soil to dry. Shallow, frequent watering is best. If other agronomic parameters are correct and microbial activity is high, disease should not be a serious problem. * Maintain balanced pH and consistent fertility. Avoid "feast-or-famine" nutrient cycling. Also, research has shown that organic nitrogen sources or ammonium-based (NH4) fertilizers result in greater microbial populations than synthetic nitrate (NO3) sources. * Maintain good soil porosity. Use physical amendments if necessary. Adequate soil-oxygen levels are extremely important for soil micro-organisms. * Any practice that enhances the volume of the turfgrass root system - for example, aeration or raising the height of cut - will enhance microbial activity in the rhizosphere. * If practical, limit the use of pesticides and growth regulators. Many of these have anti-microbial properties and may negatively impact soil and rhizosphere microbial communities. It is apparent that soil contains a varied and abundant community of microorganisms. These microbes influence all the important processes related to plant nutrition and the general plant health. Further, soil microbial communities provide a potential genetic resource for useful products and processes that the turfgrass industry may be able to exploit.
Preparing for the Olympic Games

BY RANDY WITT  CGCS
Courses Manager, Hong Kong Golf Club

The countdown to the 2008 Olympics has begun in earnest in Beijing, and here at the Hong Kong Golf Club as well.

The big day for us is August 11 when almost three years of planning, work, frustration and preparation comes to finality. For me, hopefully that day is a day of relaxation and enjoyment to be followed by a tremendous amount of work to reinstate the golf courses back to pre-Olympic condition. Reinstatement will probably be more work and pressure filled than preparing for the Olympics themselves as our golf membership will be anxious to return to playing on the three courses.

The construction of the Olympic Venue began here at Hong Kong Golf Club in early January of 2006. From January through early September the focus was on the actual construction of the cross-country track itself. Phase one consisted of construction of each of the 27 individual jump zones. These jump zones were actually very similar to the construction of a USGA green. Each jump zone or jump site is approximately 1/3 acre in size. The process was to strip off the turf, excavate the area to a depth of 16 inches, drain tile was installed, covered with pea gravel, and a sand mix installed over the drainage system to a profile depth of 12 inches. Bermuda grass or Zoysia was then sodded on top of the sand. Jump sites were constructed in this manner for the purpose of have a well-drained jump area with firm footing for the horses. Hong Kong summers normally are very wet with frequent rainfalls. This summer we have been blessed with an abundance of moisture. June 2008 set a record for the wettest June in Hong Kong’s weather history with a measured rainfall of 1,300 mm or 52 inches. Rain fell 24 out of 30 days during the month with a typhoon #8 occurring on the 25th of June. Early June I was on vacation in Wisconsin, so I was fortunate to experience some nice early summer weather. Along with the specially constructed jump sites, a center 6” drain was installed through the center of the track from jump zone to jump zone. After the center drains were installed, a firm from New Zealand was employed to sand slit the entire track. This basically is a herringbone of sand slits installed every 12 inches radiating off of the center drain. This entire construction exercise was designed for maximum drainage in case of a major rain event occurring before or during the Olympic event.

After the initial construction of the track and jump sites was completed, the reclamation of the golf course areas affected by the construction was undertaken. As one can well expect, numerous areas not part of the track were damaged. Many areas of damaged turf had to be repaired and returned. Cart paths and service roads were severely damaged, in some cases virtually destroyed. Good breaker run and road gravel is very expensive in Hong Kong. Thus, most cart paths were originally installed with very little stone base and blacktop at a thickness of 2 inches or less. Five and ten yard dump trucks along with other heavy equipment quickly destroyed most hard surfaces. Approximately 75% of the hard surfaces within the venue area had to be resurfaced. These areas were repaired and repaved, as quickly as possible, and along with a lot of turf repair, the courses were opened and playable within a month.

After Phase One of the construction ended, the Equestrian team led by Sam Bauer undertook the maintenance program to bring the jump sites and track up to the standards as determined by the track designer and the Hong Kong Jockey Club. The Hong Kong Jockey Club acts as the parent organization for the equestrian activities in Hong Kong. A major part of

(Continued on Page 25)
the Jockey Club is located adjacent to the Hong Kong Golf Club facilities. This provides a very convenient location for housing the horses during their stay in Hong Kong. A tremendous amount of work was also done at this site. Special air conditioned stalls were constructed to provide a safe location for them during their stay in Hong Kong. Specially designed warm-up areas and cool-down areas are a large part of creating a safe environment for the horses. A very intensive maintenance program for the equestrian track was designed and put in place in preparation for the Olympic Event. The Equestrian Track Superintendent, Sam Bauer, designed much of this program. Sam, another Wisconsin native and recent graduate of the University of Minnesota, was brought in as the Equestrian Team Superintendent. 2007 was devoted to preparing the track for the targeted Olympic day as well as a test event held in August of 2007 as a trial run for logistics for the event and to see how the track and jump sites would perform. The night and early morning before the test event was marked by rain with measured rainfall of 75 mm. This did provide some good feedback as to track drainage and how the track handled the test event. Overall, the track performed well with a few areas and issues that needed to be addressed after the event.

Since August 2007, Sam and his staff have been focused on maintaining and creating a track to the expected standards and requirements. In some instances, this has proven to be rather challenging. Growing turf on sand and in many cases in heavy shade, with a very dry winter season and an extremely wet summer has been challenging to say the least. Steady applications of nutrients have been the norm. A good deal of rainfall together with a growth medium of sand makes for maintaining adequate nutritional levels a real challenge. Weekly application of nutrients both granular and foliar has been the backbone of the program. Insects are always a challenge, especially armyworms and grubs of various species. Adding to this challenge is Sam’s staff of Nepalese workers who do not understand English well nor have ever been involved with growing or maintaining turf grass before. At times, this has been a true adventure for all involved.

June 2nd of this year marked the beginning of the construction of jumps, structures, fencing, etc. The golf holes of all three courses affected by the Olympics were closed on June 2. Most of the Old Course and the Hong Kong Open composite golf course were still open for member play. Each day has been marked by a tremendous amount of various workers installing a particular structure or structures for the event. Large 2-story viewing marquees, the jumps at the jump sites, security fencing, communication lines and towers, camera towers, refreshment stands, bathroom facilities, first aid stations, the list goes on and on. All this construction has been made immensely more difficult by the 50 plus inches of rainfall received during the month. The wet weather has put most construction behind schedule, heightening the daily activity as the day of the Event quickly draws closer. At times my favorite term, Chinese Chaos seems more than appropriate. Next up is the Olympic Event itself.

In the September 2008 issue of the Hole Notes I’ll report on the Event itself in the continuing Adventure in Life.

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2008 Joseph S. Garske Legacy Scholarships Awarded for 12th Consecutive Year

The legacy award named after the founder of Par Aide Products Company, Joseph S. Garske, located in Lino Lakes, Minnesota is committed to further the education of children and grandchildren of MGCSA members through financial contributions. This is the 12th consecutive year for these awards.

This year we are pleased to award $1,000 Scholarships to Candice Grimm and Kelsey Phenow, a $1,500 scholarship to Elle Clunis and a $1,500 scholarship renewal to Pamela Erickson.

The late Mr. Garske, who died at the age of 76 in 1982, started Par Aide in 1954 with plans to make a "good" ball washer. A foundry man and avid golfer, he knew little about the golf business, tried to sell his ideas for design and tooling to two accessory companies, was turned down by both and so began Par Aide Products Company.

The Legacy Scholarship was started by Steve Garske, son of the Joseph Garske, in 1996.

"I am pleased to have our company provide these scholarships since for many superintendents, providing a college education for their children requires true sacrifice. I am fortunate to have the opportunity and ability to help," Garske said.

"As a long-time member of the Scholarship Committee some years ago, it always bothered me that we had lots of scholarships available for turf students but nothing for the legacy of current members," Garske said. (Heeding the comments of a long-time Minnesota Superintendent that our committee was working to put him out of a job.) While Steve thought this was a bit of paranoid thinking, it did make him realize that supply and demand works in this industry as well, and if nothing else, an oversupply of eager new superintendents could definitely undermine salaries. However, it was the following that motivated Par Aide to initiate a legacy scholarship program: 1) Many Superintendents are underpaid, in my opinion, and they truly work a labor of love. Sending a child to college is likely a real hardship. These same Superintendents who now have college age children were the very ones who had been so responsible for supporting our company through all the years and had helped us attain our success. We wanted to thank them. 2) Our founder, Joe Garske, did not have any formal education and was always conscious of that fact. He had quietly supported at least one young man in gaining a degree. 3) There were lots of turf student scholarships but few if any Legacy awards.

So it seemed obvious to Steve to initiate a legacy pro-

(Continued on page 27)
Legacy Scholarships—
(Continued from Page 26)

Par Aide has continued to prosper and as an expansion of its Minnesota program it now also offers a similar program nationwide through the GCSAA.

Winners of 2008 Garske Legacy Scholarships are:

**Pamela C. Erickson**, daughter of David and Diana Erickson. David is the Superintendent of Eagle Valley Golf Course in Woodbury, Minn. Pamela is a graduate of Stillwater Area High School and now attends Iowa State University where she is majoring in Civil Engineering.

**Elle Clunis**, daughter of Kevin and Nancy Clunis. Kevin is the Superintendent at Tanners Brook Golf Course in Forest Lake, Minn. Elle is a graduate of Mahtomedi High School and is now enrolled at the University of Minnesota, her major is undecided.

Winners of 2008 MGCSA Legacy Scholarships are:

**Kelsey L. Phenow**, daughter of Donald and Cheri Phenow. Donald is employed by the Minneapolis Park Board. Kelsey is a graduate of Coon Rapids High School and attends the University of Wisconsin-Stout where she majors in Business/Retail. Kelsey also received a MGCSA Legacy Scholarship in 2007.

**Candice Grimm**, daughter of Todd and Laurie Grimm. Todd is employed by The Meadows Golf Course in Moorhead, Minn. Candice is a graduate of Moorhead High School. Candice will attend Hamline University where she will major in Art and Psychology.

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The MGCSA Board of Directors met on July 8 at Brackett's Crossing Country Club in Lakeville.

President Rick Traver, CGCS, reported that the MGCSA received thank you letters from the University of Minnesota for our $20,000 donation.

Arrangements Chair Tom Proshak reported that the MGCSA would be looking at members for this year’s Distinguished Service Award. The Awards Banquet is set for December 8 at Windsong Farm Golf Club in Independence.

Executive Director Scott Turtinen reported that Paul Eckholm is looking into options for a credit card service. Turtinen also reported that the MGCSA Turfgrass Research Benefit Week raised $17,000 compared to $10,300 last year.

Industrial Relations Chair David Oberle brought up Vendor advertising contracts. Oberle made a motion that if a vendor is 90 days overdue on his bill he will get a written notice that states: Until an outstanding balance is paid, the vendor cannot advertise through the association. After 120 days overdue the vendor will be suspended from the association until the bill is paid. Motion was approved.

Environmental Chair Jeff Vinkemeier reported he has received some applications for the Environmental Award. Vinkemeier hopes to receive more applications before the deadline.

Public Relations Chair Mike Knodel reported the results of the first MGCSA Internet survey. Mike reported that approximately 180 members completed the survey. The Board will review results and discuss the survey at the next Board Meeting on August 20.

MTGF President Jack Mackenzie, CGCS, reported that the MTGF has a new Executive Director. Kathy Aro will be a part-time Executive Director working from the University of Minnesota for now until she gets settled in.

- Respectfully Submitted, Matt McKinnon, Secretary
2008 MTGF/UM Field Day Set for September 11

The Minnesota Turf and Grounds Foundation (MTGF) and the University of Minnesota annual Field Day provides turfgrass and related professionals an opportunity to learn about new research being conducted at the Turfgrass Research, Outreach and Education (TROE) Center. Leading researchers will demonstrate their projects and how they directly benefit turfgrass and related industries.

Suppliers and vendors for the turf and grounds industry will be on hand to demonstrate the latest products, services, and equipment available. Lunch is catered by Famous Dave’s. Field Day also features a grounds track for those interested in learning about other forms of horticultural research taking place at the University.

OVERVIEW
(7:30 -8:30 a.m.) Registration, Exhibits and Trial Gardens
(7:30 a.m.-2:00 p.m.) Exhibits Open
(8:30 -9:00 a.m.) Welcome
Kathy Aro, Executive Director, Minnesota Turf and Grounds Foundation
Allen Levine, Dean, College of Food, Agricultural and Natural Resource Sciences
Brian Horgan, Associate Professor, Department of Horticultural Science
(9:00 a.m.-12:15 p.m.) University of Minnesota Field Research Tours
(12:15 -2:00 p.m.) Lunch and Exhibits

TURF TRACK
(9:00 a.m.) Genetic Improvement of Prairie Junegrass for Use as a Turf
Matthew Clark, Research Assistant, Department of Horticultural Science
Breeding and Evaluating Perennial Ryegrass Cultivars for Minnesota
Nancy Jo Eldike, Professor and Head, Department of Agronomy and Plant Genetics
Fine Fescue Cultivars
Andrew Hollman, Scientist, Department of Horticultural Science

Turfgrass Disease Control
Robert Golembiewski, Assistant Professor, University of Minnesota
Crookston Department of Natural Resources
Entomology
Vera Krischik, Associate Professor, Department of Entomology
Turf-Legume Mixes: N Fertility and N Fixation
JoAnn Lamb, USDA-ARS, Adjunct Associate Professor, Department of Agronomy and Plant Genetics

GROUNDS TRACK
(9:00 a.m.-12:15 p.m.) Horticulture Display and Trial Garden Tour
Campus Landscape Design and Plant Material Walk and Talk
Jame Calkins, Education Specialist, Department of Horticultural Science
TRE Nursery Tour
Jeffrey Gillman, Associate Professor, Department of Horticultural Science
Chad Giblin, Assistant Scientist, Department of Horticultural Science

EXHIBITS AND LUNCH
(12:15 -2:00 p.m.) Exhibits and Lunch

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2005 Kentucky Bluegrass NTEP Trial
Eric Watkins, Assistant Professor, Department of Horticultural Science
(10:15 a.m.) Kentucky Bluegrass Rough Conversion
Matthew Cavanaugh, Research Assistant, Department of Horticultural Science
Post Emergent Grassy Weed Control
Andrew Hollman, Scientist, Department of Horticultural Science
Establishment and Maintenance of Fine Fescue Putting Greens
Brian Horgan, Associate Professor, Department of Horticultural Science
Nutrient Runoff
Carl Rosen, Professor, Department of Soil, Water and Climate
(11:15 a.m.) Nonselective Organic Herbicides
Robert Mugaas, Extension Educator - Horticulture, U of Minnesota Extension
Turfgrass Disease Control
Robert Golembiewski, Assistant Professor, University of Minnesota
Crookston Department of Natural Resources
Entomology
Vera Krischik, Associate Professor, Department of Entomology
Turf-Legume Mixes: N Fertility and N Fixation
JoAnn Lamb, USDA-ARS, Adjunct Associate Professor, Department of Agronomy and Plant Genetics
Anticipation, defined as to look forward to, to foresee and provide for beforehand. For many of us we conjure up the memory of an old favorite ketchup commercial complete with the lilt of Carly Simon's voice. Some have anticipated their honeymoon or a big fishing trip and still others look toward retirement. Besides hot dogs going cold and prom night, I am often reminded of my younger years whenever I hear the word anticipation.

When I hear or think about anticipation my father's image instantly comes to mind. His teachings through my youth frequently focused upon "anticipating" the future whether my next golf shot, my financial management, my educational choices or even how to fell a tree. An abbreviated form of the phrase, "proper planning prevents poor performance", anticipation in my youth was taught through trial, error and sarcastic mockery. "Well Jack, your report card indicates a few terrible scores. You really should have anticipated a bad grade and studied harder or asked for some extra credit. Either you pick up your grades or there will be real trouble" or, "You should have anticipated throwing darts straight up into the air and running out from underneath them would only hurt the slowest of the bunch of you kids. Now go get those pliers so we can pull this dart from the back of your brother's leg" or "Had you anticipated swimming practice necessitates the wearing of a swimsuit, you would have brought yours and not be donning your underwear during the exercise." That last subtle message really hit a home run regarding the proper use of the word anticipate.

**Anticipate, anticipate and anticipate!** We learned to hate that mantra as my siblings and I grew into adulthood. However, the word has served my brothers and sisters in their careers and me as well in my position as a Golf Course Superintendent. I suspect that each of us in this industry is well-versed in the practice of anticipation.

On a grand scale we plan our seasons according to what we anticipate our players will demand. Our budgets are dictated by what we anticipate costs will be dependent upon supply, demand or even quantity purchases. And macro management skills are anticipated and applied reliant upon the golf and maintenance practice schedules.

**Timing is so often critical in our industry.** Anticipation of the impacts of golf course maintenance and when, where and how long a project may take bear direct consequences in our abilities to perform at high levels. Each task balanced upon anticipated outcomes and their impact upon play.

Expectation of the weather changes long, short and sometimes immediate will put our anticipation skills to task. For example; the Farmer's Almanac may indicate a long and snowy winter, does the Superintendent anticipate additional snow mold chemistry, perhaps covers or a "plan b" if there is an extended period of ice? Dew points are on the rise, will there be a need to apply a fungicide and if so, how long will the coverage last and, anticipating resistance in the future, what chemistry will be used? And from the looks of the radar and the forecast for tomorrow does one anticipate the need to water tonight and, if so, how much?

**Anticipate your staff will take some summer vacation** and make your team multitaled! Anticipate that hydraulic lines will rupture on any given weekend and check them Friday afternoon! Anticipate taking your course to the next level during a perceived special event even though your track can speak for itself on any given day! Anticipate play off the back nine even though there isn't supposed to be a cross over. Anticipate a personal meltdown and schedule yourself a little break! Anticipate a few long days away from home and send flowers today!

And when you are finished with that, anticipate your next vacation away from the challenges of labor. Anticipate time with your family for there will be no better time to make memories. Anticipate the geese migrating south, a skim of ice on the ponds and the first snow. And finally anticipate a moment alone to reflect upon how good you really are at providing your players with the finest course attainable, your children with the best possible parent and your wife the very best spouse.

Yup, the 'Big Guy' was right about anticipation. It can make a day fly away with thoughts of grand expectations, or it can make minutes seem like hours if not put into practice. On the flip side the lack of anticipation created some of the funniest memories of my youth, stories of fireworks and gasoline, flat tires with no spares, magnetic key boxes and pitching a tent at the base of a hill. Ah, the reminiscence of my trials, tribulations and lack of anticipation.