Thanks to Wayzata CC for a nice dinner at the MGCSA Championship

Wildflowers

MGCSA Champion Scott Proshek, New Prague GC and Steve Busch, Long Lake Tractor.

Stillwater's Kevin Clunis, Interlachen's John Katterheinrich, Wedgewood Valley's Jerry Webb and Mike Brower, Minikahda Club.

Facts About Sexual Harassment

Sexual harassment is a form of sex discrimination that violates Title VII of the Civil Rights Act of 1964.

Unwelcome sexual advances, requests for sexual favors, and other verbal or physical conduct of a sexual nature constitutes sexual harassment when submission to or rejection of this conduct explicitly or implicitly affects an individual's employment, unreasonably interferes with an individual's work performance or creates an intimidating, hostile or offensive work environment.

Sexual harassment can occur in a variety of circumstances, including but not limited to the following:

- The victim as well as the harasser may be a woman or a man. The victim does not have to be of the opposite sex.
- The harasser can be the victim's supervisor, an agent of the employer, a supervisor in another area, a co-worker or a non-employee.
- The victim does not have to be the person harassed but could be anyone affected by the offensive conduct.
- Unlawful sexual harassment may occur without economic injury to or discharge of the victim.
- The harasser's conduct must be unwelcome.

It is helpful for the victim to directly inform the harasser that the conduct is unwelcome and must stop. The victim should use any employer complaint mechanism or grievance system available.

When investigating allegations of sexual harassment, EEOC looks at the whole record: the circumstances, such as nature of the sexual advances, and the context in which the alleged incidents occurred. A determination on the allegations is made from the facts on a case-by-case basis.

Prevention is the best tool to eliminate sexual harassment in the workplace. Employers are encouraged to take steps necessary to prevent sexual harassment from occurring. They should clearly communicate to employees that sexual harassment will not be tolerated. They can do so by establishing an effective complaint or grievance process and taking immediate and appropriate action when an employee complains.

Filing A Charge

If you have been discriminated against on the basis of sex, you are entitled to a remedy that will place you in the position you would have been in if the discrimination had never ocurred. You may be entitled to hiring, promotion, reinstatement, back pay and other remuneration. You may also be entitled to damages to compensate you for future pecuniary losses, mental anguish and inconvenience. Punitive damages may also be available, as well, if an employer acted with malice or reckless indifference. You may also be entitled to attorney's fees.

Charges of sexual harassment may be filed at any field office of the U.S. Equal Employment Opportunity Commission. Field offices are located in 50 cities throughout the United States and are listed in most local telephone directories under U.S. Government. Information on all EEOC-enforced laws may be obtained by calling toll free on 800-669-EEOC. EEOC's toll free TDD number is 800-800-3302. This fact sheet is also available in alternate formats, upon request.

MEMBERSHIP REPORT

NEW MEMBERS—JULY 13, 1994

	Class
Gerard (Jerry) Deziel 4821 Xerxes Ave. N., Minneapolis, MN 55430	United Horticulture Supply W: 612/535-1030	F
Kirk Dukatz 400 Evergreen Rd., Hamel, MN 55340	Rolling Green C.C. W: 612/478-2179	C
Stan Johnson 8130 Bass Lake Rd., New Hope, MN 55428	New Hope G.C. W: 612/531-5178	D
George Kinkead 1655 101st Ave. NE, Blaine, MN 55449	Turfco Mfg. W: 612/785-1000	F
Michael Kunshier P.O. Box 820, Grand Marais, MN 55604	Gunflint Hills G.C. W: 218/387-1139	A
Nick Larson 2100 Arrowwood Ln., Alexandria, MN 56308	Arrowwood – A Radisson Resort W: 612/762-1124	B
Randall Mehlberg 18106 Texas Ave., Prior Lake, MN 55372	Cleary Lake G.C. / Henn. Parks W: 612/447-4017	BII
Dave Ramsay 400 Evergreen Rd., Hamel, MN 55340	Rolling Green G.C. W: 612/478-2179	C
Mickey Saatzer P.O. Box 270, Avon, MN 56310	Albany G.C. W: 612/845-4306	BII
Jason Spitzner 1597 80th St. E., Inver Gr. Hgts., MN 55077	Inverwood G.C. W: 612/457-3870	C

NEW MEMBERS—AUGUST 8, 1994

Rodney Hanson 4780 Palmgren Ave., Robers, MN 55374	Fox Hollow G.C. W: 612/428-8449	D
Tug Hengel Rt. 1, Box 261, Pillager, MN 56473	Hengel Construction W: 218/746-3688	F
Craig Paskvan Rt. 1, Box 77A, Akeley, MN 56433	Paskvan Consulting W: 218/652-3542	E
Wade Wiebold 18950 Chippendale Ave., Farmington, MN 55019	Southern Hills G.C. W: 612/463-2269	BII

RECLASSIFICATION—JUNE 13, 1994

Todd A. Domine	Arrowwood G.C. & Resort	D to BII
Fredrick Ehlers	Rush Creek G.C.	C to D
Scott Odden	Terrace G.C.	B to A
Mark Storby	Hazeltine National G.C.	D to BII
Gary Watschke	Sustainable Turf Inc.	I to F

Dick Grundstrom, Membership Chairman

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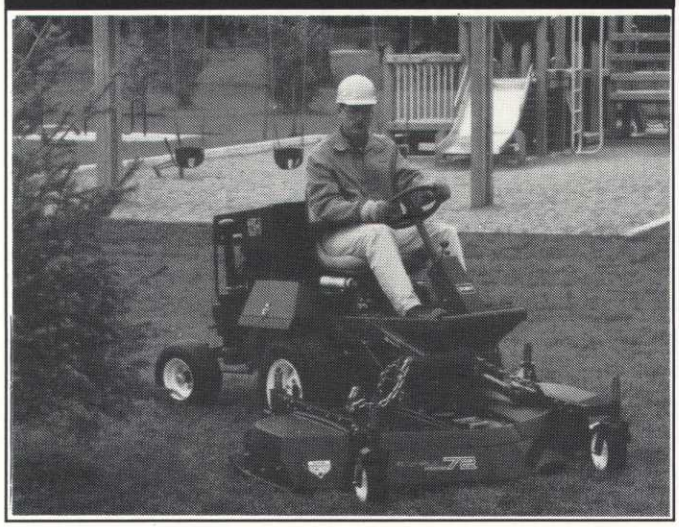

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Fertigation

* * * *

Applying Liquid Fertilizer Through The Irrigation System

By Thomas Parent
River Oaks Golf Club

Fertigation is the application of liquid fertilizer through the irrigation system. It allows for the application of micro quantities of low-cost nutrients on an as needed basis.

Maybe because fertigation sounds too good to be true so few golf courses are fertigating in the northern states. In the summer of 1992 we installed a small metering pump for wetting agents and ferrous sulfate. As the effect of iron and sulfur have such a dramatic color response, we felt this would be a good test of our irrigation system's distribution. Over the winter of 1993/1994 we decided to install a full scale fertigation system at River Oaks Municipal Golf Course. To the best of our knowledge there were no golf courses using fertigation in the state of Minnesota other than for wetting agents and minor nutrients. On paper, it looked like this system would save our course between $10-15,000 annually. The City Council agreed to transfer $5,500 from our existing fertilizer budget to pay for the installation. After a great deal of research we installed our system in mid-May.

A fertigation system can deliver the amount of nutrient that the grass plants will use over a short period of time. This minimizes volatilization and leaching and allows the turf manager great control over turf growth and color. Being able to deliver frequent small quantities of fertilizer eliminates the fluctuations of growth associated with granular fertilizers. Extended periods of rain do have a minimal effect on color and growth. This, however, can be corrected in one or two days of fertigation. The key is to have sufficient fertilizer pump capacity to apply .5 to 1 oz. of nitrogen per/Msqft in a normal irrigation cycle. In addition to environmental advantages and greatly improved turf quality are the economic advantages.

A fertigation system allows the use of water soluble agricultural grade fertilizers. We use a mixture of prilled urea, stabilized urea and ammonium sulfate as a nitrogen/sulfur source. Potassium nitrate and ammonium polyphosphate (liquid) are used for Potassium and Phosphorus sources. Most of these products constitute a large percentage of slow release mixtures and are twice the analysis at a quarter the cost per pound of active ingredient. Several suppliers for pre-mixed material are available in the metro area. Typical analysis of pre-mixed liquid fertilizers are 16-2-6, 15-0-5 and 21-0-0. These products can be purchased with varying amounts of slow release nitrogen and custom blended at added cost. We mix our own solutions to have better control of the ratio of nutrients. Because of the minute quantities applied, and that they are watered in automatically, there is no burn potential. We have found the amount of fertilizer required for vigorous turf has been drastically reduced. As of August 1st, we have applied a total slightly more than two tons of urea and one ton of ammonium sulfate on around 80 acres of turf. This equates to a pound of nitrogen per thousand square feet on our greens, tees and fairways. At this rate we have more growth than many would find acceptable.

With a fertigation system you have the ability to apply minor nutrients such as ferrous sulfate, magnesium sulfate, sodium tetra borate "borax" for boron, etc. As sufficient qualities of these products are absorbed through the leaves, celated sources are not necessary. Our course has acidic soils, Ph 5.6 to 6.3 and nutrient uptake generally has not been a problem. A fertigation system could be ideal for high Ph soils where foliar feeding may bypass poor soil chemistry. We anticipate our fertilizer budget for irrigated turf to be around $4,000 not including a granular dormant application. Although we have no experience with this yet, some suppliers of fertigation systems have made claims that fertigating can prevent light frosts from forming. You will drastically reduce your fertilizer application costs. Except for tees and unirrigated rough, we do not take the spreader out on the course. The use of a fertigation system eliminates the need to schedule fertilizer applications, use heavy equipment, disrupt play and expose equipment to high concentrations of salt.

Our system consists of a large duplex (two pumps driven by one motor) proportional metering pump capable of delivering up to 28 gallons of product per/hour per/pump, and a 3.2 gallon per/hour pump. We use the high volume pumps to deliver nitrogen and potassium and periodically phosphorus. Our small pump is used for ferrous sulfate and wetting agents. Because I was unwilling to gamble the cost of a prefabricated system on an untested procedure, we assembled our system from local suppliers. You can save considerable amounts of money by doing this, but it is more difficult. A fertigation system does require a state approved check valve, a $50 permit and a system inspection, which includes a facility inspection as well. We spent a total of $6,000 on our system which included, metering pumps, proportional control systems, bulk tanks, containment, check valve, electrician costs and permits. If you do not have a flow meter which generates an electrical signal your system will cost around $550 more plus installation. A single pump system could be installed for $3-4,000.

With the system in place for half a season, it has far exceeded our expectations. With the money saved on fertilizer

(Continued on Page 35)

Fertigation —

(Continued from Page 34)

we have been able to pay for the system and experiment with some of the new bio/humate products on the market with good results. Last year we spent $26,000 on fertilizer. This year we anticipate spending around $8,000 for N, P, K, S & Fe and minors.

There are some drawbacks to this system. All areas of the course are fertilized equally if watered equally. We manage our fertigation to the greens and supplement other areas as needed. Except for tees and a few fairways that were behind on nutrients, this approach has worked very well. A major irrigation leak could be a problem if you are fertigating at a very high rate. However, small leaks are easily detected due to the presence of fertilizer in the irrigation water. If you have water, hazards which receive irrigation water this could become a problem. Some sprinkler heads may need to be moved or converted to part circles. In most cases the cost for this should be easily defrayed by fertilizer savings as would any system upgrades to provide uniform coverage. With a double row irrigation system we have found no detectable variation in color or growth due to coverage. If your irrigation system can maintain reasonably healthy turf in semi-drought conditions, a fertigation system could work for you. A fertigation system can save time and money, promotes healthier turf and is environmentally friendly.

Pesticides —

(Continued from Page 9)

9. What kinds of training and education do superintendents and golf course applicators have?

Golfers are often surprised to find that most superintendents have college degrees in agronomy, horticulture or a related field. Because it's important to keep up-to-date with new information and technologies, the majority also attend continuing education programs offered by universities and associations like GCSAA. Superintendents are widely considered to be among the best-educated and most judicious users of pesticide products. The vast majority of superintendents are using integrated pest management practices to ensure that both the turf and the environment stay healthy. Applicators are also trained and licensed by the state. A recent study indicated that nearly 100 percent of GCSAA-member courses had at least one licensed applicator on staff (despite the fact that it isn't necessarily required in some states). This confirms a high degree of compliance and concern about safe and proper usage of chemical tools.

Anyone with a question about golf course pesticide practices is encouraged to talk with their local superintendent or call the GCSSA at 913/841-2240 to find out more.

Expanded Hours

The GCSAA has expanded the business hours at the Lawrence office to better serve member needs. The new hours are 7:30 a.m. to 5 p.m. (Central Time).

Upcoming 1994 MGCSA Monthly Meetings

Mon. Sept. 12
(FULL)
STODOLA RESEARCH SCRAMBLE
Hazeltine National G.C.

* * *

Mon., Oct. 10
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* * *

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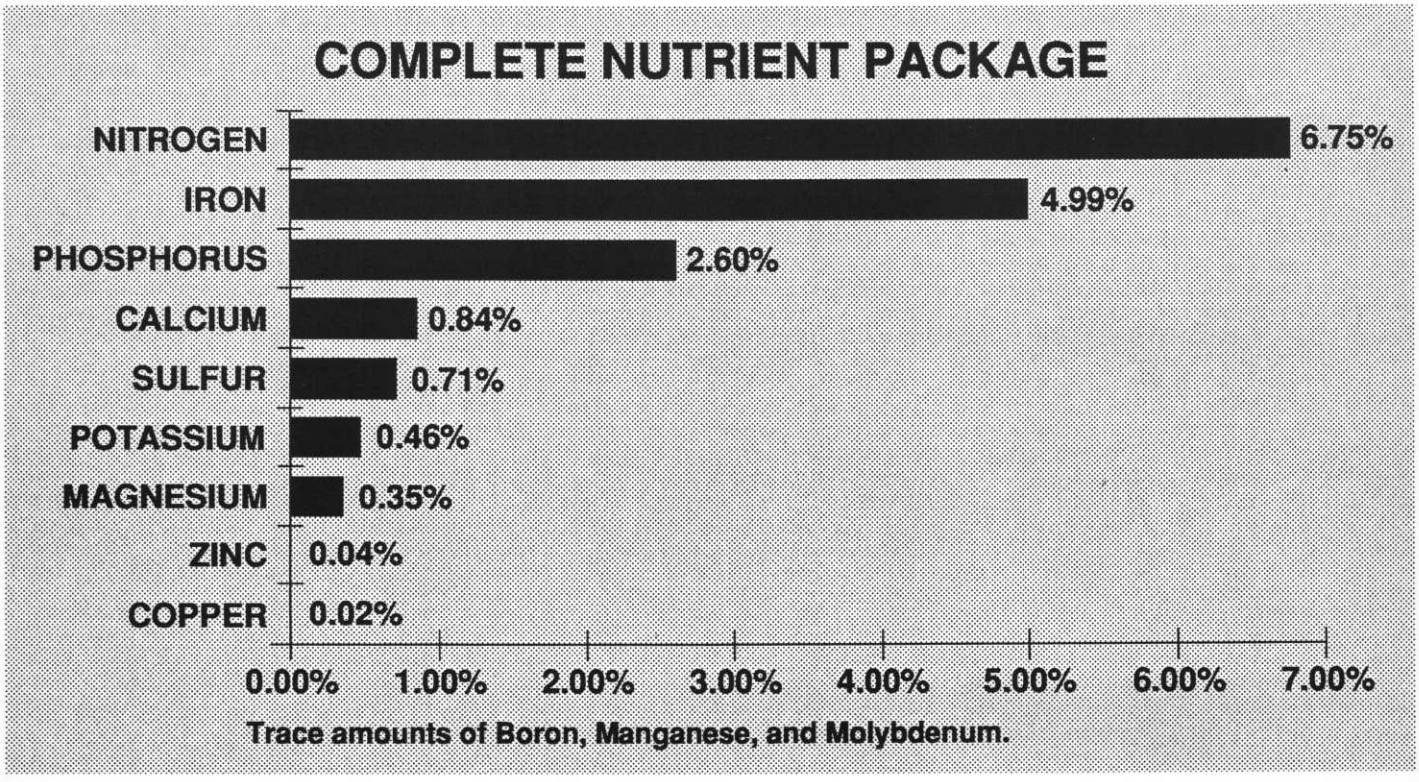

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PGA Senior Tour Battles It Out at Bunker

With perfect weather as a backdrop, the Senior PGA Tour stopped off at what can be considered one of the toughtest sites on the tour: Bunker Hills Golf Course in Coon Rapids.

Certified Golf Course Superintendent Jim Nicol had the golf course in tournament condition for the Senior PGA. Greens were rolling true with a stimpmeter reading of 10′ 6″. Tees were located on level and well-turfed areas, and the fairways just don't get any better.

With the change in date from early June to mid-August taking place in 1994, that thought alone could cause a Golf Course Superintendent to lose some sleep. However, the 18-hole track was completely ready for the return of yesterday's golf champions.

Praising Bunker Hills, 1994 Burnet Champion Dave Stockton said, "The weather was perfect, the golf course was in perfect shape." Stockton's comments complemented Tournament Director Hollis Cavner's statement that Jim Nicol is "the best at what he does, giving us a super golf course."

With the weather being perfect and the golf course in such perfect shape, one wonders what's next for the Grounds Department at Bunker Hills Golf Course.

— Dale Wysocki

1994 Burnet Champion Dave Stockton, left, with host superintendent Jim Nicol, CGCS at Bunker Hills.

Bluegrass —

(Continued from Page 5)

in July and early August, opening the door for creeping bentgrass which is known to be more tolerant of high temperatures. Our measurements of soil temperature in greens has shown that the root zone can become significantly hotter than air temperatures during sunny mid-summer afternoons. A day in the low 90s could result in soil temperatures near 100°F in the root zone. Lethal temperatures for many plant species including annual bluegrass are known to be in the 105-110°F range. It is conceivable, therefore, that high temperature stress could be responsible for the mid-summer decline of annual bluegrass in greens.

Our population counts since 1988 on a mixed annual bluegrass-creeping bentgrass green lend some support to both theories (biological vs. environmental control of the annual bluegrass decline). The very hot years of 1988 and 1989 produced the most dramatic mid-season reduction in annual bluegrass. The record cool years of 1992 and 1993 produced the smallest declines.

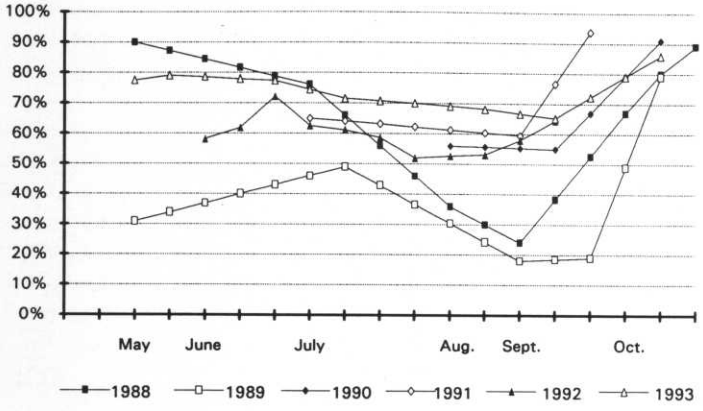
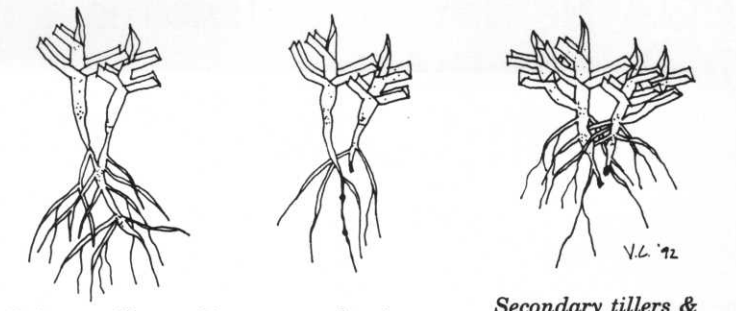


Fig. 2: % Poa annua in samples from a Twin Cities green 1988-1993

It would appear, therefore, that temperature is related to the extent of the population fluctuations. But, the fact that the annual bluegrass population still declined in the record cool years when temperatures didn't approach high stress levels seems to indicate that the reproductive cycle could also be a controlling factor.

We monitored the vigor of individual annual bluegrass plants throughout the growing season during this same period, and found that their root systems deteriorate and the number of tillers per plant decreases in conjunction with the mid-summer population decline. Root tissue appears to degenerate and rot away, which is consistent with high temperature damage. At the same time, the node at which tillers are joined degenerates and tillers separate. Later in the season as the annual bluegrass population recovers, new root tissue is produced, and a flush of new tillers occurs at nodes higher up the plant.

As somewhat of an aside, it is interesting to note the apparent relationship between the late-season resurgence of the annual bluegrass population and core aeration. Notice the dramatic increase in annual bluegrass illustrated in Figure 2 in the fall. Ecologically, conditions are perfect for



Primary tillers (early summer) — *Root system deteriorates primary tillers separate* — *Secondary tillers & adventitious roots develop (late summer)*

Fig. 3: Seasonal root and tiller transition

annual bluegrass growth following aeration. Soil on the green surface is exposed. Resources for growth are immediately available. Competition from neighboring plants is at a seasonal low. A large fresh seed bank is waiting. Temperatures and moisture are optimum for germination and seedling development. Common sense would indicate that core aeration, which relieves the turf of a season's worth of compaction, gives a significant advantage to the annual bluegrass population. Techniques for alleviating compaction and their effects on the species composition of a green is an area worthy of further research.

There are interesting questions related to the activity of the creeping bentgrass population while the annual bluegrass population is in decline. Is the creeping bentgrass released by the annual bluegrass retreat, or is the competitiveness of the creeping bentgrass during mid-season responsible in part for the annual bluegrass decline? In other words, does annual bluegrass set the pace and creeping bentgrass respond to the opportunity created by its mid-season decline, or does creeping bentgrass exert its strength in mid-season exacerbating the condition of the annual bluegrass? It is helpful to visualize a golf green as a dynamic miniature ecosystem that is subject to a continuous push and pull from the unique biology of the individual species and from the environment, which includes the stresses imposed by man. In that light, the green becomes a very complex system influenced by many factors simultaneously. Mathematically, the combinations of influences are almost limitless. It's easy to see, therefore, why managing greens is not as straightforward as the casual observer might think!

Research on the ecology of annual bluegrass in golf courses continues at the University of Minnesota with the goal of improving its control or its cultivation.