

Phosphorus Program-

(Continued from Page 19)

Soluble Phosphorus Concentrations in Runoff Water: Concentrations of soluble P in runoff water before treatments were initiated ranged from 0.79 - 2.54 ppm (Table 3). During fall runoff events (10/3/04 - 10/29/04), there was a trend for higher P concentrations in runoff water when P fertilizer was used except for the control (0,0,0) treatment when clippings were removed. The high level of P in this treatment is believed to be due to dead worms, which sometimes accumulated in the runoff water. During winter and spring snow melt (2/5/05 - 3/21/05), there was a distinct trend for increasing P concentrations in runoff water with the highest P fertilizer rate regardless of clipping management.

Soluble Phosphorus Runoff Estimates: During the fall (10/3/04 - 10/29/04), soluble P losses from runoff were low for all treatments due to low volumes for runoff water (Table 4). During winter and spring snowmelt, however, runoff volumes were large and P losses, tended to increase with increasing P fertilizer rate with little effect due to clipping management. The greatest risk of P losses appears to be during snowmelt when the ground is still frozen and runoff volumes are large.

Additional measurements over the next two seasons are needed before conclusions about P fertilizer use can be drawn.

Flow weighted soluble P concentrations in runoff water as affected by treatment

Treatments		Sampling Period		
Fertilizer lbs	Clippings	9/16/04*	10/3/04	2/5/05
N, P2O5, K2O /1000 ft2		9/16/04*	-10/29/04	3/21/05
		ppm P	ppm P	ppm P
0, 0, 0	Returned	0.82	0.66	1.03
1, 0, 1	Returned	0.81	1.30	1.50
1, 0.33, 1	Returned	0.61	2.49	2.40
1, 1, 1	Returned	2.54	3.89	4.43
0, 0, 0	Removed	1.81	4.21	1.84
1, 0, 1	Removed	2.09	1.86	0.98
1, 0.33, 1	Removed	0.81	1.84	1.58
1, 1, 1	Removed	0.79	2.05	4.25

* Before treatments were initiated.

Table 4

Soluble phosphorus runoff as affected by treatment

Treatments		Sampling Period		
Fertilizer lbs	Clippings	9/16/2004*	10/3/04	2/5/05
N, P2O5, K2O /1000 ft2		9/16/2004*	- 10/29/04	- 3/21/05
		lb P/A	lb P/A	lb P/A
0, 0, 0	Returned	NA	0.001	0.176
1, 0, 1	Returned	NA	0.008	0.229
1, 0.33, 1	Returned	NA	0.012	0.329
1, 1, 1	Returned	NA	0.009	0.952
0, 0, 0	Removed	NA	0.002	0.242
1, 0, 1	Removed	NA	0.008	0.260
1, 0.33, 1	Removed	NA	0.009	0.345
1, 1, 1	Removed	NA	0.011	0.639

* Before treatments were initiated.

CUT HERE

Phosphorus Fertilizer Re-Training Program

Name: (please print) _____

Golf Course Name: _____

Date of Initial Training: _____

By signing this document, I am stating that I have read the above document about the fate of P fertilizer applied to turfgrass and am thereby fulfilling my requirements for re-training for the Phosphorus Fertilizer Training Program which is required by Minnesota state law for golf course personnel to be exempt from the legislation.

Signature: _____ Date: _____

Send to:

MGCSA
Phosphorus Fertilizer Re-Training Program
11900 Wayzata Blvd, Suite 130
Minnetonka, MN 55305-2018

Department of Horticultural Science Display & Trial Garden

Purpose of the Garden

The Display and Trial Garden is housed within the Department of Horticultural Science. It serves as a display garden for plant materials and sustainable landscape design principles and is the site of over 500 bedding plant trials each year. Students throughout the College of Agricultural, Food and Environmental Sciences (COAFES) also utilize the garden as a supplement to their educational experience, most specifically as an outdoor laboratory for students in Environmental Horticulture. The University of Minnesota Extension Service and the Department of Horticultural Science sponsor seminars, workshops and tours throughout the growing season, and the Garden is a popular stop for garden clubs, Master Gardeners, industry groups and K-12 classes.

Students in the Garden

Faculty and staff involve students in all

aspects of Garden development and use. The Garden has been designed and installed by students through assignments associated with graduate and undergraduate classes, and individualized directed studies. Horticulture work-study and other students maintain the garden during the growing season, and students aid in the development of the management plan for the garden.

Some of the sixteen courses associated with the Department of Horticultural Science Display and Trial Garden include:

- + Plant Propagation
- + Woody Landscape Plants
- + Herbaceous Landscape Plants
- + Turf and Landscape Management
- + Landscape Design
- + Landscape Implementation & Management
- + Landscape Operations
- + Nursery Management
- + Floriculture Crop Production
- + Specialty Greenhouse Crop Production

History of the Garden

The horticulture garden has existed in the Department of Horticultural Science for many years. It was used primarily for growing, planting, and maintaining herbaceous plants. In 1992, a five-year implementation plan was initiated, in conjunction with a 13-credit course sequence in Landscape Design, Implementation and Management, to develop the garden as an outdoor laboratory for Environmental Horticulture students. At that time, the horticulture garden was renamed the Department of Horticultural Science Display and Trial Garden. As the garden name indicates, its purpose would now be department-wide with implications throughout the College of Agricultural, Food and Environmental Sciences. The garden began changing from a plant testing area to a landscape garden that displays a combination of features such as decks, patios, water features, fences, walls,

(Continued on Page 23)

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U of M Display and Trial Garden—

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seating, walkways, a pergola and a kiosk. Woody plants, herbaceous plants, and turf are now featured in both landscape and trial settings.

The Garden Design

The Department of Horticultural Science Display and Trial Garden encompasses approximately 120,000 ft² and is made up of 14 garden segments: the Outdoor Classroom, Perennial Garden (Sun & Shade), Water Garden, Texture Garden, Use Garden, Minnesota Garden, Annual and Perennial Trial Areas, Prairie, Low Maintenance Turf Trials, Perennial Identification and Nursery Area, Headhouse, Alderman Hall, and Mullin's Woods.

Industry Support for the Garden

Since its conception in 1992, support for the Garden by the industry and the College of Agriculture, Food and Environmental Sciences continues to grow each year. In 1997, the Department established a garden manager position with responsibilities for the Garden and to assist in teaching. The Horticulture Club donates approximately \$1,200 from its plant sales toward garden development each year, and the Department's Teaching, Research and Education (TRE) nursery has provided many of the large woody plant specimens. Industry supporters donate hard and soft goods, amendments and cash donations to the Garden, and many participate as speakers to classes. Companies and individuals participate in the Adopt-A-Garden program and as visiting contractors during the construction phase of the advanced design

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How to Survive a Heart Attack Alone

Let's say it's 6:15pm and you're driving home (alone of course) after an unusually hard day on the job. You are tired, frustrated, very stressed and upset...suddenly you start experiencing severe pain in your chest that starts to radiate out into your arm and up into your jaw. You are only five miles from the hospital nearest your home. Unfortunately, you don't know if you'll be able to make it that far...

What Do You Do?

You've been trained in CPR, but the person conducting the course did not tell you how to perform it on yourself!

How Do You Survive A Heart Attack When Alone?

Since many people are alone when they suffer a heart attack, without help, the person whose heart is beating improperly and who begins to feel faint has only about 10 seconds left before losing consciousness.

Do not panic but start coughing repeatedly and very vigorously.

A deep breath should be taken before each cough. Coughs must be deep and prolonged as when producing sputum from deep inside the chest.

A breath and a cough must be repeated about every two seconds without let-up until help arrives or until the heart is felt to be beating normally again.

Deep breaths get oxygen into the lungs and coughing movements squeeze the heart and keep blood circulating.

The squeezing pressure on the heart also helps it regain normal rhythm. In this way, heart attack victims can get to a hospital.

Don't ever think that you are not prone to a heart attack because your age is less than 30. Nowadays, heart attacks are found among people of all age groups.

(Editor's note: Tell as many people as possible about this. It could save their lives.)

class. The Minnesota Nursery and Landscape Association (MNLA) and the Minnesota Turf and Grounds Foundation (MTGF) regularly contribute to the garden. Without these contributions, the garden would not exist today.

Future Plans

New construction projects are designed and implemented by students each year. Current projects include redevelopment of the Use Garden, and two new segments - the Residential Landscape Carrel and the Perennial Nursery and Identification Area. There has been increasing emphasis on plant trials, selection, establishment, and maintenance. The garden currently meets the campus-based educational needs of the department and college and will remain the current size. Although managed in a sustainable manner, the biggest challenge for the future will be additional maintenance dollars to bring the garden to its full potential.

(Editor's Note: For more information about the Display and Trial Garden, to volunteer in the garden, or to schedule a group tour, contact Karyn Vidmar, Manager, Department of Horticultural Science Display and Trial Garden Tel: 612-625-4792 " Email: vidm0009@umn.edu. The Garden is free and open to the public for viewing during daylight hours, seven days a week and is located at the northeast end of the St. Paul Campus on the corner of Gortner and Folwell Avenues.)

School of Turfgrass Management Offered February 20-24 at Somerset CC

The School of Turfgrass Management (STGM) provides 40+ hours of intensive in-depth training in the biology, ecology, pathology, soils, weeds, entomology and cultural/chemical management of turfgrass. Technical information will be presented in both lecture and laboratory settings on the basic applications of turfgrass management, such as golf course management, lawn care, athletic field management and sod production. Demonstrations and hands-on learning will be integral aspects of the learning experience and provide extensive interaction with the wealth of turfgrass expertise at the University of Minnesota and the University of Wisconsin. Ten faculty and staff from the University of Minnesota and the University of Wisconsin will be on hand throughout the week.

THE GOAL

This school is designed to provide a basic foundation of turfgrass training for individuals with no formal education in

turfgrass management or for those who desire a refresher.

WHO SHOULD ATTEND?

Turfgrass professionals of all skill levels will benefit from this school; however, it will be particularly useful for individuals

"This school is designed to provide a basic foundation of turfgrass training for individuals with no formal education in turfgrass management or for those who desire a refresher."

entering the turfgrass industry, as well as professionals who have been in the turfgrass industry for many years and lack formal training.

LOCATION AND DATES

The STGM will be offered February 20-24, 2006 at Somerset Country Club in Mendota Heights, Minn.

HOW TO ENROLL

Registration information will be available in December. We limit the class to the first 40 registrants.

COST

This intensive short-course cost \$700. Participants who complete the week long training will leave equipped with a wealth of information including: a 500+ page reference notebook; Turfgrass Problems Handbook, Plant Elements of Design CD-ROM; hand lens and other diagnostic tools. The registration cost also includes a graduation banquet and dinner where certificates of completion are presented and refreshment breaks.

CONTACT

If you have questions, feel free to contact Brian Horgan from the University of Minnesota at bphorgan@umn.edu (612-624-0782) or John Stier from the University of Wisconsin at jstier@facstaff.wisc.edu.

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Picking A Winner

By **DR. ERIC WATKINS**
Assistant Professor
Turfgrass Breeding and Genetics
Department of Horticultural Science
University of Minnesota



August 2005

As fall approaches, many golf course superintendents may be preparing for a fall seeding project. In order to increase the chances of seeding success, it is important to use the best turfgrass variety possible for your situation. Improved species and variety selection can reduce or even prevent many problems common to turfgrass managers.

There are several different turfgrass species and within those species hundreds of different varieties to choose from. The number of varieties available to turfgrass managers in Minnesota is quite high. Being able to select the best variety from such a large number of options is not as hard as it may seem.

The first step in this process is finding an unbiased source of information. The National Turfgrass Evaluation Program website (www.ntep.org) contains vast amounts of data on almost every commercially available turfgrass variety. The NTEP trials are conducted throughout the country and at various management levels. In addition to overall turfgrass quality, varieties are typically evaluated for characteristics such as color, density,

Fall 2004

establishment, winter hardiness, drought tolerance and disease resistance.

If you look at several years of NTEP data, you will see that most turfgrass varieties (with the exception of many Kentucky bluegrasses) tend to decline in performance relative to other varieties from test to test. Variety A may have been the best perennial ryegrass in the NTEP trial in 1990 while it ranked near the bottom of the test in 2000; therefore, it is important to look at the most recent data available. High quality Kentucky bluegrass varieties tend to maintain their quality for many years, so using an older variety that has performed well in the past is usually not a problem.

Another great place to find relevant data is the University of Minnesota turfgrass science website (www.turf.umn.edu). Data is available in the research section under 'cultivar evaluations.' Each winter, we update the site to include the most recent growing season's results. We have also added links to data from other universities in our region. As our program continues to grow we will continue to add more extensive variety evaluations.



The TROE center currently has the NTEP trials for bentgrass (putting green and fairway/tee), perennial ryegrass and fine fescue. We will be planting the 2005 NTEP Kentucky bluegrass trial this fall.

Finally, you should avoid using a variety solely because you have had luck with it in the past – that doesn't mean it is your best option. Another important tip that most of you already know is that you should never use VNS (variety not stated) seed; this type of seed often results in a very low quality turf.

Spending a couple of minutes at the computer doing some simple research prior to putting in a new seeding will save a lot of headaches once your turf is established.



IT'S ALL ABOUT ME

Hemorrhoids

Types and Symptoms

Two of the most common types of hemorrhoids are external and internal hemorrhoids. External hemorrhoids are those that occur outside of the anal verge (the distal end of the anal canal). They are sometimes painful, and can be accompanied by swelling and irritation. Itching, although often thought to be a symptom from external hemorrhoids, is more commonly due to skin irritation. If the vein ruptures and a blood clot develops, the hemorrhoid becomes a thrombosed hemorrhoid.

Internal hemorrhoids are those that occur inside the rectum. As this area lacks pain receptors, internal hemorrhoids are usually not painful and most people are not aware that they have them. Internal hemorrhoids, however, may bleed when irritated.

Untreated internal hemorrhoids can lead to two severe forms of hemorrhoids: prolapsed and strangulated hemorrhoids. Prolapsed hemorrhoids are internal hemorrhoids that are so distended that they

"Hemorrhoids are very common... approximately one half of all Americans have this condition by the age of 50."

are pushed outside of the anus. If the anal sphincter muscle goes into spasm and traps a prolapsed hemorrhoid outside of the anal opening, the supply of blood is cut off, and the hemorrhoid becomes a strangulated hemorrhoid.



Prevalence

Hemorrhoids are very common. It is


estimated that approximately one half of all Americans have this condition by the age of 50. However, only a small number seek medical treatment. Annually, only about 500,000 people are medically treated for hemorrhoids, with 10 to 20% of them requiring surgeries.

Causes


The causes of hemorrhoids include genetic predisposition (weak rectal vein walls and/or valves), straining during bowel movements and too much pressure on the rectal veins due to poor posture or muscle tone. Constipation, chronic diarrhea, poor bathroom habits (reading on the toilet or excessive cleaning attempts), pregnancy, postponing bowel movements and fiber-deprived diet can also contribute.




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INDUSTRY NEWS

Precision Turf Announces Additions to Product Portfolio

Pursell Technologies Inc., Sylacauga, Ala. announced Precision Turf & Chemical, Inc. as the exclusive distributor to POLYON polymer-coated fertilizers in Minnesota. Pursell Technologies Inc. is one of the world's premier developers and manufacturers of controlled release fertilizers. POLYON coating is the most advanced and predictable fertilizer coating technology on the market today. Through a patented reactive layers coating (RLC) process customers get a 100 percent controlled release fertilizer.

Magic Green Corporation, Silex, Mo. also announced that Precision Turf & Chemical, Inc. is the exclusive distributor to WHITE GOLD & SALT EXIT in Minnesota. Magic Green Corporation has incorporated into the White Gold family Nano Technology Nutrition, which accelerates the uptake of plant nutrients.

President Dave Krupp added "Precision Turf & Chemical has always strived to provide the highest quality products. The addition of POLYON and the WHITE GOLD family only will enhance our product offering and allow us to keep up with the ever-increasing technology available to the end user."

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In Bounds

By JOHN "JACK" MACKENZIE, CGCS
North Oaks Golf Club

For me, fall begins when Orion shows himself and points me south with his taut bow to North Oaks Golf Club. Perhaps second only to the Big Dipper in Ursa Major, the constellation of Orion is one of the most recognizable patterns of stars in the northern sky.

Orion, the hunter, stands by the river Eridanus and is accompanied by his faithful dogs, Canis Major and Canis Minor. Together they hunt various celestial animals, including Lepus, the rabbit, and Taurus, the bull. According to Greek mythology, Orion was in love with Merope, one of the Seven Sisters who form the Pleiades, but Merope would have nothing to do with him. Orion's tragic life ended when he stepped on Scorpius, the scorpion. The gods felt sorry for him, so they put him and his dogs in

the sky as constellations. They also put all of the animals he hunted up there near him. Scorpius, however, was placed on the opposite side of the sky so Orion would never be hurt by it again.

I imagine that our Greek hunter was adorned in a cotton loincloth for comfort in the swimsuit area, and leather sandals for foot protection. On cool days he wore an extra layer of insulation in the form of an animal pelt. Hunting boots may have included fur-lined wraps for winter protection.

Not unlike Orion, I too have multiple outfits dependent upon the mood of Zeus, the Greek weather God. From top to toe I have some form of protection to help minimize the effects of sun, snow, rain and cold.

My feet will bear witness to multiple footwear changes on any given day in the

temperate season. Normally I welcome the dawn wearing low top Muck Boots, a foam rubber, water repellent and insulated soft shoe, which protect my feet from the dew and any overnight rainfall. Warm at first light, but they become too hot any time after 10:00 o'clock.

Because I suffer from sweaty, and sometimes smelly feet if they are kept too wet and warm for an extended period of time, I change up to sandals. Similar to Orion, I dress for comfort. My sandals allow me to wade rain-formed ponds to locate plugged drainage lines, maintain a comfortable toe temperature and, of most importance, dry out quickly to prevent an odor of significant proportion and the discomfort of foot slime. During the shoulder seasons of fall and spring I adorn insulated Gortex hiking boots and in the winter wear insulated Sorrels.

My years of self-dressing have taught me two very important lessons in shoe management for comfort. The first is the importance of an operational boot dryer. These devices are a great necessity for the removal of moisture from the inside of every foot covering I own with the exception of my sandals.

(Continued on Page 31)

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