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Irrigation For a Growing World continued from page 9...

Automatic controllers with water conserving features are readily available with multiple start times and independent programs for different soils, crops and climates such as cycle and soak for heavy clay and hill sides.

Managers can also plan water budgeting for easy seasonal changes. Evapotranspiration programming, rain delay and automatic set-off devices as well as instruments that can measure rain in the air or moisture in the soil are all powerful tools.

With all these new irrigation products, water pressure is critical. For example, high pressure produces misting and fog-

ging and a 5 psi drop in pressure often means better irrigation and 6-8% lower water usage. For very little cost, regulating devices can be fitted which ensure even and precise water application. Booster pumps should be considered in low pressure situations. These pumps are not expensive and are completely automated to the irrigation system.

Installation and Maintenance

Irrigation systems must be properly installed and configured to achieve the most efficient use of water and to give the user the best turf possible. Only *Certified Irrigation Contractors (CIC)* should be hired. Maintenance and operation is vital be-

cause without regular inspections and repairs, many problems will go undetected.

When water is in short supply, the initial reaction is often to shut off the taps. This can lead to confusion and increased water consumption when water bans are lifted. It is a reactive measure that does not change the behavioural habits of the user. Government grants, rebates and incentives *can* change behaviours, along with perception, responsibility, education and awareness.

The need to conserve water has never been greater. We need to do even more and with everyone's help, we can.

— Presented by Jody Malo, Rain Bird International. Summarized by Andrew Gaydon.



STA 18th Annual Field Day

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Field of Dreams at Ripken Stadium

A PERSONAL MESSAGE FROM CAL RIPKEN, JR.

Baseball has always been a big part of my life, from when I played in youth leagues all the way to the majors. During my life in the game I have played on some of the finest fields in the world. I have also played on some of the worst fields out there. What a difference a great field makes!

Since my retirement, I've been focusing on the game at every level and we have been designing and building baseball complexes across the country. In my hometown of Aberdeen, Maryland, we constructed a complex that includes four youth baseball fields, four softball diamonds and a beautiful minor league ballpark, Ripken Stadium, that serves as the home of the Aberdeen IronBirds minor league team.

It is so important to provide the young ballplayers visiting our complex with an experience that they will never forget and an experience that will enhance their love of baseball forever. When we built the complex we chose Jacobsen brand turf care equipment to maintain the fields. The results have been outstanding. In fact, in 2004 Ripken Stadium was named Minor League Field of the Year!

We think the world of Jacobsen equipment and we recommend Jacobsen to grounds keepers at ball parks everywhere. Jacobsen brand products have proven they perform in the quality of the cut, the health of the grass and the overall appearance of the field. If you're looking for consistent, high performance results on your field all season long, you can't go wrong with Jacobsen. When your local Jacobsen dealer calls, ask him to show you how your field can be a field of dreams.



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Purchasing With A Green Conscience

18TH ANNUAL STA FIELD DAY COVERAGE CONTINUED...

Cindy Toth, Director of Environmental Policy with the Town of Oakville, spoke on the whys, hows, options and barriers of purchasing GREEN. It's ironic that in an industry like ours – where literally and figuratively our success is measured by the colour green – we could do so much better on the environmental front.

Cindy stated, "Every product you purchase can have multiple impacts on human health and the environment." The list of why we need to research alternatives is

Every product you purchase can have multiple impacts on human health and the environment.

long. Saving money is not always on the top, but stimulating the market for innovative new products and services is. Reducing waste, making efficient use of resources, using reusable containers or parts and recycling are all 'no brainers.' But did you know it could be as simple as purchasing a product or service with a 'lesser' or reduced impact than that of a similar product?

Environmental purchasing policies triple your bottom line – socially, environmentally and financially. Traditional bottom line policies do create barriers, not

to mention the higher up-front costs that sometimes come with green purchasing. But by adding a clause under environmental considerations, the changes needed are within reach.

Consider refillable totes for dry goods, refillable bladders for liquid, and new services that come with an environmental certification. It is not as problematic as we think. From topdressing with compost, lining fields, and even office operations, purchasing green may involve more time researching but when 'lifecycle costs' are taken into consideration, the benefits become obvious. Do not assume there is always a cost to having a 'green conscience.'

— Presented by Cindy Toth, Town of Oakville. Summarized by Jane Arnett-Rivers.

Excellent Reference Sites

The Green Industry Guide to Environmental Purchasing

www.deq.state.mi.us/documents/deess-p2-turf-purchasingguide.pdf

Rockford Park District Environmental Policy: www.rockfordparkdistrict.org/pdf/environmental_policy.pdf

Commission for Environmental Cooperation: www.cec.org

The Tides Center, Paper for the Environment: www.conservatree.com

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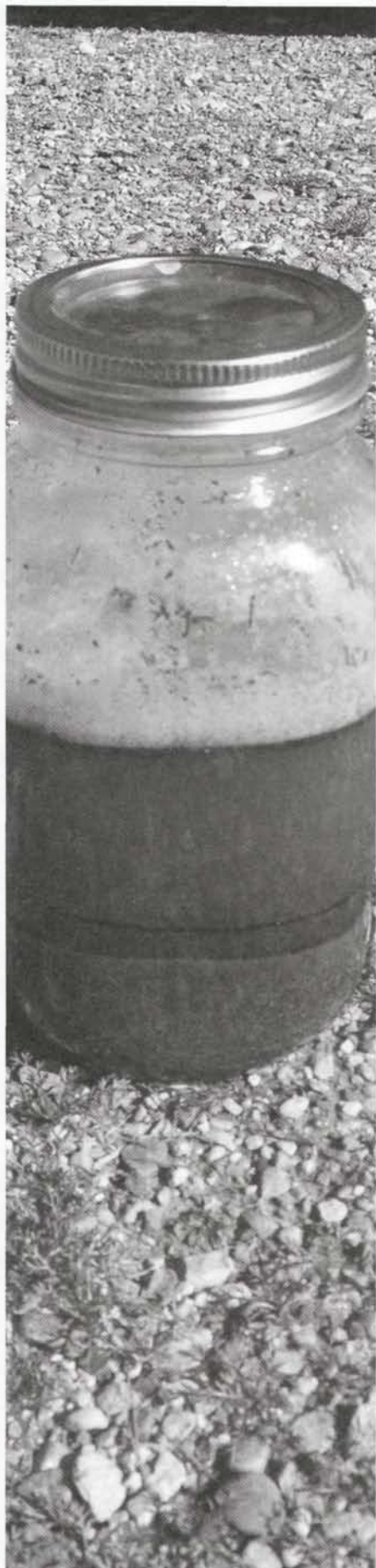


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Tools & Techniques for Sports Turf Managers

18TH ANNUAL STA FIELD DAY COVERAGE CONTINUED...

At the Annual Sports Turf Association Field Day, the Guelph Turfgrass Institute Turf Team had the opportunity to demonstrate *Smart Tools for Sports Turf Managers*. We focused on tools that will assist you in better managing your soils. The article below summarizes our session and outlines in several easy steps how to take a soil sample and also how to determine soil texture.

Before we get into the step by step outline, let's first review why it is important to know soil fertility and texture. The only way to accurately determine how much and what analysis of fertilizer to use is to take a soil sample and have it tested at an accredited soil testing laboratory. To insure the quality of the information, proper sampling is important.

How to Take a Soil Sample

Step 1. Assemble the required tools: a soil sampling tube or a shovel, a clean plastic pail, and sample bags that hold at least half a litre of soil

Step 2. For sports fields, sample as deep as the turfgrass roots. This is usually 10-15 cm.

Step 3. Take at least 20 cores for each field. The more cores the better. Remove the thatch and grass layer and discard it. Sample problem areas separately.

Step 4. Place the individual cores from the soil sampling tube in the plastic pail. Mix thoroughly to break up any lumps and remove any stones. Take a representative 1/2 litre sample of the mixture.

Step 5. Place the soil sample in a plastic bag and label it. Most accredited soil test labs in Ontario have websites with soil sample forms online. The Ministry of Agriculture, Food and Rural Affairs site lists the Ontario accredited soils lab at www.omafra.gov.on.ca/english/crops/re-

source/soillabs.htm. Print off a soil sample form and complete it with accurate information. Make sure to specify which type of turf you require a recommendation for (i.e. home lawn, sports field, greens, tees or fairways).

Step 6. The recommendations of how much phosphorus and potassium that are required are usually given in the soil fertility test results. These recommendations can also be found in OMAFRA Publication 384, *Turfgrass Management Recommendations*. Information on how to obtain this publication is also on the OMAFRA website.

On average, soil samples should be taken every two to three years. If you have never performed soil tests on your sports fields, now is a good time to start. Pick a few each year to sample to get the process underway and resample in 2-3 years time. Remember that there is no accurate test to determine the nitrogen needs of your sports fields. This is usually done by the rule of thumb of roughly 200 kg of N/ha per season.

Determining Soil Texture

Soil texture refers to the amount of sand, silt and clay present in a soil. Most accredited soils labs can perform tests to determine soil texture. This can take up to a couple of weeks. You may find yourself in a situation where you need a quick method to estimate what your soil texture is. This could be an existing soil in a root zone or it could be a load of soil that has been delivered to a site where a sports field is being constructed. Below is a description of a quick field method that will give you a rough idea of the soil texture.

Step 1. Fill a mason jar about one-third full with the soil you want to test. Pack it in and mark the top of the soil level on the side of the jar with a permanent magic marker.

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Figure 1. Portable field pH meter.



Figure 2. Portable field EC meter.



Figure 3. Sampling tools: cup changer (top), slab sampler (middle), soil probe (bottom).

Step 2. Add water to the jar to fill it to about three-quarters full. Put the lid on the jar and shake vigorously for several minutes. Set the jar down and wait for the soil particles to settle out. The sand will settle out in a couple of minutes, the silt will settle out in an hour or two and the clay will remain in solution (see picture on page 14).

Step 3. To determine the soil texture, measure the sand and silt layers as a percent of the depth of the original soil. To obtain the percent clay, subtract the sum of the sand and silt from 100.

Soil Chemistry

Compared to soil texture, assessing aspects of your soil chemistry will involve slightly more elaborate tools, and the value of the information will increase as you make repeated observations and record both normal and unusual conditions. Soil chemistry will change over the season, particularly as fertilizer applications are made, and there may be times when a snapshot of your soil chemistry will help diagnose rootzone problems and suggest solutions.

Soil pH. The acidity of the soil is measured by its pH, which can range from acid (0 to <7) through neutral (~7) to alkaline (>7 to 14). Turf grows best (availability of nutrients, susceptibility to disease) at a pH between 6.5 and 7.5, so if you can

monitor your soil pH, you may be able to anticipate problems. pH measurement involves a pH meter, which has a sensing electrode and a readout unit. There are versions available that can be used *in situ* on undisturbed soil in the field (Figure 1). They are fairly robust and not too complicated to use, ranging in cost from ~\$200 up to \$800-900 for more sensitive units. Usually the same pH meter can be used to measure soil solution pH and irrigation water pH. Chronic soil problems associated with either excessively low or excessively high pH can sometimes be corrected, but it is often easier to prevent them from developing.

Electrical Conductivity (EC—soil salts)

Related to pH is the level of salts in the soil solution. Because all the nutrients that the turf needs from the soil are available as salts in the soil solution, there is a direct connection between salt levels and fertility, but excessive salts can also cause problems with the turf (physiological drought, soil permeability problems, direct ion toxicity). Salt levels may fluctuate more during a season than pH because of fertilizer applications, but as with pH, the value of a regular record/history of salt levels is in anticipating problems or pinpointing solutions. Salt content is measured by the electrical conductivity of the soil solution (in deciSiemens per metre or dSm⁻¹). Typical salt-affected soils have soil salinity above 4 dSm⁻¹. As with pH, there

are simple, robust EC meters available for field use (Figure 2) in roughly the same price range. Again, these meters can also be used to measure salt levels in irrigation water, if you are using a pond or greywater supply rather than potable water. Keep in mind that the EC readings will not differentiate among the various types of salts that may be present in the soil — that level of examination will require soil tests from a laboratory.

Soil Structure/Profile

Much information about your turf rootzone can be gleaned from a simple examination of the profile, which can be sampled using soil probes, cup cutters (for shallow depths), slab samplers, etc. (Figure 3). From the presence of thick, problem thatch to layers from improper topdressing, compaction, or black layer, many underlying causes of rootzone problems may be visible in the profile. There are some tools available to assess aspects of the rootzone profile from above. An example is a penetrometer (Figure 4), which can be used to determine the soil strength at various depths in a rootzone. If compacted layers are developing due to traffic or improper management, regular measurement of soil strength may detect this. Penetrometers vary in cost from ~\$200 for simpler ones through ~\$2,000 for one which records depths and soils strength electronically for download to a computer.



Figure 4. Penetrometer.

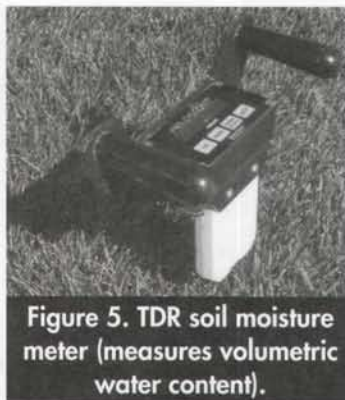


Figure 5. TDR soil moisture meter (measures volumetric water content).

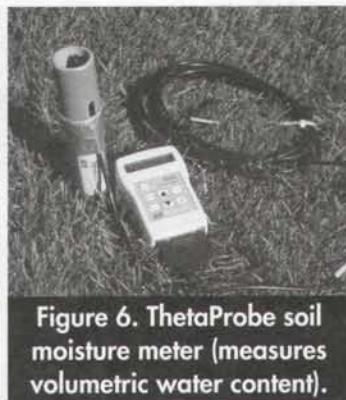


Figure 6. ThetaProbe soil moisture meter (measures volumetric water content).

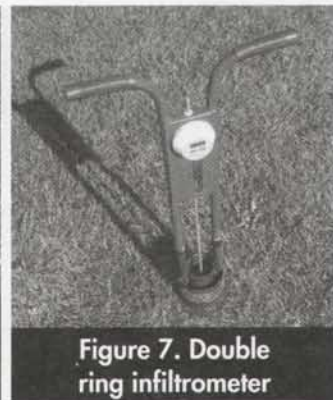


Figure 7. Double ring infiltrometer

Soil Moisture

Soil moisture is a critical aspect of your rootzone that varies as much as hourly. Accurate assessment of soil moisture is the key to effective irrigation and important in assessing other aspects of rootzone health (drainage problems, etc.). Simple examination of the soil with a probe, particularly if done regularly, can be used to develop a history and feel for your rootzones.

There are also tools which can give you more precise types of information. Mois-

ture meters can be relatively inexpensive (\$100-200) ones based on simple technology (electrical conductivity), or more sensitive ones based on time-domain reflectometry (TDR, Figure 5) or frequency-domain reflectometry (ThetaProbe, Figure 6). The TDR probe and ThetaProbe will give sensitive measurements of the volumetric water content in the top 5-10 cm of rootzone, but are pricier (\$1,500-\$2000).

There are other tools that can be used to assess other aspects of soil moisture,

for example a double ring infiltrometer (Figure 7, ~\$300), which will measure the rate of infiltration of irrigation water into the rootzone, and may detect and quantify localized dry spots, hydrophobic thatch layers, compaction, or other drainage problems. ♦

— Pam Charbonneau, OMAFRA, Ken Carey and Erica Gunn, GTI

Thank-you to all who contributed to the success of this year's event!

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Coming Events

November 6-8, 2005

Irrigation Association 26th Annual International
Irrigation Show, Phoenix, AZ
Info: (703) 536-7080, www.irrigation.org

November 15-17, 2005

Empire State Green Industry Show (Formerly the NYSTA
Turf & Grounds Exposition), Rochester, NY
Info: (518) 783-1229
www.nysta.org/greenshow/home.html (tradeshow)
www.nysta.org/greenshow/program.htm (conference)

January 4-6, 2006

Ontario Golf Superintendents' Association Ontario Golf
Course Management Conference & Trade Show,
Toronto, ON
Info: (519) 767-3341, www.golfsupers.on.ca

January 10-12, 2006

Landscape Ontario Horticultural Trades Association
Congress 2006 Featuring Fencecraft 2006
Toronto, ON
Info: (800) 265-5656, www.hort-trades.com

January 18-22, 2006

Sports Turf Managers Association (USA) Annual
Conference & Exhibition, Lake Buena Vista, FL
Info: (800) 323-3875, www.sportsturfmanager.org

January 30 - February 24, 2006

Guelph Turfgrass Institute Turf Managers' Short Course
Guelph, ON, Info: (519) 767-5000

February 20-21, 2006

Ontario Turfgrass Symposium
Strengthening Our Roots: A Growing Tradition
University of Guelph, Guelph, ON
Info: (519) 767-5000, www.open.uoguelph.ca/ots

March 3-7, 2006

- Western Canada Turfgrass Association 43rd Annual
Conference & Show
- 57th Annual Canadian International Turfgrass
Conference & Show

Vancouver, BC
Info: (604) 467-2564, www.wctaturf.com
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STA Member Profile

Barry Milner • Manager of Physical Resources • Conestoga College

What is your role with Conestoga College?

My role with Conestoga College Institute of Technology & Advanced Learning is Manager of Physical Resources. The Department has Building & Grounds Maintenance, Health/Safety & Security Services, Shipping/Receiving, Mail & Courier Services, related Contract Service Administration (i.e. Housekeeping, Food Services). There are five campuses located in Kitchener, Guelph, Waterloo, Cambridge and Stratford. The annual operating budget is 6.4 million dollars.

What kind of team do you work with?

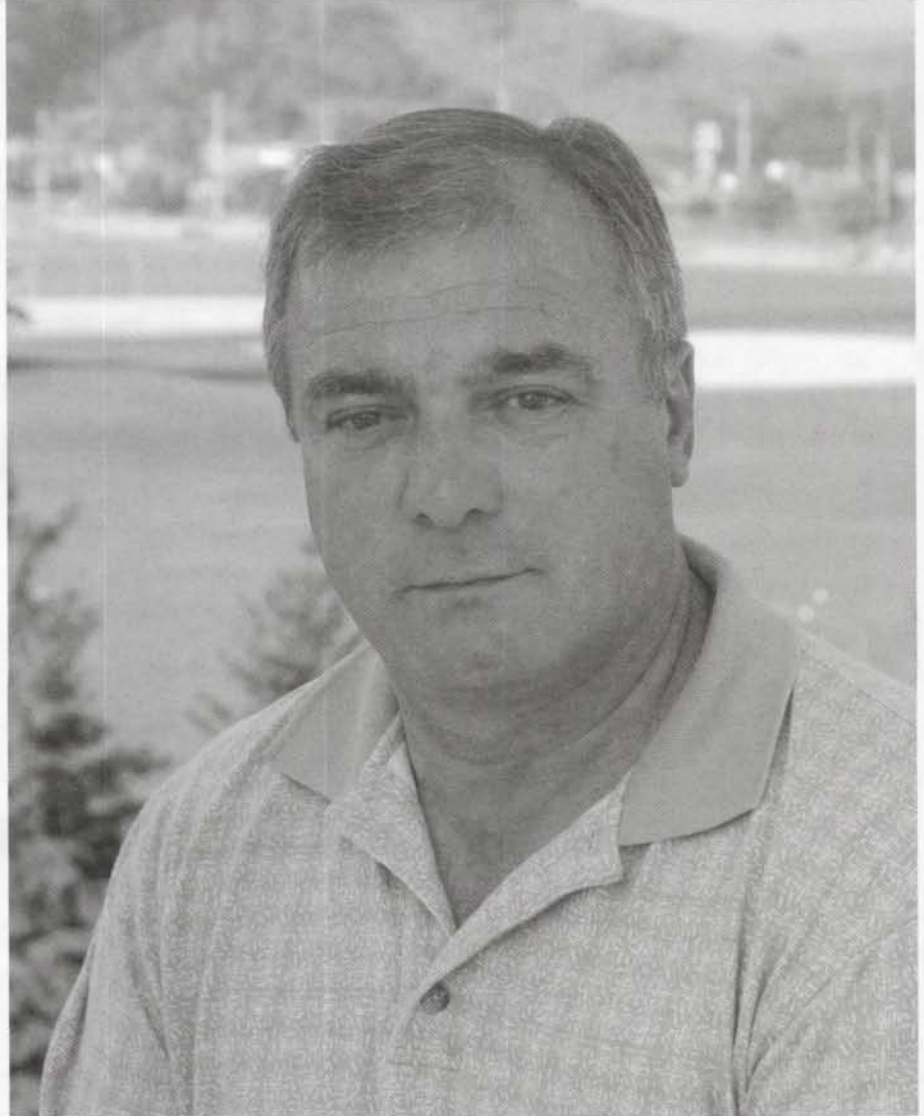
I work with a very diverse team. With the various areas of responsibility, there is a need to have many talents within the department. The cost to operate is below the provincial average on a square foot basis. Conestoga College has been ranked the number one college in the province for the past 7 years. It is because of such a strong committed team that Conestoga has been able to remain a leader in the province.

What are you and your team responsible for?

To ensure safe, clean and well maintained campuses to enhance the learning experience for our students.

What is the biggest challenge in your job?

Accommodating the changing needs of new training/learning programs. Ensuring the students have the facilities to conduct their studies and participate in recreational activities. This is done by working with the Space Planning Committee and the Athletics Department.



What is the most satisfying part, what makes the job worthwhile for you?

I enjoy being around the students. They bring so much energy to the campus each September that it is difficult to not feed off it. Having students work part-time within the department during their time at the college and watch them walk across

the stage at convocation. They grow so much during their time at Conestoga.

What is the biggest misconception about your job?

A number of people do not understand what is involved with facility management. There is considerable work that is not seen behind the walls or on grounds.