

► Contact industry associations. Make sure all related trade associations are aware of the issue and its development. Include them in relevant correspondence

► Identify local experts who can provide information or support for the group's position on the issue. Experts could include county or state health officials, university extension agents and other third-party sources.

► Create messages. Use these in conversations, correspondence and to build support for the group's action.

#### **Develop 'action items'**

**Media relations.** If the issue is expected to have continued media coverage, organize a media visit to the local newspaper editorial staff (or local TV/radio stations if appropriate).

► meet with "editorial writers" if you want to have an opinion page editorial written about the issue.

► meet with the "editorial staff," i.e. reporters, managing editor, business editor, etc., if you expect future news coverage of the issue.

Editorial staff visits should be organized very soon after an issue breaks. Reporters need contacts, names of experts and sources who understand the group's position, to cover the issue fairly.

**Send a thank you letter immediately after a media visit.** If future coverage is balanced and/or favorable, commend the individual reporter for his/her fairness. If the contact is by letter, make sure to send a copy to the reporter's managing editor.

**Letters to the editor.** In the case of reaction to newspaper articles, organize a quick "letter to the editor" writing campaign. Ideally, these letters should come from local business people and/or concerned citizens. For the greatest impact, letters should be written immediately after an article runs. Everyone should write a letter.

Make sure to keep copies of published letters to use to build support. Follow up by phoning the newspaper if a letter is not printed. Ask for a reason why it was not printed.

**Trade press contacts.** Consider contacting the trade press to inform them of the

issue. Depending on the situation, the trade press can be a great ally in communicating to others in the industry about the issue and might help those in other regions of the country facing a similar issue.

**Organize Community Relations.** Many civic organizations (Kiwanis, Rotary, etc.) allow guest speakers to address meetings on specific issues. This can be an important way to reach community decision makers and business people. The "Ambassador Speakers Program" from ACPA and RISE offers assistance in giving presentations.

**Set-up a timeline.** After the group meeting, establish a timeline for completion of all assigned tasks. Set deadlines and assign people to complete the tasks.

**On-going issue management.** For a long-term issue, identify someone to be the key contact in the community.

This person can help coordinate correspondence, watch for developments in the issue, and serve as the go-to contact. This is ideally a local person with strong interest in the situation.

**Exchange names/addresses.** Develop a



The Green Industry needs to explain the benefits of healthy lawns, and give clear explanations of chemistry.

PHOTO BY LAWNSCAPES.

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# Case study: managing the offensive

An April 18 article in the Fontana, Calif. *Daily Bulletin* announced that the state would not study whether (alleged) health problems were caused by toxic substances (i.e. pesticides). This was in response to citizens' calls to investigate (through a request by Assemblyman Bill Leonard) whether the deaths of three young girls last summer were caused by exposure to "pesticides and other chemicals," as the paper says.

Officially, the deaths were blamed on Prolonged QT syndrome (which is of genetic origins, not a man-made illness—ed.)

Those three unfortunate deaths have been the focal point of organizing efforts in Fontana by several activist citizen groups, including "Pesticide Watch" and "Center For Community Action and Environmental Justice." Earlier this year, these groups held several public workshops on how to organize locally and influence changes in a community.

Days after one such meeting, there were organized pickets at a Fontana City Council meeting, where demands for an investigation into those deaths were made. This demonstration was also shortly after the *Daily Bulletin*—the local paper that is supportive of these groups—ran a series of critical articles entitled "Toxic Legacy", where everything from pesticides to air pollution and old shut-down toxic dumps was blamed for causing a long list of illnesses in the region.

The newspaper recently reprinted the series in a 16-page section, which appeared on the newsstands in early April.

Earlier this year, calls to Responsible Industry for a Sound Environment (RISE) by Carl Clifton of Landscape Systems of Montclair and Scott Bangel from the City of Fontana Parks Department prompted the formation of our own small group of concerned business people and local organizations. Our group, which we named "Citizens For Accuracy In Environmental Sciences," met several times to formulate a plan on how to respond to the *Daily Bulletin* and questions from concerned citizens/customers.

## Get out and be heard

One action we organized was a visit to the editorial staff of the *Daily Bulletin*, which was held last week (April 15).

Attending the meeting were Carl Clifton, Landscape Systems; Karen Watts, Western Farm Service; Dr. Bob Krieger, toxicologist, UC Riverside; Pam Bennet, San Bernadino County Health Department; and me. From the paper, two managing editors, a city editor and senior editor were in attendance. Unfortunately, the reporter who wrote the most slanted articles did not sit in on the discussion. My impression was that the editors were a bit taken aback by how critical our comments were on their coverage of pesticides. Karen Watts and several others (all living in the circulation area of the paper) expressed disappointment in the one-sided coverage the paper had been providing in the recent past compared to its long standing reputation of balanced coverage. They seemed to be surprised at the reaction we've been getting from citizens and their concerned questions about pesticides.

They said their response on the "Toxics" series was running about 50/50 pro and con. The city editors' comment was that they wanted to give people the information to make their own decisions. They also denied "taking on" the pesticide industry. The main issue was one of notification of citizens before spraying in schools, public areas, etc., so people could, "make their own decisions."

The paper's editors thanked us for coming in to express our side of the story, and offered to publish an op-ed piece from us. They also promised to be more sensitive to our concerns of over-dramatizing pesticide subjects, although they thought their coverage had been pretty balanced to date. We left them a list of local pesticide industry contacts plus the RISE materials, "Commonly Asked Questions About Pesticides," the IPM brochure and the piece on cancer. We also left behind a paper slide show prepared by Carl Clifton and myself with a series of comments/quotes from their articles and our

sign-up list of all interested persons including phone, fax and e-mail addresses. Distribute the list to all attendees to facilitate rapid communication.

"It seems like there's always a need for proactive action," says Carl Clifton, Landscape Systems, Montclair, Calif.

"[Reporters] are all looking for tomorrow's story. If it's not on environmentalism, it's about drought, or another issue," says Clifton.

"There is always the need to respond to the latest news piece. You would think there would be more people speaking out on behalf of the industry, but they've got companies to run too. Reporters want to write about wasting water rather than benefits the landscape and lawn bring. Quality of life issues come into play, and industry has to mention what happens when you do away with those things."

*Parry Klassen is an independent freelance writer and communications consultant based in Clovis, Calif.*

questions about the accuracy and/or source of facts. The editors were interested in getting from us a list of third-party sources (universities, institutes, organizations) who could be contacted for interviews. The group's plans now are to write the op-ed piece (with Carl Clifton of Landscape Systems as the author) and get it to the paper.

Our group will be surveyed about starting a speaker's program similar to the one sponsored by RISE, PLCAA and GCSAA. Some have said they are very busy with business so it's uncertain how many volunteers will step up. We'd like to think the last has been said about this issue, but I'm not holding my breath.

*Parry Klassen*

# Powerful pH

*The effects of pH are not limited to the acidity or alkalinity of the soil; pH affects the availability of soil elements by making them more or less available for plant uptake.*

By NANCY STAIRS/ Technical Editor

**P**lants with roots in a soil pH environment for which they're not adapted tend to be more susceptible to pests and diseases. This isn't because pH has a direct effect on plant growth but, rather, through more indirect effects.

The elements in the soil which, by photosynthesis, are converted to nutrients necessary for plant growth are more available or less available in response to soil pH. A very acidic soil can have limited microbial activity and, for many elements, increased solubility or mobility. Adding lime to the soil can help correct an acidic soil condition. In an alkaline soil, beneficial microorganisms may be more active, but for many soil elements their solubility or mobility is reduced. If a soil has excessive alkalinity, it can often be adjusted by adding sulfur.

However, you should not amend soil without first testing the soil. Excess lime can raise the pH above plant tolerances and affect the availability and growth of beneficial microorganisms in the soil.

And, even a soil test will not tell you how much material is needed to amend a soil; different soil types require different amounts of amending materials to affect the soil pH. Test a topsoil or ask for an analy-

sis before you buy it to be certain that excess salts and elements are not present.

The significance of pH and nutrient availability is important for ornamental plants and for turfgrasses, although the symptoms of a deficiency or toxicity in turfgrasses may be different from the symptoms of ornamental plants.

**Nitrogen** is the most commonly deficient soil element. Other deficiencies are less common or occur under more specific circumstances. Nitrogen itself is soluble at any pH and is subject to leaching in acidic soils.

While **phosphorus** usually occurs in amounts adequate for most shrubs and trees, its availability is minimal in most soils due to low solubility. A pH range between 6.5 to 7.5 is best for phosphorus availability although it is also available above pH 8.5. Excess phosphorus can increase soil salinity and tie up micronutrients, especially copper and zinc.

**Potassium** is also present in sufficient amounts for most woody plants but deficiencies can occur; most often in the eastern half of the U.S. where it is humid with more soil leaching. Potassium deficiencies are less common in the more arid regions of the west except where irrigation has been practiced for many years. Large amounts of potassium reduce magnesium uptake, particularly in acid and sandy soils. Raising pH by adding lime can limit potassium availability.

**Sulfur** behaves like nitrogen, being soluble at any pH and subject to leaching. A deficiency in sulfur resembles a nitrogen deficiency, but occurs in the newer

leaves rather than the older leaves.

**Calcium** is usually present in large enough quantities to meet plant needs but levels will decline in acid soils where soils drain well and rainfall averages

*Don't amend soil for pH extremes without first testing the soil.*

over 30 inches a year. As soils become more alkaline calcium becomes more available although very high pH can make it unavailable. An excess of calcium results in low solubility of phosphorus, iron, manganese, boron and zinc which result in deficiencies of those elements.

**Magnesium**, the only metallic element contained in chlorophyll, is normally abundant in most soils, although subject to leaching in acidic soils and unavailable at high pH levels.

The type of amendment most appropriate for raising or lowering the pH depends on the soil type, so check with your extension agent or testing laboratory.

**Iron** is the most commonly deficient micronutrient in the landscape. Less soluble at high pH, an iron deficiency can result from over-liming an acid soil and is seen most frequently in alkaline soils and soil high in lime. Iron deficiency can also result from an excess of zinc or manganese in acidic soils, or

from high phosphorus levels in neutral or alkaline soils which can reduce iron availability. Iron deficiency in turfgrass causes chlorosis while sufficient iron increases color, enhances root growth and complements late fall nitrogen fertilization. Iron availability increases with lower pH when soils have too much iron to be depleted by leaching.

Manganese and iron have closely related roles and should not be applied in the absence or exclusion of the other.

**Manganese** is generally deficient under

the same conditions as iron, although deficiencies are more likely to occur in poorly drained soils high in organic matter or soils with high levels of copper, iron or zinc.

Treating a manganese deficient plant with iron may increase chlorosis. Symptoms of iron toxicity are similar to manganese deficiency and symptoms of manganese toxicity are similar to iron deficiency. Liming, to raise pH, can overcome toxicity in poorly

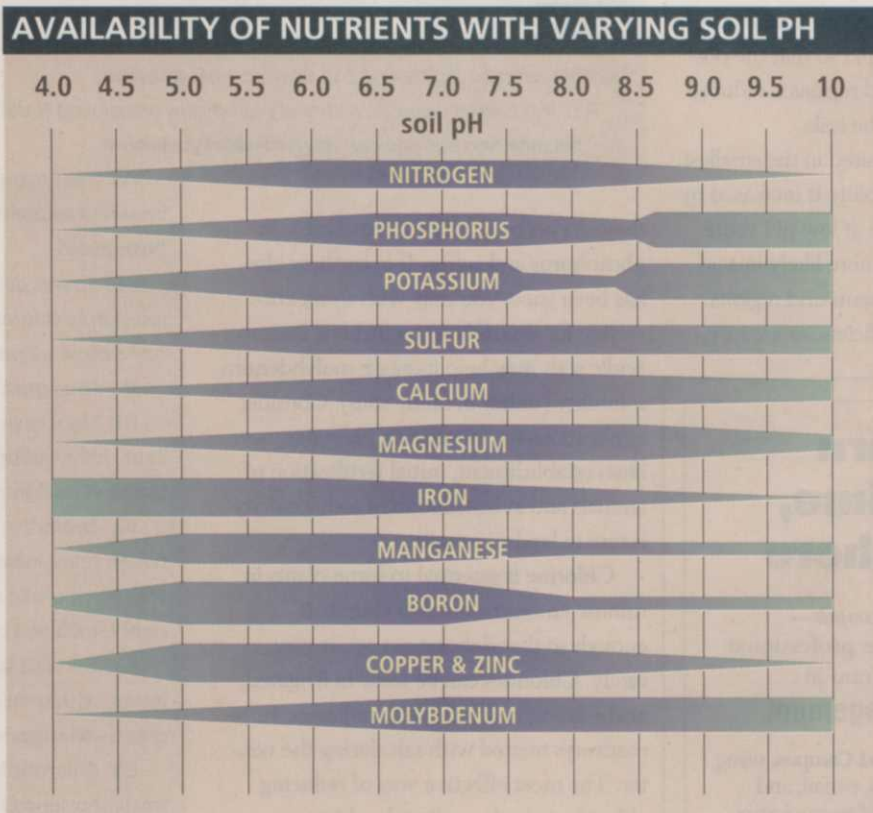
manganese, zinc can become less soluble at high pH and can be leached out at lower pH. Deficiencies in acid soils indicate low total zinc content and are most likely to occur in sandy soils with leaching, and in sites along the Gulf Coast. High concentrations of phosphorus or magnesium tend to reduce the availability of zinc. Low soil temperatures reduce zinc uptake by plants and can accentuate a zinc deficiency. Over-

liming can also cause zinc deficiencies, but applying phosphate fertilizer can reduce zinc toxicity.

**Copper** deficiency is not as common as boron or zinc but will occur in organic soils, particularly soils derived from sphagnum moss. Deficiencies can occur at both high and low pH as copper is less soluble at high pH and can be leached out at lower pH as well as where phosphorus, zinc or nitrogen levels are high. A copper deficiency can cause iron to accumulate in plants and a copper toxicity can

cause a chlorosis similar to iron deficiency. If toxicity is a result of copper fertilization or spraying, liming acid soils and spraying plants with iron chelate can help reduce toxicity. Toxicities tend to be rare but copper is toxic even at low levels so confirm with a soil test. Do not re-treat without a soil test and follow copper product application directions.

**Boron** deficiency can be hard to identify as it can appear like other deficiencies. It causes the death of terminal buds resulting in later shoot development and witches



aerated soils; however, excessively over-liming soils high in manganese will increase toxicity. Increased iron and zinc can also avert manganese toxicity as they reduce plant uptake of the element. Toxicity can occur in poorly drained soils even at high pH and in well-drained soils if pH is less than 5.6.

**Zinc** is adequate in most soils but deficiencies are often seen in cultivated trees and large shrubs. In turf, symptoms of zinc deficiency can include stunted growth with thin dessicated leaves. Like copper and

brooming. In turfgrasses, leaf chlorophyll, plant size and vigor can be affected. Boron deficiencies are usually related to parent materials low in boron, in acid, leached soils and organic soils. Deficiencies may also result from using irrigation water low in boron and high in calcium or by adding lime to soil low in boron which will inhibit boron uptake. The range between excess or deficiency of boron is very narrow, so it is easy to turn a deficiency into a toxicity. Toxicity can be reduced by leaching the soil. Boron is not very soluble at high pH so that the possibility for toxicity in arid regions is reduced due to the alkalinity of the soils.

**Molybdenum** is required in the smallest amount by plants. Solubility is increased by liming but is less soluble at low pH value so that deficiencies are more likely in acid soils and rare in arid or semi-arid regions. While molybdenum deficiencies are rare,

## A Key to Nutrient Deficiencies of Ornamental Plants

This key is divided into 3 sections: (A) older leaves first affected; (B) youngest leaves first affected; and (C) terminal bud affected. Compare the symptoms listed with the symptoms observed.

### A. Older leaves affected first

A1. General chlorosis progressing from light green to yellow; stunting of growth; excessive bud dormancy; necrosis of leaves, followed by abscission in advanced stages—

#### Nitrogen

A2. Marginal chlorosis or mottled leaf spots which occurs later; tips and margins may become necrotic, brittle and curl upward—**Magnesium**

A3. Interveinal chlorosis with early symptoms resembling N deficiency; leaf margins may become necrotic and curl upward—**Molybdenum**

A4. Leaf margins may become brown or mottled and curl downward—**Potassium**

A5. Leaves develop blue-green or red-purple coloration; lower leaves may turn yellow—**Phosphorus**

### B. Youngest leaves affected first

B1. Light green color of young foliage, followed by yellowing; tissue between veins lighter colored—**Sulfur**

B2. Distinct yellow or white area between veins; initially veins are green, becoming chlorotic under severe deficiency, followed by abscission—**Iron**

B3. Necrotic spots in young chlorotic leaves, with smallest veins remaining green—**Manganese**

B4. Chlorotic leaves abnormally small; shortened internodes in severe cases, becoming rosetted—**Zinc**

B5. Young leaves permanently wilted, becoming chlorotic, then necrotic—**Copper**

### C. Terminal bud dies

C1. Brittle tissue, young or expanded leaves becoming chlorotic or necrotic and cupped under or distorted; terminal and lateral buds and root tips die—**Boron**

C2. Growing points damaged or dead; tips and margins of young tissue distorted; leaves may become hard and stiff—**Calcium**

they can occur in soils extremely low in phosphorus and sulfur. If everything else has been tried, you may wish to try correcting for this deficiency. Adding lime to acidic soils may help increase molybdenum solubility (unless in sandy soils). Consider applications for foundation plantings, new lawn establishment, initial fertilization of annuals and at installation of sod. Toxicity is rare in landscape soils.

**Chlorine** is essential to some plants in minute amounts, but it is abundant enough so that deficiencies occur very rarely. Chlorides can be toxic in irrigated, arid regions, near seacoasts and adjacent to roadways treated with salt during the winter. The most effective way of reducing chloride and other salts is leaching.

**Aluminum** is not necessary for plant growth but is abundant and absorbed by plants. It is soluble under acid conditions and can become toxic to plant growth. Keep soil pH above 5.0 as high levels of aluminum can also reduce plant uptake of phosphorus, calcium, magnesium and iron. When soils are strongly acidic due to the presence of aluminum, turfgrass roots tend to become short and brown with a decreased tolerance to environmental stresses (such as drought and heat) and reduced recuperative potential. **LM**

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# Events

## JULY

**6-10: Groundskeepers Management Academy**, Millington, TN. Contact Floyd Perry at (407) 363-5965.

**6-11: Perennial Plant Assn. Symposium**, Westin Hotel Copley Place, Boston. Contact Dr. Steven Still, (614) 771-8431; (614) 876-5238.

**16-18: Turfgrass Producers International Summer Convention & Field Days**, Sheraton of Tyson's Corner, Virginia; Tom

Ford, (847) 705-9898; (847) 705-8347.

**25-27: International Lawn, Garden & Power Equipment Expo**, Kentucky Exposition Center, Louisville, KY. Call (800) 558-8767.

**28: Midwest Regional Turf Field Day**, West Lafayette, IN. Call Zac Reicher, (765) 494-8039.

**28-30: Penn Allied Nursery Trade Show**, Fort Washington Expo Center, Fort Washington, PA; Sandy Seltzer, (717) 238-1673; (717) 238-1675.

## AUGUST

**4: Golf Course Seminar - New Technology**, SUNY Delhi, Delhi, NY. Call NYSTA: (800) 873-8873 or (518) 783-1229; or Dominic Morales, (607) 746-4413.

**12: Landscape Maintenance Association Qualification Seminar**, Collier Country Cooperative Extension, Naples, FL. Pre-register only (at least 5 days before seminar); (407) 672-0633.

**14-16: ALCA Sales Symposium**, Westin Galleria Hotel, Dallas, TX. Call ALCA: (800) 395-2522 or (703) 736-9666; or website [www.alca.org](http://www.alca.org)

**18: Cornell Golf Field Day**, Cornell University, Ithaca, NY; Dr. Frank Rossi, (607) 255-1629

**19: Michigan Turfgrass Field Day**, Hancock Turfgrass Research Center, MSU, East Lansing, MI. Contact Kay Patrick, (517) 321-1660.

**20: Turf & Landscape Field Day**, University of California Bay Area Research & Extension Center, Santa Clara, CA. Contact Dr. Ali Harivandi (510) 639-1271.

**24: Central New York GSCA Poa Annual Golf Tournament**, Oswego Country Club, Oswego, NY. Call NYSTA at (800) 873-8873 or (518) 783-1229

**31: Metropolitan GSCA Poa Annual Golf Tournament**, Rock Spring Club, West Orange, NY. Call NYSTA at (800) 873-8873 LM

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**Curtis Dyna-Fog, Ltd.**, a maker of sprayers and foggers has a new web site, which describes the history, activity, product line and possible uses of the equipment. Visitors to the site will see complete details of the wide range of equipment offered with guides to different models. Address is: [www.dynafog.com](http://www.dynafog.com)

**The Davey Tree Expert Company** has acquired the assets of Raintree Landscape Services, Inc., a full-service landscape maintenance organization in Tampa, FL. Raintree serves commercial developers, property managers and homeowners association with irrigation, nutrition and pest control, landscaping, horticultural consulting and landscape management services.

Visit the new **Encore Manufacturing** web site at [www.encoreequipment.com](http://www.encoreequipment.com) to compare the daily equip-

ment cost of mowers, for updates on mowing and maintenance tips for commercial cutters. Products are described, with spec charts.

**Dow AgroSciences** has a new web site to answer commonly asked questions about their professional products. Regional application windows and application tips and links to various industry sites can be found at [www.dowagro.com](http://www.dowagro.com) under the Turf and Ornamental menu option.

**Flowtronex Europe Ltd.** is the newest member of the family of pumping systems companies that includes US-based Flowtronex PSI, Flowtronex International and Best Equipment, Inc. Flowtronex Europe was formed by the recent acquisition of Action Pumping Services Ltd. of Waterlooville, UK by Rosewood Equipment, parent company of Flowtronex PSI

and related entities. Action supplies pre-packaged pumping systems, pumps and controls to municipalities, golf and landscape industries throughout Europe.

**Griffin LLC** has formed a new business team for its specialty products group. Led by Owen Towne, global business director, (and ex-director of turf for Novartis), the team is to expand and develop the Griffin line including Junction fungicide; Roll-Out root-growth regulator; and Chlorofos insecticide. Jimmy Whately is business director; Joe Mares is product development manager for insect control. Trey Warnock, David King, Mark Crawford and Patti Niewoehner are on board.

**Zeneca Professional Products** has named Glen D. Johnson as Contract Sales Market Lead. Johnson has worked with Zeneca for 15 years in var-

ious capacities and will now be responsible for the sale of all technical active ingredients to customers in the non-ag and agricultural markets in North America.

Continuing in their recent expansion activities, **Century Rain Aid**, the nation's leading distributor of landscape irrigation, outdoor lighting and water feature products has opened three new midwest branches. The stores are located in Wichita, Kansas; Plainfield, Illinois; and Plymouth, Minnesota. Century has opened 30 branches in the last 12 months through corporate acquisitions and new sites.

The **Weed Golf Course Design** firm based in FL now has a website which provides a thumbnail sketch of the firm in a fast-loading format. Courses designed and redesigned or remodeled are listed and photos are presented as well as background information on the staff and recent news about the firm. Check out the site at [bobbyweed.com](http://bobbyweed.com)

**Riverdale Chemical** company named Curtis Clark as marketing manager. Clark is responsible for all marketing and advertising. Most recently he was director of marketing and sales for Troy Biosciences. Previously, he worked as sales manager and marketing manager for American Cyanamid. **LM**

## Info center

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**CD-ROM FOR PUMPING SYSTEMS TRAINING...** Flowtronex PSI, Columbus, OH, has a program that is believed to be the industry's first pumping system training available on CD-ROM. The CD features curriculum for architects, contractors, consultants, engineers, dealers and other professionals who make important business decisions related to golf course operations. The CD-ROM training currently is available only to students who attend instructor-led FINALNET and Big Picture courses from Flowtronex. Contact Greg Lush at [greglush@flowtronex.com](mailto:greglush@flowtronex.com)

**'TREE BYTES' CD-ROM FACT SHEETS...** now available from UMass Extension Landscape, Nursery and Urban Forestry Program. The 150 fact sheets have information on insects, mites and disease pests found in the Northeast and include 750 color photographs. The same CD works on both Apple and Windows 95 platforms (use in Windows 3.1 results in some loss of quality). Text cannot be printed but a hard copy booklet of the fact sheets will be available at a later date. Contact Bob Childs at (413) 545-3208.



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- ▲ Large Capacity Commercial Grass Bag
- ▲ Flywheel Brake System with Zone Start
- ▲ Safety Interlock System on Grass Bag
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▲ 27" Cut					•
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▲ 7 Blade Reel	•	•	•	•	•
▲ 3.0 Horsepower B&S	•				
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▲ Galvanized Steel Grass Catcher				•	•
▲ High Impact Plastic Catcher	•	•	•		
▲ Swivel Caster Wheels		•	•	•	•
▲ Wheel Drive System	•	•	•	•	•
▲ Roller Drive System				•	
▲ Maximum Ground speed is approximately 200 ft. per min.*	•	•			
▲ Maximum Ground speed is approximately 250 ft. per min.*			•	•	•

\*\* Engine RPM's control ground speed without changing blade cutting frequency.

\* At engine RPM of 2800

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PAGE 2 L ▶

Ponds for added profit!

PAGE 4 L ▶

Pros tips on reducing travel time

PAGE 14 L ▶

Win against vandalism

PAGE 16 L ▶

Software a time-saving tool

# Dog days, the time to relax, recharge, and refocus

**T**ake a break and catch your breath. It's mid-summer. Dog days. Take some time to relax, recharge and reflect on what you've accomplished so far this season. And what you still want to get done in 1998.

You'll think much clearer, and make better decisions if you get away from the shop for a week, a few days at least.

Reintroduce yourself to family and friends. Go to the local ball park for a game or two. Take the family on that fishing trip you've always dreamed about. Spend some time at a quiet lake. How about that bicycle tour that you were always too busy to try?

If you can't take more than a day or two away from your business (or even if you can), attend one of the many summer turf and ornamental field days. They only cost \$20-\$30 and you usually get lunch too. These field days are a great deal considering all the friends you'll see and the great things you'll hear about.

Take some of your good employees with you. They'll greatly appreciate it.

Here's a list of some of the remaining turfgrass field days:

- July 28, Midwest Regional, West Lafayette, IN: 765/494-8039.
- Aug. 12-13, Penn State, University Park, PA: 814/863-3475.
- Aug. 18, PLCAA Texas Chapter, Lawn & Ornamental Conference, Dallas: 800/458-3466.
- Aug. 19, Michigan State, East Lansing: 517/321-1660.
- Aug. 20, Turf and Landscape Field Day, U.C. Bay Area Research and Extension Center, 90 N. Winchester Blvd., Santa Clara, CA. No advance registration required.
- Aug. 26, Ohio State Turf and Ornamental

Field Day, Columbus: 888/683-3445.

Sept. 15-16, Turfgrass Research Conference and Field Day/Landscape Management Research Conference and Field Day, U.C. Riverside, CA: 909/787-4430.

Sept. 22-24, VA Tech Turf and Landscape Field Days, Blacksburg, VA: 840/231-5897. **LM**

PEOPLE & PROJECTS

## Valley Crest still hot in Orlando

The Orlando office of Valley Crest landed two contracts totaling \$5.6 million for projects at Universal Studios Florida's "Islands of Adventure" expansion. It secured a \$3.1 million contract to work on theme park's Lost Continent Island and a \$2.5 million contract to work on Toon Lagoon. In all, Valley Crest is providing over \$10 million worth of landscape, site construction, and concrete theming services to Universal Studios Florida.

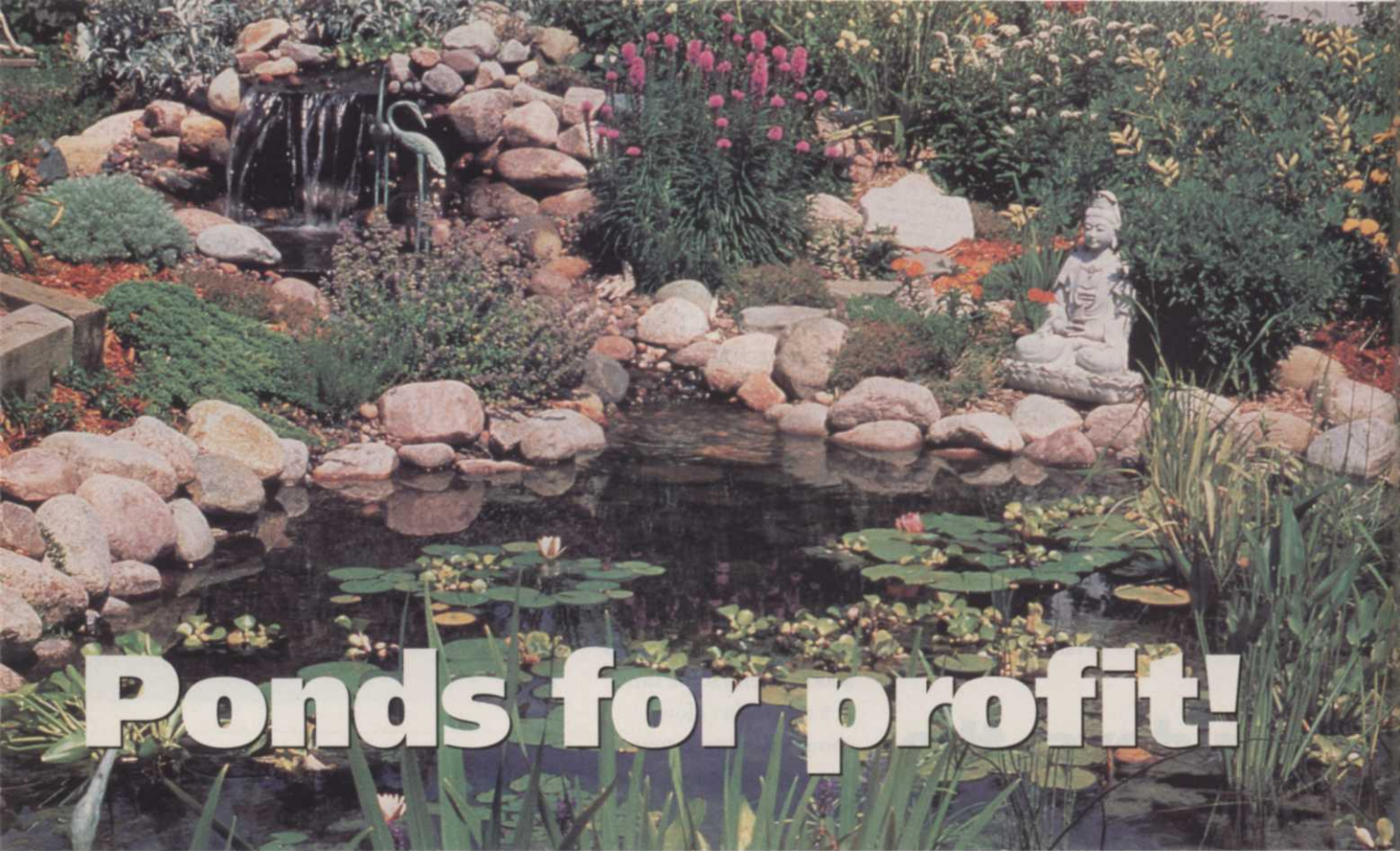
## The Groundskeeper adds to staff

The Groundskeeper, Tucson, AZ, named Roger Wyer as its Continuous Improvement Director. Wyer brings a unique background to the position. The ASU grad has, besides owning his own residential design-build company, served as a tribal planner for the Pascua Yaqui tribe, and as director of programs at Green Valley Recreation. The Groundskeeper is an employee-owned commercial landscape management firm with offices in Phoenix, Tucson, Las Vegas and Palm Springs.



*Ron Hall*

RON HALL  
Senior Editor



# Ponds for profit!

*Read these pond-building basics to put your new service in the right (and profitable!) direction.*

By GREG WITTSTOCK

**S**o, you want to get into building ponds. You research books and magazines on pond construction and maintenance, and talk to so many people that you have enough information to write a graduate thesis paper on water gardens. There's only one problem: everyone you've talked to and everything you've read conflicts with one another. Everything!

When you asked how deep a pond needed to be to have fish survive a zone 5 winter in Chicago, you heard: 3 feet, from the garden center; 4 feet, from the magazine article; and 18 inches from a friend who swears his fish live year-round.

#### **Lots of misinformation**

Why did what started off to be a profitable add-on service turn out to be such a fact-finding nightmare? The problem is simple. Although often well intended, the in-

formation produced regarding pond construction is from people who don't build ponds, or have built too few to thoroughly understand them.

As a professional pond builder, who builds ponds daily, I see the misinformation that permeates the water-gardening industry. The one who is affected the most is the pond owner left with an inferior product that requires excessive mainte-

nance. The other loser is the contractor who installs them.

Contractors are losing sales due to the confused customers and are spending excessive amounts of time educating themselves and their customers about water gardening. Yet, the popularity of ponds continues to rise despite all these problems. It's as if all the problems are worth the rewards to new pond owners.



**Approach constructing a pond with the idea of creating a balanced ecosystem with proper filtration, plants, and fish. It will dramatically reduce maintenance, and make customers smile.**

PHOTOS BY AQUASCAPE DESIGNS

This reality makes me ponder how popular water gardens would be if it were easy for contractors to get accurate information. I'd like to take a step in that direction by letting you know how my company approaches water-garden construction. Even though my ideas may ruffle some feathers, here is what I know works, and what doesn't and why, when building ponds.

If you've done much reading on water-feature construction you've probably seen the word ecosystem. In plain English, to establish an ecosystem in a pond you need to work with nature and not against it. That means you shouldn't use chemicals but should instead create a balance in each pond you build. To do this you need a mechanical skimmer filter, biological filter, pump, plumbing, rocks, gravel, fish and aquatic plants. Eliminating any one of these can hamper your efforts to establish a proper pond balance.

#### **Mechanical skimmer filter**

Water is a magnet for wind-blown debris. (Swimming pool installers figured this out 100 years ago and started making skimmers.) To remove debris, you need a skimmer filter that constantly runs to keep your surface free of debris. Additionally, a skimmer filter will break surface tension and take highly oxygenated water (the surface area) and discharge it into the biological filter.

Your biological filter is a container where high numbers of bacteria live and work to clean the water. Bacteria break down nutrients that lead to algae and green water. In essence, bacteria eat the nutrients that would lead to green water.

#### **Pump and plumbing**

Your pump needs to run 24 hours a day, 7 days a week. If you turn it off, bacteria will start to die and oxygen levels needed to sustain your fish will dwindle. Use a high-efficiency, energy-saving pump and place it in the mechanical skimmer



#### **Providing customers with beautiful water gardens is easier than you think if you put together a step-by-step installation plan.**

vault to prevent it from clogging. Use a pump that can turn the water over at least once an hour. Do not restrict your pump flow by using narrow, rigid pipe. A pump rated between 1000-3000 gallons per hour (GPH) should use 1-2 flexible PVC pipe.

#### **Rock and gravel**

The most overlooked construction materials are rocks and gravel. Spreading 3 inches of gravel over the entire liner is about 50 percent of the battle against green water. You should place 1 to 2 inches of gravel on the horizontal areas of your pond and 6-12 inch granite cobblestones on the vertical areas. (We suggest using 45 mm fish grade, rubber EPDM liners because they are easy to install and will last 50-plus years when covered with rocks and gravel.) When you

rock-in the entire pond you create a giant biological filter. Bacteria thrive on the rocks, rocks hold the liner down, and block out damaging UV rays. Additionally, a gravel bottomed pond is beautiful.

#### **Fish and plants**

Don't be afraid of fish. They're the perfect pet and an important part of establishing an ecosystem. Fish will feed on insects and algae in your pond. (Most people however, can't help feeding them and giving them names as well.) In Chicago, fish and plants will naturally overwinter in two feet of water.

Aquatic plants open up a whole new world for gardeners. Most water plants are like any other perennial plants. They'll come back every year with the additional bonus that unlike their terrestrial counterparts, they're self watering. Tropical plants can also be added and treated like any other annual.

When you approach constructing a pond with the idea of creating an ecosystem, your chances of success increase dramatically. Don't cut corners or leave out any of the previously mentioned items unless you're willing to sacrifice pond quality and your time.

Clean the entire pond and filters every spring, empty the skimmer debris nets every few weeks, and periodically sprinkle in natural bacteria, and you'll be set.

Pond construction isn't and shouldn't be made out to be rocket science. I hope I have cleared up some confusion you may have had with building a pond.

Landscaping with water captures all the senses and soothes the soul like nothing else. □

Look for "Estimating and selling water gardens" in the August issue of LM.

—The author is president of Aquascape Designs, based in West Chicago, IL, and produces materials and seminars geared towards helping contractors succeed at building and selling water features.



Not every landscaper is plagued by travel time. But for those companies whose workers must travel long distances to job sites, there are increased expenses, lost profits, fewer completed jobs and additional frustrations and stress. But there are solutions, which we here provide in the nick of time.

Jim Grow, vice president of Pennink Arrimour in Huntington Valley, Pa., is a 30-year green industry veteran, and has been with that company for 12 years. Grow tracks all maintenance operations, no

A few of those unusual things his people do at sites include cleaning pallets, off-loading docks, pressure-washing dumpsters and cleaning goose droppings from jogging paths. To perform these duties with as little disruption as possible to customers, workers must get a very early start.

The satellite office concept has helped Pennink and other companies avoid traffic jams.

"Once you get beyond 30 to 35 miles, you start to be inefficient, and not cost effective with travel," explains Grow. "So we try to limit the distance our crews have to travel to maybe 40 minutes."

A satellite office may be a full-blown mini-office and garage (with adequate parking of course), or a locked equipment trailer.

#### **Mechanic house calls**

Due to the increasingly sophisticated equipment being needed and used for landscape maintenance, crews aren't as readily equipped to repair equipment on their own. Grow therefore sends a mechanic to the dedicated sites for weekly service or maintenance.

Crews may also bring equipment to the closest office

site on a day with less work, and the mechanic then does normal preventive maintenance and repair.

Grow says the equipment is usually seen once each week. Six full-time mechanics do the work, with split shifts, between 6 am and 10 pm.

"The key is to keep your crews as well stocked and as well maintained as you can," says Grow. "They don't have to do a lot of running around. Keep them prepared."

#### **Routing routines**

Another important time-saver is in the actual job routing.

"The crews have to know where they're going," says Grow. "They need to be able to walk into the office in the morning, see if there are any changes to their schedule and go!"

To operate that efficiently, Grow believes, crews have to be well-trained so they are not constantly stopping for all kinds of reasons.

"We basically insist that they get trucks loaded the night before.

# Getting there

*Travel time is a cost burden you have to solve by creative routing, satellite offices and early starts. It*

*should also be*

*included in*

*customer costs.*

*And guys, ask*

*for directions!*

small accomplishment in a 235-man company.

Grow starts with the obvious: being an "inter-state" company, the crews come in at 6 am, "to beat the traffic and alternate travel times around rush hour," says Grow. "If we're traveling a distance, we hope they're at the job site before rush hour."

These crews handle the commercial side of the business, which is about 65 percent of sales. Residential crews start later in the morning.

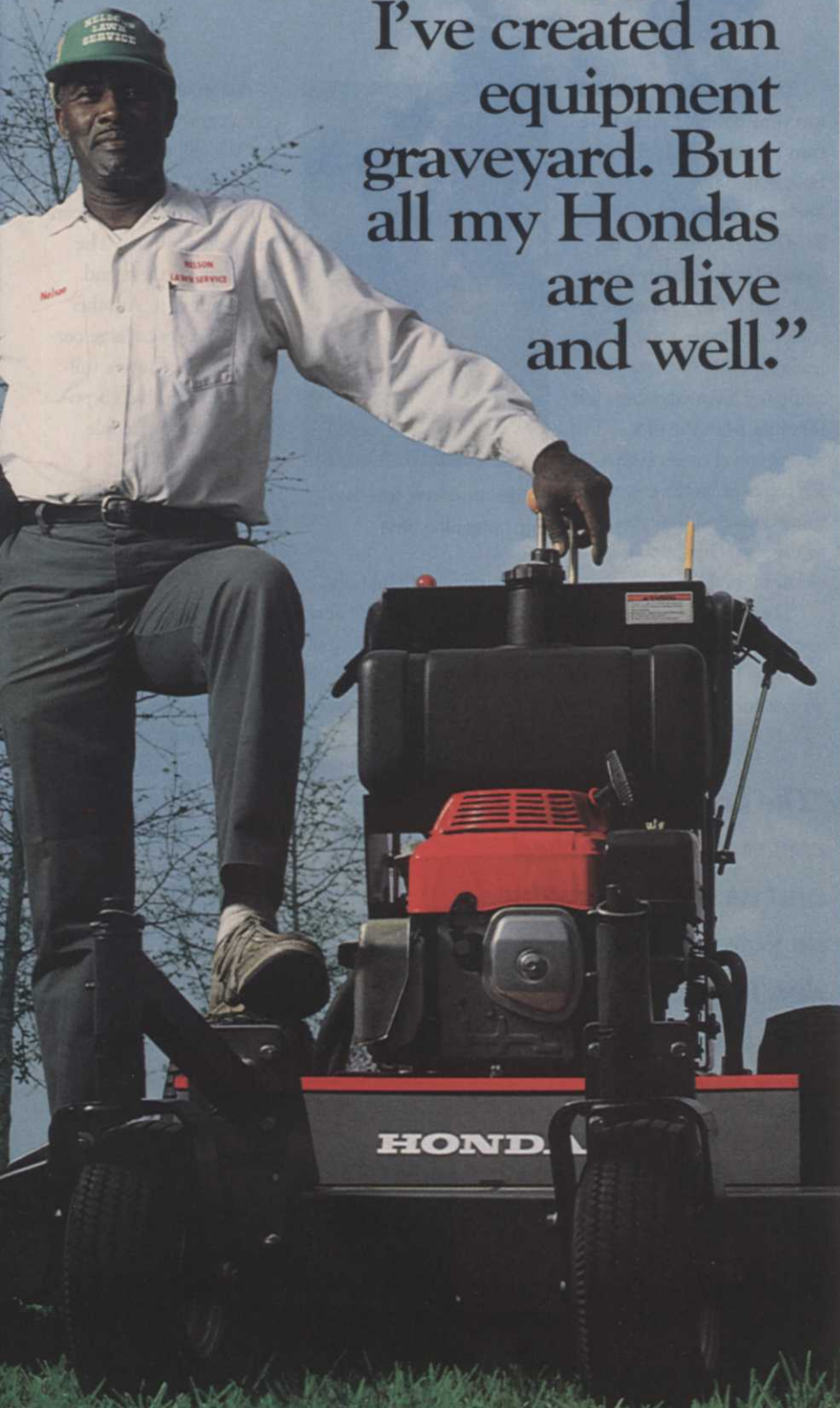
Some crews will report directly to the site. Trucks and trailers are kept at certain client's properties, those that have facilities and allow it.

One of those clients is a large pharmaceutical company in northern New Jersey, with multiple branch locations. Specific crews direct-report and move between the drug company sites.

Saving travel time might become more important in the future for non-traditional landscape reasons. To land and keep certain contracts, Grow says, "there are a lot of unusual things that you get in to. What ever the client wants you to do."



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At Pennink, account managers are responsible for crews, and they run those crews as a small business."

#### Geography lesson

Knowledge of the neighborhoods and cities is important, because let's face it—not everyone can fight their way out of a paper bag, and should not be expected to look at a map to set up a route.

As basic as this sounds, some wasted travel time could be solved by putting a different employee on the routing and scheduling.

Fullbach Services, Inc., Louisville, KY., is also working to eliminate the travel time blues.

Jon D. "Dave" Fuller, is the company's executive vp, and also a former PLCAA board member.

Fullbach is located in an enterprise zone, which, says Fuller, "puts us out of the city, where most of the flurry of economic development is. So, we're pretty far removed from the majority of our customer base."

The location might provide some tax advantages, but, says Fuller, it creates certain travel-related "situations".

A solution for Fullbach is an industry-specific computer program, for routing and scheduling. The program also does job costing, billing and financial reporting.

"Not that this is the do-all, end-all, but Clip allows a landscaper to do map codes, and then sequence jobs. It's a pretty slick program."

Fullbach has a highway department account that involves lots of shrubbery maintenance. Due to the distance involved, Fuller was motivated to set up drop sites for equipment, with highway department permission.

"I have found different spots in the city that we begged for, negotiated for or rented. We find a remote location to set up our center of operations and have all the material delivered to that remote site."

The drop site saves lots of lost time by not having to return home to load up on bulk material.

#### Security glitch

Theft prevention at remote sites is certainly important, and Fuller says some sites are not safe enough to leave equipment there. The company has a landscape job 90 miles from the office. Saving travel time on that job requires "getting everything delivered that you can to the site. Then, you go the old fashioned way, rent a room!

"Dead time is a real factor. You can be as efficient as you want on the job, but if you have [numerous] hours of dead time, it's not such a good deal. That's where

***"The key is to keep your crews as well stocked and as well maintained as you can, so that they don't have to do a lot of running around. Keep them prepared."***

you've got to track this travel time."

Tim Aalbu, president of Aalbu Landscape Maintenance, Inc., Portland, OR, blames the traffic for most delays, especially with rush hour and road work.

"Heavy traffic in the area is one of the reasons travel time has grown. The population growth in the Puget Sound area has been tremendous, and it's dramatically increased our travel time. Then, there's the fact that we have spread ourselves out geographically as far as our jobs go."



**Fuller: drop sites save loading, unloading time.**

Aalbu uses drop-off containers to store tools.

"We call them 'satellite offices' but it could be as simple as a large cargo container on a job site. The crew reports there and works out of it. Another one is set up at a large corporation. We have a full-time crew on that corporate site, so the people report there."

The container is 8 ft. tall, 30 ft. long, 6 feet wide. The client supplied it,

thankfully.

"We also have one additional crew that works out of that site. They report in and pick up their equipment and go out from there," says Aalbu.

What's it contain? "We pretty much just keep our normal maintenance equipment in there. If they need something extra, like an aerator, we supply it out of the main office," says Aalbu.

"A good on-site supply for one crew would be a 36-inch intermediate walk-behind mower, a 21-inch mower, edgers, line trimmers, blowers, and then some basics—rakes, shovels, maybe a few chemicals. That takes care of their basic needs. They radio to us if they are in need of any thing other than normal maintenance type equipment.

#### Money savings

"I guess we're saving probably two man-hours each day, plus fuel and maintenance on vehicles and wear and tear," estimates Aalbu.

"We looked into self-storage units, but they will not allow you to have any source of fuel in them whatsoever; not even a cup."

But there's one more problem they haven't been able to solve.

"We're doing a chain of about 200 banks in four states, and we have to use a

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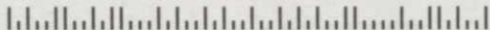
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ferry to get to some of them. But you can't transport equipment on a ferry with fuel inside it, so you have to completely drain the fuel tanks and refill them back on shore."

"It's unproductive time," says Larry Schultz of Nair's Lawn Care Service in Medina, Ohio, about drive time. "

"We've had the routes rescheduled or rerouted by one of the managers. That way it's well thought out. We beat the rush hour. Maybe get them out an hour before rush hour."

Schultz says there are six different routes that are used to serve the company's more than 300 customers.

And it's not just about distance. Delays such as too many left turns and red lights, are sliced out of the route as often as possible.

"We'll take a back road with one stop sign as opposed to a main road with five lights. That is so unproductive."

Road work maps are available from some state DOTs. Ohio provides one, and Nair's uses it every day.



Fullbach crews benefit from industry-specific scheduling/routing software.

Fuel savings is another benefit of clever routing, "and you also make sure vehicles leave with full tanks so they're not looking for gas stations that we don't have credit cards for," reminds Schultz.

"Wasted time hurts. You can waste 20 minutes at a gas station, with buying snacks, using restrooms, and waiting in line

as another company's truck and trailer are fueled.

Dan Jacobson, who co-owns Landstyles, Inc., Willoughby, Ohio, with partner Ralph Tirabassi, keeps maintenance crews on fixed schedules.

"We generally keep them within the same area, so they're not bopping around from one area to another," says Jacobson.

Equipment loaners for breakdowns in the field are made possible by helpful distributors.

"We have things set up with some of our vendors for maintenance equipment. They can pick up a loaner piece of equipment and keep on moving. With smaller equipment, we carry extra weed-eaters and leaf blowers, so they can continue working.

"We try to establish good relationships with equipment vendors, so that when we need something, they will bend over backwards to help us," explains Jacobson.

Landstyles also has a landscape equipment mechanic on call to service larger equipment in the field. □

*John B. Calsin, Jr. writes for LM out of West Chester, Pa. Terry McIver contributed to this story.*

## Travel survival skills

❶ What is the condition of the equipment, including vehicles and trailers. Can they take hard travel abuse? If needed, can your crew change a tire on a trailer, or do you need a mechanic?

❷ Keep crews well stocked so they don't have to make trips back to the garage or "run around" to buy something.

❸ Have daily schedules with map routing and/or directions for the crew to take with them.

❹ Tell crews about all alternate routes, for those times when expressways are clogged.

❺ Real basic: some wasted travel could be eliminated by putting a different employee on the routing and scheduling team.

❻ Be flexible in case a customer needs to change his service day on short notice.

❼ Consider travel time as an expense, and charge the customer for it. Cut out as much travel "fat" as possible.

❽ Study your geographical area and mark all your accounts. Are there areas with numerous customers bunched together, and are those areas an extended distance from the shop, say 25+ miles? Maybe it's time to consider a satellite office, or remote storage site for vehicles and equipment.

❾ The storage company you pick has to allow outside storage of trucks and trailers.

❿ Buy a computer routing program.

-JC



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# Win against vandalism

*Follow these measures to protect your business from vandals, and to make sure you have proper insurance plans should damage occur.*

By BOB DECKER

**I**magine the shock of arriving bright and early to the landscape company you've built from ground zero and finding each of the windshields of your five trucks shattered and the tires slashed.

Unfortunately, situations like the one described above happen more often than you might think. The good news is that there are measures that you can put into place to minimize your chances of becoming a victim.

## **Eliminating opportunity**

The first step in deterring vandalism is to eliminate opportunity. Inspect your property and assess its overall security. Consider adding extra security measures or improving existing ones. The more secure the property, the less appealing it will be to vandals. Consider:



**Decker: advertise your anti-crime group.**

- ▶ Installing an alarm system. If you already have a proprietary alarm system in place, test it at least once a week to ensure proper working condition. Central station alarms are

maintained by an alarm company and checked at regular intervals;

- ▶ Using deadbolt locks on all outside entrances and inside security doors. If you prefer padlocks, they should be made of



**This damage, and that on page 15, was not caused by an accident. It was deliberate, an act of vandalism. It occurred in a nursery/landscape company in the East several years ago.**

steel and kept locked at all times. Remove serial numbers from your locks to prevent unauthorized keys from being made;

- ▶ Purchasing exterior or security doors lined with metal and secured with metal security crossbars;

- ▶ Welding exposed door hinge pins to prevent removal;

- ▶ Keeping lights on both inside and outside of your business, especially around doors, windows, skylights, points of entry;

- ▶ Installing covers over exterior lights and power sources to deter tampering;

- ▶ Building a fence;

- ▶ Designing your landscape with prickly shrubs or closely planted hedges;

- ▶ Eliminating places on your property where someone might hide.

In addition to examining the property yourself, you may want a second opinion from a qualified source. Some insurance companies, like Florists' Mutual, provide

walk-through inspections as part of their loss control programs. Local police or sheriff's departments are also good sources for advice on security measures.

## **Protecting assets**

In addition to making your property as secure as possible, you should be sure you have appropriate insurance protection against vandalism, including coverage for:

- ▶ Loss or damage to real or business personal property;

- ▶ Debris removal, which covers expenses involved with removal of debris resulting from the destruction of insured business property;

- ▶ Repair and replacement of damaged signs;

- ▶ Repair and/or replacement of motor vehicles;

- ▶ Repair and/or replacement of mobile equipment, including tractors, farm machinery and other vehicles designed for use

primarily off public roads;

▶ Repair and/or replacement of outdoor property. This provides coverage for outdoor fixtures, fences, antennas, satellite dishes and towers, lawns, plants, shrubs and trees not held for sale.

Also, mark all equipment with an identification number (for example, a tax identification or license number) and keep a record of all these numbers off premises. You should also keep detailed, up-to-date records of all existing and new property and store backup copies off premises. Always remember to report any new property to your insurance company to ensure adequate protection. If you are victimized, your insurance will be able to assess losses more easily, and you'll be able to provide useful information for law enforcement agencies.



#### Joining forces

An anti-crime council can establish links among companies and improve communication between businesses and the police, making them highly effective in vandalism prevention and prosecution. "Business Watch", a National Crime Prevention Council program, is modeled after the "Neighborhood Watch" concept. Check with neighboring businesses or your local police department.

Get to know neighboring business owners. A telephone tree is an effective means of sharing information with other merchants. Should a problem develop, each merchant is responsible for calling one or two others on the tree.

Aggressively advertise your anti-crime group. Post signs noting that your block of businesses is organized to prevent crime by watching out for and reporting all suspicious activities to law enforcement.

#### After vandalism occurs

In the unfortunate event your property is vandalized, immediately:

## Beware former unhappy employees

Vandalism committed by former, disgruntled employees can be particularly destructive because, in many cases, they have had access to security information and know where the company's most valuable assets are located. To prevent problems down the road:

- ▶ Establish and enforce clear policies about employee vandalism, crime reporting, opening and closing the business and other security procedures;
- ▶ Limit access to keys, computerized records and alarm codes;
- ▶ Engrave "Do Not Duplicate" on store keys;

▶ Change locks and access codes when an employee is terminated;

▶ Provide information about your security systems to employees on a "need-to-know" basis;

▶ Instruct your employees to report any suspicious activity or person immediately and write down the information for future reference;

▶ Reward employees for uncovering security problems;

▶ Perform background checks as part of the hiring process.

—BD



- ▶ Call the police;
- ▶ Document the crime with photographs;
- ▶ Contact your insurance agent;
- ▶ Clean up or replace signs, repair equipment and paint over graffiti.

Vandalism is a crime that can paralyze your business. By eliminating opportunities for vandalism, protecting your assets and properly insuring your business, you

can significantly reduce the likelihood that your landscape company will be a target for vandalism. □

—The author is Assistant Vice President of Loss Control Florists' Mutual Insurance Company

# A time-saving tool

*CLIP for Windows, a computerized lawn industry program, helps lawn care business owners eliminate business inefficiencies.*

By RON HALL/ Managing Editor

**Y**ou hear it all the time, "Time is money." Don't believe it; time is more valuable than money.

Time is not replaceable. It's the most valuable resource any business owner manages. This is particularly true in the green industry. There are so few productive hours in each season. Doing things right the first time and keeping the hours spent on mundane, repetitive tasks to a minimum contribute to a robust bottom line. Tasks that are repetitive are made for computers. Beg for computers. Most green industry businesses are using one or more off-the-shelf software programs such as QuickBooks, MYOB, Peachtree, Microsoft Word, Excel, etc. These programs promote a professional appearance and generate necessary business reports. However, chances are that even if you are using one of these software packages, or something similar, you're still suffering from paperwork overload.

Off-the-shelf software just does not cut it when it comes to certain areas of your green industry business. Routing and scheduling remain the stuff nightmares are made of;

billing is a headache just waiting to happen; job costing can cost you sleep.

Why spend late nights and early mornings under the paperwork siege when the right software program can handle your repetitive tasks and categorize the massive amounts of data they generate into a readable format that enables you to make informed business decisions fast?

One of the popular programs designed specifically for the needs of the green industry is called CLIP. It has been on the market for over a decade and has a large number of lawn care business users. Where off-the-shelf software falls short, CLIP picks up the slack by tying your customer base into your job scheduling, routing, billing and job costing.

"We have approximately 700 jobs. CLIP saves us a lot of time as far as keeping track of them," says Peggy Moyers, Moyers Lawn Care, Rockville, MD.

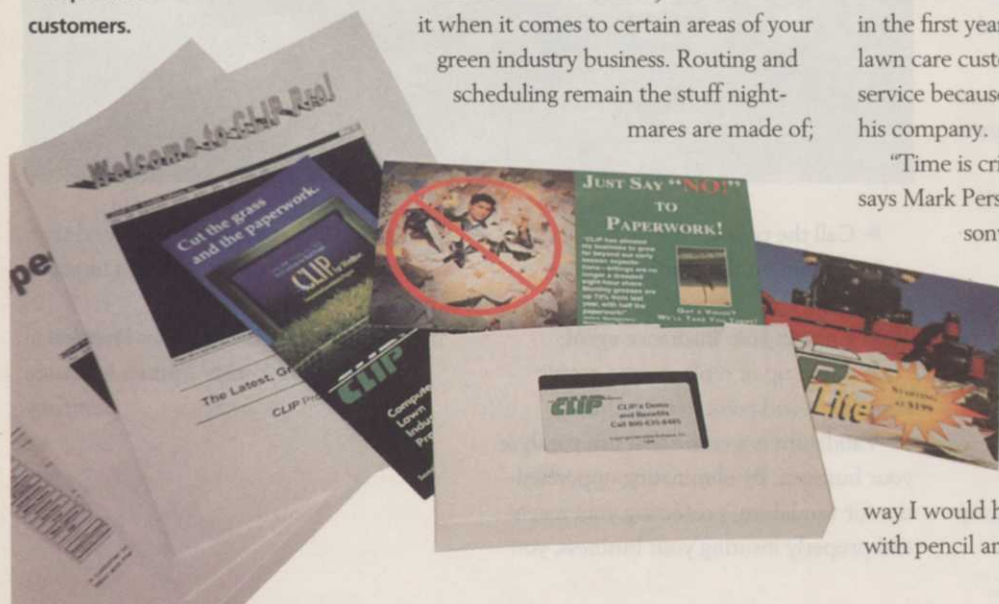
Peggy says every afternoon the crews bring back their work orders and she enters that data into her computer. She says it usually takes only about 40 minutes. Then she prepares and prints out the next day's route sheets.

Marty Allen, Environmental Expressions, Gaithersburg, MD, says, "before I got CLIP, I spent three days a week in the office doing paperwork." He says the software allows him to do the same amount of work in only 10-15 minutes each day. He estimates that using the software saved him \$20,000 in the first year alone. It's also allowed him to service lawn care customers he would not have been able to service because of the flexibility the software gave his company.

"Time is critically important in maintenance," says Mark Perschel, Perschel Brothers Services, Jacksonville Beach, FL. "I know exactly how much money I am making per man, per hour on every job."

His crews enter information into a Remote Data Collector as they enter and leave each job site. "We have 300 properties all with differing schedules. There is no way I would have time to keep track of them all with pencil and paper," says Perschel.

**Sensible Software provides a large amount of marketing and product support material to customers and potential customers.**



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Turf-ID is a computer program to aid turfgrass managers, extension personnel and consultants in the vegetative identification of some common turf and weedy grasses.

The program was developed and is being offered by the North Carolina State University Dept. of Crop Science. Turf-ID uses a dichotomous key developed by J. M. DiPaola. The key currently covers 48 grasses. A glossary, digitized illustrations and help information are included in the use of the identification key.

Turf-ID requires an IBM-compatible computer with 512 Kb available RAM, VGA graphics capability and one of the following operating systems: DOS 3.3 or higher, Windows 3.X, Windows 95, Windows NT 3.5 or higher. Turf-ID can run from a diskette, but a hard drive is recommended. The program requires about 800 Kb of hard drive space. Diskette size both 3 1/2" and 5 1/4".

Cost is \$50 (\$40 educational) with proceeds going to a scholarship fund for a turf major. Send order to: *North Carolina State University, Attn: Art Bruneau, Box 7620, Raleigh, NC 27695-7620.*

CLIP operates on an IBM PC compatible system using the Intel 80386, 80486, Pentium or later chip. These systems must have at least 200 megabytes of hard disk, a 3 1/2" high density desk drive, and at least 8 megabytes of RAM. You can use any Windows compatible printer. A Super VGA color monitor is recommended.

Sensible Software, Inc., 9639 Doctor Perry Road, Suite 123, Ijamsville, MD 21754. 800/635-8485.  
<http://www.clip.com>. **LM**

## LCA home page helps consumers find a landscaper

The Landscape Contractors Association of MD-DC-VA now has a web site for landscape professionals and consumer access: [www.lcamddcva.org](http://www.lcamddcva.org).

Consumers searching for a landscape professional can now find companies that meet their specific needs by using a "find a landscape professional" link. Searchable by types of work and geography, the consumer will immediately be able to locate firms that can meet their landscape needs.

The site also contains information about the association's upcoming events and programs. Scott Brinitzer, LCA president, says both the public and LCA members will be able to access information about the association and its members outside of regular business hours.

## San Diego awaits irrigation show

Now's the time to start planning for the 1998 Irrigation Association International Irrigation Show in San Diego on November 1-3. Don't put it off any longer. Call the IA today at (703) 573-3551 or register over the web at [www.irrigation.org](http://www.irrigation.org). Lock in your reservations and start planning your perfect convention.

Held in the expansive San Diego Convention Center on the waterfront, the show will have irrigation experts from more than 60 countries. More than 6,000 are expected to register for the annual event. The exhibition floor sold out in May for the fourth year in a row!

## EETC has certification program

Schools across the United States are excited about the prospect of gaining certification from the Equipment and Engine Training Council (EETC). At the organization's meeting in Milwaukee, WI, in May, the 120-plus participants received copies of the new "Outdoor Power Equipment Technology Program Certification" publication.

For a school to become certified it must meet the industry's standards for providing professional training facilities and tools; ensuring instructor competency; and teaching industry-specified and desired subject matter.

Each of the three levels of certification will require compliance with specific standards for the facility, instructor qualifications, and curriculum competencies.

Level 1 covers two and four-stroke engine competencies,

Level 2 covers electrical, driveline, hydraulics, and hydrostatic competencies,

Level 3 covers compact diesel & generator competencies.

Bruce Radcliff, incoming president of the EETC, said that "one of the primary goals of the EETC for the coming year is to provide accreditation to six to 10 schools in North America. The first school accreditation should be complete by early June."

A second goal outlined by Radcliff was for the EETC "to see a measurable increase in the participation of OPE dealers." He said the involvement and experiences of OPE dealers are needed for the success of EETC. For more information about the EETC, contact Virgil Russell, Executive Director, at 512/442-1788 or [opecert@io.com](mailto:opecert@io.com).

**P**erusing a few regional newsletters, we find examples of the variety of tasks and concerns that can make for a busy day for the modern superintendent.

Color rotation in flower beds is the topic of discussion in a recent Central Ohio GCSA newsletter. Colorscapes that provide seasonal color are a good way to draw attention to your course if you've got it in your budget.

Two to six rotations of plants during a season provide the longest and best display, writes the contributor from Davey Groundskeeper. The length of the growing season and visual impact

desired from flower beds determine how many rotations to make during one season.

Three rotations are often used: the first is in spring, for the Midwest, Northeast and Southeast. Tulips and daffodils are of course the favorite spring bulbs.

Summer annuals such as begonias, impatiens and periwinkle perform well throughout the summer if they are properly watered and fertilized.

For the third rotation, go with mums, marigolds and flowering cabbage (kale). Pansies will be a nice addition in the fall, especially in the Southeast and Southwest from October 1 to October 15.

On to collies. Many superintendents continue to have success using border collies to herd geese away from golf course turf. Thankfully, the U.S. Fish and Wildlife Service states that no permit is required to merely scare a flock of...migratory birds other than endangered species or bald and golden eagles."

One caution: you are not permitted to scare geese away if they are actively nesting.

Superintendents in Washington state reportedly using herding dogs with success are Mark Cupit, Snoqualmie Ridge GC; Steve Hausman, Druids Glen; Dave Baber, Canterwood G&CC; Tom Corlett, Tam O'Shanter; and Tom Christy, Inglewood

## Crews, collies and color fill a super's day



*Terry McIver*

TERRY MCIVER  
Editor-in-Chief

### GOLF

PAGE 4 G ▶

Clean start for LACC greens

PAGE 8 G ▶

The 'Lady' gets a great shop

PAGE 12 G ▶

Renovating? Look before leaping

PAGE 16 G ▶

Hot turf, stressed turf

CC. If you need some advice on using herding dogs, these superintendents are the ones to ask.

That news on collies came to us from *Turfgrass Management*, published by the Northwest Turfgrass Association, a group that's on top of turf news in Oregon, Washington, Montana and Idaho. Thanks to Donald Clemens for a copy of the premier issue.

Crew trouble got you down? Rick Osewalt, director of business management for New England Business Service, Inc., says you've got to take a businesslike approach with new workers. Use applications that are easy to understand, and be straightforward in the interview.

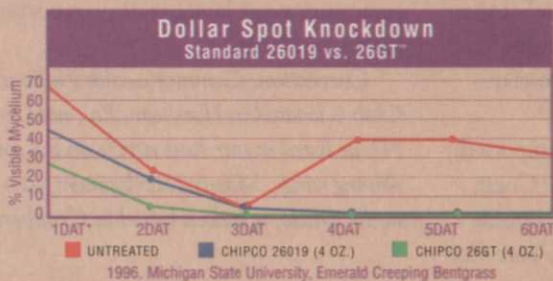
Provide written descriptions of all established company policies, from paid time off to attendance requirements.

Maintain complete and up-to-date records on each employee. Keep job performance files that include written information on attendance, changes in duties, salary or job performance.

Keep employees well informed. Make sure they know about changes in employment law, minimum wage law, overtime reporting and safety standards.

**Correction:** Commonwealth National Golf Club is located in Horsham, Pa., not Cranberry, NJ, as listed in our June article on the course's new driving range. Matrix Development, also mentioned in the article, is indeed based in Cranberry, NJ. **LM**

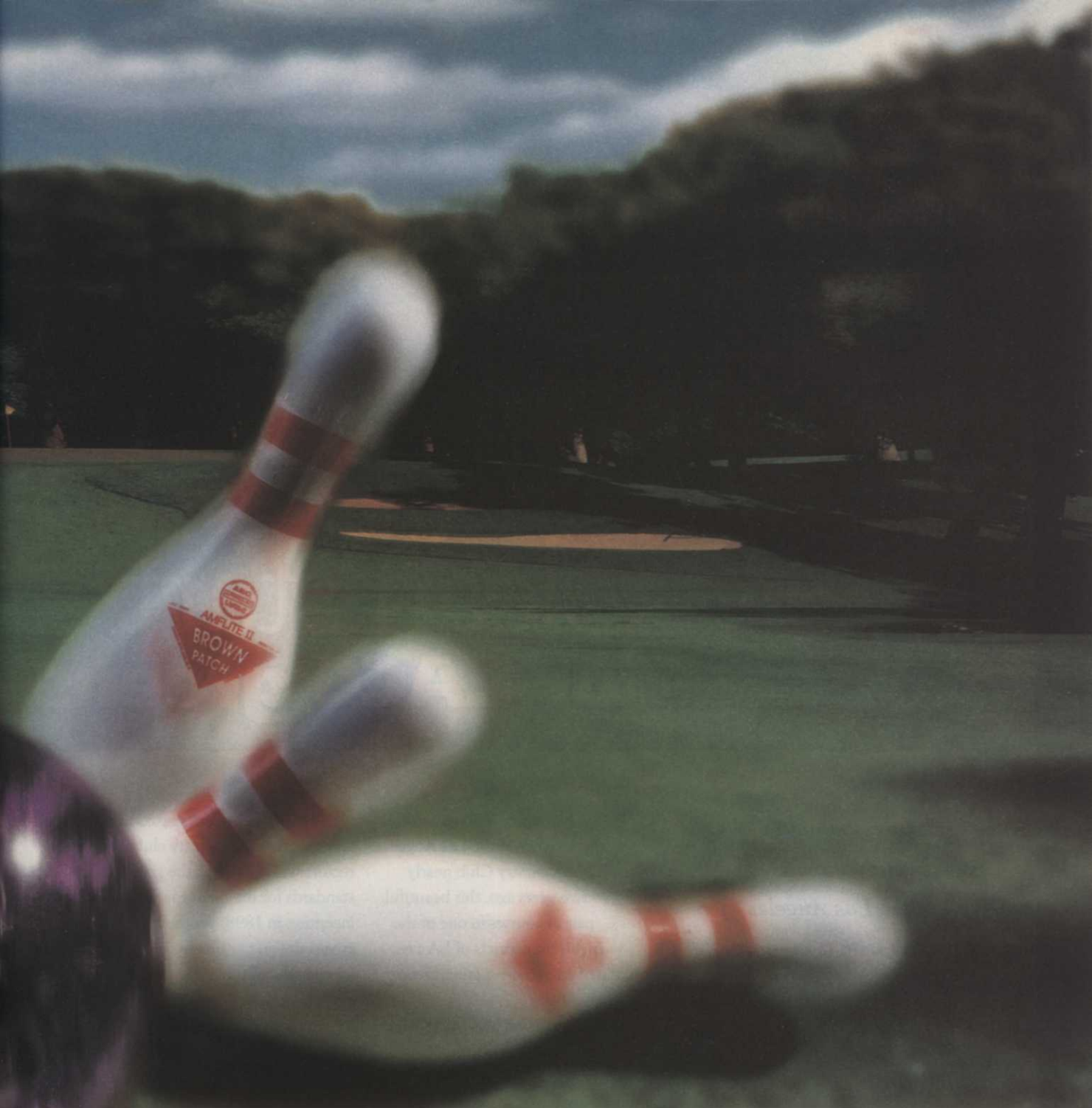
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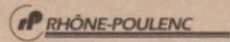


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Jon Peck, assistant superintendent at the South Course, looks out at the 5th green at LACC.

# Clean start for LACC greens

*Bruce Williams jumped in to a greens renovation program at the Los Angeles Country Club with a mandate to keep the topography as is.*

By DON DALE

**W**hen Bruce Williams came to work at the Los Angeles Country Club nearly two years ago, this beautiful pair of courses in one of the high-rent districts of LA was in the middle of an extensive greens renovation program.

The North Course was half-completed, with the South Course due up next. Williams modified the program somewhat, but more importantly, kept a meticulous record of each step along the way.

That's because Bruce Williams is an exacting kind of guy. Which is a good thing, because Los Angeles Country Club is an exacting kind of golf venue. The two were made for each other.

The LACC project started in an odd way, because the country club board of directors was upgrading the greens to USGA standards for the first time since the club's inception in 1898; yet they wanted the greens design to remain exactly the same for the sake of tradition.

A laser survey was done to record the topography of the greens.



**Bruce Williams: greens crew has things well in hand.**

The old greens, sub-grades and drainage pipes were removed. A clean start was necessary for this project, Williams says, and it's vital to remove all the old contaminated debris and soil.

"You develop a smooth contour for the new subgrade," he says. That is composed of the native clay soil and follows the contour of the eventual green.

## Nutritional balance before and after

Williams says that one requirement for healthy establishment and growing of a fine turf surface is a "heavy" nutrient balance prior to seeding.

"I'm a firm believer in having good nutrition at the beginning," he says.

His pre-plant mix was 70 pounds of Milorganite (6-2-0) per 1,000 sq. ft.; 40 pounds of Roots Topdress, organic matter derived from seaweed; 10 pounds of gypsum; 16 pounds of Scotts STEP for micronutrients; 5 pounds of Scotts starter fertilizer (19-26-5); and 15 pounds of sulphate of potash (0-0-50).

"That ends up being 5.15 pounds of nitrogen per 1,000, 2.7 pounds of phosphorus, and 7.75 pounds of potassium," Williams notes. "That might be more than some people would use, but I had good success with it."

Williams says the above formulation was based on his own experience and his colleagues' advice, based on their experience in growing in greens. He says he is a firm believer in going to the people who know the answers and taking their advice.

One of the reasons that he fertilized so heavily is "to establish appropriate levels of ferti-

lity in an otherwise sterile, sandy greens-mix." He used 1.1 pound per 1,000 of A-4 bentgrass seed. This seeding rate is lower than for other bent varieties, but it produces a plant population of 2,200 to 2,500 plants per square decimeter.

Follow-up nutrition consisted of 5 pounds of Scotts starter fertilizer per 1,000 sq. ft., applied weekly for three weeks. Top dressing, using the original greensmix material, was applied weekly for 10 consecutive weeks.

New greens were planted on June 1 and were ready for play in the first week of September. Total N used during that period was 9.55 pounds per 1,000; total P was 6.6 pounds; and total K was 10.64 pounds.

Growing a championship golf green is only half the battle. Williams is just as precise in maintaining it with a regular fertilizer schedule.

Fertilizer is the primary component of maintenance, and the greens get a weekly foliar feeding of Gary's Green (18-3-4 plus iron) at .9 pounds of nitrogen per week.

"We supplement that with a 1-0-14 product for an equal ratio of potash to nitrogen," Williams says. Soil and tissue testing is done regularly. Micronutrients are added as needed.

-DD

### No choker needed here

For the drainage system, four-inch ADS pipes were laid in a herringbone pattern dug into the subgrade. The angles of the herringbones point down the slope to more efficiently catch water and carry it away. The pipe trench is backfilled with pea gravel.

"Then you put in a gravel layer—again maintaining the contour of the subgrade." Four inches of  $\frac{1}{4}$  to  $\frac{3}{8}$ -inch gravel does the trick, and 12 inches of top mix is the final layer. Williams decided he didn't need the "choker" or transition layer between gravel and top mix because the sizing of the gravel allowed for proper drainage.

The top mix consisted of 85% sand and 15% peat moss. Williams worked with a soil consultant to get the right sand.

"Once you get the top mix established you make sure it's compacted sufficiently so it's not going to sink on you," he says. That means light hand-rolling, because it should not be compacted so tightly that it loses its porosity.

### Precise seeding of A-4

That plant population, along with the thin leaves of the A-4 variety bentgrass gives a very dense turf mat. It also has an upright growth habit, and this new-generation variety has been rated high in NTEP

trials across the country.

"It all equals quicker putting speeds without having to go to lower heights of cut to achieve it," Williams emphasizes.

He's aiming for 10 to 10½ on the Stimpmeter, and the ability to go to 11 or higher for tournaments and special events.

"We're able to achieve that without going below a .125-inch cut."

Half the seed was planted in one direction, and half at a 90-degree angle with a drop spreader, using Milorganite as a carrier to improve distribution and avoid skips. Hand leaf rakes were used, also working in two directions, to manually dig in the seed and remove footprints.



*Poa annua* on greens is removed by hand. Here, staffer Leopoldo Castillo gets the job done.

"Then we rolled it with a hand roller to accomplish soil/seed contact," Williams says. The greens were watered uniformly immediately after rolling.

At germination, Williams' able crew, led by North Course assistant superintendent Doug Martin and South Course assistant Jon Peck, applied Subdue fungicide uniformly to prevent pythium. That treat-



Bruce Williams with assistant superintendents Doug Martin, left and Jon Peck

ment was repeated every three weeks.

"Within seven days we had germination. Within 14 days we were able to mow the greens for the first time."

#### Double row works

Irrigation systems were improved on the new greens, and one feature of that facilitated the growing-in. Williams had double heads installed on the South Course greens, and that proved an excellent move.

"At times the greens required more water than the greens banks did," he says. Double heads allowed precise watering according to grass species and soil type.

Germinated greens were watered by manual operation of the sprinklers. Checked hourly during daylight hours, the greens were kept moist constantly.

#### Poa annua control

Getting rid of *poa annua* was one object of renovating the Los Angeles Country Club greens. Williams did that during the renovation, and is assiduously fighting its reemergence.

"We decided our best practice was mechanical removal of *Poa annua* plants," he says. That means the staff use knives to physically cut out poa plants found during the daily inspection program designed to locate and remove it from greens. Remaining patches in other areas of the golf course are attacked with Kerb or Progress.

"The men who mow our greens are re-

## Lower the mower, slowly

As with everything Williams does as a greenskeeper, his selection of mower height on the growing greens was meticulous.

► The first cut was at .375-inch with a walking mower, no basket.

► Week 2: mower height was reduced to .250

► Week 3: .215

► Week 4: .200

► Week 5: .185

► Week 6: .170

► Week 7: .160

► Week 8: .150

► Week 9: .140

► Week 10: .130

► Today, greens are mowed at .125.

ally on top of it, and they do a wonderful job," Williams says of his crew.

It's worth noting that Williams credits his hard-working staff, especially his two assistants, with much of the success of the renovation—which also covered tees and bunkers.

The governing board's commitment in the \$2.5 million-plus renovation was crucial to its success, as was the support from General Manager Jim Brewer.

Williams, a past president of the Golf Course Superintendents Association of America, and one of the industry's more progressive superintendents, says it was "extremely exciting" to move into such a challenging situation.

"This, as a package, is rated one of the top country clubs in the United States," asserts Williams, who came to LACC from another fine course, Bob O'Link Golf Club in Chicago, where he was superintendent for 20 years. □

Don Dale writes for LM from Hollywood.



5th hole on the South Course of the Los Angeles Country Club



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# This 'Lady' deserves the best

*Superintendent Steve Humphreys put together a great golf maintenance facility one step at a time at the historic 101-year-old Dutchess Golf and Country Club.*

By CAROLYN STEADMAN

**T**he trend in maintenance facilities is toward more secure, more efficient and more worker-friendly structures. Often these buildings offices for the superintendent and other maintenance managers. Computers are commonplace. Many also have employee training/break rooms.

Such is the case at "Golf's Lady of the Hudson," the 101-year-old Dutchess Golf and Country Club,



Meeting room at the shop is used for lunch or educational sessions. At right is the Trion equipment lift.

in Poughkeepsie, NY. Superintendent Steve Humphreys is, seemingly, constantly upgrading the maintenance facilities there. He's been at it a while.

Humphreys came to Dutchess in 1970. He inherited greens with a mixture of annual bluegrass and South German bentgrass, and roughs of annual

bluegrass, ryegrass and some bent. He also inherited an 80' by 40' cinder block maintenance building. It was a fine facility for its time, and just a few years old. It contained the supply room, an office, a conference room, lockers, equipment inventory and chemicals. It also had one heated bay and two unheated bays.

But demands for better golf turf keep pushing for more intense maintenance, and the need to periodically upgrade maintenance shops and equipment/chemical storage facilities.

#### **After the fire**

After a fire destroyed a smaller storage building at Dutchess in 1981, Humphreys oversaw the building of a 20' by 40' cinder block building. It was built with a 42' drive-through between it and the main building. In 1985, he enclosed the drive-thru. In 1995, his crew improved the building by finishing off a staff room.

Today's 5600 sq. ft. building includes three heated and three unheated bays. When they were designed, Humphreys decided to put the doors on opposite walls for easier access to stored equipment. The major equipment servicing is done in the winter in the three heated bays. Each vehicle has the date of purchase painted on it. The club works on a drop



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#### Well equipped

The staff/lunch room is equipped with a television and VCR (for rainy days and training), three microwave ovens, and a handsome large oak table that Humphreys rescued from the trash at the clubhouse and refinished. The room is sealed from the floor to the ceiling. A large window looks out at the heated bays. Another window looks out on the 17th fairway. The greens

dead life cycle for all the equipment.

"The heated bays help us to meet the member requirement of maintaining not only the mowers and related equipment, but the ball washers, the benches, the trash baskets and the other accessories that are part of the game. They are all repaired and

committee holds its meetings in this room.

Humphreys says members are welcome anytime.

There's also a separate locker room with a washer and dryer. The locker room contains a shower, a bathroom and lockers for everyone which the five fulltime and between 11-13 seasonal golf course employees greatly appreciate.

Humphreys' office is in this building, too. Like the staff room, it's sealed from the floor to the ceiling and has huge safety glass windows that look into the shop and out on the course. He has a new computer and is a member of the GCSAA web site and TurfNet.

He uses the computer to glean information from the growing number of golf course web sites. "It's like being able to visit your neighbors on a rainy day and find how they are managing their problems. You can do it at your convenience. I do more of it in the winter than in the summer," explains Humphreys.

While change is often slow at a historic course like Dutchess, it comes nevertheless. Humphreys can document many of the recent ones. He has every work log for his long tenure there.

Humphreys says, "I maintain the course to keep the membership happy," which includes staying out of their way during play.

Crew members see themselves as the phantoms of the course. Their goal is to do all the maintenance before members tee off. Only the rough is mowed during play.

The Dutchess maintenance complex reflects the growing demands placed on golf course maintenance at Dutchess. The course has a maintenance facility that will serve "Golf's Lady of the Hudson" well into the 21st century. □

*Carolyn Steadman writes on Green Industry topics from her office in Delmar, NY.*

### *Humphreys uses the computer to glean information from the growing number of golf course web sites.*

*"It's like being able to visit your neighbors on a rainy day," he says.*

painted during the winter," said Humphreys. A feature in one of the bays is the Trion equipment lift, a tool that Humphreys loves. "It's really increased our efficiency," he says.

Large windows made of safety glass allow lots of natural light into the improved maintenance building. The newest section also has skylights.



Never again will Humphreys or a crew member wonder if they have a certain part.



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IRRIGATION<sup>®</sup>

# Look before leaping!

*Before doing any type of renovation on your course—know what you have, determine what you want, then make sure you keep it separate from your regular maintenance program.*

By ROBERT A. BRAME

**R**enovation is anything done to a golf course beyond regular maintenance. Even minor improvements which are not a part of regular maintenance should be considered renovation.

There are many reasons why you may want to improve your course, or some part of it: to improve aesthetics, to make it safer, to make it easier to maintain, for environmental reasons, or to improve fairness, although everybody will probably define the issue of fairness differently.

Safety is becoming an increasingly important reason for renovation. Many older courses weren't

*cont. on page 14G*



# QUELANT™-Ca

## Calcium & Amino Acids

# CALCIUM DEFICIENCY CORRECTOR

Addition of calcium to the soil by traditional means is not usually efficient or effective in treating the calcium deficiency of turfgrass. Once applied, the common forms of liming materials can rapidly change to compounds that are insoluble in water and not readily available to the plant. Continuous applications over long time periods are necessary to effect even modest improvements in calcium uptake.

Quelant™-Ca is a newly available amino acid chelated calcium product that corrects calcium deficiencies in turfgrass upon application. Quelant™-Ca provides readily available calcium chelated with amino acids so that it is easily absorbed by the leaves and/or the roots of the plant regardless of most soil and water conditions. The unique formulation of amino acids used for chelation was



developed not only to facilitate absorption by the leaves and roots, but to increase mobility of the calcium within the plant as well.

Quelant™-Ca is normally applied as a foliar spray and may also be applied through fertigation. Either way, it is tank-mix compatible with herbicides, soluble fertilizers, insecticides, fungicides and plant growth regulators. It will even help improve the efficiency of most of these treatments by increasing their absorption and translocation within the plant.

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designed for the number of golfers they're now getting. This increases the likelihood of accidents. Pay particular attention to the location of tees relative to fairways, or the location of cart paths relative to a green or a fairway.

Whatever your reasons for wanting to renovate, put together a plan that defines and communicates its need:

Research what you have on the course.

## Bunker battles

Some suggestions to guarantee problems with renovated bunkers:

- ▶ don't remove sand before rebuilding,
- ▶ select poor quality sand,
- ▶ design to foster erosion problems,
- ▶ poor or inadequate drainage,
- ▶ don't provide supplemental irrigation for bunker banks.

Spell out exactly what you want.

Communicate clearly what you would like to do and why.

Separate renovation from maintenance.

The question of who should do the renovation always comes up. You might be tempted to do the project in-house, particularly if it's a small project. If you do, dedicate the necessary personnel for the renovation—and for that project only. Keep this work separate from regular maintenance. You can't do them both and do them well.

Besides, for most projects, you'll want to get them done as quickly as possible. Drawing out a renovation over many months, or perhaps several years, usually results in an increasing level of member frustration. Before starting a renovation, get a feel for what your members are willing to commit to.

It's almost always a good idea to hire an architect. Besides planning the details of the project, the architect can help explain and sell it to your membership. Somebody is going to have to be able to stand before the membership and answer the questions

## Classic mistakes to avoid

- ▶ **Trying to be something that you're not.** There is only one golf course known as Augusta National, and there is only one course exactly like your own. Work on improving the strengths of your course. Don't imitate.
- ▶ **Not knowing what you have to start with.** Go through the files at your course (even attics or basements) for any original drawings, plans or photographs of your course. Check with longtime members. A local library or soil conservation service may have photographs of the course.
- ▶ **Mixing design themes.** This is not an uncommon mistake when renovating bunkers or tees. Keep them the same style around the course..
- ▶ **Reconstruction of tees or greens when a relatively simple correct environmental problem is at fault.** Look first at air movement or sunlight. Sometimes the condition of a green or tree can be improved by simply removing trees and opening it up.

## New green blues

The poor performance of new greens can be due to one or more of any number of factors, including:

- ▶ using different soils, like rebuilding sand-based greens when others on the course are soil,
- ▶ grassing with a different turfgrass,
- ▶ rushing a green into play too soon,
- ▶ not building a nursery at the same time,
- ▶ not taking time to identify the best materials,
- ▶ sloppy construction.

and field the concerns of the people who are going to pay for the work. Your members need to see the long-term picture, not the short-term inconveniences.

Make sure you're aware of the architect's qualifications. Do his/her ideas and philosophies fit with your club's finances and philosophies. Get out and look at other similar projects they've done. Check with other superintendents who have worked with the architect. Would they hire that person again?

Be equally diligent in hiring any contractors that you're considering for the project. Have they done similar projects that you can look at? Again, talk to other superintendents who have worked with them. Be sure to let contractors know about the agronomic conditions of your course, particularly if they're unique, before they

begin the job.

Be aware that there are things to consider that might be affected by your renovation. Will you need to change your irrigation? Add or relocate a sprinkler head? Install additional lines? Require more pump capacity? Will you need to add or improve drainage? Buy or lease additional maintenance equipment as a result of the renovation? Increase the size of your maintenance building? Think ahead.



**Bob Brame advises to keep renovation separate from maintenance.**

As you look at renovation work on your course, make sure you have the infrastructure in place to handle it. Don't bite off more than you can chew, especially in the first year. □

—This article was adapted from a talk given by Robert A. Brame, Director of the USGA Green Section's North Central Region, at a seminar in Rocky River, Ohio, this past April.

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# Hot turf, stressed turf

**M**id-summer is here. Be aware of the effects of heat stress on yourself and your crews, but also on your turfgrass.

That's why it's probably a good idea to keep a soil thermometer handy. And to use it, particularly when temperatures start getting uncomfortable.

Excessive heat can weaken or, if soil temperatures become hot enough, kill turf. But heat alone may not be the only reason why turf may begin to decline in mid-summer. This is the season when traffic is heaviest on the turf. Conditions are favorable for some summer diseases. Also, drought stress, particularly if the turf is not irrigated, can be a factor.

"Environmental stresses are a real challenge in our maintenance of turf," said Dr. Karl Danneberger to about 100 superintendents at a USGA regional seminar in



Dr. Karl Danneberger, of The Ohio State University, says that when turfgrass is under severe stress, it stands a better chance of survival and recovery if you don't disturb it too much.

## RELATIVE HEAT HARDINESS OF 19 TURFGRASSES

HARDINESS RANKING	SPECIES
Excellent	zoysiagrass
	Bermudagrass
	buffalograss
	carpetgrass
	St. Augustinegrass
Good	tall fescue
	meadow fescue
	colonial bentgrass
Medium	creeping bentgrass
	Kentucky bluegrass
	Canada bluegrass
	chewings fescue
Fair	red fescue
	annual bluegrass
	perennial ryegrass
	redtop
	Italian ryegrass
Poor	rough bluegrass

—From "Turfgrass Science and Culture," Prentice-Hall, Inc., by James B. Beard

Cleveland this past spring.

The Ohio State University turfgrass expert said the optimum soil temperatures (measured at 1-2" depth) for growing creeping bentgrass are very narrow--50° to 64° F for optimum root growth; for optimum shoot growth 50-75° F.

He said that when the soil temperature exceeds 75° F the root system of the creeping bentgrass decreases by 50 percent.

"When temperatures reach that, your turf can look fine. It will be nice and green, and maybe you may have too much growth going on. But underneath, that plant is losing its root system and that can cause problems," said Danneberger.

There is a reduction in amount of energy the plant is able to store for growth, and loss of carbohydrates. This usually becomes evident in a secondary fashion. For instance, the turfgrass becomes less tolerant to traffic.

Less commonly, excessive heat (when the soil temperature rises above 104° F), can kill turfgrass.

While superintendents can't control Mother Nature's heat, they can lessen the effects of heat stress, said Danneberger.

For instance, mowing greens at 1/8 inch

or less provides precious little canopy over the soil surface, and, of course, is a stress of its own. Consider temporarily raising the cut during summer's heat.

Studies have also found that shaded turf is more susceptible to heat stress. Increase air movement by pruning (or removing) trees or shrubs adjacent to greens or tees with stressed turfgrass.

Clippings? While it doesn't hurt to leave them on in the spring or fall when the turf is actively growing, collect them when it's hot.

Also, be careful with topdressing when the turf is heat stressed, said Danneberger. Putting down another layer of material, particularly at noon or mid-afternoon, can cause a rapid temperature buildup in the soil.

Syringing greens during the heat of the day can drop soil temperatures several degrees rather rapidly.

After the turfgrass survives heat and all the other stresses of summer, and the temperature begins to drop again, that's when it begins building root mass again. "Late-season fertilization is a critical time in a plant's recovery from stress," said Danneberger. **LM**

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 03  260 Lawn Care Service Companies  
 04  265 Custom Chemical Applicators (ground and air)
- 05  270 Tree Service Companies/Arborists  
 06  275 Landscape Architects  
 07  280 Land Reclamation and Erosion Control  
 08  285 Irrigation Contractors  
 Other (please specify) \_\_\_\_\_
- 09  290 Sports Complexes  
 10  295 Parks  
 11  300 Right-of-Way Maintenance for Highways, Railroads or Utilities  
 12  305 Schools, Colleges, Universities  
 13  310 Industrial or Office Parks/Plants  
 14  315 Shopping Centers, Plazas or Malls  
 15  320 Private/Public Estates or Museums  
 16  325 Condos/Apartments/Housing Developments/Hotels/Resorts  
 17  330 Cemeteries/Memorial Gardens  
 18  335 Hospitals/Health Care Institutions  
 19  340 Military Installations or Prisons  
 20  345 Airports  
 21  350 Multiple Government Municipal Facilities  
 Other (please specify) \_\_\_\_\_
- 22  355 Extension Agents/Consultants for Horticulture  
 23  360 Sod Growers/Turf Seed Growers/Nurseries  
 24  365 Dealers/Distributors/Formulators/Brokers  
 25  370 Manufacturers  
 Other (please specify) \_\_\_\_\_
- 2. Which of the following best describes your title? (fill in ONE only)**
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 27  20 **Manager/Superintendent**- Arborist, Architect, Landscape/Grounds Manager, Superintendent, Foreman, Supervisor  
 28  30 **Government Official**- Government Commissioner, Agent, Other Government Official  
 29  40 **Specialist**- Forester, Consultant, Agronomist, Pilot, Instructor, Researcher, Horticulturist, Certified Specialist  
 30  50 **Other Titled and Non-Titled Personnel** (please specify) \_\_\_\_\_

**3. Is your golf course:**  
 31  A Public 32  B Semi Private 33  C Private 34  D Hotel/Resort 35  E Municipal

**4. If you work for a golf course, how many holes are on your grounds?**  
 36  1 9 37  2 18 38  3 27 39  4 36+

**5. How many acres are maintained at your facility?** \_\_\_\_\_

**6. SERVICES PERFORMED (fill in ALL that apply)**

- 40  A Mowing 45  F Turf Fertilization 50  K Paving, Deck & Patio Installation  
 41  B Turf Insect Control 46  G Turf Disease Control 51  L Pond/Lake Care  
 42  C Tree Care 47  H Ornamental Care 52  M Landscape Installation  
 43  D Turf Aeration 48  I Landscape/Golf Design 53  N Snow Removal  
 44  E Irrigation Services 49  J Turf Weed Control 54  O Other (please specify) \_\_\_\_\_

**7a. Do you specify, purchase or influence the selection of landscape products?**  
 Yes  No

**7b. If yes, check which products you buy or specify: (fill in ALL that apply)**

- 55  1 Aerators 62  8 Herbicides 69  15 Sweepers  
 56  2 Blowers 63  9 Insecticides 70  16 Tractors  
 57  3 Chain Saws 64  10 Line Trimmers 71  17 Truck Trailers/Attachments  
 58  4 Chipper-Shredders 65  11 Mowers (reel/rotary) 72  18 Trucks  
 59  5 De-icers 66  12 Snow Removal Equipment 73  19 Turfseed  
 60  6 Fertilizers 67  13 Sprayers 74  20 Utility Vehicles  
 61  7 Fungicides 68  14 Spreaders

**8. Do you have a modem?**  Yes  No

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105	117	129	141	153	165	177	189	201	213	225	237	249	261	273	285	297	309
106	118	130	142	154	166	178	190	202	214	226	238	250	262	274	286	298	310
107	119	131	143	155	167	179	191	203	215	227	239	251	263	275	287	299	311
108	120	132	144	156	168	180	192	204	216	228	240	252	264	276	288	300	312
109	121	133	145	157	169	181	193	205	217	229	241	253	265	277	289	301	313
110	122	134	146	158	170	182	194	206	218	230	242	254	266	278	290	302	314
111	123	135	147	159	171	183	195	207	219	231	243	255	267	279	291	303	315
112	124	136	148	160	172	184	196	208	220	232	244	256	268	280	292	304	316



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  - 63  9 Insecticides
  - 64  10 Line Trimmers
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  - 66  12 Snow Removal Equipment
  - 67  13 Sprayers
  - 68  14 Spreaders
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