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LANDSCAPE MANAGEMENT

SEED

availability &
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ALSO:

- Saving our wetlands
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CATION

From Tee-2-Green

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AS WE SEE IT

JERRY ROCHE, EDITOR-IN-CHIEF



On line with LM a 'net' gain for many readers

It probably won't be long before there's a discussion group for turfgrass on the Internet. It seems like every other subject under the sun is being bantered back and forth in cyberspace.

The only reason that you haven't read about such computer-based communication systems in LM (until now) is because many of you, we've found out, don't have computers equipped with the modem technology that makes inter-computer communication possible.

This year already, we've visited your offices in Spokane, in Houston, in San Francisco and in Washington. We've seen computers on your desks nearly everywhere we've been. Yet most of them are for billing customers or scheduling irrigation or figuring out job costs.

Four months ago in this space, we wrote:

"Try adding a fax/modem to your computer so you can subscribe to information services like those offered by the Turfgrass Information File or the American Society of Landscape Architects." This month, we're giving you another reason to add a modem to your computer: so you can "talk" to us.

Beginning immediately, you can send the LM editorial staff letters, comments, opinions and suggestions via the Internet's e-mail system, which is offered through most online computer services (CompuServe, Prodigy, America Online, etc.).

Our new experimental e-mail address: 75553.502@compuserve.com.

The e-mail system might come in especially handy for:

● Commenting on an article you read in the magazine.

● Asking a question about an article you saw in the magazine. *How do I get in touch with that author? Has any research been done on that product?*

● Asking a technical question that we can forward to Dr. Bal Rao of "Ask the Expert" fame. *What are the most heat tolerant turfgrass species? What herbicides control crabgrass best?*

● Requesting information about the industry. *How many lawn care companies are there in the country? What is the biggest U.S. landscape company? What is the square footage of the average golf green?*

● Requesting information from our annual Buyer's Guide. *Who manufactures landscape florgy tubes? What's their address and telephone number?*

● Finding out more about the books we market. *Is there a chapter on containment system design? What are the author's credentials?*

However, please remember that you can still contact us in the standard manner: by writing us a letter, faxing us a letter or note, or phoning us directly.

We hope you'll take us up on this standing offer. To quote Drs. Venkman, Stantz and Spengler (in "Ghostbusters"): "We are here to serve YOU!"

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LANDSCAPE MANAGEMENT

AUGUST 1995 VOL. 34, NO. 8

COVER STORY

8 Seed availability, pricing

Researchers are working on insect-resistant bentgrasses and Kentucky bluegrasses, which will have a tremendous impact on the turfseed market in the near future.

Jerry Roche

FEATURES

12 LM Reports: Truck accessories

Options to make your pick-up truck more functional, from trailers to snow plows.

Terry McIver

14 Wetlands mitigation

A good environmental consulting firm can help you avoid problems, or take care of those that have cropped up.

John B. Calsin Jr.

18 Landscape timbers

You can charge for 'pieces of art' rather than just landscape enhancements, or you can just spiff up your golf course, with this type of hardscaping.

James E. Guyette

24 Seven ways to motivate

If number one on your list is a swift kick in the seat of the pants, you've got a lot to learn.

Phillip M. Perry

GOLF & ATHLETIC TURF

1G Reel mower sharpening

Another 'spin' on that most controversial topic, this from the reel technician at Jacaranda Country Club in Florida.

Paul Fox



3G A bona fide money-saver

Natural cultural practices help keep the Oregon Golf Club one of the sharpest in the Pacific Northwest—if not the entire country.

Jerry Roche

6G Preventing black layer

Make sure that the rootzone soil is rich in oxygen, control the amount of water used and relieve any physical problems in the soil.

Dr. W. Lee Berndt

7G Field experience fights pitfalls

A golf course maintenance program is comprised of many duties and concerns. Ignore one and you may create a problem somewhere else.

10G Planning, experience count

Cities are using landfills, gravel pits and farmlands to make space for the deluge of Baby Boomer golfers entering the ranks.

Terry McIver

11G Bunker upkeep

Sand bunker renovation and maintenance can be like trying to prevent the tide from sweeping away a sand castle

14G Battling floods and wildlife

Floods, critters and creative landscaping make this Washington State course exciting year round.

Leslee Jaquette

16G Stress on 9-hole courses

To handle double play, use two sets of tees for each hole, and find a way to vary traffic patterns.

TECH CENTER

26 Fall fertilization

Research suggests many different effects, many different approaches. Weigh them all before making any applications.

Dr. Paul Rieke

27 Summer patch control

Cultural and chemical controls are available for this patch disease, if you can correctly identify it.

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HOT TOPICS

30 Ambrosia beetle spreads

The Asia ambrosia beetle is creating havoc in several nurseries in East Texas. Infected trees must be burned.

James E. Guyette

30 Study backs pesticide use

Avid duffers are not at risk from pesticides applied religiously to golf courses, according to a new study from the USGA and 11 universities, including the University of Florida.

DEPARTMENTS

1 As We See It...

4 Ask the Expert

32 Info-Center

32 Events

33 Product Review

34 Ad Index

35 Classified

ON THE COVER: *The Mountain Course at La Quinta Hotel Golf & Tennis Club, La Quinta, Calif. Photo by Larry Kassell.*

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Circle No. 120 on Reader Inquiry Card

ASK THE EXPERT

DR. BALAKRISHNA RAO



Liquid enhancers defined

Problem: What is the difference between spreaders, stickers, anti-desiccants, wetting agents, adjuvants and surfactants? An explanation would help us in using some of these products. (Pennsylvania)

Solution: The following definitions should help you better understand these products:

Spreader: a substance which increases the area that a given volume of liquid will cover on a solid or on another liquid.

Sticker: a material added to a pesticide to increase tenacity rather than to increase initial deposit.

Anti-desiccant: a chemical applied directly to a plant which reduces the rate of transpiration or water loss by the plant.

Wetting agent: a compound which reduces surface tension and causes a liquid to contact plant surfaces more thoroughly.

Adjuvant: a substance added to a product to aid the activity of the main ingredient; said product may be formulated to have one or more surfactants, solvents or co-solvents, solubilizers, buffering agents, film formers and other materials to provide specific functions.

Surfactant: a "surface active agent" whose function may be as a wetting agent or a component of an emulsifier or a spray adjuvant; some have been used successfully to enhance herbicidal activity.

Before choosing and/or using any of the above products, make sure what function you would like them to perform and check whether their stated function fills your need. Also, read and follow label specifications for best results.

Cultural control of rot fungus

Problem: Once in a while, we find large, reddish, thick, fleshy-type mushroom growth at the base of trees. They also have a varnish-like coating on them. The mushroom growth doesn't appear to be an "umbrella" like most mushrooms. They are normally found on red and Norway maples, which show decline and have dieback. Is there any fungicide to prevent and/or manage the problem? (Kentucky)

Solution: The problem appears to be related to ganoderma rot. This fungus is known to affect red and Norway maples, which appear to be most susceptible.

No fungicide treatment will manage the problem. Perhaps carefully removing the fungal growth and letting it air dry might help prolong the life of affected trees. Provide proper watering, fertilizing and mulching as needed to help improve plant health. Also, avoid basal bark and/or root injury.

Juggle control windows for grubs, worms

Problem: We are thinking of using Sevin insecticide to control white grubs. We also have residential and com-

mercial properties with sod webworm problems. If we go after grubs, can we also control sod webworm? (West Virginia)

Solution: The following recommendations come from Dr. Doug Caldwell, our landscape entomologist and technical advisor:

First, concentrate on the most damaging pest group, the grub species. Your best "window of control" to minimize grub root-feeding damage is in mid-August through September. Most currently registered grubicides will only provide three to six days of effective residual; so if egg-producing adults are still flying, there will be more grubs appearing later after your grubicide has worn off.

Don't make your application too early in this window of control if you have sold just one application. In heavy grub years, two applications may be needed.

Now, overlay the windows of control for the sod webworm species in your area. This gets complex—there are at least 14 species of sod webworms.

The three most troublesome in turf have two to three generations per year. These species have fairly similar lifecycles with three larval peaks: (1) from mid-June to early August and (2) again in late August through September. They overwinter as larvae. If numerous, or if you are dealing with a previously untreated property, sod webworms could cause damage from March through April; this is the third window of control. However, usually grass is growing rapidly due to spring rains and damage is outgrown.

Sevin will control grubs and sod webworm larvae, but there is only about six days residual. You may get some of the sod webworms of the last generation with your mid-August through September treatment, but monitor for larval population peaks; don't count on being lucky.

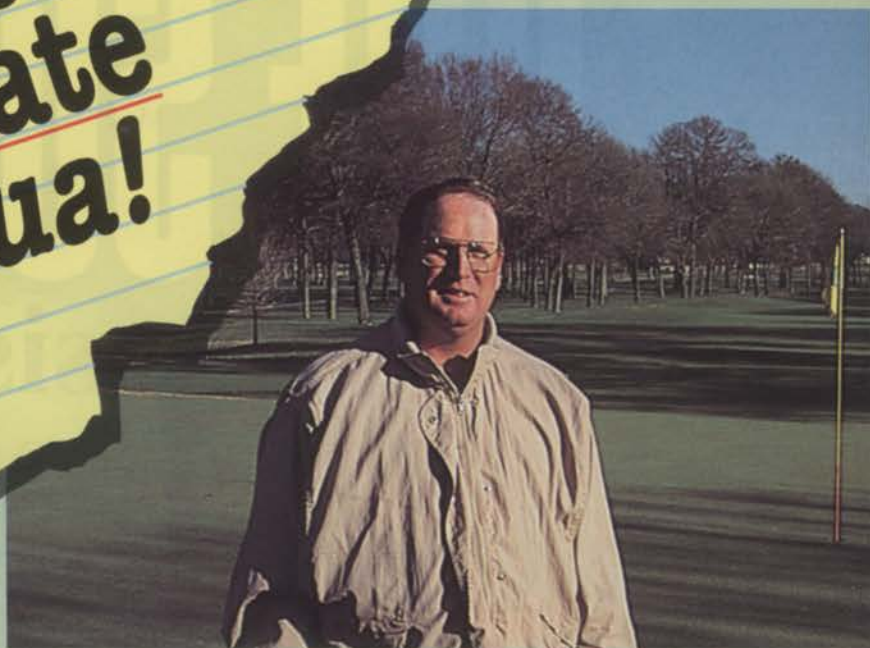
The first summer generation of sod webworms (mid-June to early August) may require a separate application. Do not make pesticide applications without finding the sod webworm larvae and determine how vigorously the turf is growing.

Unnecessary pesticide applications can severely reduce predator insects, spiders and mites, which can reduce sod webworm populations by as much as 75 percent. Follow local cooperative extension newsletters that monitor and predict the development of these pests.

Dr. Balakrishna Rao is Manager of Research and Technical Development for the Davey Tree Co., Kent, Ohio.

Mail questions to "Ask the Expert," LANDSCAPE MANAGEMENT, 7500 Old Oak Blvd., Cleveland, OH 44130. Please allow two to three months for an answer to appear in the magazine.

The most economical way to eliminate Poa annua!



Ken Small, G.C.S.
Royal Oaks Country Club
Dallas, TX (shown above)

There are plenty of products that provide preemergent control of crabgrass, goosegrass, and other unwanted grass weeds. But if your problem is *Poa annua* on putting greens, your choice is limited.

Proven weed control and a high level of turfgrass tolerance have made Bensumec 4LF the most widely trusted preemergent herbicide for greens and other highly maintained turf areas. It is also compatible for tankmixing with many other turf products.

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Mitchell Shaw, G.C.S.
Cowan's Ford Country Club
Stanley, NC

"To control *Poa annua*, we spray our bentgrass greens with Bensumec at 3.5 gallons per acre in late September. After 6 years, the *Poa* population is near zero."

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DUE SOON:

Insect-resistant bentgrasses and Kentucky blues?

Lessons from the field: don't fool with Mother Nature, and don't put all your eggs in one basket.

**BY JERRY ROCHE
EDITOR-IN-CHIEF**

■ These are exciting times for the turfseed industry. But they're also times that try men's souls.

"We've been able to get endophyte infected into creeping bentgrass and Kentucky bluegrass, so we're very excited that we'll have some product in the market soon," comments Dr. Eric Nelson of Medalist America.

Endophytes are those little critters that make grasses more insect-resistant and cut down on the landscape manager's

need for costly pesticides. Until now, they've been found in perennial ryegrasses, fine fescues and tall fescues, but scientists have not been able to inject the same quality into the two most-used golf course and home lawn grasses in the U.S., to which Dr. Nelson refers.

"Endophytes are the single most beneficial and important biological turf development on the market today," says Dr. Peter Landschoot of Penn State University. "They are like an insurance



policy: you pay more, but you get less insect damage."

All news from the turfgrass seed producing industry, however, is not rosy.

Uh-oh—"Perennial ryegrass prices will be up considerably over last year," notes Dr. Jerry Pepin of Pickseed West. "The Perennial Ryegrass Bargaining Association—a growers' group—is a factor this year. But I don't know how long they will be able to keep prices up, because this is a supply-and-demand industry."

Bob Richardson of Lofts/Great Western says the ryegrass supply is down, too, creating further havoc. "Lower carryover and an average crop, plus farmers demanding higher prices and no competition from foreign sources means ryegrass price increases," he observes.

Yet ryegrass can be had—if you want to pay the price. "Perennial ryegrasses should be in adequate supply, though not yet determined," notes Zenon Lis of E. F. Burlingham & Sons.

A shadow, too, has been cast over fine fescue growers, though circumstances will probably benefit landscape managers in the long run. While stem rust disease is forcing prices of U.S.-grown fine fescues up, low-priced fescues grown in Canada are strangling the domestic market.



Nelson: endophyte-enhanced bentgrass available soon.



Stanley: look for value in fine fescues this year.

"Stem rust started affecting yields in 1993 and has become an ever-increasing production challenge," observes Lesco's Art Wick. "Fungicide applications appear to be the only solution, thus increasing production costs. This may widen the price gap between the commodity 'creeper' prices from Canada and the proprietary varieties from western Oregon."

Adds Tom Stanley of Turf-Seed: "The pricing on fine fescue is probably going to remain depressed through 1995. The Canadians have had several big, back-to-

back crops. When they have a product on the market for 35-40 cents, it's pretty tough for us to get 60-65 cents. So I think through 1995 prices will be low.

"Fine fescues are going to be an exceptional value this coming year. For a very nominal price, you're going to get some excellent, excellent products."

Back to the really bad news: if you want large amounts of tall fescue seed, you're out of luck.

"Back in 1989-90, Oregon was producing about 95,000 acres of certified turf-type tall fescue," notes Stanley. "In 1995 we will produce about 55,000 acres. The good varieties are sold out or non-existent. We will see high prices on tall fescue and some spot shortages in July, August and September."

A Wet Willie—The weather, always a topic of conversation in the Pacific Northwest's seed production areas, has supplied its share of surprises.

"Continued rain showers and cool temperatures have raised the potential for quality problems for the 1996 crop," remarks Steve Tubbs of Turf Merchants. "There has never been a long enough break in the weather for spot spraying, and the flush of growth happened too quickly to keep up with."

Turf Merchants estimates that 10 percent of the bluegrass crop was lost in the Pacific Northwest.

And Scott Harer of Advanta West agrees:

"The bluegrass crop looks to be light. The early-maturing grasses are coming in at less than expected. We believe that prices are at their lowest now. The only prices changing [going up] are the common and mid-range Kentucky blues; prices of the elite Kentucky bluegrasses won't change from last year."

Notes Steve Jerhoff of Finelawn Research: "The market's a little nervous because of concern about the size of the

(Kentucky bluegrass crop). If we have a year like last fall, it's going to be a tight market again."

The annual ryegrass crop, meanwhile, is "average or above," even though it's off 10-15 percent from last year—largely due to rain shatter.

Tall fescues are starting to come in with a broad range of yields, but seedhead populations are disappointing. "Late rains help tall fescue the most," notes Tubbs, "so yields would have been far worse without the last-minute help from the precipitation."

All the talk about this crop or that crop, however, might be a moot point. It's more a mixed bag that's being offered





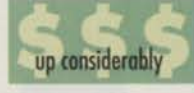




to landscape managers.

"We now emphasize diversity," notes Dr. Landschoot. "That means planting species and blends [rather than a monostand] so a variety will dominate where it's best adapted. It's the same thing as working with an investment counselor, who will tell you not to put all your money in one company."

—Jerry Roche

continued on page 10

TURFSEED OUTLOOK

	AVAILABILITY	PRICES
Kentucky Bluegrass	 adequate supply	 up slightly
Perennial Ryegrass	 adequate supply	 up considerably
Tall Fescue	 shortages	 up considerably
Fine Fescue	 surplus	 no change
Bentgrass	 adequate supply	 no change



Dr. Rich Hurley of Loft's informs field day attendees of seed availability.

NEW VARIETIES:

- Barcelona Kentucky bluegrass (Barenbrug USA): one of the most aggressive bluegrasses ever developed; perfect for athletic fields and parks because of high wear tolerance; fine leaf texture, dark green color and a short growth pattern, which makes less mowing possible.
- Belmont Kentucky bluegrass

- (Lofts): available in limited quantities.
 - Confederate tall fescue blend (Turf-Seed): adds Apache II to Tomahawk and Safari; sales are growing at 20-25 percent per year.
 - Crenshaw creeping bentgrass (Lofts): introduced in 1994, but supply is now greater.
 - Endure zoysiagrass (Lesco): for

use with tall fescues in the transition zone; limited quantities available in fall.

- L-93 creeping bentgrass (Lofts): developed to perform well below a 1/8-inch cut; excellent color and disease resistance, fine texture, and good density through the summer months; available in sample quantities.

• Midway intermediate ryegrass (Lesco): for overseeding in warm-season areas where improved spring transition is needed; moderately fine textured, darker green, rapid germination, but lacks heat tolerance.

- P-105 Kentucky bluegrass (Lofts): available in limited quantities.

• Preakness Kentucky bluegrass (Lofts): available in limited quantities.

- Rebel III tall fescue (Lofts): a darker green than Rebel II, introduced last year, more readily available this year.

• Salty alkaligrass (Lofts): for sea-coasts, roadsides with salt damage or saline soil/water areas; in good supply.

• Shademark creeping red fescue (Lesco): dark green, fine textured, high endophyte with excellent density and good recuperative ability.

• Sultan seeded bermudagrass (Farmer's Marketing): fairway-quality; one of highest ranking seeded entries in NTEP trials; developed by Dr. Arden Baltensperger, New Mexico State University.

• SunStar bermudagrass (Lesco): cold tolerant, fine leaf texture, more decumbent growth than common; seed for evaluation available this fall.

• Wildwood Kentucky bluegrass (Lesco): introduced in 1994, but supply is now greater.

• Williamsburg perennial rye (Lesco): dark green color, fine texture, excellent mowing characteristics, moderate endophyte level and high seed yield; primarily for winter overseeding in warm-season areas.

• Yuma seeded bermudagrass (Pennington): drought tolerant, low growing, excellent turf density, rich green color; quick germination and rapid recovery from mechanical injury; less water required after establishment.

(NOTE: List is not all-inclusive. These are companies that responded to an LM survey by deadline.)

—J.R.



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Truck Craft's TC-100 pickup dumper features a rear window protector.

■ The green industry is an industry that's laden with accessories. Tools, sprayers and other heavy equipment have to be trucked around, but it has to be done with safety and efficiency.

We received a great response to our last LM Reports on trailers. Here's more of what's available:

Art's Way Manufacturing Co., Inc., has applied its experience with farm equipment to the lawn and landscape market with the Mega Haul line of three wagons and two trailers. Their product line includes:

- a heavy-duty, conventional wagon for yard work; a flat-bed wagon for industrial and commercial markets;
- a tandem trailer for pulling behind a lawn tractor;
- and the Uni-Trailer, a universal trailer

designed to give ATV owners a small utility trailer to pull behind their ATV. Ron Hottes, president of Art's Way, says the products have been sparking interest. "We were very surprised with the market acceptance of the pilot run," says Hottes. "The acceptance of the test market units made it crystal clear that there is a need in these markets," for company products.

Truck Craft manufactures the TC-100 pickup dumper with a rear window protector. A tarp system can be added to completely protect the load in the bed.

Good dump attachments such as the Truck Craft model should include a variety of features, such as seamless floors; three-way tailgates; a bed wide enough for a full sheet of plywood; and easy installation, with no welding or cutting required. (The Truck Craft unit installs with four bolts and one wire in less than two hours.)

The **Stahl** company's Landmaster is also a tool and equipment storage unit. The dump bed features tapered side walls to accommodate service body sites, and are reinforced with a full length rib for rigidity.

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Different sizes are available from Stahl: a 60-inch, 2.5 cu.yd. model, or a medium and light duty 84-inch model.

The Reading Body Works, Inc. has been making service bodies and pickup caps for 40 years. Reading products are made of two-sided, A-60 zinc-coated, galvaneal steel.



The Spacemaker Service Body from Reading Body Works, Inc. has room for nursery supplies and tools.



The Art's Way trailer is new to the green industry. A heavy-duty wagon is designed for conventional landscape applications.

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—Terry McIver

Circle No.'s

Art's Way	200
Reading	201
Stahl	202
Truck Craft	203

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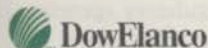
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Wetlands mitigation: what the law requires

A good environmental consulting firm can help you avoid problems, or take care of those that have cropped up.

by John B. Calsin, Jr.

■ "Our approach to the wetlands creation process is not to dictate where the created wetlands should be, but rather to have the landscape 'tell us' where it can succeed," says Mark Gutshall.

Ideally, this is how Gutshall works. Realistically, the ideal is not always attainable. Sometimes there is a problem.

Gutshall is president of Landstudies Inc. of Oxford, Pa., an environmental consulting firm that specializes in technical, and regulatory planning and services concerning wetlands and forests.

One of the typical problems, Gutshall says, is when a state, county, township or neighbor "blows the whistle" on work that was previously done to a former wetland. If it was filled improperly or impacted upon without a permit and has to be restored, then an enforcement action or after-the-fact permit is required.

Why would a landscaper, golf course superintendent or developer want a wetland created? Are the services of an environmental consulting firm necessary? How are wetlands created? And what is involved in the permit process?

Some answers—A wetland is more than just damp soil or a water-filled hole in the ground that some government regulator is making you sweat bullets over.

At an office campus or golf course, a wetland can be incorporated into an open water irrigation pond to eliminate the sterile look.

Wetlands can be integrated into a golf course or multi-unit complex, such as a townhouse landscape, for wildlife habitat or to enhance the presentation of a hole or tee.

In a community, a wetland can be used to create a nature center.

If you understand that none of these happen overnight, and then follow the

plans of an environmental consulting firm, the process can be much easier.

If you are about to enter into a wetlands project, you might want to maximize your property use while minimizing any risk exposure. You will also expect all proper permits to be submitted to avoid



If you are about to enter into a wetlands project, consider maximizing your property use while minimizing any risk exposure.

potential enforcement actions against the project. And that's where an environmental consulting firm comes into play.

The first step is an investigation by the firm to determine the presence or absence of wetlands in the study area and to give their approximate size and location. According to Gutshall, the search is usually relatively inexpensive and extremely informative.

When some type of wetlands action is necessary, the consulting firm should be a major player throughout the project's life. Gutshall recommends finding a firm that can provide:

- wetlands delineations;
- agency coordination/permit prepara-

tion, both federal and state;

- mitigation/restoration;
- habitat evaluations;
- stream macroinvertebrate studies;
- water quality analysis;
- land planning and feasibility studies;

and

- forest stand delineations and forest conservation plans in compliance with state legislation.

The permit process—While the balance of power has shifted in Washington, and there is talk of easing some environ-

mental restrictions, it cannot be counted on for some time. The qualified wetlands consultant understands the rules and responsibilities that federal and state agencies have concerning wetlands regulations and permit reviews.

The wetlands consultant ordinarily works with the Army Corps of Engineers, the EPA, the Fish and Wildlife Service and other various state and local agencies with which you may not personally have experience.

The requirements for obtaining a permit varies with the project's degree of difficulty, the size and type of impact being proposed. For instance, a golf cart crossing is much easier to secure than filling a wetlands to place a green or tee. Quality of the wetlands is also considered in this process.

As painful as it might sound, Gutshall believes in involving regulatory agencies

continued on page 16

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 Confront



WETLANDS from page 14

in all phases of a project. Environmental consultants, like his, schedule pre-application meetings, on-site inspections, permit preparation requirements, project presentations and follow-ups—before restoring or creating the wetland.

"We are creating wetlands more often than restoring them," Gutshall observes.

The actual restoration or creation is not just sticking a shovel in the ground, moving dirt and channeling water, either. Some additional considerations:

- Site selection, collection and interpretation of hydrologic data, and plant community association. (Hydrologic data directly affects site location because both surface and groundwater and their ability to be directed, redirected or managed dictate wetland placement.)

- Soil analysis and suitability, such as the capability of retaining and perched water.

- Construction coordination with contractors.

- Selection and planting of native plant material.

- Non-cooperative weather.

Some problems that might arise—some of which can be foreseen and some which cannot—are:

- Time scheduling for site grading may

Site selection (above) and planting of native plant material (below) are appropriate considerations when dealing with wetlands.



not coincide with the availability of plant material, leading to not planting the desired plants at the appropriate time.

- Too much precipitation at the time construction is scheduled.

- Once the actual work begins, the site itself may not be exactly the way the cursory finding indicated, and modifications may be necessary. This requires flexibility from the design team and the permitting agencies. (This is where a good consultant is necessary.)

If someone is in trouble because a permit was not obtained and an enforcement

Definitions

Compensatory mitigation:

the actual creation of a wetland, following the mitigation process

Delineation:

the process of designing the boundary between wetlands and non-wetlands

Enforcement action:

a regulatory agency's requirement that a wetland be restored or a similar amount of wetland created, following a report of non-permitted work

Hydrologic data:

measuring or observing the amount, frequency and duration of water that's either on site or under ground to assess or predict what the level of amount of water would be for a given time or season

Mitigation:

avoiding, modifying and minimizing the impact of new construction on wetlands, as required by regulatory agencies

Perched water table:

clay layer underneath the surface at any given depth in which water becomes trapped between the surface and clay layer; occurs naturally or can be man-made

Restoration:

the enhancement or recovery of a degraded or low quality wetland

—J.C.

action is initiated, an environmental consulting firm can be especially helpful. With its help, a sound compensatory mitigation plan and prudent interaction with regulating agencies may pull a superintendent or contractor out of the regulatory quagmire.

—The author is a frequent contributor to *LM*. He is based in West Chester, Pa. For more information on *Landstudies Inc.*, write to Mark Gutshall, P.O. Box 97, Oxford, PA 19363, or phone (610) 932-3762.

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Installing landscape timbers: a lucrative marketing opportunity

You can charge for 'pieces of art' rather than just landscape enhancements with this type of hardscaping.

by James E. Guyette
Contributing Editor

■ Each year an estimated one billion board feet of treated wood products are installed in American landscapes, and business owners nationwide are finding that splintering off into this type of service can build up the bottom line.

But no matter how tempting timber may be, you need to be in touch with the technical skills required before taking saw in hand. An improperly installed project can go against the grain of any local building inspector—and create ill will among clients, too.

Design developments by the makers of concrete block products has some consumers opting instead for stonework, but "wood still has that mystique about it; it's still popular," reports Dan Bywalec, president of D&B Landscaping Inc., Detroit, Mich.

D&B has been installing wooden landscape projects for about 18 years, and Bywalec believes that some property owners may balk at wood because of previous bouts with inferior products.

"People are apprehensive because they might have had timbers and they rotted," he explains. "People were disillusioned with the product, and it's not so much the wood but who was doing the treating." Improperly treated wood simply will not hold up.

Helpful hints—Other suggestions:

- **Get the right wood** for your region of the country.
- **Hang on to paperwork** when purchasing wood, "just in case something's rotten on down the road," says Bywalec. "You always have to keep the records on those timber jobs because some suppliers will say, 'Those aren't our timbers,'" if there's a quality control problem.
- **Know your supplier.**
- **Don't skimp on quality.**



There's no doubt about it: wood has a certain 'mystique' about it, but it takes design sense to build an appealing wood landscape structure.

• **Buy the proper product for the job at hand**, advises Fred Sydow of the Sydow Construction Co., based outside of Jacksonville, Fla. "Anything that goes into the ground needs a higher grade of treatment," says Sydow, whose company builds gazebos, fancy stairways, waterfalls, planters and retaining walls.

• **Call for help** at the slightest hint of any problem with a construction project, Sydow emphasizes. Good carpentry skills and design talents are a requirement, and it's simply not worth it to wing it, he notes.

• **Work with licensed landscape architects** at the design stage, and then follow the plans correctly in the building stage, Bywalec urges. "You have someone to stand next to you as long as you put it in the way he (or she) drew it."

When building a retaining wall, for example, water runoff patterns must be addressed and you need to guard against future erosion. "If you're building a timber retainer

wall, it's very important that you have the proper drainage." The wall should be backed with a suitable fabric material and it should have a T-shaped "deadman" going back at least four to six feet inside the area being retained. "If you don't have a 'deadman' in there the wall will fall over," Bywalec warns.

• **Be creative.** With the competition from concrete pavers and their spiffy design innovations, wooden projects need to have some bark to them, so-to-speak. "It's going to take some creativeness to build a (wood) wall and make it attractive in the 1990s," Bywalec observes.

"If you have to retain soil, why not make it something to look at?" challenges Kim Kocher, president of Stonewater Landscapes, Oakland, Calif. "It's an artistic outlet for me, but I also make it very functional," she explains, adding that she frequently consults with other professionals to ensure that everything is acceptable. "I get talked out of

continued on page 20

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TIMBERS from page 18

a lot," she reveals. "We do everything to code and standard construction practices."

Kocher's work tends to be at the high end of the design spectrum, and among her specialties is constructing what she calls "landscape rooms." These are essentially walls in a yard that resemble the walls of a house. They may have French doors or glass window panes that reflect



the colors of plant materials. In drought-stricken California she'll also install irrigation heads that create the illusion of rain outside the "window" while watering the flowers and adding an element of sound to the piece. "Every water feature we do is water tight—there's not a wasted drop of water," she stresses.

The designs are considered works of art, rather than fences, Kocher explains. "The free-standing landscape rooms serve as an alternative to fence heights and allow homeowners to achieve as much privacy as they desire without limitations to city fence



Kim Kocher, here with her father, Joe, is president of Oakland, California's Stonewater Landscapes. The company offers customers a variety of wood structures for high-end landscapes, as shown in the work-in-progress at left.



to \$22 to \$28. "I give my customers the options from high end to low end—it's just like buying a car," says Bywalec, adding also that "you have to look at it from

an artistic point of view."

codes." The works are often set off by including objects of "urban ore," which is what Kocher calls old-fashioned cast-off items such as washtubs, old pots and the like.

Pricing—These landscape room projects can cost a homeowner \$5,000 to \$11,000. In Detroit, a wooden retaining wall project can be priced \$12 to \$15 a face foot. A standard stonework front can be \$18 to \$20 a face foot, with fancier designs upping the price

The best selling point for wood work tends to be word-of-mouth advertising from satisfied customers. Sydow points out that he advertises in the Yellow Pages, makes his presence known to landscape managers, and he presents a book of photographs when pitching potential customers. Says Sydow: "They usually see what I've built or they see my portfolio."

Using wood in the landscape: tips

by Brian Lotz

■ Here are some important considerations when choosing wood for landscape/golf course projects:

□ Natural hardwoods make excellent bridges (pedestrian and vehicular), walkways, shelters, docks, piers, terraces, site furniture, light and sign posts, and retaining/noise abatement walls.

□ Use the right tree/wood species for the job. For instance, 12- by 110-foot clear span through truss bridge in the City of Batavia, N.Y. used "Ekki" for structural members because of its strength and availability in large sectional sizes. "Jarrah" was selected for

the rails, ballisters, decking and light fixtures for its superior aesthetic appearance and stability.

□ Use kiln-dried wood where you need a stable material. Kiln-drying stabilizes wood to a moisture content equal to the air which surrounds it. In many cases, no maintenance or preservative need be used.

□ Contact natural hardwood representatives before writing specifications for bid or to allow alternative bids. Pointing out environmental concerns will enhance the ability of bidders to properly respond in term of economics and suitability to the job.

□ Use natural wood sound barriers

where golf courses or landscapes are exposed to high vehicular traffic.

□ Knowledge of installation and maturation characteristics is also important. For instance, Ekki is imported only in a fresh-cut stage and has a moisture content of 35-40 percent. When used for smaller sectional areas, it is prone to movement from shrinking, twisting and warping. Therefore, steel dowels must be used for fastening.

—The author is director for Timer Holdings/Timbatech in Milwaukee. He has spent years providing his expertise to project managers.

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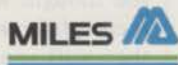
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Seven sure-fire ways to motivate workers

If number one on your list is a swift kick in the seat of the pants, you've got a lot to learn.

by Phillip M. Perry

■ Imagine the benefits of a crew that goes that extra mile for your team. Better employee attitudes lead to superior work habits, happier customers and fatter profits or a more efficient team.

And the alternative? An unmotivated, lethargic staff that irritates customers... disenchanted workers who leave for greener pastures...and you, scrambling to hire and train replacements.

"Top managers realize that in a tight labor market, it's cheaper to concentrate on retention than to live with high turnover," says Don Schackne, president of Personnel Management and Administration Associates in Delaware, Ohio. "When an employee walks out the back door, you lose all your invested training dollars and productivity. Starting over is very expensive and creates morale problems."

Is the secret to boost salaries? Not in the long run. "You may steal a few employees from the competition that way, but you can raise your cost of doing business to a level that cannot be passed on to your customers," Schackne notes.

Here is the secret of motivation: show employees how you can increase their skills and move them forward on their career path.

Effective personnel management helps workers achieve their maximum abilities, resiliently and independently, says Dr. Peter A. Spevak, director for the Center for Applied Motivation in Rockville, Md.

Here are some steps you can think about implementing. All will not fit your situation, so select the ones that seem most appropriate...then go to work!

1) Relate individual goals to those of your entire team.

Do your employees feel as though they are vital elements in the success of the team? If not, you're in trouble.

Share financial information with them—sales figures, if applicable, and

The secret of motivation:

Show employees how you can increase their skills and move them forward on their career path.

The steps:

- Relate individual goals to company team goals.
- Provide individual feedback.
- Provide career counseling.
- Teach each employee what everybody else does.
- Involve employees in the planning process.
- Encourage them to motivate each other.
- Try new techniques.

budgets—and tell them how they contribute to the team's financial well-being. Then, show them how even greater efficiency will lead to greater salaries and bonuses. Describe your financial plans to share the benefits of increased efficiency.

This two-step effort helps employees identify individual goals and rewards with the greater good in mind, a much better approach than telling them that simply serving the customer is the prime goal.

2) Provide individual feedback.

Once employees have a solid understanding of the team's goal, make sure each one understands how individual tasks help the team.

Your employees need more than a sense that they will be rewarded with higher pay. They also need to know that their work is worthwhile; that it creates value.

Establish a regular program of providing performance feedback to each employee. Keep an eye open for on-the-job excellence. Then issue the appropriate praise.

When praising employees: be specific and provide the feedback in a structured format. Invite each employee into your office on a regular basis and discuss what you thought were especially noteworthy accomplishments. This motivates more than will spontaneous expressions of appreciation at the work site.

3) Provide career counseling.

In individual meetings, communicate to your employees that you are concerned with their long-term career goals, and that what they do today will help them achieve their aspirations tomorrow.

Ask how you can provide them with more opportunities for advancement. Encourage them to suggest ways to further their skills—while helping the team. For instance, can their work be done more efficiently or more productively, or can some tasks be delegated to newer employees?

Also encourage continuing education, which will require a budget.

4) Teach each employee what everybody else does.

Only by knowing the "big picture" will the employee realize how his or her individual actions fit in.

5) Involve your employees in the planning process.

"With the tighter labor market, employers are starting to realize that they better listen to their employees," says Schackne. "How do they feel about the place? The management style?"

Take written surveys, hold regular staff meetings, and establish a goal-setting process, but don't set too many goals and schedule enough time to achieve the goals.

6) Involve your employees in motivating their co-workers.

Ask employees how to motivate everyone else. Speak with each one individually, and as a part of a group discussion.

7) Experiment!

Don't get caught in a rut. Always be on the lookout for new techniques that will get employees working with you to create a valuable team that out-performs any other team around.

Some recent innovations to motivate employees: flexible work hours, suggestion boxes and an awards program.

Remember, too, that incentives are good motivating tools, but they aren't miracle workers, and they have to be structured carefully and correctly. Awards should be items (usually \$10 to \$100 gifts) that employees would not normally purchase on their own.

Above all, gear everything toward encouraging employees to create their own incentives. If they feel they are going somewhere, you won't have to push them.

—The author is a freelance writer based in New York City. More than 3,000 of his articles have appeared in the business press.

GOLF & ATHLETIC TURF

Reel mower sharpening:

Two months ago, one industry expert gave his analysis of reel mower sharpening. Here are some alternatives to consider.

by Paul Fox

■ When grinding the faces of bedknives on reel mowers, make your angle measurements from the center of the axle shaft to the longest radius of the blade tip. (This is the leading edge of the blade. The shorter radius is the back side of blades.) At the perpendicular point where the longer radius meets the top edge of the bedknife, add an extra 5° to determine grinding angle. The relief angle on the back side of the bedknife, meanwhile, will differ depending on the size of the reel and the amount of grass being cut.

On greens mowers and walkers, the most often used grinding angle is 7° plus a "dirt factor" of 2°. For tee and collar mowers, it is usually 9° with a dirt factor of 3°. Large fairway and pull gang units use 11° with a dirt factor of 4°. This relief angle on the bedknife is for ejecting the grass clippings and debris. When this angle is worn away by lapping, grass builds up on the back of the bedknife, causing it to rifle, which in turn leads to poor ejection of clippings and loss of cut quality.

Spin grinders achieve what is known as a convex grind. Over a three- to eight-week period, blade tips wear 60 to 100 percent, causing excessive drag. Thus, reducing the blade thickness by relief grinding is a correctly recommended solution.

An Express Dual gives a hollow (concave) grind. This is achieved by the stone

another spin



On greens mowers and walkers, the most often used grinding angle is 7° plus a 'dirt factor' of 2°.

hitting the back side of the blade and then grinding forward to the blade tip. This gives anywhere from 2° to 4° relief in the reel. Over the same three- to eight-week period, the blade tip wears only 15 percent.

Once the reel and bedknife are ground, the clearance should be anywhere from .002 to .003 inch. Greens and tee mowers should cut a piece of paper that has been folded in half and pinched. Light fairway

and larger units should cut a business card.

Regular maintenance of the bedknife is essential to keep acceptable cut quality. This is done by facing the bedknife with a file or a die grinder. A product from Precision Small Engine, Pompano Beach, Fla., will be on the market soon that will face bedknives on the traction unit.

continued on page 2G

ELSEWHERE

Another course goes Audubon, page 3G

Watch air, water to cure black layer, page 6G

Follow a plan to survive summer, page 10G

Creative 'scapes at Oregon course, page 14G

Jacaranda's program

■ Our equipment consists of four Toro 3100s with S.P.A. reels, two Jacobsen Greensking IV greensmowers, four Jacobsen Greensking IV tee mowers, two Jacobsen 3810 fairway units, two John Deere 3325 slope mowers with old-style beaver reels, two seven-gang Toro Reelmaster rough units and two spare sets of 3100 S.P.A. reels.

All cutting units have regular bedknife maintenance, facing the bedknife. For other specifics, please consult the accompanying chart.

Modifications to the reels and frames of our 3810 fairway units made by head mechanic Jim Wicklein and myself make the reels much easier to grind and remove from the traction unit.

John Deere 3325s with the old beaver reels take 8-10 hours due to

the amount of work to remove the bedknife. We have just modified the bedknife holders on these reels that could cut grinding time by up to two hours.

All spare reels are ground and ready to go whenever needed.

In seven months, I have only replaced two 3810 reel bearings on two cutting units. I haven't had to replace any on greens, tees or rough units. I've only had to replace three cutting units on slope mowers, due to factors other than grinding or lapping reels.

If you are interested in the modifications we made on the Jacobsen 3810 or John Deere 3325, contact me at Jacaranda Golf Club, 9200 W. Broward Blvd., Plantation, FL; (305) 472-5251.

—Paul Fox

surfaces are mirrored and curved to the shape of the reel blade. The grass is rolled over the bedknife (even with a faced front edge), pinched, dragged, ripped and torn, leaving a ragged cut that shows up in the afternoon as pale or white-colored grass.

Also, with this braking effect, contact must be tighter and tighter for the reel to cut properly. It also makes the mower or traction unit work harder—meaning the engine and hydraulic pumps must work harder.

Bearings on mowers with lapped reels don't last as long as on mowers with spun-ground reels because lapping creates a vertical stress on the bearings. With the reduced contact area from relief grinding, a much higher vertical thrust will oval the bearings. (On a ⅓ tip reduction, vertical stress is 16 times greater.) The bearing wear creates a fine vibration, which rounds off the blade tips, creating more bearing wear, more vertical stress, more vibration, etc.

Finally, while the amount of metal removed during backlapping is small, over a period of time it adds up to a lot more than is removed during a regular grinding program.

—The author is reel technician at Jacaranda Golf Club, a 36-hole semi-private club in Florida whose superintendent is Randy Jacobson. Fox is a former employee of Bernhard & Co. Ltd., manufacturer and marketer of Express Dual and Anglemaster.

GRINDING from page 1G

Cutting units will not need to be removed.

After relief grinding, if the reel and bedknife are properly set, there will be no friction. But a thinner blade is not as strong because of less blade area being removed during relief grinding, and it will not take a "hit" as well as a thicker blade.

The thicker blades of spin grinding on an Express Dual will usually pass the object through the reel or cut it with min-

imal damage to the bedknife or no damage at all. (This depends on the size of the reel and object being hit.) If that should happen, you can grind the reel or take the bedknife out and also regrind it.

Backlapping is not necessary after spin grinding because the burr that is left after grinding will go away on its own during mowing. Backlapping removes the relief angle that is ground into the bedknife and flattens out the reel blades, creating a braking effect. As the reel is lapped, both

Jacaranda's Maintenance Program

EQUIPMENT	GRINDING INTERVAL ¹	OUT OF SERVICE ²	BEDKNIFE LIFE
Toro 3100	6-8 wks.	40-45 mins.	4-4.5 mos.
Jacobsen Greensking IV	6-8 wks.	60 mins.	6 mos.
Jacobsen 3810	8-10 wks.	4.5-5 hrs.	>10 mos.
John Deere 3325	8-10 wks.	8-10 hrs.	1.5 yrs.
Toro Reelmaster	16-18 wks.	8-8.5 hrs.	1.5-2 yrs.

¹Time between grinds

²Time out of service during grinding

Source: Paul Fox

N.Y. Audubon certification is a bona fide money-saver

Natural cultural practices help keep the Oregon Golf Club one of the sharpest in the Pacific Northwest—if not the entire country.

by Jerry Roche
Editor-in-Chief

■ Oregon Golf Club superintendent John Anderson points at a particularly steep wooded area adjacent to a short fairway. That's where he was almost killed, he says.

"We've had some close calls," the veteran superintendent admits. "One day, while I was trying to mow that fairway, the tractor started slipping down the hill and I had to jump off it real quick. I watched it roll down the slope and hit a tree at the bottom."

The tractor was destroyed, but Anderson survived with just a few scratches. "Mowing is a definite problem, even though I've got some very skilled workers," he still admits. "Everything we have now is traction-assisted four-wheel drive."

This is the price of maintaining a natural, wooded golf course. But it's a price that Anderson—and other superintendents like him—gladly pay because it pays off itself in the end.

Four years ago, pro golfer Peter Jacobsen chose choice land from the 600 acres that the late Tasimano Ohno owned, here in the hills of West Linn, Ore., overlooking Portland. His design is stunning.

"He is still our director of golf, and he sets the tone and philosophy for the whole club," Anderson observes. "When he designed the course, he left it as natural as possible. There was less earth moved on



Though it looks natural, this is a man-made stream that weaves its way through Oregon Country Club, the 18th course to earn complete New York Audubon Society Cooperative Sanctuary certification.

the golf course than there was to build the clubhouse. The course looks like it's been here forever, and it's only three years old."

The Oregon Golf Club was the 18th golf course to be certified in the New York Audubon Society's Cooperative Sanctuary Program.

"The year the course opened, I spent \$45,000 on turf chemicals," Anderson remembers. "The hardest thing for me to do was not grab the sprayer and to get out

of that mode. You have to accept some damage and let the disease run its course. Last year, we spent just \$580 on turf chemicals. Being in the Audubon program has saved us a tremendous amount of money."

Indeed, there has not been a fungicide application on the course for 16 months. The difference, Anderson relates, comes from light foliar applications of $\frac{1}{4}$ lb. of nitrogen and $\frac{1}{4}$ lb. of potassium plus iron.

"I can't believe it myself," he notes. "Our helminthosporium (leaf spot) disappeared as soon as we made the foliar application, and it was the same situation for our patch diseases."

Besides cutting back on pesticides, the Oregon Golf Club is cooperating with the district park department to build a nature trail along a local park that abuts the course. Prior to construction, the local Nature Conservancy is lending a hand by conducting a flora/fauna audit.

The club is also building numerous bluebird houses. "It's very rewarding," says Anderson. "It feels like you're giving something back to the environment. With the Audubon program, you're forced to do and document all the good things you should be doing anyway."

When an article about the club appeared in a local magazine, "I got a lot of calls from people who want to get involved or do the same things on their own property," Anderson remembers.

Many of the problems that most golf courses experience are headed off by using good cultural practices and the right plant in the right spot.

"We use Bardot colonial bentgrass on the fairways because it's less aggressive and a lower thatch producer," says Anderson. "Our soil is low pH, so there's not any microbial activity to decompose our thatch. And I'm keeping the *Poa annua* out by using good cultural practices."

"Our most important cultural practice is light, frequent topdressing every two

continued on page 4G

AUDUBON from page 3G

weeks. It controls thatch, smooths and speeds the surface, and improves water percolation."

The course has Pennlinks greens and tees. Greens are mowed at $\frac{1}{8}$ -inch, tees at $\frac{1}{4}$ -inch and fairways at $\frac{1}{2}$ - to $\frac{3}{8}$ -inch or slightly more.

"I also personally change the cups every morning," says Anderson. "It's a good way for me to monitor the greens. The best pair of eyes on the golf course are mine. I can see things long before they happen, while the dew is still on the greens."

People like pro golfers Ben Crenshaw and Phil Mikkelsen, and Larry Gilhooley of the USGA Green Section say the club's surfaces are "as good or better than any playing surfaces (greens) they've ever seen," Anderson contends.

Another part of his secret is a competent and proud staff of 22 people in the summer and 11 in the winter. Key employees are assistant super Bruce Brown, head mechanic Sam Simonson, horticulturist Dave Phipps and head irrigation specialist Gil Goldsberry.

Brown was with Anderson at Portland Golf Club. Simonson is simply known as the best mechanic in the Northwest, for both his inventiveness and his prior experience as a superintendent. Phipps has won awards for maintaining the clubhouse landscape, which is brightly colored by hundreds of roses, the late owner's favorite



Anderson: Spots trouble long before it has a chance to happen.

flower. (The course itself has 3,000 roses on the 12th hole.)

Average age of the 400 members who

play 25,000 rounds per year is around 40. Members include Terry Porter, Buck Williams and P.J. Carlissimo of the NBA's Portland Trailblazers. The day LM visited the course, former NFL quarterback Neil Lomax, another member, was having his annual golf "shootout," and Charles Barkley of the NBA's Phoenix Suns was among the participants.

"We have a very family oriented membership," Anderson observes. "But a lot of our members haven't been country club members before, so education is a key. A lot of them don't know golf etiquette. Our assistant golf pro and I did a video for the men's and women's associations last year. We also distribute a club newsletter, and we had a demonstration where we showed the associations how to repair divots."

Yet Anderson considers himself very lucky. "Peter and David Jacobsen are the Greens Committee, so political hassles don't exist. It's like being on vacation, not having those political problems.

"If ever there was a dream job, this is my own personal dream job."

Beware leaking underground storage tanks, says expert

■ "A good number of the underground storage tanks in this country are leaking," says Purdue University's Dr. Ron Turco, "and you may run into a situation where you have to [pay to] clean up the environment."

The types of liquids that are likely to leak from underground storage tanks on golf courses include gasoline, heating oil and kerosene. They, along with airplane fuels, are commonly referred to as LNAPLs (light non-aqueous phase liquids).

"The real problem is when they contaminate aquifers," Turco notes. "LNAPLs float right on top of the aquifer."

A tank leakage will introduce chemicals

into aquifers at very high levels—parts per hundred—and the subsurface area cannot clean itself.

There are four ways to clean up aquifers contaminated by leaking underground storage tanks—and none is cheap, Turco is quick to point out.

1) Bio-remediation is a process in which biological (especially microbial) catalysts act on pollutants, thereby eliminating contamination. Of the four, it is the most cost-effective means of aquifer decontamination.

2) Bio-venting is when air is pumped through the contaminated soil zone to the

aquifer. This process stimulates bio-degradation of the pollutant.

3) Air sparging is the same as bio-venting, except the air is blown right into the aquifer

instead of into the saturated soil zone.

4) Soil vacuum (vapor) extraction uses the bio-venting process in reverse to actually recover the contaminating product.

"Now, scientists are combining bio-venting and vapor extraction to more efficiently remove contaminants from aquifers," Turco notes.

The point? If your golf course includes underground storage tanks for fuels or other LNAPLs, make sure it is not leaking. It costs far less to have it removed and replaced than it would to clean up a contaminated environment.

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Circle No. 101 on Reader Inquiry Card

Air and water prevent black layer buildup

Make sure that the rootzone soil is rich in oxygen, control the amount of water used and relieve any of the physical problems in the soil.

by W. Lee Berndt, Ph.D.

■ Black layer can be a serious problem for managers of fine golf greens. A decline in the turf quality can occur very quickly when the black layer appears.

Black layer is a form of sulfur that has bonded with metal. A soil chemist would call the black layer a deposit of metal sulfide. It forms in soil when hydrogen sulfide reacts with an element like iron. For example:

hydrogen sulfide + iron → iron sulfide

Hydrogen sulfide (or free H_2S) is a type of sulfur gas. It appears in a turf soil when microbes called sulfur reducers respire. The amount of free H_2S released to the soil depends on how active the sulfur reducers are. To be active, they require ample amounts of organic matter and water in the soil. They also require a form of sulfur such as sulfate or elemental sulfur, plus a total lack of soil oxygen—which may be the most important factor. Free H_2S cannot form without any one of them. Together, these are the building blocks of black layer.

Free H_2S is likely to be the cause of the turf decline associated with black layer. Free H_2S is a known cell poison that can suffocate a plant by stopping its root respiration. Scientists have proved that it causes a decline in the quality of grass plants like rice. It can also be lethal to turf.

Could the presence of a black layer in the rootzone of a golf green actually be

helpful to turf managers? In one respect, it may be. However, a deposit of metal sulfide in soil hinders the flow of soil water and soil air. It also binds any oxygen in the soil, making it less available to plant roots.

The best way to stop the release of free H_2S in golf greens is to make sure that the rootzone soil is rich in oxygen. A way to minimize the release of free H_2S would be to avoid applying any kind of sulfur. This is

sulfur.

Making sure that the rootzone soil is rich in oxygen is not as easy. To do so, turf managers need to control water. They also need to relieve any of the physical problems the soil may have.

Placing ample amounts of nitrate in the soil is one way to assure that the rootzone of a golf green is rich in oxygen. Studies show that placing nitrate in a flooded turf soil prevents a decrease in that soil's redox (aeration) status. This in turn prevents free H_2S from forming.

Take care when using any nitrate-type fertilizer. Apply it to fine golf greens only at very light rates to avoid burning the



Black layer is a form of sulfur that has bonded with metal.



Scientists have proved that black layer causes a decline in the quality of grass plants like rice. It can also be lethal to turf.

true even when oxygen is absent.

It should be easy to control the amount of sulfur applied to a putting green: just limit the use of turf products that contain

turf. This approach can also help save the quality of groundwater.

The release of free H_2S could also be prevented in soil by removing any of the other building blocks. However, it would not be practical to rid a turf soil of the sulfur-reducers. Nor would it be practical to rid a turfgrass soil of its native sulfur and organic matter. Soil moisture cannot be removed from a golf green unless the turf manager also wants to lose a job.

The best bet for stopping free H_2S from occurring is by keeping the soil rich in oxygen and avoiding sulfur.

—The author is a certified professional agronomist operating out of his office at 143 Greentree Circle, Jupiter, FL 33458; phone (407) 746-4762.

Field experience clears maintenance pitfalls

Your golf course maintenance program is composed of many duties and concerns. If you ignore one, you may be creating a problem elsewhere.

Formal research methods gives superintendents many techniques and strategies for maintaining golf course turf, but there's no substitute for field experience and observation when it comes to keeping the turf healthy, says a USGA agronomist.

"An important aspect of improving ourselves is recognizing our mistakes and

then learning from them," says Bob Brame, agronomist with the USGA's Mid-Atlantic Region. "Each facet of a golf course maintenance program overlaps and ties in with all the other components."

Individual trouble spots need to be identified, evaluated and considered individually before they are combined with others as a package.

Brame lists the following, "Second 10" pitfalls of golf course maintenance.

Time on the course. Few superintendents have the time or take the time to walk their golf courses daily to closely observe turf conditions. Not because they don't want to, but because they are pulled in too many different directions.

While superintendents agree that they are spending more time on the job, less time is actually spent on the golf course.

Superintendents need to play their courses once a week, or at least walk the course regularly. The industry can't afford to lose sight of the fact that golf course maintenance is still a hands-on profession.

Documentation. Record keeping ranges from very good to non-existent in golf course maintenance operations. With today's pesticide regulations, however, it's important to record every detail leading to and including the decision to actually apply a chemical.

Bandwagon. Before you copy what the "leading" course in town is doing, take the time to see if the method is agronomically sound for your course. Find out whether any university testing has been done in that area to suggest that it will work equally well at most sites.

Marking the course. Know the rules, stay current with changes and mark the course properly.

Lack of outside interests. To avoid burnout, take time off from making your

course the "perfect" course. Pursue a non-golf related interest.

Test plots. The value of on-course testing cannot be overstated. Every golf course maintenance operation should have at least one turf nursery in which to perform controlled evaluations.

Leave control strips when making applications to determine the efficacy of a product.

New technology. Attend local, regional, national and even international educational conferences, field days and seminars.

Read industry magazines and publications.

Long-range planning. A well-devised



The Top 20 Pitfalls

(Superintendent sins of commission or omission)

- Poor communications and public relations.
- Overwatering.
- Fast green speeds.
- Excessive use of pesticides.
- Continuity of course officials/green chairperson.
- Pesticide storage and/or maintenance buildings.
- Tree management.
- Amount of play.
- Labor: not enough and/or underqualified.
- Equipment: not enough and/or poor quality.
- Time on the course.
- Documentation.
- Jumping on the bandwagon.
- Marking the course.
- Lack of outside interests.
- Test plots.
- New technology.
- Long-range planning.
- Training and delegating.
- Managing carts and paths.

master plan, approved by management can help bridge the gap in continuity when superintendents or course officials change. A good master plan may also increase the longevity of the current superintendent because there is a good idea of what is expected and where the operation is headed.

Training and delegation. If you have a pager, cellular phone or two-way radio in constant use, maybe it's time to spread some responsibility to other key employees. A good rule of thumb is to train key employees to do everything you do. Don't be insecure.

Managing carts and paths. A well-built golf cart path offers the best wear control and maintenance options where heavy cart traffic exists. While no one likes the idea of having a paved surface on the golf course, serious thought should be given to current and future use of carts on your course.

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Circle No. 103 on Reader Inquiry Card

Planning, experience take off the 'heat'

You can survive a busy summer if you follow a plan, hire good people and rely on past experience. These superintendents show us how.

by Terry McIver
Managing Editor

■ Sharri Brogan at Champions Golf Course in Columbus, Ohio, and Steve Early at Columbus Country Club keep things running smoothly, even in the crazy summer months. Brogan does it by "working the plan," while Early uses techniques gleaned from 25 years as a superintendent.

Brogan maintains a 30,000-round facility with a mere eight employees. And she's always smiling.

The secret to her peace of mind is planning, plain and simple. Brogan loves what she does, and she says she loves working at Champions, and that's probably because

the work never gets the best of her. She knows what has to be done, and when. Equipment maintenance is regular, product applications are done in time, and everybody gets along.

Smart delegating—Planning the work and working the plan make it easy for Brogan and crew to cope with unexpected problems, as happened in early July. Heavy flooding from a creek running through the course required that four holes be closed for a few days. The knee-high water receded quickly, and the once-flooded fairways bounced back beautifully.

Champions offers golfers an invigorating combination of well-maintained bentgrass, native grasses and rockscaping. Tees, fairways and greens are

all seeded with bentgrass, and every hole looks great, beyond the usual wear and tear.

Champion's 54 bunkers are being renovated, and a preventive disease control program helped the greens make it through the hot July weather.

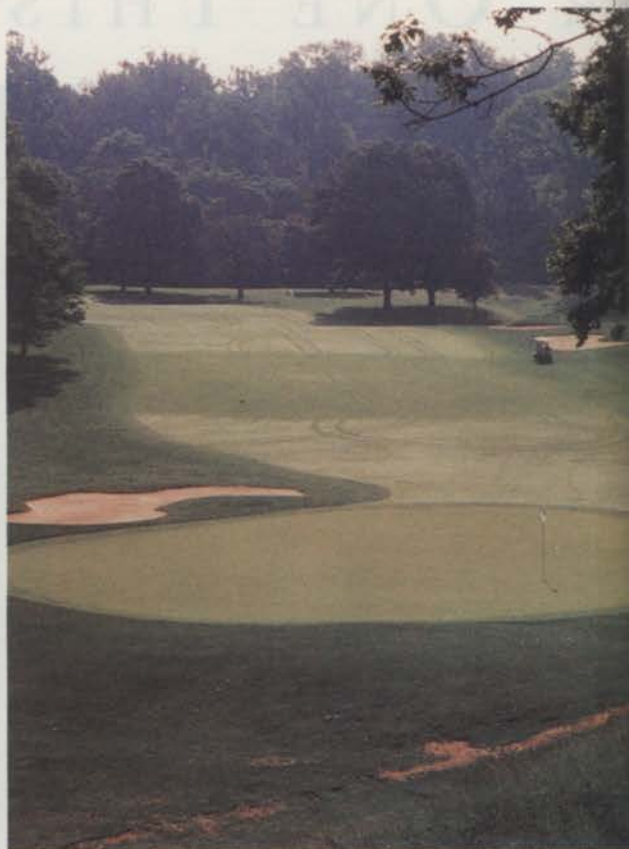
Early also uses a preventive approach to disease and insect control. Management includes aerification and supplemental fertilization, and regular soil and leaf tissue testing. If he's stumped by a problem, agronomists at Ohio State University are just a phone call away.

Early keeps his equipment running smoothly by letting employees most adept at equipment operation ride the mowers and other larger equipment. People with other talents handle other duties. Equipment hours and maintenance is carefully tracked.

Two sets of environmental conditions make the agronomics at the course a challenge. Soil content in the upper half includes a lot of yellow clay. The lower half, at an elevation that's about 100 feet lower, has richer, darker soil.

Teamwork—At Champions, higher wages in an area of very low unemployment made it easier for Brogan to find help this summer; the down side is that the city budget keeps the payroll small for each course. Brogan has three full- and five part-time employees, which means everybody does a little of everything. Mowing duties are shared, and all employees gain experience tending the tees, greens and fairways.

When it comes to Early's employee relations, he has two rules: pay a competitive wage—which is essential in a city with low unemployment figures—and follow the Golden Rule.



Columbus Country club handles between 18,000 and 20,000 rounds a year.



Champions was originally known as Winding Hollow Country Club. The Robert Trent Jones, Sr. course was built in 1948, and has a classic, tree-lined look.

"I treat people the way I would like to be treated, and I try to be fair. I don't believe in double standards," Early says. "We had very little turnover this year. The people have good attitudes, and most respond well" to the daily regimen.

Brogan, meanwhile, lucked out in the equipment department when the city took over: with new ownership came all new equipment. A Toro Hydroject aerator was purchased last year, and is shared by the seven courses. Greens are aerated twice each summer, as a defense against hard spots and compaction.

Work remains to be done on the tee

boxes. Some of them are just too small to accommodate all the play.

"This year, we're on another 30,000-round pace," Brogan says. "That's a lot of rounds for this type of facility. We rebuilt the number 2, 14 and 17 tees, to make them larger. Number 10 and 14 were reseeded; 14 and 17 were sodded."

The roughs at Champions are mowed between two and two-and-a-half inches, which makes for faster play.

"We get information (on speed of play) from the pro shop," and Brogan keeps her eye on the speed of play. In 1994 she surveyed the customers, and one of the most

common complaints was slow play. To solicit opinions, she placed comment cards on clubhouse tables.

Steve Early finds it easy to discuss and finalize plans with the golf course directors. After 25 years in the business, his talent and judgement is recognized and respected.

For example, green speed at Columbus Country Club is fast (10-10½ stimpmeter readings), and the fairways are tight. But as Early says, "anybody here would agree they'd rather have green grass than dead greens."

Bunker upkeep a function of design



■ Sand bunker renovation and maintenance can be like trying to prevent the tide from sweeping away a sand castle. The frequent erosion, golfer traffic and debris that often collect in them make some supers wish grass bunkers were the norm.

Bunkers are important to the game, since they: set shot value; control shots or moving balls; contain balls from out-of-bounds or water; better define the hole; and improve eye appeal of the hole.

Steps in construction—John Carlone, CGCS, of Middle Bay Country Club, Oceanside, N.Y., offers these financial and construction suggestions for bunker renovation:

- Two choices when it comes to budgeting the job: hire an architect with a construction company or have an architect and operator shape the bunkers, and your crew do the rest.

- Possible fees include: architect fee; labor; equipment rental; employee lodging; drain tile; gravel; fill; sand; sod/seed; small tools; gas/diesel fuel; fertilizer; irri-

gation; cleanup; soil tests; sand tests.

- Consider what kind of shots your players will be landing. Don't, for example create impossible shots out of bunkers onto greens that slope back to front.

- Have soil tests done on the fill material. If you are selecting a sand for the bunkers, have samples tested before construction starts.

- At Middle Bay, Carlone had top soil pushed from the existing bunkers to an out-of-the-way area. They had to generate fill since the bunkers were a mere three feet above ground water table, and they could not dig down to generate fill and deepen the bunkers.

"We had to add fill all around the bunkers to give them the appearance of being deep," Carlone notes. "Several of our ponds were being enlarged at this time, so we were able to haul fill from those sites to the bunker sites.

"Once there was enough fill, the bulldozer operator shaped the area. When it was roughed out, the topsoil was pushed

back over the fill."

- Budget money for cart path repair. No matter how careful you are, there will be some damage to the course.

- Caring for new sod will be important post-construction duty. It must be weaned off the fertilizer, to 2 lbs. of nitrogen per year. Moisture is also important. For steep slopes with southern exposure, it might be wise to add a mist system and use drought-tolerant turfgrass.


- Hand raking provides a consistent surface and lie, but it's labor-intensive. Courses using this method usually are on a continuous schedule.

- Edging may also be restricted by the budget, however, it is something that must be done periodically or the turf will close in and shrink the bunker, leaving an unsightly and unplayable margin.

Types of edging—**Rotary**: this is a quick and easy way to maintain the margins followed by hand-raking the trash left in the bunker. However, this method leaves the raw edge exposed unless the sand is brought to turf level, eliminating the desired lip. Remember to require the operator to wear goggles.

String trimmers do a fair job in the hands of a good operator, but it is difficult to maintain a clean and straight edge. It also leaves the turf with ragged edges. Hand rakes are required to remove the trash in the bunker after this operation.

Hand edging is the preferred method, by far, because pulling the runners that protrude leaves the turf with a groomed look and lets it drape over the edge.



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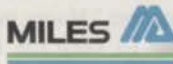
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Circle No. 105 on Reader Inquiry Card

Battling floods and wildlife

Floods, critters and creative landscaping make this Washington State course exciting year round.

by Leslee Jaquette



Jean Phipps raises about 60 flats of annuals in the Mt. Si greenhouses.

■ Originally part of the largest hop farm in the world, the Mount Si Golf Course has been mostly dry since Prohibition days. And—though Elliot Ness never made a raid on the Snoqualmie Valley farm—the 18-hole course has since seen its share of excitement.

The public course is nestled in the foothills of the Cascade Mountains at the base of Mount Si, about 30 miles east of Seattle. The old, well-maintained course attracts folks from all over the Northwest—except when it floods.

Because of a slough to the north where three forks of the Snoqualmie River converge, you would think spring runoff

would be the problem.

Not so, explains superintendent J.K. Moore. Annual winter floods, caused when the Cascades receive a heavy snow before Thanksgiving followed by a warm December with rain, swell the river into uncontrollable torrents. The bloated rivers back up first into the first slough, which under less violent conditions acts as a fairly successful reservoir. But when the waters jump the banks, the back nine suffers the consequences.

Moore recalls that one flood measured 12 feet above the 10th green. Three times in the past two decades, the entire course has been submerged, and three times the clubhouse has been under five feet of water. Every year some flooding affects the course.

Fortunately, Moore says, the water backs up onto the course but doesn't cut it into ravines. (If the rivers invented a new fork during floods, the course would suffer much more damage.) Secondly, the water abates quickly, usually within 24 hours.

But what remains is a spongy course strewn with debris.

Moore mobilizes volunteers from the men's club and other local courses, plus his full-time winter staff of three to scrape six to eight inches of silt off the greens. The work takes several days, and the greens are left terribly soft. Surprisingly, even when the back nine is flooded, the front nine often stays open in keeping with the course's commitment to year around play.

Birds and bees—Most of the critters—bald eagles, great blue heron, otter and waterfowl—make the slough their home. But the deer and elk graze on everything in sight. Indeed, each of the three Snoqualmie Valley golf courses has its own herd of elk. "Maybe each herd has its own course," Moore muses.

To keep the large animals away and

minimize destruction, Moore buys "Cougar Crap" from the Seattle Zoo. He discreetly places the big cat feces around the wooded perimeter of the course in standing bird-feeder type troughs. "The scent freaks out the deer," he notes.

This year, the course got a late start due to the lingering snow season, heavy rains, late freeze and small spring flood. Because of that, Moore may not be able to purchase any new equipment this year. However, most years he buys one piece of

new equipment. He prefers to invest in top, new equipment on a regular basis as opposed to employing a full-time mechanic. He compares his plan to that of the businessman who drives the latest model car. This way he doesn't have to nursemaid old equipment. He gets efficient performance and minimal service headaches.

Moore explains that this management method is different, but works due to the fact that his core employees,

including son and assistant supervisor Michael Moore and head landscaper Jean Phipps, are reliable individuals who take responsibility for their own machines.

"Our operators do their own maintenance," says Moore. "If their machine doesn't work, they don't work."

Mount Si Golf Course has the smallest crew anywhere in the Pacific Northwest. The three of them, all salaried, mow 135 acres.

Phipps says that by making two fungus spray applications, early spring and fall, both fungi and grubs are easily controlled. She notes that other local courses that only make one application seem to suffer grub infestations some years. When moles attack the course, Phipps traps them.

Colorful treats—Since Phipps joined the team eight years ago, she has concentrated on additional landscaping and flowers. Probably the most ornamental course in the Northwest, Phipps raises about 60



Superintendent J.K. Moore, left and landscape manager Jean Phipps trust in the work of reliable crews.

continued on page 16G

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MOUNT SI from page 14G

flats of annuals in the course greenhouses and purchases another 60 flats. Perennials are used extensively in the course's 40-plus gardens. Indeed, Phipps maintains enormous gardens, each with its own style and motif with dozens of kinds of flowers, flowering trees and roses. She is proud of the 100 roses on the course and broad spectrum of relatively unusual flowers

they cultivate from seed.

Phipps jokes, "Golf is free at Mount Si. Here people pay for the botanical gardens."

Her newest and largest garden parallels the 18th tee. At a whopping 130 feet by 20 feet, this garden includes everything from Asian pear trees, peach and apple trees to poppies and the popular and somewhat unusual feathery, purple astilbe.

One of the reasons Phipps can cultivate

such enormous and varied gardens is that the course rests at an elevation of 400 feet. Despite its proximity to the volatile, mighty Cascades the weather is mild and inviting in the valley most of the year.

—The author is a freelance writer based in Edmonds, Wash. She is a frequent contributor to LM.

Turf stress a factor with 9-hole courses

When to expand—For courses of 2,500 to 3,000 yards and a Standard

To handle double play, use two sets of tees for each hole, and find a way to vary traffic patterns.

■ On the face of it, managing a nine-hole golf course should be no more difficult than looking after 18. Yet, some factors related to golfer traffic and maintenance make 9-hole management more challenging.

The decision to develop a site for 9 holes, as opposed to 18, usually relates either to a lack of space or finance. Generally, these basic constraints follow through to produce management problems for the shorter course.

Excellent 9-hole courses are located throughout the country, but many golfers consider them the "poor relation" to 18-hole facilities. This perception is grossly unfair, as some have layouts that are as good as, if not superior to, the quality of an 18-hole layout.

If a 9-hole golf course is built on land too small for 18, there may be more room to design a superior course in terms of its playing qualities, assuming that the architect fully appreciates and capitalizes on the opportunity. Many 18-hole courses are ruined because two or three holes have been squeezed into the available area.

It's more difficult to attract visitors to a 9-hole course due to the perception that a standard 18-hole course is better. The supposed tedium of playing the same hole twice in a round may be another reason.

This can be overcome to a degree by having two sets of tees per hole, located well away from each other. This presents a totally different tee shot to the fairway on a par 4 or par 5 hole, or green shot on a par 3.

Scratch Score as low as 60, the option to go to an 18-hole format should be resisted, if there is only the room to double the existing yardage. It may make more sense to design a quality, 9-hole layout with a better balance of par 3, 4 and 5 holes.



Some superb 9-hole layouts have a special character of their own which would be impossible to repeat through a full 18.

Turf stress concerns—A round of golf on a 9-hole course still adds up to 18, and this results in double the turf traffic.

If room was initially a constraint, it is unlikely that much thought was given to designing large greens, adequate tees and wide, diverse traffic routes.

Nine-hole courses with separate tees and varied landing and approach areas will have less wear damage. A tighter layout also provides less opportunities to divert winter play.

The question of access around the course has implications for equipment as well as golfers.

If the layout takes up most of the available room, then maintenance vehicles may encroach more onto the playing areas of the 9-hole course. Less room through the site may necessitate having to mow everything, an added maintenance burden many 18-hole courses avoid by promoting banderoughs and conservation areas.

Morning glut—It won't take long for a 9-hole course to become choked with golfers first thing in the morning, and there will be minimum amounts of time for greens mowing and other important morning maintenance.

Maintenance for 9 holes is not half that of the 18-hole course due to down time—traveling around the course, maneuvering around small greens and small tees takes up a major portion of management hours.

Machinery costs—Essentially the same machinery range is required to tend a 9-hole golf course. A triplex mower is needed for the greens, regardless of number. At first glance, it may be thought that a walk-behind greens mower is more feasible on a 9-hole course. However, the lack of time may mandate using a riding triplex.

Half the topdressing, fertilizer and fungicide can make for a tidy savings, although the difference can be eaten up by increased repair costs.

Fertilizer and pesticide bills may not show lower costs, due to the demands of play, which require a greater input to stimulate growth.

Equivalent costs with reduced income will not make the club's accountant a happy man and the budget will be strained by major outlays, such as irrigation projects, or larger equipment purchases.

—Source: "Northern Ohio Turf"

LAWN & LANDSCAPE INDUSTRY

Natural habitat gardens sell when explained in detail

by James E. Guyette
Contributing Editor

■ Landscape managers say more customers are appreciating the benefits of natural habitat gardens, which essentially use the plants and animals originally found at a site.

The key factors for this type of work are specialized plant selection skills, education of both landscape manager and customer, and a firm commitment to integrated pest management techniques.

"It's a business opportunity that's just beginning—and it's growing," reports Dr. Fernando Agudelo-Silva of FAS Technologies in Berkeley, Calif. An entomologist, Agudelo-Silva specializes in using beneficial insects for interior and exterior pest control. Much of his work deals with implementing pesticide-free landscape applications in cooperation with landscape managers who tend natural habitat areas.

"The thrust of my practice is planning," says Agudelo-Silva. "A lot of the pest problems in gardens can be eliminated by planning before you have the outbreak of pests."

Agudelo-Silva says his customers usually have to be receptive to at least the natural habitat concept from the beginning. "The clients have to have the attitude that they want to reduce pesticide use long-term," he explains. "My approach includes a significant amount of education. In the beginning, it's a lot of work to make the client feel comfortable—most people don't feel comfortable with insects."

Photographs and charts are critical sales tools. "I use a lot of visual aids. I have pictures of beneficial insects, before-and-after pictures (of landscape sites) and charts. A lot of people, for example, have



never seen a picture of a beneficial mite attacking a harmful mite."

Clients mostly come to Agudelo-Silva via word-of-mouth or other referrals. "There are situations where a client can't use chemicals, like a hospital, for example," he notes.

The right 'diagnosis'—Natural habitat gardens can be just the right cure for hospital grounds in need of landscape improvements. "Hospitals seem to like the idea," reports Linda J. Novy, chief executive officer at Gardener's Guild, Inc., a full-service landscape firm based in San Rafael,



Calif. "They want to create a healing, healthy environment around them."

Novy notes that the natural habitat concept is especially appealing to her homeowner association clients, retirement communities and senior citizen-oriented institutions.

Dial it in—A landscape manager skilled at this type of project is able to assign differing levels of naturalness based on the clients' needs. It depends a lot on the site itself, too. "In a suburban or rural type of environment, it can be expanded," Novy explains. "You can have more than plants and beneficial insects—you can bring reptiles into the picture."

Reptiles and amphibians such as snakes, lizards, toads, salamanders and frogs are great pest controllers. The menagerie of desired animals is dictated by site concerns.

Gardener's Guild created the butterfly garden at San Francisco's Yerba Buena Gardens. There, butterflies seek tall trees for roosting, and—for some species—developing into their pupa form. They also seek open sunny areas. Certain flowers, grasses and shrubs are used to provide nectar for the adults and food for the caterpillars.

continued on page 6L

ELSEWHERE

**Make money on
firescaping,
page 7L**

**Ever-popular
hostas soar,
page 12L**

**Care & feeding
of customers,
page 14L**

**Let employees
take risks,
page 16L**

Sense of history helps

■ Look to the past when selecting natural habitat plant materials, advises Ken Druse, author of the book "The Natural Habitat Garden."

"In evaluating your site, take into consideration what would have been there and nearby presettlements working from researched models (in regional and local guides, old topographical maps, museums and arboretums, for example)—before the bulldozers pulled up and put in a parking lot—not just what exists today," the book says.

More suggestions:

• **Educate, educate, educate.** "It's a learning curve for the clients in having them accept a look that they may not be used to," explains Lance Schendorf, general manager at Gachina Landscape Management, Menlo Park, Calif.

Corporate office complexes, homeowner associations and other developments may opt for a natural habitat garden in order to attract certain wildlife species or to comply with regulations for preserving native plantlife. This approach can also be a plus when it comes to projecting a politically correct image to the public.

"People are becoming more environmentally aware in regard to their landscapes," notes Schendorf. "The corporate client will get into it as something that's good to do from a public rela-

tions view—it'll look good in the company newsletter."

Problems can crop up, though, if people think that the natural habitat garden they're paying for looks akin to a weed patch. "If it's an existing development, it has to have curb appeal, so in most cases you have to have plant material that looks good all year round," Schendorf notes.

And this is where the landscape manager must pay attention to detail and explain the concept to skeptics. "It's a lot of education of the client and you have to be on top of the client's structure," Schendorf stresses. "It's not just the client; it can also be their bosses or residents, who may want a manicured look."

A scenario can develop where "the property manager's boss who flies in from Chicago is going to pull up in front of the building and say, 'What on earth is going on here?' And if the property manager says, 'We're attracting birds,' that might not work," he warns.

• **Choose customers carefully.** "It's best to work with customers who are willing to listen to the educational part of my program," says Dr. Fernando Agudelo-Silva of FAS Technologies in Berkeley, Calif. "I've recognized that some clients are not going to like it."

Schendorf suggests that existing

clients are more likely to go for a natural habitat site, especially those who enjoy an ongoing personal relationship with their landscape manager. "If you know a client who goes hiking on weekends or who likes bird watching, then you have an 'in' to discuss their interests." You can explain that "we're able to choose a plant that attracts birds, or that attracts whatever you want."

• **Be aware that each property and each natural habitat site requires individual planning and attention.** "You can't have a recipe book," Agudelo explains. "One of the characteristics is that each landscape program is customized—and that can be an advantage or disadvantage."

• **Take your time pricing.** "It's so site-specific," says Schendorf. "Actually, you're taking better care of it than if you went in and cut everything down. Sometimes it's more expensive than taking care of it in a traditional manner. One of the main problems is getting rid of plants you don't want. There may be upfront costs to replace areas" overgrown with undesirable species. Usually native plants are best obtained from smaller nurseries because the larger ones tend to concentrate on growing plants that are more popular.

—J.G.

NATURAL from page 5L

Other needs are fresh water, tall trees that provide lookouts for adult male butterflies on the hunt for a mate or protecting their turf, and rocks for basking.

"The butterfly garden is maintained in a more relaxed state than the crisp, manicured look usually expected in urban gardens. Knowledge of which plants provide nectar, which provide food, which provide shelter, and which are places for pupae to form and mature guide our rotative plant choices," Novy points out.

No-spray zone—"Each area of the garden has special maintenance needs, so we designed specifications just for this garden," Novy says. Pesticides are not used here.

"The butterflies don't know where their garden ends and the rest of the grounds begin, so strict integrated pest management is necessary throughout the entire gardens. Cuttings from trees, shrubs and



groundcovers are placed in piles for up to a week. This allows caterpillars to crawl away and seek alternative living plants.

"Near these piles of clippings are plants that are larval food sources. Flowers are

detailed frequently to encourage abundant flower and nectar production, but discolored or disfigured leaves are left as-is because there may be caterpillars grazing, eggs laid on the underside of the leaf, or caterpillars molting in leaves that have been pulled together," she cautions.

"Mowing heights of turf in the butterfly garden were raised to three inches and the turf is not edged. Around the boulders, the turf is allowed to grow taller," Novy recounts. "What attracts butterflies to our garden also attracts birds and other insects," she adds.

If you decide to seek these types of projects, educating yourself is the first hurdle—then you can get to work on educating potential customers.

Agudelo-Silva suggests that you seek information from your local extension agent and enlisting consulting services from an IPM specialist such as himself.

8 ways to make money on firescaping services

These new add-ons are spreading like wildfire—and not just in California. It's now a coast-to-coast enterprise.

by Maureen Gilmer

Wildfires have always been a concern to residents of the western U.S., but in recent years the threat is spreading to other areas of the country, including the East Coast, where conditions have changed for the worse.

The area in which the new risk is greatest, though, is in the Rocky Mountain states and Pacific Northwest. There, populations are exploding and more homes are cropping up in the urban-wildland inter-



Firescapes are often designed with low growing shrubs such as heathers, with gravel or decomposed granite walkways as fire breaks.

face—that zone where housing developments blend with ecosystems rich in fuel for fires.

The interest in “defensible space” homesite design and fire-resistant landscapes becomes more critical with each deadly wildfire.

Long-term landscape maintenance can eliminate fuel accumulations that can grow to dangerous proportions. This creates an opportunity for companies to tailor

new service packages to wildfire-vulnerable apartment and condominium complexes, commercial buildings, homeowner associations and single-family residences.

Some of the components of “firescaping” maintenance, which are more likely to be requested during fire season or just after a recent fire in a particular neighborhood:

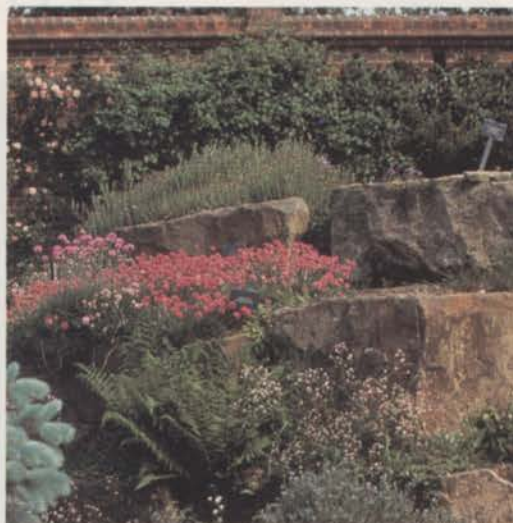
1) Pruning to keep proper separation and clearances must be ongoing. The edges of tree canopies must remain separated in order to reduce the tendency of flames to spread through continuous canopies. You may extend this service to cleaning up any tree litter which accumulates on rooftops and in rain gutters.

2) Weed and litter disposal. On the ground, sources of fuel like tree litter and weeds must be removed and disposed of. Here, too, separation of shrub and ground-cover plantings is used to interrupt the

rapid spread of flames, but as plants mature these spaces decrease and must be pruned and shaped.

3) Dead plant removal and replacement. If allowed to dry out—as did the vegetation of the Oakland Hills fire of 1991—a very hazardous condition results.

4) Irrigation system maintenance. Irrigation keeps firescape plants fully hydrated because the greatest threats come in the driest seasons.



Dwarf shrubs for rock gardens are frost hardy, and provide low/no fuel.

5) Compliance with local ordinances. Some communities are passing laws that demand homeowners control weeds and flammable vegetation on their property. In some cases, this calls for alteration of an existing ornamental landscape; in other cases it's the application of firescape concepts to native or naturalized wildland vegetation.

6) Comprehensive fuel management programs. You can cultivate clients in areas where services are most needed according to fire experts, and obtain leads from municipal fire stations or state fire protection agencies. Creating a dual package of services—one to alter the existing problem and another to make annual or biannual maintenance visits—assures you the initial clean-up job and a long-term regular customer.

7) Tapping the senior citizens market. For older homeowners who cannot accomplish the fire preventive maintenance work as easily as others, a landscape maintenance service is essential.

8) Increasing your public visibility. When you move into the firescape management and maintenance business, your work suddenly becomes a public service issue. Your company could eventually be placed in the public eye, should it save a home, a life or even an entire community.

Beforehand—It is basically the same to maintain a landscape designed for fire resistance and render an existing landscape less vulnerable to fire. Knowing how fuels accumulate, and how fuel types vary, should be considered for a comprehensive program and more accurate cost estimates

continued on page 10L

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Circle No. 104 on Reader Inquiry Card

FIRESCAPING *from page 7L*

for service.

Three types of fuels should be considered:

Aerial fuels are composed of tree canopies which feed crown fires that travel quickly from tree to tree. Rooftops are considered aerial fuels as well, particularly if wood shake or shingle.

Ground fuels exist from the soil surface to about 18 inches tall and are typically dry grass, leaves, litter, groundcovers and low-growing shrubs which feed a surface fire.

Ladder fuels fall between: taller shrubs and tree branches below 8-10 feet. They provide the "rungs" by which a surface fire jumps into trees or vice versa. The most dangerous fires are those which burn both on the ground and in tree

canopies simultaneously.

Also, before you attempt to mine the growing market for "defensible space," you must examine all the information already available on state and local wildfire conditions.

Many other factors (besides the choice of plant materials) should be considered, like topography, local wind conditions



Keeps colorful plants at 18 inches or less in height (above). Perennials at left are too high. Keep taller plants away from flammable wood walls.



and native fuel types. Where public lands or national parks are concerned—or even in private communities with strict CC&Rs, you must understand the regulations before attempting any work.

—Maureen Gilmer of Dobbins, Calif., has worked in virtually all aspects of horticulture and landscape design. She is author of "The Wildflower Survival Guide," a 176-page book available for \$10.95 from Taylor Publishing Co., Trade Books Division, 1550 W. Mockingbird Lane, Dallas, TX 75235; (800) 275-8188.

IPM book available from EPA

■ RISE is partnering with the National Pest Control Association (NPCA) and the Professional Lawn Care Association of America (PLCAA) to distribute an U.S. EPA booklet.

That booklet tells schools how to adopt an integrated pest management (IPM) approach. The EPA developed the booklet in 1993 with the help of RISE.

"Although EPA did include responsible pesticide use information in the booklet, we believed some issues needed further emphasis to ensure a full understanding of responsible pesticide use and its role in IPM," says Tim Maniscalco of

DowElanco, who heads the Issues Committee's IPM in Schools Task Force.

Maniscalco says a plan is under way to distribute additional educational material to schools along with the booklet.

He points to the rigorous pesticide testing and registration process as an issue which needs more emphasis.

"Communicating this message helps reassure schools that pesticides pose low or no risk when used responsibly," he says.

In addition, the educational materials include information on why schools use pest control products and the RISE defini-

tion of IPM. The mailing also underscores the willingness of regulatory bodies and associations to work together toward a common cause.

Maniscalco encourages lawn care professionals and others to merchandise this effort at the state and local efforts and position themselves as IPM experts within their communities.

"Implementing an IPM program takes knowledgeable people who understand pests and how they can be monitored and controlled," says Maniscalco.

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Hostas' popularity ready to soar

Ohio grower says landscape pros should educate themselves to the growing variety and versatility of one of America's favorite perennials.

by Ron Hall, Senior Editor

■ The hosta is a flowering plant that landscape pros should become more familiar with for reasons you'll discover here. But first an anecdote from a top Mideast hosta grower:

Van Wade says that in 1986 he had a huge dog on his Wade & Gatton Nurseries in rural north central Ohio. He says it weighed about 140 pounds and one hot day that summer it proudly deposited a dead ground hog at his front door.

After a while Wade's wife, Shirley, protested about having a dead ground hog in their yard, and commanded Van to bury it. Obediently he did. He shoveled the ripening woodchuck into a hole near their big white frame farm house; then he planted a hosta over it.

Although it's been nine years, Wade still grins every time he points to that hosta and comments about its prodigious growth. The huge yellow leaves of the



Ohio's Van Wade with his 'Sum & Substance' hosta, the world's largest.



Hostas show incredible diversity in size, color, shape, according to expert Van Wade.

hosta are each about the size of a tennis racket. They give the plant (variety: 'Sum & Substance') an 11-foot span at its base.

"It's the biggest hosta in the whole world, and it's probably the most photographed hosta in the world too," he declares.

That specimen hosta is just one of an amazing 1,500 varieties of hostas that the Wades have collected. Many came from hosta hybridizers, but Van has developed a few himself.

The hosta is a "plant of the future" because of its amazing variety and versatility, says Van Wade.

Originally from Asia, the hosta varies in size and color from the huge yellow 'Sum & Substance' variety to the tiny-leaved 'Poo Poo', a blue/green miniature that spreads no larger than dinner plate. The different shapes and textures of leaves among varieties is almost as remarkable as the differences in sizes and colors.

Hostas are easy to care for and, generally, require minimal maintenance. They're winter hardy, develop few pest problems (apart from slugs or black vine weevils), and tolerate shade well. Most hostas, in fact, do best in a dappled shade. If they can

get some morning sun they prosper. Growing in well-drained, but moist soil they'll form large clumps from basal rhizomes and stolons.

Because they tolerate different growing conditions and because they're so diverse, hostas fit well in many landscape areas. There are varieties that qualify as specimen plants, ground-cover, and varieties that can be used with shrubbery, near a pond, in the perennial border or as edging plants.

But, with all this praise, the hosta's main attribute is its beautiful foliage. This lush foliage makes the hosta a perennial to enjoy in spring, summer and fall. Mid-summer blossoms that range from snow white to blue are attractive too, but really just a bonus. (The blossoms of some varieties are quite fragrant.)

Wade says landscape pros need to educate themselves about hostas to keep up with the gardening public.

"Many landscapers probably only know 5 to 10 varieties of hostas," he says. "That's just scratching the surface. In fact, we're all just scratching the surface because as the public sees more gardens with different varieties of hostas, there's going to be more demand for them."

Van says he and his wife began building the hosta gardens, and adjacent gardens containing about 1,000 varieties of daylilies, just over 10 years ago. He says many of their ideas come from other "wonderful inspirational gardens" that they visit.

Their gardens, located just east of the tiny town of Bellville, Ohio, are open to the public Monday through Saturday. They are a part of the 1,000-acre operation that is a large regional grower of shade and ornamental trees.

—To learn more about hostas, contact The American Hosta Society, 7802 NE 63rd St., Vancouver, WA 98662. There are also a number of state and regional hosta societies.

An ear to the customer

Tune in—before, during and after the service delivery process—to enhance your customer retention and profitability.

by Ed and Aaron Wandtke

■ A man went to his doctor complaining of poor hearing. The doctor took out a pocket watch and asked his patient if he could hear it ticking. "Yes," the man replied. The doctor went into the hallway. "Can you hear it now?" he asked. "Yes," said the patient.

The doctor moved to another room. "Can you hear the ticking now?"

"Loud and clear."

The doctor returned to the examining room. "There's nothing wrong with your hearing," he said, "you just don't know how to listen."

It's true of many people. They don't know how to listen.

As children, we were taught to "listen to others." But the older we became, the less we felt we had to listen to certain advice. Not until we've had a variety of unfortunate experiences do we begin to remember the importance of being a good listener.

The ability to listen well contributes much to human development. People do learn from mistakes and from trial and error, but many of the errors can be avoided if they learn to listen to people who have experienced similar situations.

The trade-off—When we spend our money, we expect good service or a good product in exchange for the money spent. Customers can inspect and use the product only after purchase. But sellers of professional services are scrutinized in three stages: before, during and after the service is provided.

Therefore, your employees and the company they represent are both under scrutiny by the customer through the length of the contract.

Along with the physical abilities required to perform professional lawn and landscape management services, your employees must be able to communicate with your customers. Many employees love to talk, and will often talk to their hearts' content. But these same employees may not realize the

importance of *listening* to the customer, and must find a happy medium between prolonged talking and attentive listening.

How to listen—When your employees listen to (and address) customer concerns, the customer feels more comfortable about both the property and your company. Effective listening builds, sustains and expands customer confidence.

A new customer, for instance, may be unsure about what he or she expects from the service. The simplest way to overcome this obstacle is for employees to ask questions so they can better understand what the customer expects.

Have your employees do the following to improve their listening skills:

- Ask questions during a conversation rather than during a question-and-answer session. Allow questions to flow with the conversation.

- Restate their understanding of what the customer said.

- Ask the customer to restate his or her answer to a question. This serves two functions. First, your employee might not have completely understood what the customer explained. Second, asking a question a second time requires the client to re-think his or her answer and breaks it down into simpler terms, often clarifying what was intended to be said. Both frequently cause the client to change his or her position after better understanding what he or she expects.

Your customers often enjoy the satisfaction of coming home from work or stopping by on their way out for the day to observe the progress made on the property. These opportunities allow your employees to interact and listen to the customer while the job is in progress.

Careful follow-up—After a job is completed, most lawn and landscape companies will follow up. Most programs, however, don't integrate the customer's suggestions with the ongoing operations. Companies might record the customers' suggestions but never apply them—which, more often than not, only enhance the services it can provide.

Customers who actively participate in a follow-up program are extremely valuable to your company, because they are willing to share their positive, negative or indifferent feelings about your service.

Good listening is essential if a company wants to experience the most value from a customer. Before and during a job, listen-

Listening Skills

Have your employees do the following to improve their listening skills:

- Ask questions during a conversation rather than during a question-and-answer session. Allow questions to flow with the conversation.
- Restate their understanding of what the customer said.
- Ask the customer to restate his or her answer to a question.

ing should focus on the customer's needs and how these needs can be met. By listening to customer comments after the job is completed, your company can measure how well it did what the customer wanted.

—The authors are affiliated with Wandtke & Associates, 2586 Oakstone Dr., Columbus, OH 43231. For more information about the managerial and financial services the company provides, phone (614) 891-3111 or fax (216) 891-7698.

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Circle No. 109 on Reader Inquiry Card

The care and feeding of customers

Review your current customer relations system as the season winds down. It's never too late to make some changes.

by John B. Calsin, Jr.

■ Do we really need another article on customer service? Yes!

An article on a new piece of equipment or control product would be nice. But if your care and feeding of customers is nothing more than waving to the customer as you walk behind your mower, read on.

Whether you are a sole proprietor with one truck and a few pieces of equipment, or the division head for a regional or national company, it's critical that you improve customer service and/or keep your customers happy.

Tackling complaints—"We really strive for customer service," says Chuck Feld, vice president and 19-year employee of J. Franklin Styer Nurseries in Concordville, Pa. This 105-year-old company is a frequent winner at the Philadelphia Flower



Show. It supports a large garden center, has four architects on staff and nine crews on the road.

According to Feld, Styer does not consider itself big enough to have a specific customer service department or representative, but it does have a plan to handle customer complaints.

If there is a complaint, it goes directly to the salesman who sold the job. This person tries to solve the problem. Even if the customer is at fault, "we usually just take care of it," says Feld.

The company does all it can to satisfy the customer, and guarantees its plants for two years.

If the salesperson is not able to remedy a problem due to a personality conflict or design problem, the complaint moves up to the vice president.

This does not happen often, however. "The salesperson has full responsibility to take care of it and full power to take care of that customer," explains Feld. They can't "give away the store," but Styer wants to "make sure (the customer) is happy."

Feld believes professionalism is the reason why there are so few complaints about the company's work.

In other words, do the job right the first time.

Keep customers informed—Styer also distributes handouts to customers:

✓ A doorcard checklist is signed by the foreman and left with the customer.

✓ A printed maintenance sheet with instructions for proper irrigation.

✓ "A Basic Primer on Garden Insect and Disease Control" contains instructions for applying control products.

It comes down to harmony versus good agronomy. John Carson, division manager of Ehrlich Lawn and Tree Care, says,

"We're really trying to focus on customer service issues as opposed to agronomic issues. I think it is becoming less important what materials (for example, the former industry battle of liquid materials vs. granules) you're using and much more important how the customers are relating to the services."

Ehrlich operates in a multi-state area, and is headquartered in Reading, Pa.

'It's a heck of a lot cheaper to keep (customers) than to gain new ones.'

—John Carson

Carson says the company did a quality-of-service survey four years ago. Representatives talked with current customers who were satisfied, and those who had left.

"The number one, glaring issue," Carson noticed, "was that customers want to hear more about what's happening with their service, and they want to hear it from the person who is providing the service—the technician. The customer wants to be reassured that the company is trying to do all that is necessary."

Training for technicians—the front-line service people—incorporates customer service issues. It includes role playing between service technicians, in which one takes on the role of the customer.

Technicians speak with the customer before and after the service is provided. These chats cover treatment, problems and expected results.

This way, customers are not left wondering what is going on with their lawns or trees. It also helps to cut down on nervous or angry telephone callbacks. For example, the customer is told that certain weeds may take two to three weeks to die back, and that others may show up before the next treatment.

Carson believes that, especially in the lawn care business, there is a trend to sell on price, and acquire new customers through discount programs. This, natural-

Customer relations guidelines

- Answer the phone by the third ring, no matter how busy you are
 - Answer with a smile
 - Be polite
 - Speak slowly
 - Answer questions to the best of your ability
 - Customer complaint form is filled in with information, which is used later.
- For landscape designers:
- Return calls the same day they come in
 - Set appointments within the next week
 - Keep the appointment, and be there on time
 - Dress neatly

—J.C.

ly, effects a company's profitability and its ability to pay professional, year-round technicians and other employees, which in the long run impacts employee turnover.

Carson states that Ehrlich realized it has to maintain competitive pricing levels. "We are not going to sacrifice profitability and we're not going to sacrifice what we believe we need to pay professionals technicians, year-round as we can make them."

This is a fine line. "Customer service is the basic guiding principle of our firm," says Terry S. Wallace, president of Landscape Services of Kennett Square, Pa. When she bought the business in 1980, it grossed \$300,000. This year, Wallace expects \$1.5 million in gross sales.

The issue—Several years ago, Wallace came to the conclusion that customer service was "the key issue" in today's market. Her company started a couple of initiatives to improve customer relations, which also included a customer survey. Some of the customers' concerns were caused by common industry problems (such as phone calls not returned promptly, or missed

Handling the gripes

■ Advice from Lawrence

Kokkelenberg, popular speaker at the PLCAA show, for handling customer complaints:

- 1) Establish in the first three minutes of a conversation with the customer that you are going to be helpful.
- 2) Never point to a customer's errors.
- 3) Try to avoid the word "you;" instead, use the customer's name in conversation.
- 4) Draw the customer out by engaging

appointments).

"(These are) basic things we could have figured out ourselves," says Wallace, but hearing it from the public made a big impact.

The company also provides a number of informational pieces which deal with different aspects of the service the customer will receive and what they might expect.

in conversation.

- 5) Use nurturing words like "I can appreciate your concern."
- 6) Always try to be calm: use gentle gestures and a gentle tone of voice; be reassuring.
- 7) Give bad news only when after the customer is settled down.
- 8) Use common sense. Assume you are dealing with a person who possesses a good bit himself or herself, and he/she will respect you more.

Included with each bill is a letter of appreciation and a questionnaire, to learn what can be done to make the service better. They also send out complete, specific maintenance instructions for every type of plant used on site.

The author is a freelance writer and president of Lighthouse Writing Services, Inc., West Chester, Pa.

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Fall fertilization of turfgrass

Research suggests many different effects, many different approaches. Weigh them all before making any applications.

by Paul Rieke, Ph.D.
Michigan State University

■ Fertilization is a priority for fall and late-fall turf management. Fall fertilization is one of the most important turf management practices done that has a major effect on the quality of turf the following spring.

Phosphorus and potassium—

The key nutrient in fall fertilization is nitrogen, but phosphorus and potassium are also key nutrients. Certainly, these nutrients should be available to the turf in adequate quantities.

For example, when potassium is limited, there is a probable reduction in stress tolerance—including potential for low temperature injury to turf during winter. Some evidence also suggests an increase in susceptibility to snow mold when potassium is limited.

Use a soil test for medium and fine-textured soils to be sure there is adequate potash in the soil. If it suggests potash is needed, appropriate rates should be applied based on recommendation and

common sense. For turfs on sands, soil tests for potassium are usually low in spite of a potash fertilization program. Regular, light applications of potash at frequent intervals (spoon feeding) should be made on sandy soils, particularly on sand greens.

At the time of late-fall fertilization, about half as much potash should be applied as nitrogen on finer-textured soils. On sands, use equal quantities of nitrogen and potash.

If soil tests show a phosphorus deficiency, it can also be applied in the fall, normally in a complete fertilizer. Seldom is phosphorus limited on turf. An exception is when no phosphorus has been applied and clippings are routinely removed.

Another potential exception is on sand greens, which have little capacity to hold phosphate. We have seen several cases of phosphorus deficiency on sand greens, more commonly on new greens, but also on older greens where no phosphorus has been applied for some time. Soil tests must be used to determine the need for phosphorus.

N in the fall—For cool-season grasses, both fall and late-fall fertilization should be considered.

Fall fertilization is best done during September, preferably early in the month. Weather

changes in late-summer, shorter days, cooler nights and more regular rainfall cause the turf plant to grow at a less rapid

vertical rate than it will during the spring. More lateral growth results in better turf density after the rigors of the summer. So fertilization in the fall deserves top priority. Carbohydrates manufactured at this time of year will be more likely to be stored, building up the plant for next year.

Appropriate rates of nitrogen applied during the fall period depend on a number of variables, ranging from ½ to 1 lb. N/1000 sq. ft.

A higher rate may occasionally be justified at times such as:

- on a newly-established turf which has suffered serious thinning over the summer due to injury from diseases, insects, traffic or moisture stress;
- in areas where an extensive weed population has been controlled, leaving open areas.

On general turfs (lawns, grounds, etc.) all the nitrogen can be applied in one application. For greens and other high maintenance turfs, you can use two split applications if the higher rate of nitrogen is needed. An alternative is to use a fertilizer which contains more slow-release nitrogen. Or, a spoon feeding program with weekly applications of soluble sources can be used, particularly on greens.

Normally, it is best to withhold nitrogen applications during October to permit the turf to "harden off." This permits the turf to accumulate carbohydrates and reduces the potential for frost injury if the turf softens before a major freeze.

Timing—In part because of differences in climatic zones and variations in the severity of seasons, there are many opinions as to how and when to apply nitrogen in late fall.

From my perspective, the objective is to supply nitrogen to the turf after growth has ceased. The root system is still active, as the soil is warmer than the air, and nitrogen can still be taken up and used by the plant.

If N has been applied properly in September, the turf should still be green and active. This permits the plant to continue photosynthesis whenever modest



Dr. Rieke says you should supply N after growth ceases, but while soil still warm.

temperatures and some sunlight conditions occur. Carbohydrates manufactured during this time are not "burned off" with growth and clippings, but are stored. This builds up the plant for next spring.

The rate of nitrogen application will again vary with turf conditions and the philosophy of the turf manager.

- For greens, $\frac{1}{2}$ lb. N/1000 sq. ft. may be sufficient.
- If tees are still thin from traffic, especially on par 3 tees, $\frac{3}{4}$ to 1 lb. may be needed.
- Fairways could receive $\frac{1}{2}$ to $\frac{3}{4}$ lb.
- Lawns and general grounds can receive $\frac{1}{2}$ to 1 lb. N.

Some turf may perform better without late fall nitrogen. Some lawn care companies cannot justify the cost of late-fall nitrogen for customers who may not continue with their services the next year. However, turf quality the next spring should be excellent about the time spring sales begin.

Snow mold caution—Snow mold was severe on many turfs over the winter of 1992-93. Some of the greater infestation was aided by late fall nitrogen applications.

If turf is hit hard by snow mold nearly every year, and no snow mold prevention

Late fall nitrogen: pros and cons

PROS

- + Good carbohydrate levels in the turf next spring.
- + Good early spring root growth.
- + Good fall and spring color.
- + Good turf density; less spring weed establishment.
- + Good turf color in spring.

CONS

- Nitrogen may leach.
- More mowing, affecting snow mold and other winter injury.
- May increase susceptibility to thatch formation to some degree, based on evidence from Ohio State University.
- Small increase in mowing in spring.

program is followed, it may be best to avoid late-fall nitrogen. In most years, the late fall N may increase the amount of snow mold, but there is a much quicker recovery from injuries.

Snow mold damage may be more superficial with the late fall nitrogen and/or the recovery is quicker. Either way, the next spring the turf returns to a better quality condition sooner with late-fall nitrogen.

For the Great Lakes region, we suggest applying the nitrogen after growth has ceased for all practical purposes.

This does not mean there will be no need to further mowing, but regular mowing will not be needed.

An additional mowing or two may be required before growth ceases entirely. This occurs anywhere from the last week of October to the second week of November.

Avoiding early spring nitrogen has the advantages of reduced carbohydrate loss caused by excessive growth, less mowing, potential reduction in several diseases and greater moisture stress tolerance during the summer.

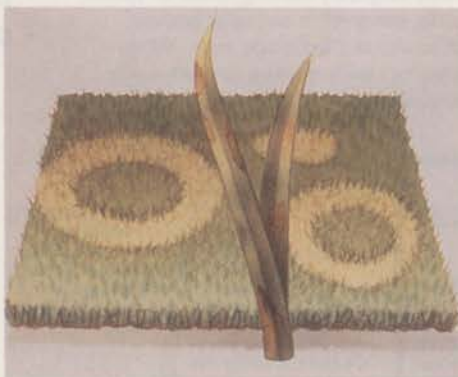
—Dr. Paul Rieke is a turfgrass specialist at Michigan State University. This article is excerpted from a paper he wrote for Hole Notes.

Take the bite out of summer patch

■ Summer patch is one of the most destructive diseases of cool-season turf in North America. Prior to 1984 it was an unidentified component of the disease Fusarium blight. Summer patch has been reported on annual bluegrass, Kentucky bluegrass and fine fescue.

The symptoms—In mixed stands of annual bluegrass and bentgrass maintained under putting green conditions, patches are circular, 1 to 12 inches in diameter. As annual bluegrass yellows and declines, bentgrass species frequently recolonize patch centers. On fairways, rings or patches may not develop; symptoms may appear as diffuse patterns of yellowed or straw-colored turf that are easily confused with heat stress, insect damage or other diseases.

Infection commences in late spring when soil temperatures stabilize between 65-68 F. Symptoms develop during hot (86-95 F.) rainy weather or when high



To reduce summer patch

- ✓ raise the height of cut
- ✓ aerate in spring and fall
- ✓ fertilize with acidifying N sources
- ✓ convert from annual bluegrass to bentgrass

temperatures follow heavy rainfall. Patches may expand through the summer and early autumn and are often still evident the following growing season.

Chemical control—Systemic fungicides such as fenarimol (Rubigan), propiconazole (Banner), triadimeton (Bayleton), and the penimidazoles (i.e. Tersan 1991, Fungo 50, and Cleary 3336) are most effective applied at label rates. Begin preventive applications in late spring or early summer when the maximum daily soil temperature exceeds 60° F. for four or five consecutive days. Monitor soil temperatures at a two-inch depth during the warmest part of the day. Repeat fungicides two to three times at 21-28 day intervals. Control is enhanced by applying products in 4-to-5 gallons of water per 1000 sq. ft. Post-treatment irrigation does not seem to increase control.

Cultural control—Because summer patch is a root disease, cultural practices

that alleviate stress and promote good root development to reduce disease severity. Avoid mowing turf below recommended heights, particularly during periods of heat stress. Summer patch is stimulated at high soil pH. Maintain soil pH between 5.5 and 6.0 with the application of ammonium sulfate or a slow-release nitrogen source such as sulfur-coated ureas. Conversion of golf areas from annual bluegrass to bentgrass will further reduce disease incidence.



Clarke: Maintain soil pH between 5.5 and 6.0.

reduce fungicide rates 25-50 percent. Acidifying fertilizers and systemic fungicides have also been used on golf greens to effectively control summer patch and increase the population of bentgrass 11 to 20 percent over a three-year period.

—Bruce B. Clarke, Ph.D., Rutgers, presented this information at the 1994 Turf-Seed Field Day, Hubbard, Ore.

We spoke with Scott Werner of Lincolnshire Fields, about whom the article was written. He agreed that thalonil was the only "true" contact fungicide mentioned in the article, which was also the opinion of our caller.

Werner explained there has long been a difference of opinion as to how the product action of fungicides should be described. Werner said there is no danger in combining these products, but agreed that some clarification was in order.

We spoke with Dr. Bruce Clarke of Rutgers University. He describes thalonil, Vorlan and Curalan as contact fungicides, while thiophanate and Chipco 26019, he says, are systemic fungicides. Others may prefer to call them "penetrants," while many turf pathologists will say the only "true" systemic is Aliette.

If you have questions on fungicides, contact your supplier or an extension turfgrass pathologist.

LANDSCAPE MANAGEMENT regrets any inconvenience this may have caused.

CORRECTION

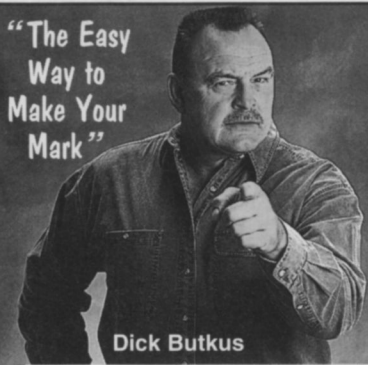
■ The systemic vs. contact fungicides "definition" debate has returned, after an article in our July issue.

A reader called to say that the article on page 29—which was supplied to LM—misidentified thiophanate, Chipco 26019, Vorlan and Curalan as contact fungicides.

Good cultural practices such as aeration, raising the height of cut, and fertilizing with acidifying nitrogen sources can reduce the use of fungicides.

Although these practices may take two to three years to reduce disease severity, they represent an environmentally sound means to improve turfgrass vigor and

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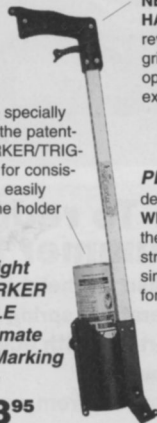
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HOT TOPICS

Survey tracks spread of Ambrosia beetle

by James E. Guyette
Contributing Editor

COLLEGE STATION, Texas—The Asia ambrosia beetle is creating havoc in several nurseries in East Texas. This spring the pest did a minimum \$5,000 damage in one nursery alone.

"We've got a lot to learn about this insect," says Bill Ree, a Texas A&M University research entomologist.

Ree is surveying entomologists in 25 states—from Florida to Maine and as far west as Oklahoma—to determine the beetle's migration patterns.

The ambrosia beetle was first found in the United States in Charleston, S.C., in 1974. It was first identified in Texas in 1985, and under a statewide monitoring program started in 1994, it is now seen in 41 Texas counties. Because many Texas nurseries send their stock elsewhere the impact of the beetle could be more widespread than previously believed.

The only control method specialists can recommend so far is to burn any infected trees—which is something Ree

had to recently tell one nursery owner. "When you have a 5- to 6-year-old (infested) Shumard oak in a 30-gallon bucket and you have to tell her to burn it, that's pretty hard," says Ree. A tree like that can retail for as much as \$250, he says.

The pest attacks numerous woody plants, and its damage may be identified by the toothpick-like spines that protrude one-and-a-half inches from the host plant. These spines are the "sawdust" left after the female bores into the host to make brood galleries.

The ambrosia beetle bores horizontally into the tree, not vertically like most pests. This eventually causes more damage to the different sections or layers.

"The number of infestation sites on a host plant will determine whether it will die," Ree reports.

The pest has been found in Shumard oak, burr oak, chinquapin, red bud, Chinese pistachio, Mexican plum, golden raintree, Bradford pear, and pecan trees.

Ree can be reached at (409) 845-6800.



Musser names major scholarship winner: UM's Paul Johnson

SHARON CENTER, Ohio—The Musser International Turfgrass Foundation has awarded Paul G. Johnson \$6,000 toward pursuit of a Ph.D. degree in horticulture from the University of Minnesota.

"This kind of award indeed reminds me of the kind of support the turfgrass industry has for students like myself," says Johnson. "In my mind, no other industry group shows this kind of support."

"I also look forward to showing my appreciation by serving this great bunch of people in any way that I can."

Johnson, 30, would like to teach and to conduct research in turfgrass breeding and genetics. His doctoral thesis is on "Genetics and Physiology of Flowering on Selected *Poa Annua L.*"

Professor Burton Musser, for whom the scholarship is named, was a turfgrass pioneer for four decades at Penn State University, according to foundation president Frank Dobie. "The foundation is dedicated to promoting that same kind of pioneering individual," he says.

Over the past seven years, \$63,000 in scholarships has been awarded.



New study backs no-risk studies on golf of the past

BELLE GLADE, Fla.—Avid duffers are not at risk from pesticides applied religiously to golf courses, according to a new study from the USGA and 11 universities, including the University of Florida.

"From the pesticides that we have studied, there's not much danger for the golfer," says soil chemist George Snyder of Florida's Institute of Food and Ag Sciences (IFAS) at Everglades Research and Education Center. "We think it's really mini-

mal, based on what we've seen so far."

Snyder and his colleagues, including chemist Curtis Elliott, began a \$2.7 million, USGA-funded environmental study three years ago.

He and turfgrass scientist John Cisar conducted their study on a specially-constructed USGA-specified green. In one phase of their work, they determined the amount of pesticide residue left on used golf shoes, golf pants and on golf balls. As

part of their studies, the scientists walked around the course, knelt on the grass, and even putted balls. They also measured what amounts of pesticides remained in the soil and in runoff groundwater.

"We concluded that most organophosphate insecticides are strongly absorbed into the golf courses' thick thatch layer," says Snyder. "Even less of the pesticide penetrated into the soil and very little seeped into the percolated water."



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ON GOLF GREENS...

"Diagnostic Turfgrass Management for Golf Greens," written by Tom Mascaro, is available for \$130.95 from

Turfgrass Products Publications, 4740 N.E. 12th Ave., Oakland Park, FL 33334. The text includes 106 color photographs. Section 1 illustrates how to perform analytical tests on greens. Section 2 outlines how to monitor and treat greens. A 525-page workbook is included.

PHOTO REFERENCE...

The 1995-96 "Garden Plant Book" is the Flower Council of Holland's latest addition to its popular list of full-color photo reference guides. The handy 92-page guide to 394 garden plants is priced at \$9.95, including shipping and handling. To order, send check or money order to: Public Relations Marketing, Holland Plants Dept., P.O. Box 749, Glenwood Landing, NY 11547.

FOR NEW BUSINESSMEN...The Associated Landscape Contractors of America

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Literature and videos for the green industry

offers "Guide to Developing a Landscape Maintenance Business" for \$75 (\$50 to members). The book contains 19 chapters on topics like customer service, total quality principles, banks and banking, financing your business, pricing, estimating, costing and equipment purchasing. To order, remit payment, plus \$5 shipping and handling, to: ALCA, 12200 Sunrise Valley Dr., Suite 150, Reston, VA 22091.

PESTICIDE USE...Reports on pesticide use in the U.S. are now available from the National Center for Food and Agricultural Policy. The 537-page National Data Report is \$125, and the 280-page National Summary Report is \$30. State reports, ranging from 10 to 50 pages, are also available for \$20 each. Send check or money order payable to NCFAP, 1616 P Street NW, Suite 400, Washington, DC 20036. If

you are ordering a state report, be sure to note which state(s) you wish.

SAFETY VIDEO...

Progress Products is selling a safety training video on plant installation. Topics on the 31-minute video are hole size and depth, soil preparation, soil drainage, planting techniques, tree staking and more. Cost is \$64.95 including shipping and handling. To order, send check, MasterCard or Visa number, or purchase order to Progress Products, P.O. Box 29018, Thornton, CO 80229, or phone the company at (303) 289-7740.

MORE ON SAFETY...It only costs \$10 to obtain a copy of the "Groundskeepers Safety Guide," a handy 4- by 6-inch, 80-page booklet from the Canadian Centre for Occupational Health and Safety, Canada's authoritative source for health and safety information. The book contains information on recognizing workplace hazards, safe work practices and use of personal protective equipment. To order, contact the organization's customer service department at (800) 668-4284.

ENVIRONMENTAL DESIGN...The American Society of Golf Course Architects has developed a document that provides objective information on the environmental impact of well-designed golf courses. According to the ASGCA, it is a "must" for municipal officials, greens committee chairs, superintendents and course owners and managers. To order a copy, send a \$10 check payable to ASGCA Foundation to: ASGCA, 221 N. LaSalle St., Chicago, IL 60601.

DEEP-TINE PRIMER...Emrex, North American distributor for Verti-Drain products, has produced a free informational booklet on aeration: "Deep-Tine Aeration: How, When, Why and Where To Do It Properly." To obtain your copy, write Emrex, Box 1349, Kingston, PA 18704 or telephone (717) 288-9360.

FULL-COLOR DISEASES...The first full-color book on diseases of annuals and perennials is now available from Ball Publishing. It contains 494 color photos, 11 reference tables and 166 annuals identified by scientific and common names. For more information, U.S. residents should telephone (800) 456-5380; outside the U.S., telephone (708) 208-9089.

GREEN INDUSTRY EVENTS

SEPTEMBER

1-Oct. 14: Certificate in Club Operations and Golf & Country Club Management, Pan Pacific Glenmarie Resort, Kuala Lumpur, Malaysia. Phone: (011) 603-443-7000.

5-7: Sports, Amenities & Landscaping Trades Exhibition, Royal Windsor (England) Racecourse. Phone: (011) 44-01954-230710.

7-8: Southwest Horticultural Trade Show, Phoenix (Ariz.) Civic Plaza. Phone: (602) 966-1610.

9: Nebraska Lawn & Garden Open House, University of Nebraska John Seaton Anderson Turf & Ornamental Research Facility, Ithaca, Neb. Phone: Amy Greving, (402) 472-2584.

10-12: International Garden & Leisure Exhibition, Exhibition House, London, England. Phone: (011) 0181-855-9201.

11-12: Legislative Leadership Conference, sponsored by American Association of Nurserymen, Washington, DC. (By invitation only.)

12-13: California Turf & Landscape Research Conference & Field Days, University of California-Riverside. Phone: Susan Denney, (909) 787-4430.

13: Hampton Roads Field Day, Hampton Roads Ag Research Center, Virginia Beach, Va. Phone: (804) 363-3906.

13-15: National Urban Forestry Conference, Marriott Marquis, New York. Phone: Peter Frank, (518) 457-7370.

14-16: International Plant Propagators' Society Western Region annual conference, Red Lion Columbia River Hotel, Portland, Ore. Phone: (503) 283-2111.

14-17: Florida Nursery & Allied Trades Show, Stouffer Orlando Renaissance Resort. Phone: (404) 955-8977.

17-19: World Fertilizer Conference, Hyatt Regency Chicago. Phone: (202) 675-8250.

19: "Perspectives on the Landscape: Trees" seminar, Cold Spring Harbor Laboratory, Long Island, N.Y. Phone: (516) 366-0048.

19-21: Virginia Tech Turf and Landscape Field Days, Blacksburg, Va. Phone: David Chalmers, (703) 231-9738.

20: PLCAA Regional Workshop on Customer Service and Risk Communication, Shilo Inn, Portland, Ore. Phone: (800) 458-3466.

20: Landscape Expo, sponsored by Landscape Contractors Association MD/DC/VA, Howard County Fairgrounds, West Friendship, Md. Phone: (301) 948-0810.

21-22: Shigo Tree Seminar, Turf Valley Hotel and Country Club, Ellicott City, Md. Phone: John Kirkland, (503) 254-0482.

26-28: International Construction and Utility Equipment Exposition, Kentucky Fair and Exposition Center, Louisville. Phone: (414) 633-4500.

26-29: How Washington Works, The Washington (D.C.) Campus. Phone: (202) 234-4446.

27: PLCAA Regional Workshop on Customer Service and Risk Communication, Sheraton Hotel, Columbia, S.C. Phone: (800) 458-3466.

30-Oct. 5: International Bedding Plant Conference, San Jose, Calif. Phone: (800) 647-7742.

PRODUCT REVIEW

Narrow aerator has higher crankshaft speed

Verti-Drain's new model 205.150 turf aerator is powerful and compact. Its working width is 60 inches, small enough to easily maneuver within and treat hard-to-reach turf areas.



The 205.150 can penetrate to a maximum soil depth of 16 inches, and its specially-designed gearbox provides a better connection to the tractor and a higher crankshaft speed; a creeper is not always necessary.

"This is an ideal machine for football fields, golf courses, municipalities and other places where there are narrow gates or bridge entrances," says Charles Otto, head of Emrex, Verti-Drain's North American distributor.

Circle No. 191 on Reader Inquiry Card

View colorful plants on CD ROM database

Green Thumb Software's new Pro Series Database for CD-ROM contains cultural information on 2,300 plants along with 2,500 color photographs of plants. It also contains detailed plant descriptions and an audio botanical plant name pronunciation guide.

System requirements: IBM-compatible 386SX minimum, Microsoft Windows 3.1, 8 MB of RAM, CD-ROM drive, VGA graphics (SVGA recommended), and a mouse.

Circle No. 192 on Reader Inquiry Card

All-purpose spray machine compact and lightweight, for many turf/ornamental jobs

The Lady Bug is an all-purpose turf and ornamental spray machine that performs a wide variety of jobs, from turf and ornamental applications to large tree spraying.

Turf spraying can be done with a front-mounted breakaway boom, for coverage between three and 15 feet. There are a wide range of gallons-per-thousand square feet application rates, which can be attained by changing nozzles, pressure or speed of spray.

The machine can be carried on a small, lightweight trailer, or wheeled onto the back of a pickup with ramps.



The rear wheel can be removed to allow for quick engine checks, and the front tilts down to allow inspection of hydro units, belts or battery.

The Lady Bug's many features include single-hand steering, a boom control pedal, hydrostatic, variable-speed control, and liquid-filled pressure gauge.

Circle No. 193 on Reader Inquiry Card

Riding mower runs cool, offers high productivity, more profits

Scag says it has designed exceptional value into its STHM Hydro Rider for more productivity, more performance and more profitability.

The high-capacity, hydro cooling system features a 13-quart nylon reservoir and heavy-duty cooling radiator for cooler running, resistance to contamination and longer component life.

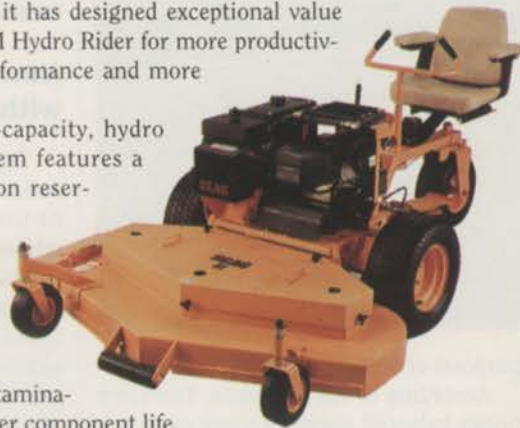
The drive system is simple and straightforward, and features a durable pump/motor drive system for smooth, even power to both wheels, with single, pedal control.

Circle No. 194 on Reader Inquiry Card

Insecticide labeled for fast knock-down on commercial and multi-family sites

Tempo insecticide from Bayer is now registered for use around business and office complexes, shopping complexes, multi-family residential complexes, airports, cemeteries, parks, playgrounds, athletic fields and other landscape turfgrass.

continued on page 34



PRODUCTS from page 33

"The new registration enables lawn and landscape professionals to use Tempo on ornamentals and most turf sites," says Steve Chaney, Bayer turf and ornamental product manager.

Tempo was previously registered only for hown lawns and landscapes.

Tempo is an advanced generation pyrethroid that controls a broad spectrum of turf and ornamental pests. It is characterized by fast knockdown, low dosage rates, long residual control and no phytotoxicity. When used at the recommended label rates, Tempo controls pests in outdoor landscaped areas as well as recreational turf.

Circle No. 195 on Reader Inquiry Card

Heat or cool golf greens with underground system

The Turf-Temp system from BioTherm Hydronic, Inc., is a network of water-heated tubing installed beneath golf greens for



purposes of heating or cooling.

According to the company, TurfTemp brings balanced warmth to turf roots better than sunlight. The warmer roots will result in hardier and healthier turfgrass, with less maintenance requirements.

Estimated costs for the TurfTemp warming system are based on square footage required and geographical location, and range between \$3.65-\$4.10 per sq. ft. To add cooling capabilities, add \$1 to the square foot price.

TurfTemp has been installed at the Palos Verdes Golf Club in Southern California, and the Pebble Beach Golf Links.

Circle No. 196 on Reader Inquiry Card

Plow/trencher blade for job-site flexibility

Vermeer's LM-42 walk-along plow/trencher features an adjustable blade on the vibratory plow, to provide operators with more flexibility and versatility on the job site.



The vibratory plow attachment features a shaker box that delivers 10,000 lbs. of force to the plow for more efficient plowing and increased productivity.

The LM-42 features adjustable plow blades in lengths from 12 feet to 30 feet.

Vermeer's plow centering springs hold the vibratory attachment in place when in the raised transport position, to increase the machine's stability and reduce the potential for operator accidents.

Circle No. 197 on Reader Inquiry Card

New software compatible with existing system

Trims Software International has designed a Microsoft Windows version of its Grounds Management Software, to be released in October.

Standard features will include: budget and expense tracking; inventory and purchase orders, equipment maintenance scheduling, chemical and fertilizer reporting, personnel and labor activity and weather data.

Trims for Windows is a completely new product that is data file and keystroke compatible with Trims for DOS. This compatibility allows existing Trims users to move easily to Trims for Windows without having to learn a new system or repeat existing data.

Features include standard Windows Graphical User Interface, pull-down menus, on-screen report preview, multi-tasking, context sensitive help, dazzling color graphs and Multi-User capability.

Circle No. 198 on Reader Inquiry Card

ADVERTISER INDEX

101	AgrEvo USA Co.	5G
102	AgrEvo USA Co.	15G
103	American Cyanamid.....	8G-9G
104	American Cyanamid	8L-9L
131	ASLA.....	25
	Dow Elanco	Cv3
	Dow Elanco	11
	Dow Elanco	13
	Dow Elanco	15
	Dow Elanco	17
	Dow Elanco	19
108	Echo, Inc.....	10
109	Floratine Products .	13L
130	Fox Valley Systems ...	28
120	General Motors Corp.....	4-5
132	Green Industry Expo	29
121	John Deere	11L
122	John Deere	1L-4L
123	Lofts Seed	Cv4
105	Miles	12G-13G
106	Miles	22-23
107	Miles.....	25
124	Nextel Communications.....	29
125	PBI/Gordon Corp.....	7
126	Pickseed West Inc.	31
133	RISE.....	19
127	Tee 2 Green.....	Cv2
128	Terra Intl.....	21
129	Turfco Mfg.	15L

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7500 Old Oak Blvd.
Cleveland, OH 44130

for more information, call Stephanie:
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or 216-891-2719
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101	118	135	152	169	186	203	220	237	254	271	288	305	322
102	119	136	153	170	187	204	221	238	255	272	289	306	323
103	120	137	154	171	188	205	222	239	256	273	290	307	324
104	121	138	155	172	189	206	223	240	257	274	291	308	325
105	122	139	156	173	190	207	224	241	258	275	292	309	326
106	123	140	157	174	191	208	225	242	259	276	293	310	327
107	124	141	158	175	192	209	226	243	260	277	294	311	328
108	125	142	159	176	193	210	227	244	261	278	295	312	329
109	126	143	160	177	194	211	228	245	262	279	296	313	330
110	127	144	161	178	195	212	229	246	263	280	297	314	331
111	128	145	162	179	196	213	230	247	264	281	298	315	332
112	129	146	163	180	197	214	231	248	265	282	299	316	333
113	130	147	164	181	198	215	232	249	266	283	300	317	334
114	131	148	165	182	199	216	233	250	267	284	301	318	335
115	132	149	166	183	200	217	234	251	268	285	302	319	336
116	133	150	167	184	201	218	235	252	269	286	303	320	337
117	134	151	168	185	202	219	236	253	270	287	304	321	338

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108	125	142	159	176	193	210	227	244	261	278	295	312	329
109	126	143	160	177	194	211	228	245	262	279	296	313	330
110	127	144	161	178	195	212	229	246	263	280	297	314	331
111	128	145	162	179	196	213	230	247	264	281	298	315	332
112	129	146	163	180	197	214	231	248	265	282	299	316	333
113	130	147	164	181	198	215	232	249	266	283	300	317	334
114	131	148	165	182	199	216	233	250	267	284	301	318	335
115	132	149	166	183	200	217	234	251	268	285	302	319	336
116	133	150	167	184	201	218	235	252	269	286	303	320	337
117	134	151	168	185	202	219	236	253	270	287	304	321	338

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1. BUSINESS & INDUSTRY

MY PRIMARY BUSINESS AT THIS LOCATION IS:
(PLEASE MARK ONLY ONE IN EITHER A, B OR C)

A. Landscaping/Ground Care at one of the following types of facilities:

- 01 0005 Golf courses
02 0010 Sports Complexes
03 0015 Parks
04 0025 Schools, colleges, & universities
05 Other type of facility (please specify) _____

B. Contractors/Service Companies/Consultants:

- 06 0105 Landscape contractors (installation & maintenance)
07 0110 Lawn care service companies
08 0112 Custom chemical applicators
09 0135 Extension agents/consultants for horticulture
10 Other contractor or service (please specify) _____

C. Suppliers:

- 11 0205 Sod growers
12 Other supplier (specify) _____

Which of the following best describes your title:
(mark only one)

- 13 10 EXECUTIVE/ADMINISTRATOR
14 20 MANAGER/SUPERINTENDENT
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Keeping customers' lawns insect pest free is what Dursban* insecticide is all about. Not only is it a dependable and economical broad spectrum insecticide,

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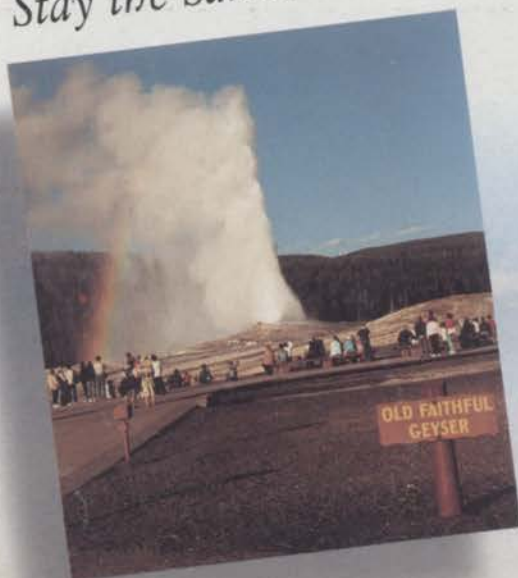
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Jamestown II

Chewings Fescue

Contains endophytes for natural insect resistance

Some "Old Faithfuls"
Stay the Same...



What Benefits You Can Expect from Jamestown II

- Natural resistance to surface-feeding insects because of the endophytes
- Good performance even when mowed as close as 1/4"—or left unmowed
- Less fertilizer requirement
- Less need for irrigation
- Consistent performance in sun or shade
- Excellent cold hardiness
- Blends well with creeping bentgrass while exhibiting resistance to "take-all patch" which can damage bentgrass turf
- A very attractive, low-maintenance turfgrass

Where You Can Use Jamestown II

- Golf courses— low-maintenance roughs, non-irrigated fairways, limited fertility areas, even as a companion grass with creeping bentgrass on tees, greens or fairways
- Reclamation sites — Roadsides — Parks
- Vacation homes or lawns that require less mowing or low-maintenance turf
- In the cooler climates, from Canada to the hills of North Carolina, where an attractive, low-maintenance turf is desired
- Use Jamestown II Chewings Fescue alone or combined with Reliant Hard Fescue in Lofts' Ecology Mix.

The Links of North Dakota at The Red Mike Golf Resort was designed by Stephen Kay with Stan Weeks as Superintendent. Jamestown II Chewings Fescue is included in the fescue/bentgrass mixtures used on the greens and fairways. Roughs are seeded with a Jamestown II/Reliant mixture. Photo is a view of hole #2 on this new course, recently quoted as a "masterpiece" by *Golf Digest*.



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