

THE VOICE OF THE GREEN INDUSTRY

LANDSCAPE *management*

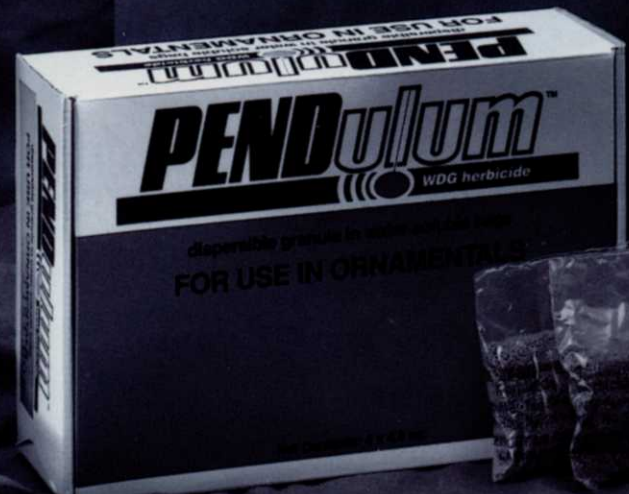
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Ken Thomas, an Atlanta-area landscaper, started working for himself in 1986. He drew \$250 a week for 60 very honest hours' work. But he soon realized that he'd eventually self-destruct trying to maintain that frenetic pace.

"Five years ago, when I realized that landscaping was going to be my life, I knew some serious decisions had to be made," Thomas recalls.

Just as it dawned on him that he needed to grow his "job" into a "career," it recently dawned on me that you can use numbers to determine how your career is progressing. (A "career," of course, being preferable to "just a job.")

The answer to this lone question can quantify and qualify what you're doing for a living, whether you're a landscaper, a lawn care operator, a golf course superintendent or a grounds manager.

The question is this:

What percentage of your time is spent on manual labor like mowing, chemical application and digging?

(Fill in a percentage here, before reading any further.)

Here are your alternatives, and how they relate to whether you've actually got a career or just a job:

100%: What you've got is a job—no more, no less. At times, you doubtless feel like you're on a treadmill, working long hours and getting nowhere. Unfortunately, you're destined to remain at this level unless you can create and follow a plan that allows you to assume less of your organization's "manual labor" burden.

In some cases, the plan might include moving up in the organization to a foreman's position; in some cases, it might be parlaying your experience and expertise into a new job that will put you on a faster career track; in some cases, it might even be starting your own business.

99%-50%: You're on your way to a full-fledged career in the green industry, because you've taken that huge first step by (1) being promoted at least once or, (2) hiring someone to

help you, if you own a business. Much of the journey toward a successful career in this industry remains ahead of you, however.

49%-21%: You've created a good working base for advancing your career. You've been able to delegate much of the everyday manual labor to people you can trust to get the job done.

If you're a golf course superintendent or grounds manager, you're probably handling quite a few managerial tasks by now, and have also taken a firmer grip on administrative tasks. If it's a small business, you're also concentrating more on selling.

20%-1%: Interestingly enough, this is the range in which *most* of you are *most* content.

Alan Culver at Mahoney Golf Course in Lincoln, Neb., doesn't hesitate to hop on a mower. He's been at the course for 20 years, and he's as happy as a clam.

"It might be a hard job, but I love what I do," says Culver. "I'm actually best at managing—putting all the pieces together and seeing that things get done right."

If your answer to our question is in this range, you're spending most of your time on management, administration, and short- and long-range planning—but you're still getting outside enough to keep you happy.

0%: Sorry, Jack. Unless you're CEO of a multi-million-dollar company, this probably isn't a career, it's a rat-race.

It's fine to be able to delegate all the mowing and chemical applications, but you should still be handling some of the everyday chores, if for no other reason than to "stop and smell the roses" (which probably in some way attracted you to the green industry in the first place). You may well be making money hand over fist, but I'll bet you're not as content as you were back in what you consider "the good old days."

So there you have it: my version of how to establish a satisfying career in the green industry. The above generalizations, based on hundreds of interviews conducted over the last 13 years, may be right on the money or they may be a little off-base. I'd like to know how you feel. Please phone (216-826-2830), e-mail (jroche_lm@compuserve.com) or write, and we'll use your own observations in a future column. **LM**

Is it a job or a career?



Jerry Roche

JERRY ROCHE
Editor-in-Chief



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EDITORIAL STAFF

Fax (216) 891-2675
E-mail jroche_lm@compuserve.com

Jerry Roche **Editor-in-Chief** (216) 826-2830
Terry McIver **Managing Editor** (216) 891-2709
Ron Hall **Senior Editor** (216) 891-2636
Dr. William Knoop **Contributing Technical Editor** (903) 860-2410
Vernon Henry **Group Editor** (216) 826-2829
Lisa Lehman **Art Director** (216) 891-2785
Lisa Bodnar **Graphic Designer** (216) 891-3101

READER ADVISORY PANEL

Joe Alonzi **Westchester Country Club** Rye, N.Y.
Rod Bailey **Evergreen Services** Bellevue, Wash.
Alan Culver **Mahoney Golf Course** Lincoln, Neb.
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Jack Robertson **Robertson Lawn Care** Springfield, Ill.
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BUSINESS STAFF

John D. Payne **Publisher** (216) 891-2786
Leslie Montgomery **Administrative Coordinator** (216) 826-2856
Judy Miducki **Production Manager** (218) 723-9281
Donna Pack **Group Business Manager** (216) 891-3131
Debi Harner **Production Director** (218) 723-9325
Rosy Bradley **Senior Production Manager** (218) 723-9352
Karen Edgerton **Circulation Manager** (218) 723-9280
Sandy Ollah **Green Book Supervisor** (218) 723-9618
Lynn Viele **Green Book Coordinator** (218) 723-9393
Alex DeBarr **Group Publisher** (216) 891-2789

ADVERTISING OFFICES

Headquarters 7500 Old Oak Blvd.
Cleveland, OH 44130-3369
(216) 243-8100 Fax: (216) 891-2675
John D. Payne **Publisher** (216) 891-2786
E-mail: jpayne222@aol.com
Kerry Jacobson **Southeastern Sales Manager**
(216) 891-2626
Tom Galligan **National Sales Manager**
3901 52nd Ave.
Kenosha, WI 53144-1830
(414) 653-9523 Fax: (414) 653-9524
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John Kiesewetter **Western Sales Manager**
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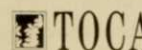
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THE VOICE OF THE GREEN INDUSTRY

LANDSCAPE *management*



ON THE COVER: ESTANCIA CLUB, SCOTTSDALE, ARIZ. CARL RYGG, SUPERINTENDENT. PHOTO BY LARRY KASSELL.

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Summer patch is the most common turfgrass root disease in the Northeast, and it starts to show up at the beginning of summer.

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Don't let the turfgrass thatch layer get beyond a half-inch, because that's when your insect, disease and drainage problems begin.

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Circle No. 115 on Reader Inquiry Card

Herbicide timing in tall fescue

In our area, some people do the fall seeding of tall fescue lawns during September, October and November. How safely can we apply a pre-emergence herbicide like pendimethalin during the following spring to control smooth crabgrass? What can we expect?

—NORTH CAROLINA



BALAKRISHNA RAO
*Manager of Research and
 Technical Development
 for the Davey Tree Co.
 Kent, Ohio*

As a general rule, turfgrass that has been recently seeded should not be treated with pre-emergence herbicides like pendimethalin. Applications should be avoided until the turfgrass produces good density and has been mowed at least four times at regular cutting height and mowing frequency. You can use Tupersan herbicide on newly-seeded lawns without any problems.

Researchers at the University of Georgia evaluated the response of fall-seeded tall fescue during September, October and November to spring-applied (Feb. 28th) pendimethalin. They found that tall fescue seeded during September or October had excellent density without showing any adverse effect of pre-emergence herbicide application in the spring. However, they found a significant reduction in density with a November seeding period as a result of immature turfgrass plants.

Another option is to delay the pre-emergent application as late as possible in the spring and apply products like Dimension, which will work as a pre-emer-

gence and an early post-emergence crabgrass management tool.

In some situations, you can best manage the crabgrass through a split application program where you use one-half of the product early in the spring and then follow with the other half about six weeks later. For additional details on the rates and specific directions, refer to label guidelines.

You can also consider skipping the entire pre-emergent application in the early spring. Instead, start monitoring the crabgrass seedlings as they germinate and begin to emerge. When they are at the two- to three-leaf stage, you can manage using post-emergence herbicides like Acclaim, DSMA or MSMA (Daconate 6, Lescos MSMA 6.6). Some of these may produce discoloration of desirable turfgrass. Therefore, become familiar with the product on a small scale before using in your programs.

Where feasible, you can also skip the application of pre-emergent for crabgrass management during the first year of establishment.

Read and follow label specifications for better results.

Pine needle scale

When and how do we control scale on pine needles?

—NEW YORK

The pine needle scale attacks pine, spruce and occasionally hemlock, fir and taxus. Most severely affected are Austrian,

Scotch, white, red and mugho pines, and white and blue spruces.

This sedentary insect sucks large amounts of plant juices, turning the needles yellow and causing them to drop prematurely. If left uncontrolled, infestations can stunt and gradually kill branches and entire trees.

Pine needles may appear nearly white when heavily infested with pine needle scale, an elongated insect one-tenth of an inch long, white with a yellow spot at one end.

During the fall, purple-red eggs are deposited beneath the white female covering; these eggs overwinter and hatch in late May (when lilac is in full bloom), and the reddish crawlers emerge from under the mother covering. Crawlers migrate to the new growth and, once established, do not move again. In about seven weeks, this first brood matures and produces a second generation in late July. This brood matures in October and lays eggs which overwinter.

Apply 2% horticultural oil during mid-June and again in mid-September. These dates are targeted against second-instar scales which have had a chance to settle down, but before they develop hard protective cover (testa). It is easier to manage the scales at this time.

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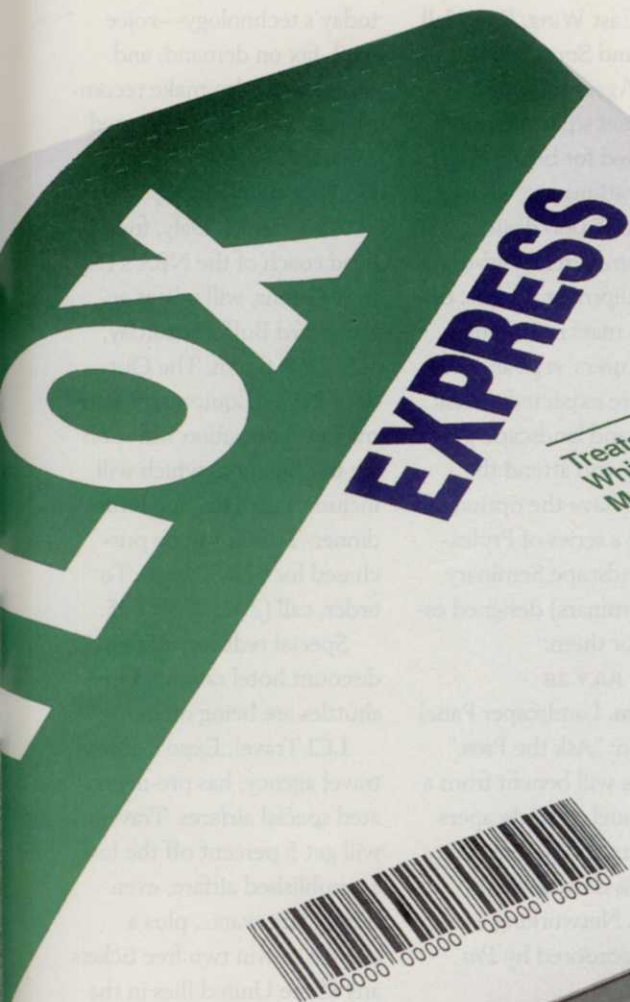
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PLCAA to offer free seminar at Expo 96

The Professional Lawn Care Association of America (PLCAA) will officially participate in the 13th annual International Lawn, Garden and Power Equipment Expo (Expo 96).



"We are happy to have the PLCAA aboard," says Dennis Dix, CEO of the Outdoor Power Equipment Institute, which sponsors Expo 96. "About 22 percent of the Expo visitors are lawn and landscape professionals. It is hoped that PLCAA's partici-

pation will bring an increase in this percentage. Expo brings PLCAA members an excellent market with 87 percent of the exhibiting companies being manufacturers of commercial equipment. So this is an ideal fit for PLCAA and for Expo."

Ann McClure, executive vice president of the PLCAA, says her association is inviting Expo attendees to a free seminar on Monday, July 29, 8-10:30 a.m. during the show. Titled "High-Powered Hiring—Tools of Success," the session will feature Tom Diederich, vice president of government relations for Orkin Lawn Care. He will explain how to slash employee turnover costs through dynamic hiring strategies.

"This seminar is for anyone responsible for hiring good workers, especially in the lawn and landscape industry," says McClure.

Six hundred top manufacturers and suppliers will introduce more new products than ever. Indoor exhibits will cover 240,000 net sq. ft.

in the Kentucky Exposition Center's East Wing, East Hall and South Wing.

Again this year, 560,000 net sq. ft. outdoors will be used for hands-on demonstrations.

About 25,000 dealers, retailers, commercial end-users, rental equipment dealers, distributors, mass merchants, manufacturers' reps and exhibitors are expected to visit.

Lawn and landscape professionals who attend the event will have the option of attending a series of Professional Landscape Seminary (PLUS seminars) designed especially for them:

SUNDAY, JULY 28

2-4 p.m. Landscaper Panel Discussion: "Ask the Pros." Attendees will benefit from a diverse panel of landscapers and cutters at different stages of business development.

5 p.m. Networking Reception sponsored by *Pro* magazine.

MONDAY, JULY 29

2-4 p.m. "Growing People Who Grow Your Business." Tom Winner, Winner Resource Group, will teach management techniques with a common sense approach. This is an intensive seminar on the art of building a more productive self-sufficient team.

TUESDAY, JULY 30

7:30-8 a.m. Continental Breakfast sponsored by *Pro* magazine.

8-10:30 a.m. "Tech Tools: Technology You Can Use to Grow Your Business." Technology expert Steve Epner,

B.S.W. Consulting, will give advice on making the most of today's technology—voice mail, fax on demand, and more. He'll also make recommendations of sophisticated software developments for bidding and planning.

Also, Chuck Daly, former head coach of the NBA's Detroit Pistons, will talk at an Early Bird Buffet Saturday, July 27 at 6 p.m. The Outdoor Power Equipment Aftermarket Association will sponsor the function, which will include a cash bar and buffet dinner. Tickets can be purchased for \$28.50 each. To order, call (202) 775-8605.

Special reduced air fares, discount hotel rates and free shuttles are being offered.

LCI Travel, Expo's official travel agency, has pre-negotiated special airfares. Travelers will get 5 percent off the lowest published airfare, even during fare wars... plus a chance to win two free tickets anywhere United flies in the continental U.S. Questions and reservations can be directed to LCI Travel, (800) 381-2453 or (714) 680-6375 between 8 am and 5 pm Pacific Standard Time.

Expo 96 is free to those who pre-register. To receive an Expo 96 brochure, which includes PLUS seminar registration information, contact Expo 96, 550 S. Fourth Avenue, Suite 200, Louisville, KY 40202; call (800) 558-8767 or fax (502) 562-1970. In Kentucky or outside the U.S. call (502) 562-1962. □

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Dr. Bill Knoop joins LM team as technical editor

Dr. William E. Knoop, extension turfgrass specialist at Texas A&M University for more than 16 years, is *LANDSCAPE MANAGEMENT*'s new contributing technical editor.

Knoop, a resident of Mt. Vernon, Texas, is a nationally-known speaker, author and turfgrass expert. Last year, he received the Texas Governor's Award for Environmental Excellence. He also received a Special Citation from the Professional Lawn Care Association of America in 1985, and a Superior Service Award from the U.S. Department of Agriculture in 1991.

A Certified Professional Agronomist, Knoop will advise the magazine's staff on agronomic matters. He will be responsible for writing monthly articles, including the popular spring

"Guide" series to fertilization and weed, insect and disease control. Dr. Knoop will also represent the magazine at trade shows and will work on custom publishing projects.

"It's an honor to serve as a technical resource, for both the sales and editorial staff of *LANDSCAPE MANAGEMENT*," says Knoop. "I also want to be available as a technical resource to all our readers. It's our intention to provide more useful educational materials to the industry as a whole in the future."



A new guide series and annual digest, coordinated through *LANDSCAPE MANAGEMENT*'s parent company, Advanstar Communications, is also in the works.

"Dr. Knoop is going to be a wonderful addition to our already-experienced editorial staff," notes LM Editor-in-Chief Jerry Roche. "He provides that special turfgrass expertise that can only help our product, especially on a technical level."

Knoop is a graduate of the University of New Hampshire (Ph.D.), the University of Florida (M.S.A.) and Iowa State University (B.S.). □

L.A. Council, actors help ban blowers

Los Angeles City Council voted 9-4 on May 14th to draft an ordinance to ban gas-powered leaf blowers from residential areas. The actual vote on the ordinance is due this month.

The law would effectively ban backpack, gas-powered blowers within 500 feet of residential properties.

This was the third attempt in the last 10 years by L.A. to legislate against the blowers commonly used by landscapers.

The two previous attempts in 1986 and 1991 failed outright.

But anti-power blower interests brought out the "heavy hitters" this time: actor Peter Graves (of TV's "Mission: Impossible") and actress Meredith Baxter (of TV's "Family Ties").

"Leaf blowers are bad. They blow other things around," Graves was quoted as saying in a Los Angeles *Times* front-page article May 15th. "Are we going to put masks on our kids?"

Baxter told the council that using power blowers "flies in the face of all rational thinking." She cited what she considered the dangers of gas-powered blowers before being cut off by Council President John

Ferraro.

"The implications of this are apparent to the entire industry," says Robin Pendergrast of International



Marketing Exchange, who has been carefully monitoring the situation for Echo, Inc., a major manufacturer of power blowers. "While this ordinance was actually a modification of the original, there appears to be an attempt to legislate all lawn and garden equipment."

After the council meeting ended, a lengthy discussion initiated by Councilman Marvin Braude followed. "Both proponents and opponents [of the law] cited what appeared to be fabricated health issues and undocumented numbers of cities that apparently had legislated the product," observes Pendergrast. □

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Wage hike will 'ripple' into green industry

The "ripple effect" is alive and on the prowl. The green industry should feel higher labor costs, maybe as early as next season.

That's Ben Bolusky's read on Pres. Bill Clinton's push, and the decision of Congress to raise the minimum wage from \$4.25 to \$5.15 starting in 1997, a 21 percent jump.

"There are those who believe that because their firms'

pay scales are above the minimum, a minimum wage hike

will not impact their business operations. I believe they're wrong," says Bolusky, director of government affairs for the American Association of Nurserymen and its 2,300 members.

Blame the so-called ripple effect.

Bolusky, shown above, explained that green industry businesses generally pay their newly-hired employees at a scale starting a dollar or more above the minimum wages in their markets. That difference gives them a hiring advantage over minimum-wage employers.

"If the starting wages are increased at the bottom by 21 percent, then there is often an expectation by other workers that their wages should be similarly increased," says Bolusky.

Even without the federal wage hike, higher labor costs seem inevitable. As of mid-May, at least 29 states were considering ballot initiatives or legislation to raise the minimum wages within their boundaries.

"In order to attract qualified workers, the green industry needs to do a better job of offering attractive wages and benefits. It is really that simple," says Bolusky, who spoke at the annual meeting of the Turf & Ornamental Communicators Association in Washington D.C. recently. □



Industry swallows fuel hikes

When gasoline and diesel prices jumped 15 to 20 cents a gallon across the nation early this spring, the green industry was hardly affected.

Golf course superintendents and grounds managers paid little attention because fuel is such a small part of their overall budgets. And—apparently—few lawn/landscape service providers raised prices because of it.

But the extra cost is not insignificant. A quick calculation shows about \$70 in extra fuel costs per vehicle for each 10-cent jump in fuel prices; that's for a service vehicle averaging 15 miles per gallon, driven 10,000 miles in a season.

Bill Clutter says that none of his lawn care customers "are running out and offering to make up the difference." Nor did he ask or expect them to.

The owner and operator of the Turfguard Company in Dayton, Ohio, points out that when fuel prices took a similar climb several winters ago he took that into consideration when he raised prices.

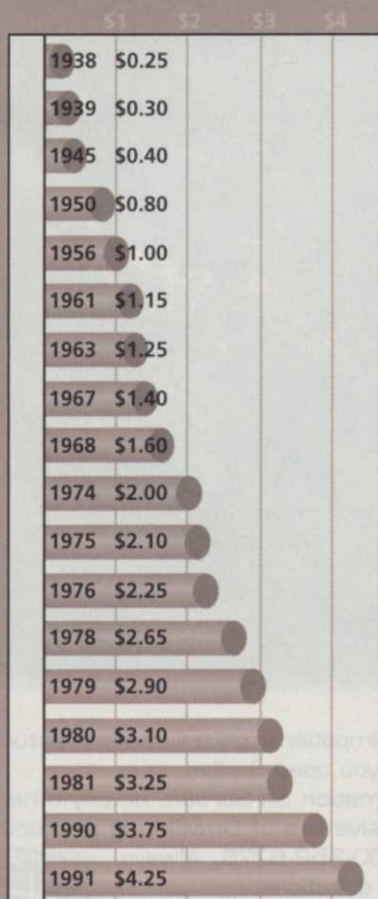
"Of course, we didn't refund the surplus to our customers when the prices came back down," points out Clutter.

The timing of this recent fuel price rise kept lawn and landscape service deliverers from adjusting prices.

"We sign people to our service at the beginning of the year, and we can't go in and raise the price," says David Harris, Liqui-Green Lawn & Tree Care in Bloomington, Ill. □

Maxxing out the minimum

The federal minimum wage has grown steadily since it was first established in 1938. It was last raised in 1991 to \$4.25 per hour. President Clinton proposes another increase, possibly as high as \$5.15.



Correction

The photo on page 21 of our may issue was not that of Ewald Astaltdt. LANDSCAPE MANGEMENT apologizes for any inconvenience this may have caused.

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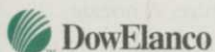
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SPRAYING EQUIPMENT

by TERRY McIVER / Managing Editor

A wide variety of accessories, brands and models of spray equipment are available for use in large and small turf and ornamental applications.

The head horticulturist/grounds supervisor for the Pinehurst Resort Country Club says the resort's grounds and golf course crews use all kinds of spray equipment, from a Cushman 100-gallon tank with a six-foot boom, to Spray Hawks, Flood Jets and Monsanto's Expedite sprayer for small spot treatments.

"My emphasis is on ornamentals—trees, shrubs and flowers," explains John Clark. "The superintendents are set up for a larger area."

Clark says new equipment purchases are made "only if it's something we think will make the job more efficient, easier or safer."

"We're pretty intense about grounds care, and the superintendents are more intense," says Clark. All Pinehurst crews share a concern for spraying application safety and efficiency. Clark says the crews are always careful about what materials are applied, when they applied, and how the job is done.

"We're very conscientious about the weather," says Clark. "We watch the elements and spray when it's calm. If it's too windy, we shut down and wait for a better day."

Spraying Systems, Inc., says to delay spraying if wind speeds exceed 7 mph or temperature is above 85 degrees and relative humidity is less than 50 percent.

Safe and 'on the spot'

Accuracy and safety should be your two biggest concerns whenever you use spray applicators. These factors determine how much product you use, the future condition of the turf-grass, and whether or not you operate within established regulations and guidelines.

"Drift" is defined as the movement of spray droplets outside the intended target, and is a major concern to applicators. The smaller the droplet size, the more prone to drift the product will be in windier climates. Different-sized spray tips produce different-sized droplets under varied degrees of pressure. A nozzle might produce medium droplets at low pressures, while produc-



Echo's MS-5 is a 5-gallon tank with interchangeable pump handle for left- or right-hand operation.



The Cushman 5th Wheel Sprayer contains six Venturi Jet agitators.



Jacobsen Division of Textron SV trucks offer a choice of three spraying attachments.



Agri-Fab's 15-gallon towable sprayer comes with a 12-foot handgun.



Solo sprayers are equipped with easy moving pumps with large cylinder capacity.

ing fine droplets as pressure is increased.

When using a boom sprayer, speed is an important factor in establishing accuracy. Sprayer calibration prepares your sprayer for operation and diagnoses tip wear.

Each nozzle must be checked for accuracy. Variations in sprayer output can be caused by mismatched nozzles or nozzles that have worn unevenly. There may also be some plumbing clogs to clear, or screens may be plugged or partially plugged.

Consult with manufacturers or distributors to learn the appropriate calculations for nozzle output.

Spray nozzles: easy to damage

Don't overlook the importance of spray tips to proper pesticide application. The goal is to get the largest droplets without losing good target coverage. Today's advanced tip designs produce larger droplets less prone to drift, while maintaining a high quality spray pattern. In applications where maximum coverage is critical, higher carrier volumes may be necessary when droplet sizes are very coarse.

Watch for wear. Finely-machined edges on most tips are delicate and easy to damage. When the tips become damaged or worn, they often let more material through and over-apply product, or put product down unevenly.

These guidelines will help protect spray nozzles:

- 1) **Select** tips made of long-lasting material, or replace them often.
- 2) **Use** recommended strainers to reduce tip clogging.
- 3) **Clean** nozzles with a soft-bristled brush. Even a wooden toothpick can damage the orifice and cause uneven spray patterns.

The naked eye can't see tip damage, so you have to compare each tip's flow rate to the flow rate of a new tip of the same size and type. If flow rates from two or more tips on the boom differ by 10 percent, replace the entire set.



Tuflex truck-mounted spray systems range in capacities from 300 to 2000 gallons.

Tanks for different jobs

Spray tanks are made of either stainless steel or fiberglass, with polyurethane enamel for chemical and impact resistance.

Tank sizes range from about 5 gallons to small trailer models, to 3000 gallon, truck-mounted units.

If you need a larger tank, be sure its capacity is sufficient to cover the proper-

ties in one trip. Smaller, compact models may be designed for a van or pick-up truck bed. Features include diaphragm pumps, hose and applicator gun.

High-volume trigger sprayers can be used on a variety of containers. Adjustable sprayers can shoot 30 feet or more and also be dialed down to an ultra-fine mist.

cont. on page 20

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SPRAY EQUIPMENT FOR PROFESSIONAL USE

AGRI-FAB (217) 728-8388 Circle No. 280

Sprayers for spot weed control to large-area fertilization have 15- to 25-gallon capacity tanks. They are available as hand-held, push models or tow and tractor-mounted units. All have easy-to-grip handgun hoses.

BROYHILL (402) 987-3412 Circle No. 281

Sprayers for a variety of product applicators: Terramaster pin-mounted sprayers for turf vehicles; AccuSpeed walk-behind booms; 200-gallon Hydramaster tanks; a Fairway LX 3000 series; and Mini-50 and Stadium-80 units. Accessories include low-profile booms; spray gun kits; hose reel assemblies; electric lift actuator; and foam markers.

hoses and console mounting stand. Boom sprayers are available with 200- and 300-gallon tanks.

DYNA-FOG (317) 896-2561 Circle No. 283

Dyna-Fog plastic sprayers use UV-stabilized polypropylene tanks and fiberglass-reinforced wands. Nozzle wear is reduced by using polyacetal, a material with the characteristics of stainless steel and four times the nozzle life of brass, according to the company. Knapsack sprayers, trigger sprayers and pump sprayers are available. Tanks hold 1½, 3 and 4 gallons. The knapsack sprayer is made of a one-piece plastic tank with enclosed pump and no seals to wear out. Larger riding units are available for broadcast fogging against flies and mosquitoes.

FRIEND MFG. (716) 772-2622 Circle No. 285

Commander Sprayers have a wide range of accessories, such as mechanical and hydraulic spray booms, hose reels, spray guns, Kohler and Honda engines, sprayer computers and monitors. They are available as trailer models or utility vehicle-mounted, with an engine drive or PTO drive.

GREGSON (716) 768-7035 Circle No. 286

Gregson makes truck-mounted sprayers from 500 to 800 gallons; and van, pick-up truck and trailer sprayers from 100 to 500 gallons. The Eco-500 is a 25-gallon stainless steel or poly tank used for blanket application from a main tank (typically fertilizer) and on-demand spot treatment from an auxiliary tank (typically herbicide). By installing the Eco-500 on existing sprayers, you are able to blanket-apply fertilizers and selectively apply pesticides by pulling a second trigger on the spray gun. Distributed in the U.S. through Rhett M. Clark, Inc.

HANNAY REELS (518) 797-3791 Circle No. 287

The 1000 Series hose reel was designed to be strong, lightweight and suitable for various pest control and lawn care applications. The reel is also suitable for all power cleaning applications, including washdown, in-plant cleaning and degreasing. It is made to handle ½- and ¾-inch I.D. hose from 50 to 175 feet long, and will handle product temperatures from 20° F to 400° F. The Series 1500 handles ¾- through 1-inch I.D. hose with either a direct-crank rewind or a chain and sprocket drive powered by electric or compressed air motor. The reel is a direct crank rewind. A removable crank is also available.

JACOBSEN (414) 637-4465 Circle No. 288

The SV-3422 and SV-2322 system vehicles offer a choice of three spraying attachments. Truck-mounted sprayers are available in 125-gallon and 20-gallon models.

Both sprayers have a working width of 20 feet for fast coverage,

and remote electronic controls for easier hook-up and cleaner operation. For really big spraying jobs, use the fifth-wheel attachment 300-gallon sprayer.

KROMER (612) 472-4167 Circle No. 289

The Kromer AFM is a multiple purpose unit for spraying weed and insect control products. It can also be used to water down baseball in-fields. The tank has a 50-gallon capacity. Attachments are available for other maintenance duties: a spring tooth harrow, leveling blade, broom, line painter, line cutter, utility box and draw bar.

LESCO (800) 321-5325 Circle No. 290

Choose from a complete line of poly tank sprayers, from 50 to 300 gallons. These high-quality spray units can be mounted in a pickup truck, van or truckster-type maintenance vehicle (50- and 100-gallon models only). Running gear assemblies are available that allow sprayers to be towed. These sprayers are ideal for use by professional turf managers, landscapers and tree and ornamental specialists. Backpack sprayers, poly sprayers, spray wands and spray guns are also available.

MACKISSIC (610) 495-7181 Circle No. 291

The Mighty Mac P5350T-10 sprayer is a 50-gallon power sprayer. Spray tall trees up to 35 feet high with 300 lbs. pressure at 10 gallons per minute. The sturdy tank is non-corroding, 200-mil polyethylene and has a large 10-inch fill opening with twist-on lid. The large opening allows easy interior access for thorough, reach-in cleaning. Flow bypass return line provides liquid agitation that keeps wettable powders in suspension. Other products range in size from 12½ to 50 gallons.

PARKER HANNIFIN (216) 943-5700 Circle No. 292

The company's Hose Products Division offers a new catalog describing its varied assortment of hose, fittings and equipment. An appendices section offers informa-



Broyhill's walking boom features an Accuspeed speedometer and an optional, 'see-through' drift cover.


CUSHMAN (800) 228-4444 Circle No. 282

The Cushman Turf Master by SDI (Spraying Devices, Inc.) offers the ultimate in spraying technology along with proven benefits of the Cushman Turf-Truckster. The Turf Master features ground pressure of 11 psi on the rear wheels at full capacity. Tanks are 125- to 160-gallon. SDI's electronic boom spray control console includes pressure gauge, pressure adjustment switch, master and individual on/off switches, electric pressure regulator, three solenoid valves, boom feed

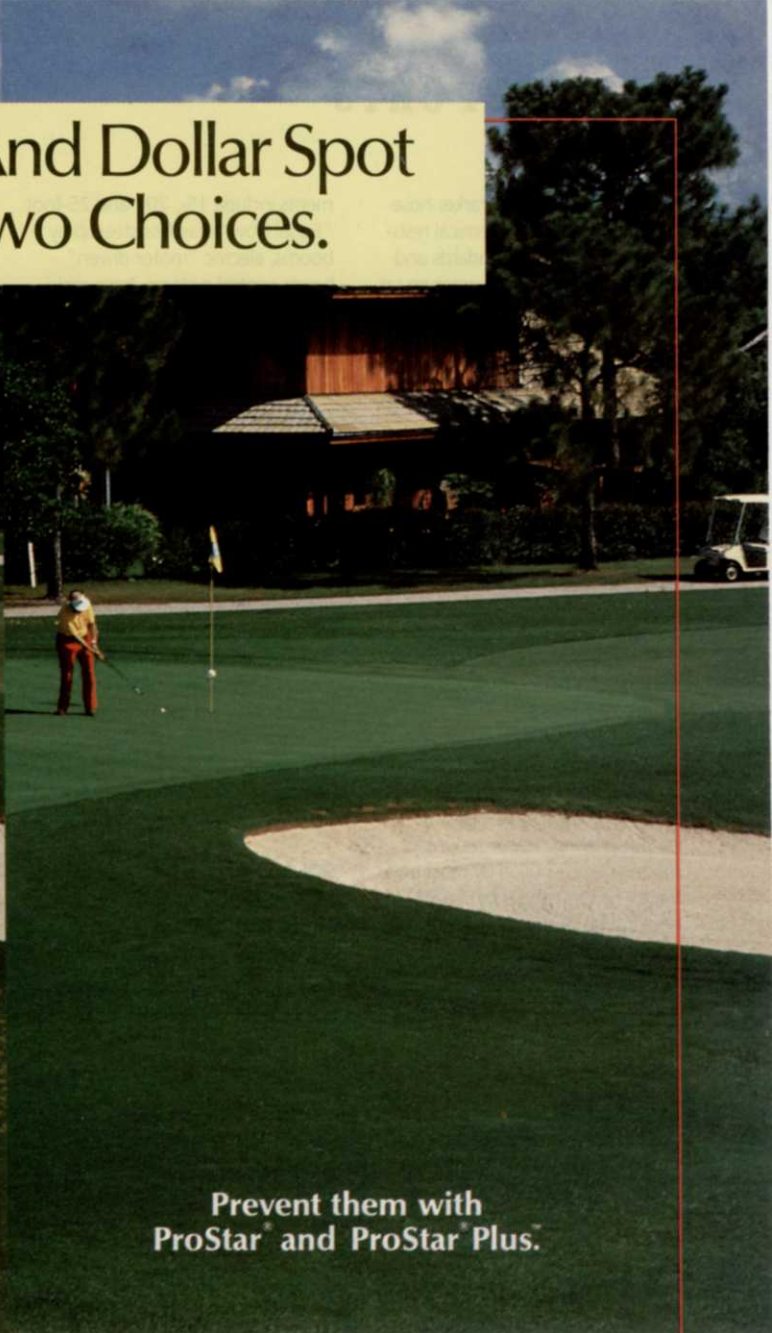
ECHO (847) 540-8400 Circle No. 284

The MS-5 manual backpack sprayer features a five-gallon, high-density polyethylene tank for long-lasting use and fewer stops between refills. A 24-inch brass lance has an adjustable nozzle and an oversized actuator with lock-on feature, for commercial users with lots of spraying to do. All seals and O-rings are made of chemically-resistant Viton.


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tion for working with Parker hose products, including chemical resistance information, standards and specifications for hose, pressure rating tables and charts, metric conversion information, hose installation tips, a safety guide and more.

RAVEN IND.
(605) 336-2750
Circle No. 293

The company manufactures sprayer flow control systems, chemical injection systems and an automatic liquid/dry control system for agriculture, turf and roadside applications.

SDI/SPRAYING DEVICES
(209) 734-5555
Circle No. 294

Vehicle-mounted models can be quickly pinned onto Jacobsen, Toro and Cushman Turf Vehicles for dedicated spraying. Trailer-mounted models can be pulled by most any tractor or turf vehicle by simply hooking up to the sprayer drawbar when ready to spray. Other attach-

ments include 15-, 20-, and 25-foot "Equal Flow" stainless steel spray booms, electric "motor driven" boom control systems, hose reels, spray hoses, spray gun, walking spray booms and "Quick Foam" foam marker systems.

SHINDAIWA
(503) 692-3070
Circle No. 295

The SP415 sprayer features a high-efficiency piston pump with built-in agitator to minimize operator effort. Viton seals are chemical resistant. An in-tank pump system means a reduced chance of leaks during operation. The flat bottom tank resists tipping, and a concave tank contour fits the operator's back for maximum comfort. Standard equipment includes four nozzles, field service kit and tools for normal periodic maintenance requirements.

SOLO
(804) 225-4228
Circle No. 296

Sprayers feature ergonomically-

designed pump and carrying handle, comfortable backpack carrying frames and large openings for easy filling. Complete emptying and cleaning of the pressure sprayers is easy. The sprayers are equipped with easy moving pumps with large cylinder capacity for extended but comfortable operation. Lightweight shut-off valves and rugged spray tubes fit nicely in the operator's hand.

SP SYSTEMS
(310) 449-1492
Circle No. 297

The SP0 four-gallon Knapsack Sprayer comes equipped with a new, patented triple function pump. The pump—with piston/diaphragm agitation—offers incredible spraying pressure, safety from leaks and the ability to agitate wettable powders all at the same time. The unit is easy to use, simple to maintain.

SPECTRUM ELECTRO-STATIC SPRAYERS
(210) 822-8479
Circle No. 298

The Spectrum 3010 Electrostatic Spray Head converts motorized backpack mistblowers to electrostatic operation. According to the company, advantages are significant increase in spray deposition, uniform coverage on both the top and undersides of leaves, and reduced chemical requirements, worker exposure, drift and run-off.

SPRAYING SYSTEMS
(708) 665-5000
Circle No. 299

The makers of TeeJet products supply a wide variety of spray tips, nozzle bodies, pressure regulating valves, spray guns and sprayer control, calibration and adjustment accessories. Regional offices are located across the U.S.

TUFLEX
(800) 327-9005; (305) 785-6402 in Florida
Circle No. 306

Tuflex makes handcrafted fiberglass tanks for the lawn care and pest control industries. Truck-mounted spray systems range in capacities from 300 to 2000 gallons. Trailer units include a 30-gallon en-

closed system, a 100-gallon nursery sprayer and a 400-gallon two-compartment system. The Injecto-Matic chemical injector system is a 600-gallon seamless fiberglass tank with dual reels for turf, trees and shrubs; tip-n-pour containment; tool racks; handwash port; dry product storage; an external tank fill port and other features. Tank mix systems with auxiliary pumps and engine are also available.

WESTHEFFER
(800) 362-3110
Circle No. 307

This distributor offers parts and repair kits for "just about everything" related to spray systems. A BF 12-volt sprayer unit is a compact,



The SP0 from SP Systems has a triple function pump.

quiet and cost-effective herbicide and pesticide sprayer. A 200-gallon poly tank has a D30 Diaphragm Pump, Honda 5.5 engine, Hannay electric reel, 300-foot, half-inch 600 psi hose and ChemLawn spray gun. Other units available.

WYLIE
(800) 722-4001
Circle No. 308

The Wylie Road-way Spray System is an affordable solution to right-of-way weed control for roadways and waterways. Designed to adapt to most any flatbed vehicle, with a one-ton capacity, the 500-gallon unit is durable dependable and simple to operate. The SK-110 Sprayer is assembled with a 5 hp Briggs & Stratton engine and comes with a high-pressure spray hose.

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Make the most of shop space

by ABBY McNEAL / Pleasant View Fields

Whatever sort of turf facility you maintain, you need a place for the equipment. Too often, the group that plans the athletic facility, golf course or commercial site forgets to provide

ample room for equipment storage and maintenance.

A more efficient and economical approach would be to determine:

1) What equipment do we need to keep this facility in top condition?

2) How much space is needed to store it properly?

For crews that work out of shops with limited space, however, the motto must be, "make the most of what you have."

Storage, transport tips

Pleasant View Fields is a seven-field soccer complex, in its first full year of play. Two fields are to be built at a later date. The city of Boulder, Colo., has three athletic turf departments: parks, recreation and a golf course. Initially, the three departments had no on-site equipment storage. Everything was transported on an 18-foot trailer from the golf course, which is four miles away.

We now have a 25x25-foot rock-base storage area surrounded by a wire fence and locked gate. There is limited covered storage in one section of the restroom building. We've also acquired a 28-foot trailer which we use to haul two large mowers—or one mower and one other large piece of equipment—in one trip.

The paint machine, walk-behind mower, shovels and other assorted small tools are kept in the covered storage. The paint machine is kept there because it's used most often, and has to be kept in a dust-free

area. The smaller tools are kept there to prevent theft.

The complex has two Toro 325D tractors with 72-inch recycling-deck Groundsmaster mowers, a Ransomes 72-inch mower and a Toro 216 Reelmaster Triplex mower. We also



◀ **Mowers: have them cleaned and stored right every night.**

have a large topdresser and tractor, a small seeder and aerifier and a utility cart.

Assigned equipment space needs to be allocated to avoid shuffling equipment. Mowers earn more or less permanent spots based on frequency of use. The mower that is used three times per week is easier to get to than the mower used once a week or for special field grooming before a game. Equipment that's needed for the next day's maintenance chores is moved to the front, while the current

day's equipment is put into overnight storage.

A tarping system is being developed to protect equipment from the weather during our active months.

Share the space

Some equipment is shared with the golf course and parks department, so we take advantage of their covered storage space whenever possible. For example, if the golf course crew needs the topdresser, it is left there until needed at the complex. During winter, covered storage is available at the golf course.

► Keep entrances to garage area clean and clear.

As the person responsible for equipment maintenance, I am in charge of blade sharpening. With no assigned work space, the blades must be changed in the parking lot or on the small, paved area behind the restroom building. The golf course technician allows me to use one of the service bays there when necessary. This does have advantages. I call him my "on-site mentor," thanks to his expertise and years of experience.



The storage/maintenance shop at Collier's Reserve golf course, Naples, Fla. is a model of what every facility should be—or at least come close to—in terms of order and cleanliness.

A place for everything...

A neat, organized shop shows professionalism, and will help to instill confidence in others that you can do the job as an equipment manager, says Fred Peck, equipment manager at Fox Hollow at Lake-wood (Colo.) Golf Course and director of the Rocky Mountain Golf Course Equipment Managers Association.

Peck advocates regular shop cleaning.

"Establish daily, weekly, monthly and annual cleaning schedules," says Peck, "and your shop will become a place you can be proud of, not a place to be avoided.

"Ongoing repair projects should be neat and organized," which will eliminate lost parts and lost time, says Peck.

Peck has learned that people who use equipment take better

The disadvantage is getting the equipment there and back, and planning for my own off-site time. Generally, I'll take the unit to the course at the end of the day and start there the next morning.

Besides the good communication and cooperative relationship between our complex and the golf course, we both have good working relationships with our equipment distributors. This allows me to call on either of them if we experience a major equipment breakdown.

Equipment out of sight

The security of our outside storage is helped by limited visibility from the main road. The fenced area is located off a side street that is used mostly by those coming to the soccer complex. Though relatively close to the parking lot, it's par-

tially hidden from view on one side by a wooden shed used by the soccer associations.

The fenced area is about 1500 feet from a day-care school which has frequent outdoor activity at various times during the day.

I'd like a small maintenance building, if the budget permits, even if it's only a three-sided barn. At least, I'd like a covered area for equipment storage, a wash bay, and a covered area for materials storage. With a little higher budget, I'd move up to a totally enclosed building for better protection and add working space for routine maintenance procedures. **LM**

—The author is turfgrass manager for Pleasant View Fields, Boulder, Colo.

care of equipment that clearly shows a history of proper use and care. Ask your crews to rate equipment on ease of use and how well it does the job it is intended to do.

And *do not*, insists Peck, let crew persons have a "favorite" mower that they all prefer to ride. This causes one piece of equipment to be over-used, which leads to uneven wear within the fleet.

The equipment manager needs a designated work station and office, with all manuals in one place and file cabinets for paperwork. Use equipment logs to hold all information about equipment: make, model, manuals, what you paid for it, and all maintenance receipts.

Take pride in calling yourself an equipment manager, says Peck.

"What better term for someone in charge of \$350,000 worth of equipment, who sets up training, cleaning and record-keeping methods?"

—Terry McIver

Don't get sued

FOR WHAT A WORKER DOES

by PHILLIP M. PERRY

The six bucks it costs to psychologically test an applicant could save you mega-bucks down the road. 'Better safe than sorry,' as they say.

Suppose one of your employees drives a fellow worker home after drinking alcohol in the parking lot, and injures his passenger in a car wreck.

Or he gets mad and slugs a customer or golfer.

Or burglarizes a home during his

lunch hour.

In any of those cases, are you and your business liable for damages?

Too often, the answer is yes! Even if an employee's criminal act is outside the workplace, you may be liable for damages.

Why? Two new business-eating beasts have been born in the field of employment law: "negligent hiring" and "negligent supervision."

The former charge claims that you failed to perform diligent background checks when you hired an employee. The latter claims that you failed to investigate allegations that an employee was performing acts that would indicate a tendency to harm others in the future.

"This whole area has taken on more urgency for employers," says Richard J. Reibstein, a partner with McDermott, Will & Emery in New York City.

"Over the past five years, plaintiff's attorneys have become

more familiar with the doctrine of negligent hiring and retention. The doctrine is now being applied with full vigor."

You are at a disadvantage in defending yourself, since most of these suits—if pursued to the bitter end in the court system—end up as jury trials. And most jury members are employees rather than employers. They often identify with a victim and look upon a company as a "deep pockets" source of cash to right a wrong.

Forget insurance, too. You can insure against negligence, say brokers, but not against willful misconduct. "In all general liability policies, there are exclusions for willful acts of employees," says Deane K. Felter of Arthur A. Watson & Co. business insurance of Wethersfield, Conn.

A way out

Yet there are steps you can take to protect yourself and your organization from such suits:

1) Do background checks for each job applicant, and write down the steps you take.

"You must consider every hiring decision as if it represented potential litigation," says Reibstein. "When you are dealing with a position where you have reason to believe the individual you are hiring may come into contact with the public, with clientele, or with co-workers, do a full background check—even for a temporary worker."

Ask why each period of former employment ended. Ask about

Sources for integrity tests

McGraw-Hill London House

9701 West Higgins Rd.
Rosemont, IL 60018
(708) 292-1900

Reid Psychological Systems

200 S. Michigan Ave.
Chicago, IL 60604

Pinkerton Services Group

6100 Fairview Rd. #900
Charlotte, NC 28210
(800) 528-5745

any problems with drugs, alcoholism or violent behavior. Remember that it is the act of asking for such information from applicants and their former employers that provides your defense against a negligent hiring charge. Write down all of the questions you asked, even if you got no helpful answers.

2) Have each applicant take a written integrity test.

Tests can be selected in many areas critical to personnel management, such as integrity, drug use, and attitudes toward theft. Price per test typically ranges from \$5.75 to \$17.50, depending on quantity ordered and depth of testing desired.

"Model Guidelines for Pre-Employment Integrity Testing" is available for \$10 from the Association of Test Publishers, 655 15th St. NW, Suite 320, Washington, DC 20005; phone (202) 857-8444.

You do need to make sure that such tests do not conflict with any of your state discrimination laws, or invade employee

privacy. Run it by your attorney first.

Take the test results seriously. In one example, an applicant had been given the tests, and it predicted violence and emotional instability. The applicant was hired, anyway. The fact that a test was given increased the employer's liability when the person committed an act of violence.

3) Perform criminal background checks where appropriate.

In one recent Florida case, an employer was found guilty of negligent hiring when an employee broke into a nearby home. The employer had failed to discover that the applicant had been previously convicted of breaking, entering and assault with intent to kill.

Criminal background checks are usually time-consuming, and a new employee may commit a crime long before the results of the check land on your desk. The fact you requested such a check provides evidence of conscientious hiring procedures, even if it

turns up no information.

4) Respond appropriately to allegations of wrongdoing or suspicious behavior by the employee.

Investigate to the fullest extent possible and document what you do. If, later on, the employee commits an act for which you are sued, you have the written evidence that you were supervising correctly. You can show that you operated in a reasonably prudent fashion, which is a significant defense.

5) Test for drug use.

"Drug testing is being done by more and more of the larger employers," says Peter A. Susser of Littler, Mendelson, Fastiff, Tichey & Mathiason of Washington, D.C. "The courts have, in most instances, upheld their use. But state laws vary widely and can restrict their use, so you need to check with your attorney." **LM**

—The author is a freelance business writer based in New York City.

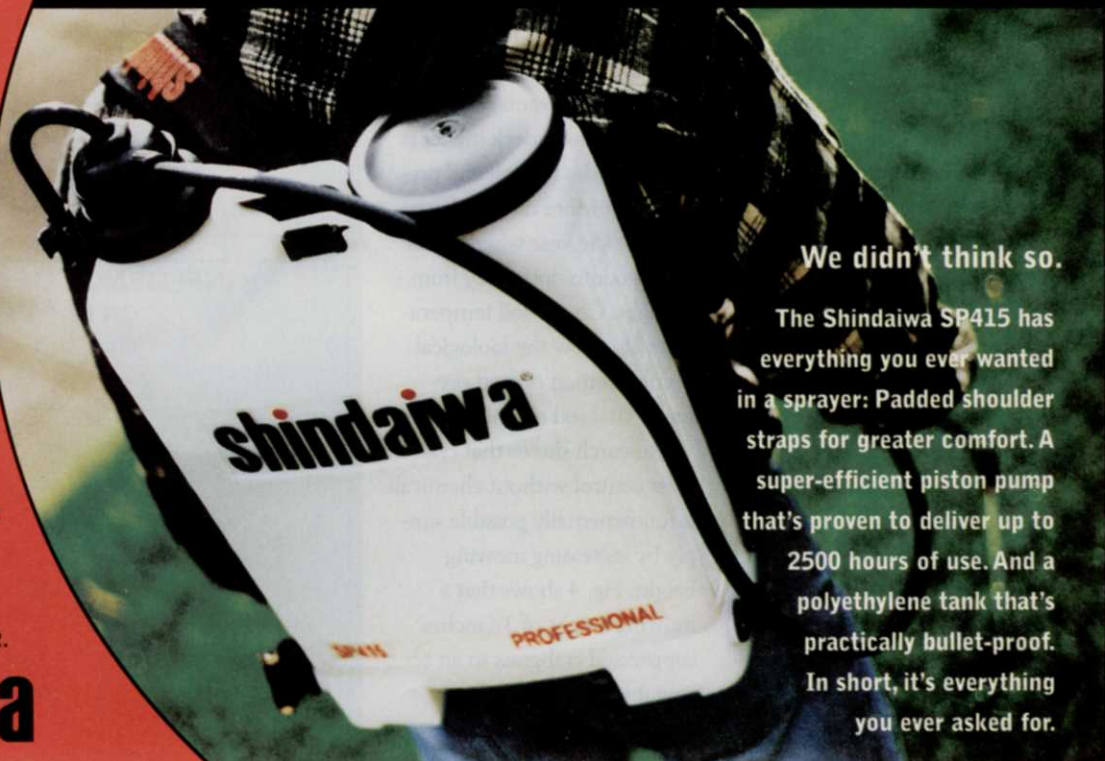
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Circle 120

The right HEIGHT

Fertilizer, pesticide, seed and other treatments will accomplish little if lawns are not mowed at a height that is healthy for the grass plant.

by PAUL SACHS

Low mowing heights weaken turfgrass. More surface area on the leaves of the plant mean more photosynthetic production of nutrients for the roots. More extensive roots mean better access to water and nutrients.

And that results in a healthier and heartier plant.

Fig. 1 shows that for each eighth of an inch the mower is raised, the amount of leaf surface exposed to the sun increases by 30 percent. When a mower is raised from $\frac{3}{8}$ inch to 3 inches, the leaf surface area is increased by more than 10,000 percent.

Turf root systems are generally annual. They die off every year and new roots grow the next spring from the plant's crown. Old roots contribute and distribute organic matter to the soil. This organic material improves the turf's water and nutrient retention, lowers soil density, and significantly increases beneficial biological activity.

Container experiments at the University of Maryland show a significant increase in organic matter produced from root growth (see Fig. 2) when the mowing height is raised. What is even more impressive is the increase in rhizome development (see Fig. 3): more than 1000 percent when the mowing height is raised from $1\frac{1}{8}$ to $2\frac{1}{2}$ inches.

Another advantage of setting the mower deck higher is that it shades the soil and preserves moisture during crucial times of the year when lawns often go into dormancy from drought. Cooler soil temperatures also slow the biological decomposition of, and preserve, vital soil organic matter.

Research shows that crabgrass control without chemicals is fundamentally possible simply by increasing mowing height. Fig. 4 shows that a mowing height of $3\frac{1}{2}$ inches suppressed crabgrass to an acceptable level—actually, as well as any of the herbicides.

The one-third rule

Removing more than one third of the top growth can cause turf to stop growing for up to 28 days. If too much leaf surface is removed, photosynthesis is diminished to the point where the plant must use nutrient reserves. When new top-growth exposes itself to the sun, photosynthesis will begin to produce nutrients for the roots again, but will first have to replenish the reserves used when the leaves were too short. The energy needed for normal functions plus the restocking of reserves can stop root growth for almost a month.

Root growth is relative to how a plant fares through many different types of stresses such as heat, cold and drought. Root production of organic matter in the soil is a long-term asset that can benefit many future generations of turf plants. Loss of root growth during crucial times of the season can make the difference between a lawn with problems and one without problems, in both the short and long term.

Wrong!

For years, the classic response to questions about lawn clippings has been that they

cont. on page 30

INFLUENCE OF MOWING HEIGHT ON PHOTOSYNTHESIS BY TURFGRASSES

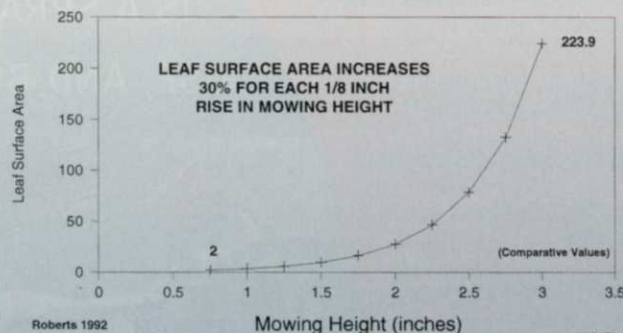


FIG. 1

INFLUENCE OF MOWING HEIGHT ON ROOT PRODUCTION (KENTUCKY BLUEGRASS)

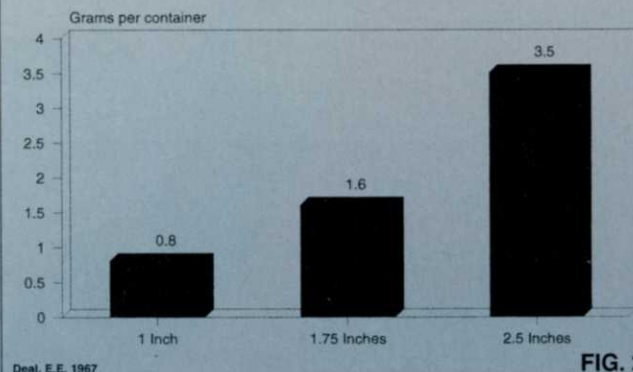


FIG. 2

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cont. from page 28

must be removed because they can cause thatch, turf diseases and an unsightly appearance. Research tells us that this advice is wrong. In fact, clippings contain 58 percent of the nitrogen that we apply to our lawns. Removing them is equivalent to sweeping up most of the fertilizer that you have just applied. Leaving the clipping adds about 2 lbs. N/1000/sq. ft./year.

According to research, returned lawn clippings have other benefits:

- crabgrass suppression,
- increased earthworm populations,
- improved water infiltration into the soil,
- improved turfgrass color,
- disease suppression,
- thatch reduction, and
- acting as a temporary mulch to preserve soil moisture.

Mowing without the bag will produce a quality lawn if it is done at proper intervals. Infrequent or inconsistent mowing can produce clumps of clippings that can block necessary sunlight from grass plants.

The new mulching mowers are designed to chop clippings into smaller particles, shortening the time it takes for them to decompose. They do not work well, however, if you're not mowing often enough. These machines also consume more energy than conventional mowers. Many experts in the field say that the clippings from conventional mowers disappear quickly enough without using a mulching mower.

The nutrients and organic matter contained in grass clippings should be replaced to

compensate for the loss generated by mowing. If practical, annual topdressing of compost should be applied to lawns where clippings are removed.

'Cold' composting

Clipping disposal can become a problem, especially in municipalities where they are not allowed in landfills. Composting is a good idea if you've got the time and carbon-based materials needed to do it right.

An alternative to standard composting is "cold" composting. A golf course superintendent in Maine discovered that clippings could be effectively recycled into compost by tilling them into the soil. He chose one site where all the clippings from the entire course are incorporated into the soil. There were no odors, and the vastly improved soil could be used in numerous applications around the course.

Mowing frequency

Mowing frequency should depend on the growth of the plants, but is often based on a service contract, or when the opportunity presents itself, such as whatever day of the week you service a particular neighborhood.

During rapid growth periods—after fertilization or heavy rain—grass should be mowed more often, so that no more than one third of the plant is removed at one time. This may only amount to one or two extra cuttings per year.

Mowing techniques have more to do with producing a quality lawn than all other treatments combined.

A tremendous amount of

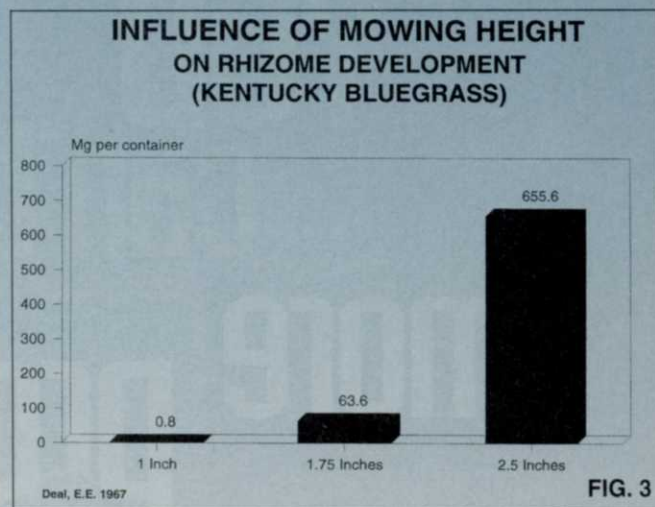


FIG. 3

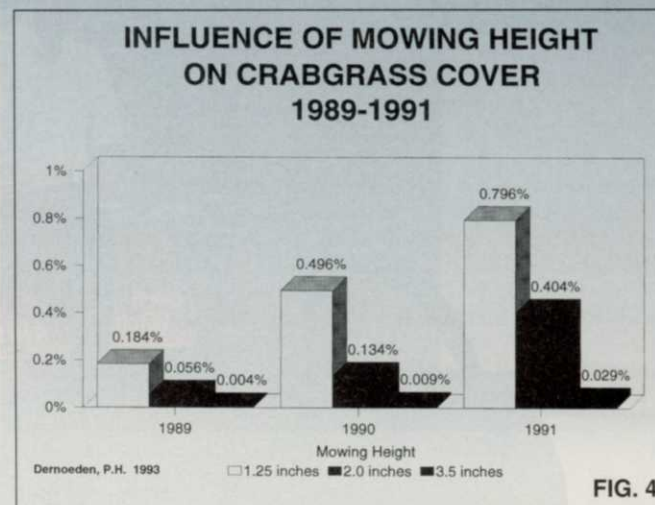


FIG. 4

damage and stress can be caused by improper mowing. Most lawns, especially residential lawns, do not serve a specific purpose such as sport recreation. The need is usually only an aesthetic one that includes uniform color and height. There is rarely a good reason for mowing a lawn short or for removing the clippings.

Lawns mowed at or near maximum mower height during the hottest part of the year can often weather the summer months without going into dormancy, or at least have a much shorter dormant period. Clippings returned to the lawn are rarely noticed and literally dis-

appear in a day or two. The benefits that are eliminated when the clippings are removed can be more easily noticed. Finally, the sharpness of the mower's blade can make a big difference between a lawn with problems and one without. **LM**

—The author is founder of North Country Organics, a Bradford, Vermont-based supplier of natural fertilizers and soil amendments for commercial use. This article is excerpted from his second and latest book, "Handbook of Successful Ecological Lawn Care," published by Edaphic Press, P.O. Box 107, Newbury, VT 05051; (802) 222-4277.

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LM

Seeing spots?

If you're starting to see spots when looking over the lawns you've planted, your turf may be suffering from summer patch. It's the most common turfgrass root disease in the Northeast and it starts to show up at the beginning of summer.

Summer patch spots begin as small, circular patches of wilted turf, 1½ to 3 inches in diameter. Some can get as big as 24 inches in diameter, although most stay in the 2- to 12-inch range. As the summer progresses, patches turn from a grayish-green to a light straw color.

Summer patch is caused by the fungus *Magnaporthe poae*. It moves between plants by growing along roots and rhizomes, and can spread at a rate of 1½ inches per week.

Since summer patch affects the root system of the plant, a change in the environment surrounding the root—the rhizosphere—may help suppress the disease. According to Dr. Joseph Heckman, soil fertility specialist at Rutgers University, plant roots can alter their immediate environment in response to the form of



Summer patch spots begin as small, circular patches of wilted turf, and can become as large as 24 inches in diameter.

nitrogen fertilizer applied to the soil.

"The ammonium form of nitrogen lowers the pH while nitrate raises the pH."

Heckman explains that the summer patch pathogen grows best in soil with a high pH. "By lowering the pH of the rhizosphere, the environment is no longer conducive to summer patch growth."

A low pH in the rhizosphere also promotes uptake of elements such as phosphorus, iron and manganese. Manganese in particular has been associated with the reduced incidence of summer patch.

Heckman recommends fertilizing turf during cool weather with small amounts of ammonium sulfate fertilizer every three weeks—fertilizer blends containing ammonium sulfate will get the job done. Applications of nitrogen as ammonium sulfate reduce the rhizosphere pH, thereby suppressing summer patch development.

Any soluble chemical fertilizer, such as ammonium sulfate, ammonium nitrate and urea, can burn turf during hot weather. Make sure to apply these products only in the spring and fall months.

Dr. Bruce Clarke, extension turf pathologist at Rutgers University and Director of the Center for Turfgrass Science, offers additional suggestions:

- Avoid mowing turf below recommended heights. Low mowing (1 to 2 inches) enhances the symptoms of summer patch.
- Overseed affected areas with a mixture of resistant turf species such as perennial ryegrass or tall fescue.
- Apply systemic fungicides at a two-inch soil depth in late spring or early summer when soil temperatures stabilize between 60° and 65° F. **LM**

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Circle 110

Are your people aching to be taken advantage of?



Terry McIver

TERRY MCIVER
Managing Editor

Do you often feel you're wasting your time on things you don't do very well or "hate" doing? These could be things you're either not strong in or things you never thought were your responsibilities.

You can't always have it just right. You have to help out, fill in, supervise, organize, eliminate, hire, fire, discuss, and purchase.

Each of us is gifted in different ways for different reasons. It seems that I'm a pretty good writer, although some of you may disagree. I may

also sort through mail and perform other duties not listed in my official "job description."

Our golf and grounds readers most often act as managers, although some hands-on work is certainly required from time to time.

People are hired into a company or crew every day because they possess a particular gift or talent. Later, they may find that they are not given the chance to use their gift in the best possible way.

Politics is often to blame for a shift in one's duties. This is often unavoidable and always unfortunate. Budget cuts can also cause a project to be placed on hold. We hear that it happens all the time, in these days of limited funds. If it happens at your facility, and you're still on the job, just be thankful, and try to use your talents in other ways.

Remember that there's more to life than working for 40 long years and retiring. Everything you do has a purpose. Don't take the "somebody's gotta do it" attitude. Don't complain or grumble—as I was tempted to do earlier today! Be happy that you've been placed in your particular situation and make the most of it.

Which brings us to an often-maligned word: delegation.

Delegating has a negative connotation for some people, particularly the "delegates."

It's important that you realize—and explain to others—what good delegating is all about.

At its worst, delegating is indeed nothing more than passing along work you don't want to do yourself. At its best, delegating accomplishes three things:

- ▶ it frees you of a duty which you may not be very good at;
- ▶ it lets you work on your strengths;
- ▶ it gives someone else a chance to do the job better than you would have done it.

Somewhere in your crew is a person who's been aching to try his or her hand at a new skill, or run with a new idea. Ask around and see if you can find someone who feels he or she can contribute in a new and different way.

Summer is a busy time, but nice weather also allows the freedom to experiment in the great outdoors. Take advantage of the sunshine, and the talented people who are on your team. **LM**

Questions, comments? Call Terry at (216) 891-2709, fax at (216) 891-2675 or e-mail at 75553.502@compuserve.com.

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Summer Patch



Dollar Spot



Anthracnose



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and other diseases. And you can apply BAYLETON over your entire course to keep golfers from tracking disease from your fairways to your greens and tees.

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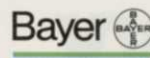
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Circle No. 106 on Reader Inquiry Card

Best bunkers

soak up heavy rainfall

by STEVE & SUZ TRUSTY

After nearly 18 inches of rainfall within the last few months of 1995—including one day-long, nine-inch deluge—Fred Wong and Ed Okamoto were beginning to feel like kids stuck in a sand box.

With 77 bunkers on Wong and Okamoto's Kauai Lagoons Golf Club in Hawaii and 109 on the Kiele Course, crews were constantly reshaping and reworking the sand.

It was obvious to these superintendents that sand bunkers serve functions other than aesthetics. They separate sections of the course and help define areas of play, control ball movement, "save" balls from landing in water hazards, and even serve as targets for golfers.

Your golf course may not have as many bunkers as Kauai Lagoons, but it is equally important to decide which of these roles each bunker on your golf plays and define its effectiveness in that role.

Traffic control

Bunkers help control traffic, but turf wear and compaction may be caused in the surrounding turf. Turf-covered mounds or hollows that would slow and spread out traffic might have less negative impact. More flexible traffic control can be achieved with movable landscape features such as flower beds.

Think "playability." How will balls be landing?



Wet bunkers that drain poorly are tough to maintain and are a constant source of golfer complaints.

How will they be played? Bunkers are hazards and should present a fair challenge, not an impossible one. Look at the bunker's placement, its overall angle, slope and lip from a player's perspective. How extreme is the frustration level for the beginning golfer and for the course's "average" player?

If funds are low, try grassy hollows and mounds as an option to bunkers. But make sure they can be mowed easily.

If you rebuild, assess the impact of past and potential problems.

Consider the impact of prevailing winds, water flow patterns, and player and cart traffic flow. Gauge the accessibility of the surrounding turf—especially the greens—for mowing, aeration and other maintenance needs.

The steeper the banks of sand within the bunker,

WASHOUTS

the greater the "wash" during heavy precipitation. While vertical lips help define and edge the bunkers, too deep or steep a lip can contribute to washing. Washing changes the placement of the sand and cuts down the depth on the slopes by about two to four inches, and adds to the flat areas unevenly.

Washouts also bring silt into the bunker. Compaction in low areas will increase and hamper the natural drainage pattern. Following washing, valuable crew time must be allocated to clean the bunkers and rework contours.

Larger, flatter bunkers with curving sides rather than sharp banks reduce washing, and make it easy to use bunker rakes instead of the more time-consuming hand raking.

Are some slopes so steep that walk-behind mowers are required? Could these slopes be reshaped without too much effect on course aesthetics to allow mowing with ride-on units? Cutting the steepness of the turfed slopes also reduces their exposure to sun and wind, lessening desiccation and the need for supplemental irrigation.

Maintenance concerns

Less extreme variations on constructed bunkers can cut maintenance time. Scalloped perimeters look showy but are tougher to mow and edge. Consider altering the scallops to more flowing curves, or changing the overall perimeter to a straight-edged

A bunker with poor drainage leaves a lasting reminder of heavy rain. Find a sand that drains well.

oval or circular pattern.

Edging around the bunkers is necessary to keep turf from invading and to maintain the sharp, precise appearance. Experiment with the edging methods of mowing, string trimming and hand edging to find a combination that meets expectations but trims maintenance time. Learn which crew persons are most skilled at each type of edging, and let them handle the job regularly. □

—The authors are principals at *Trusty & Associates, Council Bluffs, Iowa.*

Scalloped perimeters look showy but are tougher to mow and edge. Consider altering the scallops to more flowing curves.



Sand-aids

—Choose sand that has visual appeal but also the right gradation and physical characteristics.

—Bunker surfaces need to be firm, but not hard or crusted. If possible, establish precise specifications of particle size, shape and composition.

—Avoid sands with very fine or coarse particles. Larger particles may cause problems when "blasted" onto the green during a shot.

—Repeated contact with coarse sand will be abrasive to mowing equipment.

—Determine the sand's degree of contamination, and regard any material other than the sand to be a contaminant.

—Look for some degree of compatibility with the putting green sand and topdressing materials.

—Avoid sands that are too soft and thus likely to break down faster.

—Choose a sand that drains well. Test various materials in different bunkers prior to the change over.

—Ask crew and players for their opinions.

—If the sand is of good quality, but drainage is still a problem, examine the subsurface drainage system. Perforated drain pipes sunk into a gravel-filled

trench that extend beyond the bunkers are preferred. Problems may be due to channeling greens drainage into the bunker drainage system.

—Sand in different batches may be inconsistent. Buying from a local source may save you money, but be sure he has sand in sufficient quantities to meet your needs.

—Before you buy, ask other superintendents about the reliability of the supplier and the sand quality.

—S.T.



'Wet weather'

REPAIR STRATEGY

by STEVE & SUZ TRUSTY

The athletic turf manager's job is to provide a safe, playable surface for the athletes. All other concerns—including field aesthetics—are secondary.

Generally, these professionals find a way to do it all, even with limited budgets and limited staff...and lots of rain.

Field composition, drainage

Preparations for excess water—and then your reactions to it—vary, according to soil profile and underlying drainage conditions for each field.

Many premium fields have a sand content of 80 percent or higher, coupled with sophisticated underground drainage systems to channel excess water from the playing surface.

Most extensively used fields are found in school systems and parks and recreation facilities. Many were built where space was available, and thus feature native soils, which may not be ideal for rainy weather. Native soils, especially those with substantial proportions of heavy clay, absorb water more slowly and retain it longer than fields with a higher sand content. Underlying conditions may include hard clay, rock or even layers of packed debris (such as old landfill).

The athletic field manager must then:

- 1) Assess the basic composition of the field and drainage.
- 2) Analyze average infiltra-



After normal rainfall, a well-maintained and properly designed infield should be ready for play within a reasonable amount of time.

tion rate during rainfall and irrigation.

3) Develop a wet weather strategy.

Ideally, the infiltration rate will be slightly better than average rainfall patterns, and will let moisture be absorbed rather than run off or stand in puddles.

After normal rainfall, the surface area should be capable of sustaining play within a reasonable period.

Groundwater table levels affect percolation rates. If a river or lake is near the field, water table levels may fluctuate with the depth of that body of water, and the percolation rate may fluctuate accordingly.

On football fields and the outfield sections of baseball and softball fields, above-ground drainage can be improved by slightly crowning the field and

channeling natural drainage with a minimal grade.

For the skinned areas of baseball and softball fields, a water-absorbent material such as calcined clay can be mixed into the sand-and-clay infield mix to improve water infiltration rates and develop the best consistency for play.

Where funds are limited, an affordable amount of material can be added each year, gradually bringing the surface to the desired quality.

Turf areas with poor infiltration rates also can be improved gradually, after extensive aeration. The cores can be:

- dragged back into the field;
- dragged back in with a topdressing material of sand or a sand-and-soil mixture;
- removed, and a topdress-

ing mix applied.

To avoid layering of different soils, periodic deep aeration will penetrate subsurface layers.

Fields that frequently become too wet for safe play should undergo extensive reconstruction programs, with attention to underlying drainage systems, and rebuilding the field with a better quality soil profile.

Temporary fixes

Field covers will protect surfaces from too much moisture buildup, from pre-game irrigation, or both. If field covers aren't available, or the effects of a previous rain linger too long, spot applications of calcined clay or other absorbent materials may sufficiently dry skinned surfaces for play to proceed.

For heavier moisture buildup on skinned areas, add calcined clay or a clay and calcined clay mix and work as usual to reach the desired level of consistency. It may be necessary to rework the pitchers' mound and bullpen mounds with more materials, depending on the depth or moisture and the consistency of the existing materials.

On overly wet turf, cut compaction as much as possible, but keep the grass within normal conditions. That may mean switching to walk-behind mowers rather than ride-on units. Cut the turf a little bit

cont. on page 8G


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Golf Course Superintendent
Hillendale Country Club
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cont. from page 6G

shorter than normal to allow better surface evaporation, but never remove more than one-third of the turf blade in any one mowing.

If the grass was thick and heavy, it may be best to catch clippings temporarily to allow better air movement for evaporation.

In soggy turf, the oxygen supply to the rootzone can be improved by multiple passes with a slicing aerifier or slit seeder. Depending on the soil profile, after moisture levels drop from field capacity, the area may be topdressed with sand or a sand and calcined clay mixture

Time out to shift fields

When field conditions are too wet for safe play, or when play would be damaging to the field, sports turf managers may shift play to other fields.

All practices might be moved off the game field, or practices shifted to specific practice fields until conditions could be improved through maintenance practices, or the fields dried out naturally. Most players, when told about possible restrictions in advance, will understand and cooperate.

If alternate fields aren't available within a facility, arrangements may be made to shift play to neighboring facilities temporarily. Plan ahead with other facility managers for these reciprocal arrangements. Advance planning makes it easier to work through problems when they do occur.

Scheduling adjustments will be in order, so teams, coaches, athletic directors and league personnel must all cooperate. □

Strategy for severely flooded fields

During the past few years, athletic field managers across the country have seen their fields flooded. In some instances, waters rise rapidly, recede quickly and little damage remains. In many cases, long-term saturation takes place and silt and other debris move in along with the flood waters. Here's how you solve the problem.

1) Once the waters recede, hose off the coating of silt and debris.

2) For heavy residue accumulation, the exposed silt layer may be allowed to dry. It can then be broken into "chunks" with a spiker, raked into piles and removed by hand, or broken into small enough particles to be removed with a turf vacuum.

3) A topdressing application of calcined clay may be necessary to counteract any slick-

ness—which might be a threat to player safety—that remains on the turf surface.

4) Use the standard topdressing mix to level out the uneven areas.

5) Mowing and aerification strategies on wet fields should be applied to flood-ravaged fields.

6) Because considerable leaching may have taken place, and turf is in a weakened condition, the fertilization program may need adjusting.

7) When active growth resumes, fertilize with balanced nitrogen and potassium, and whatever nutrients the soil tests indicates are low.

8) Build up the strength of the plant first, then gradually get back on the normal fertilization program.

9) Supplemental iron applications will improve turf color without stressing turf or forcing

growth roots cannot support.

10) Turf will be susceptible to disease. If budgets allow, apply preventive controls. If funds are low, watch for signs of disease activity and be prepared to apply treatments immediately.

11) Irrigation adjustments will be necessary, depending on the length of saturation.

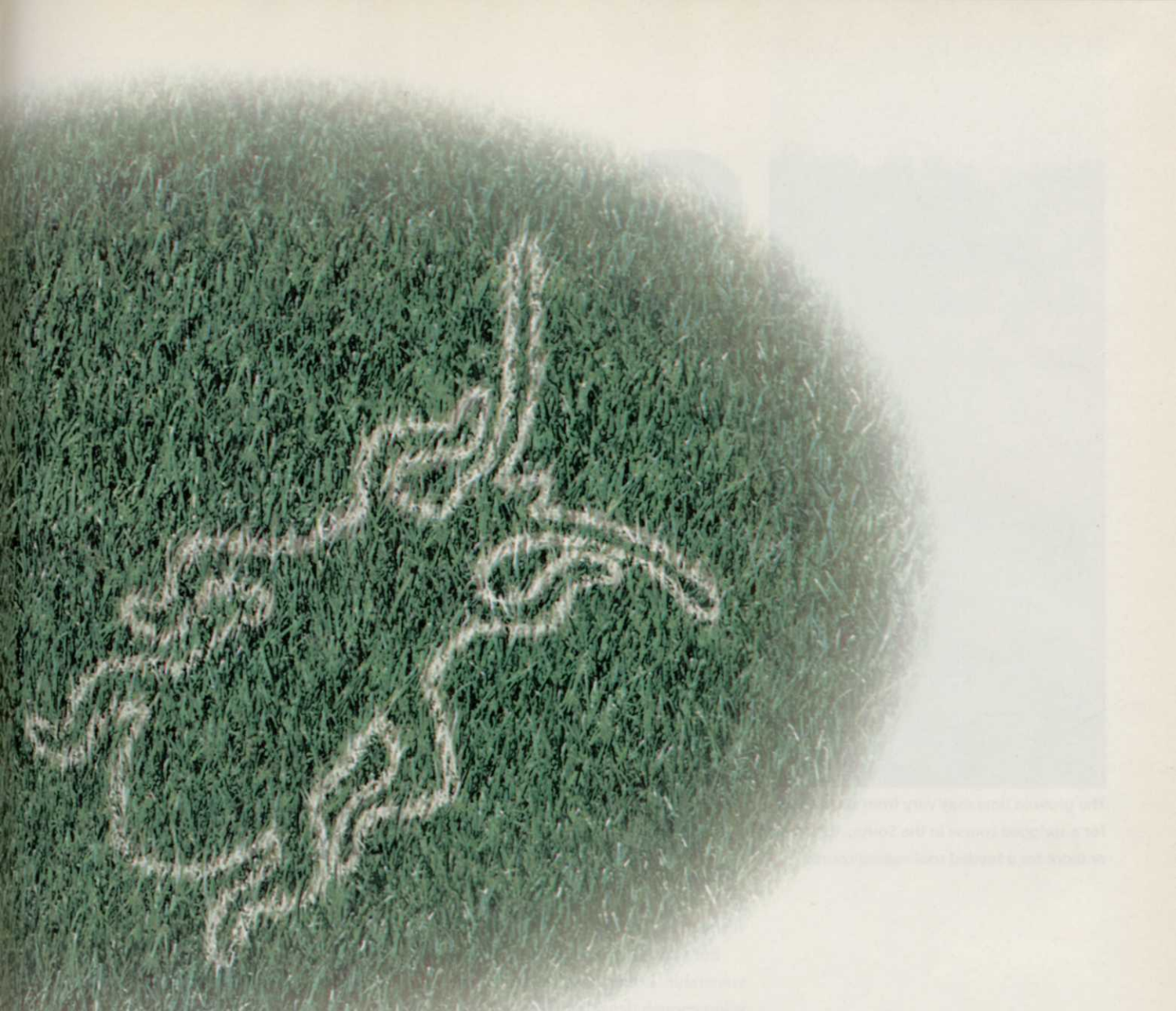
12) Turf roots will become more shallow during prolonged wet spells. Apply water more frequently at first, gradually promoting deeper root growth with less frequent but deeper irrigations.

13) When the field is dry enough, make multiple passes with a core aerifier. Apply pre-germinated seed with both a slit seeder and broadcast spreader. Keep players off the field as long as schedules allow.

—S.T.



Even with limited budgets, it's often possible to purchase covers to protect the infield sections of baseball or softball fields, or at least the mound, batter's box and skinned baseline.



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The grow-in time may vary from six months for a sprigged course in the South, to a year or more for a seeded cool-season course.

Grow-ins: FAST...FASTER...FASTEST

Jonathon Scott, an agronomist with Nicklaus Design, outlines a superintendent's options for getting a golf course ready for play sooner than usual.

by RON HALL / Senior Editor

You walk a tightrope while a new golf course is growing in. Everyone wants grass now. Everyone wants the course to open as soon as possible. Members are eager to play. Owners and financial backers want to start getting a return on their investment.

But you realize that the new turfgrass is vulnerable. It must be given time to develop enough density to withstand wear and environmental stresses.

"How fast can it be done?" is the question a superintendent is usually asked rather than "how long will it take?"

You can't answer either question with certainty. Weather is the wild card. The grow-in time may vary from six months for a sprigged course in the South, to a year or more for a seeded cool-season course.

In the real world, this sometimes isn't fast enough, and you may be called upon to accelerate the process.

Jonathon L. Scott with the Golfturf Division of Nicklaus Design says you have five options when trying to establish turfgrass fast.

"Each option has its associated advantages and disadvantages over conventional

grassing methods," says Scott, a superintendent for 16 years before joining Nicklaus seven years ago.

To compress the grow-in period, you may choose to use one, or any combination of these procedures. They can be used instead of—but more often in conjunction with—conventional grassing, says Scott.

The options are:

- 1) Increasing the seeding or sprigging rate.
- 2) Hydroseeding or hydrosprigging.
- 3) Strip or row planting live sprigs or sod.
- 4) Sodding.
- 5) Increasing the fertilizer rate and frequency.

Regardless of option, all grassing procedures start the same, with proper soil preparation. This includes:

- ▶ cleaning up any rocky debris,
- ▶ discing and raking to loosen up the top four to six inches of soil, and
- ▶ testing and amending with any necessary minerals or organic materials.

Not that easy

The simplest way to establish turfgrass faster is to increase the seeding or, for warm-season grasses, sprigging rate, says Scott. But it's not as easy, nor as effective, as it might seem on the surface.

Boost the rates

Research has shown that, although a greater planting rate results in a proportionally greater number of seedlings and an initially denser stand, six months later, the turf is generally no denser than it would have been if it had been seeded at "normal" rates. Moreover, higher rates predispose some turfs to more disease.

In the case of sprigging, the problem of getting more plants into the soil is mechanical. Most machines are designed to plant between 300 and 400 bushels per acre for fairway-type bermudagrass, says Scott.

To maintain good soil-to-sprig contact with an increased sprigging rate, contractors generally make two passes with the sprigging machine. If a third pass is called for, they may use a slicing machine to push exposed sprigs into the soil.

Scott believes the best time to use a higher rate is when the planting time has passed the time of optimal turf development.

For cool-season grass zones, this is after the soil temperature has dropped below 60°F., usually by the end of September.

He says a 50 percent increase in the seeding rate offers several benefits. It gives better protection against erosion over winter, and it compensates for the expected mortality of young seedlings due to cold, desiccation and disease.

For sprigging, increasing the rate pays more dividends after the soil temperature falls below 75°F., usually by the end of August. Scott recommends gradually increasing the sprigging rate as dormancy nears, finishing at, perhaps, triple the normal rate.

"Mulching plays an important role in the success of late-season grasses by insulating the soil surface and protecting the young plants against freezing and drying," he adds. Mulch should be thin enough to let air and light to reach the soil surface, but thick enough to stay in place.

The easy way

In hydroseeding, seeds are sprayed onto the soil in a slurry of water, mulch and fer-

tilizer. The process is called hydrosprigging when sprigs are used.

This procedure saves weeks, perhaps even a month, in establishing a course, says Scott. It results in less disruption to soil during planting; it discourages soil erosion, and it makes it easier to seed or sprig slopes. Also, using green-colored mulch

gives the course a more pleasing appearance before grass actually starts growing.

But there are risks. The procedure makes it more difficult to keep grass contours sharp where different varieties of grass are used to provide contrasts, say between fairways and roughs.

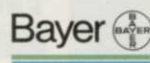
Also, areas must be irrigated immedi-

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Circle 104

ately after they're hydroseeded. The lack of direct soil contact in the upper layers of the mulch means that grass plants must grow downward to get moisture, says Scott.

Row planting

Machines plow narrow furrows, introduce sprigs of a warm-season grass like a hybrid bermuda, then close the furrows in row planting. Generally about 400 to 500 bushels of sprigs per acre are planted this way.

To maintain good soil-to-sprig contact with an increased sprigging rate, contractors generally make two passes with the sprigging machine. If a third pass is called for, they use a slicing machine to push exposed sprigs into the soil.

Its major advantage is convenience, particularly in renovation because it causes minimal disruption of the target area.

In new construction, sprigs have a stronger survival rate, particularly where irrigation isn't as frequent. The sprigs, being in the soil, draw on soil moisture. Row planting's major disadvantage is cost, says Scott.

Check sod for purity

Sodding provides almost instant results. It limits erosion, and play can begin in as little as one month after installation, meaning that a cool-season course may be able to generate a full season of revenue.

But these benefits have to be weighed against the cost and availability of the desired types of sod. A cool-season course with bentgrass fairways costs about \$2.8 million to sod, a course with zoysia fairways about \$2 million, and one with bermudagrass about \$1.5 million, says Scott.

Other risks associated with sodding include possible sod/layer interface problems, purity, and pest infestations.

Scott recommends that superintendents check all maintenance records of the sod they're considering buying. They should also visit the sod fields and get samples to send to reliable laboratories.

Although a sodded course looks like it's ready to play almost immediately, it's not.

"Sod requires the same amount of initial care as seed or sprigs," says Scott. "Wait at least four weeks before subjecting it to traffic and play. During that time treat it like the new turf that it is."

Fertilizer can help

You can accelerate the grow-in process with fertilizer, but only to the ability of turfgrass plants to take and use the nutrients.

"A sensible fertilization program for either warm- or cool-season courses uses moderate rates and frequencies determined by growth, color and density," says Scott.

Greens and tees planted with cool-season grasses establish well with ½ lb. N/1,000 sq. ft./week. Fairways and roughs get ¾ lb. N every two weeks until full density, says Scott. Bermudagrass, growing under optimum growing conditions, can receive 1-1 ½ lbs. N/week.

Balance phosphorus and potassium with nitrogen, on either sand or soil, until the initial turf coverage is established. Then, adjust phosphorus levels according to soil test recommendations.

Scott says superintendents should reduce fertilization rates if they notice turfgrass disease.

"The key to being successful is understanding all the options, and selecting the methods that best match your situation," says Scott.

"Make sure the risks and benefits are clearly understood by all parties, and know that the limitations of nature will always be your constant companion." **LM**

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Ciba-Geigy Ltd. and **Sandoz Ltd.**, have merged to form Novartis, which will be the largest marketer of crop protection chemicals in the world. Ciba Ag Group head Emilio (Leo) Bontempo will head Novartis Crop Protection (which includes turf and ornamental), and Northrup King president Edward Shonsey will head Novartis Seeds. Fred Fuller, president of Ciba Seeds, is the new head of Vaughn's Seed Co., Novartis's stand-alone flowers and ornamentals business in North America.

Golf superintendent Glenn Smickley of Robert Trent Jones Golf Club in Gainesville, Va., is a winner in the GCSAA's Environmental Steward Award competition. The competition is sponsored by GCSAA and **Ciba Turf & Ornamental Products; Rain Bird's Golf Division; Jacobsen Division of Textron**, and **Lebanon Turf Products**.

Jim Ferrin of Granite Bay Golf Club in California is **Seed Research of Oregon's** 1995 "Golf Course Superintendent of the Year" winner. The company's "Golf Course of the Year" award went to Glen Oaks Country Club of West Des Moines, Iowa, Tom Marzolf, architect, and Tim Johnson, superintendent.

Monsanto is sponsoring the Roundup All-Pro Weekend Sweepstakes, which will send the grand prize winner and a guest to the AT&T National Pro-Am Golf Tournament next year at Pebble Beach, Calif. To enter, pick up an entry card from your Roundup Pro retailer. The com-



Clint Eastwood is one of the celebrities expected to tee off in the AT&T Pro-Am tourney.

pany also announced plans to spend nearly \$200 million to produce Roundup herbicide in several countries.

Rain Bird launched a "Passport to Fun" contest on May 1. Contractors can win luxury cruises, camcorders, color televisions or free cases of rotors. Pick up entry brochures at your Rain Bird distributor.

Twenty students received Peter Selmer Loft Memorial Scholarships worth \$1,000 each, at the Rutgers Alumni Awards Banquet last fall, continuing a 13-year tradition established by **Lofts Seed**. Also, Lofts gave royalties to Dr. C. Reed Funk, Dr. T.M. Casey and Dr. Bruce Clark of Rutgers University (\$700,000) and Dr. Noel Jackson and Dr. Bridgit Reummele of the University of Rhode Island (\$15,000).

AgrEvo's North American controlled release nitrogen fertilizer business—including Nitroform and Nutralene—is now being made and marketed by

the Nu-Gro Corp., Ontario, Canada. AgrEvo is planning to concentrate on ag and turf control products.

When a golf course superintendent purchases Pinpoint 15 Granular Insecticide and/or Orthene Turf, Tree & Ornamental Spray, a donation will be made to the research organization of his or her choice. The program is called "The Right Course," according to **Valent's** Derrell Kelso. For more information, phone (800) 898-2536.

Walker Manufacturing produced its 25,000th mower on Jan. 9th, 16 years after the first units were produced. President Bob Walker commended the nearly 100 employees for quality workmanship and teamwork.

Four personnel changes at **Jacklin Seed**, which is celebrating its 60th year in business: Gayle Jacklin promoted to project leader in new market development, Hiromi Yanagisawa promoted to vice president, managing director of marketing; Rick Dunham promoted to vice president, marketing; and Brandie Beebe named to a public relations/advertising position.

Scag Power Equipment held its annual distributor service conference in Ft. Myers, Fla. Dave Greinder of Lawn Equipment Parts was Service Manager of the Year and Texas Outdoor Power Equipment was Service Distributor of the Year.

Ransomes America will co-sponsor the GCSAA's program of 150 local and regional semi-

nars across the U.S. The company will also be exclusive supplier of turf maintenance equipment and utility vehicles for the GlenEagles Hotel of Perthshire, Scotland.

TerraBiotics has acquired Hydretain, a water management product for golf courses, from Ecologel USA. The product, which costs \$100 per acre, is applied by overhead spray or through a fertigation system at a rate of 4 gal./acre.

Golf Digest magazine selected the **Milorganite Division** of MMSD as one of four winners in its first "Environmental Leaders in Golf" award as the company was celebrating its 70th anniversary in April.

John Deere has a new three-year transmission warranty on its GS series of commercial walk-behind mowers. The warranty covers transmission failures for the original purchaser and parts and labor for defects in material and workmanship.

Jacobsen Div. of Textron and Automatic Turf Equipment will provide a training and support program for many Purdue University students, and will help renovate Purdue's golf course and turf facilities.

The **Mycogen Corp.** is to acquire **DowElanco's United AgriSeeds** seed business in exchange for 46 percent equity in Mycogen, which agreed to issue about 4.5 million shares of common stock to DowElanco in exchange for United AgriSeeds and \$26.4 million in cash. **LM**

That brown layer of living and dead organic material at the top of the soil surface is called thatch. You can see it—and judge its depth—by taking and examining a core sample.

All turfgrass naturally produces a thatch layer that consists of dead and dying leaves, stems, stolons, rhizomes and roots. Its purpose is to insulate the grass plant against sudden temperature changes, to cushion against wear, to reduce excessive water evaporation, and

instance—slows establishment of a utilitarian lawn. The best way to “push” thatch formation is by programming your management to produce up to ½ inch of thatch as soon as possible, by using extra nitrogen and extra water, for instance.

But once a turf is established, thatch control should be a major management practice built into the overall maintenance program. Too many times, we fail to set up an ongoing program until the thatch has built up beyond optimum levels (½ inch).

In lawns with excessive thatch, the grass tends to produce long thin leaves with shallow roots. Here are other problems that excess thatch can cause:

1) **Increased insect and disease activity.** Rather than manage thatch, we tend to apply more insecticides and fungicides. The thatch also contributes to making these control products less effective because its organic matter reduces their activity. Also, chemical penetration through the thatch is restricted, reducing its chances of reaching pests and pathogens in the soil.

2) **Holding excessive moisture.** Besides increasing disease problems, excessive moisture will encourage a shallow root system that predisposes the turf to water stress during periods of high evapotranspiration. When a thatched turf dries out, it does not permit water to reach the underlying soil. Thatch can also act as a sponge that holds the water at the soil surface after an intense rain or irrigation.



3) **Limiting uptake of nitrogen.** Because thatch increases volatilization of some nitrogen fertilizers, less nitrogen reaches the grass's roots, where it is most needed.

4) **Low heat, drought and temperature tolerance.** Because the turf's crowns, rhizomes and roots are elevated above the soil surface, they are exposed to greater extremes. A restricted root system also results in reduced water absorption and increased drought stress. Winter desiccation injuries are particularly severe when a thatch is present.

5) **Scalping,** particularly during the heat stress periods of mid-summer.

Vigorous grasses that have rhizomes and stolons, such as bluegrass, bermudagrass and kikuyugrass, are greater thatch producers than are bunch-type grasses like perennial ryegrass, tall fescue and creeping red fescue.

Poor turf aeration and drainage reduce the activity of

Thatch and its control

Don't let the turfgrass thatch layer get beyond a half-inch, because that's when your insect, disease and drainage problems begin.

to stabilize the soil and protect it against compaction.

Lignin makes up from 10 percent to 40 percent of the thatch, making it very resistant to chemical change or breakdown.

Too much or too little thatch can create a problem. Lawns or golf course fairways can safely handle ¼ to ½ inch of thatch, while the optimum amount of thatch on golf greens is ⅛ to ¼ inch.

Too little thatch—when you're establishing new turf, for



A complete thatch prevention plan includes turfgrass aerification or dethatching.

various micro-organisms which normally help break down the thatch. When temperatures are too low, or the turf is over-irrigated (keeping the rootzone cooler and poorly aerated) those same micro-organisms are less active.

No one has found a panacea for controlling thatch build-up.

Biologically, any management practices that control the grass's growth will discourage thatch build-up. To a degree, we can control or reduce the rate of thatch development with lower rates of nitrogen fertilizer, and by making sure that the turf is not over-irrigated.

Culturally, you can topdress, lime and cultivate to control thatch.

Topdressing provides good contact between the thatch and the soil, promoting thatch decomposition. Topdressing programs should depend on

the rate of thatch accumulation. Some golf greens need no topdressing because of low turfgrass vigor or conditions that result in rapid decomposition of organic residues. For greens in which a thatch layer continues to develop, a good rule of thumb has been to topdress when the thatch layer becomes "pencil thick," approximately $\frac{1}{4}$ inch. The amount of topdressing soil required under these circumstances would be about 1/5th cu. yd. per 1000 sq. ft., which provides a layer of approximately $\frac{1}{8}$ inch. Essentially pure sand can be applied at rates as low as 1/10th cu. yd. per 1000 sq. ft.

In addition, frequent, light lime applications neutralize acidic conditions, allowing more optimal micro-organism activity.

But even with the best management practices, excessive thatch can accumulate over time—especially on highly-maintained turf. You will probably have to resort to mechanical, regularly scheduled thatch control.

Dethatching with a vertical mower may be required one to three times a year. In some areas where thatch is more than one inch thick, several aerifications per year may be necessary. On some golf greens and bluegrass lawns, thatch is so thick that the grass plants are growing in their own matted thatch. In this case, the area may need six to eight aerifications per year until the problem is solved.

At Purdue University, researchers lifted 283 lbs. of cores per 1000 sq. ft. from a

sand rootzone with $\frac{1}{2}$ -inch aerator tines. They lifted 357 lbs. of cores per 1000 sq. ft. from a silt loam rootzone. These figures project to about 6 to 8 tons per acre.

Renovation annually or at least every other year for common bermudagrass turf has been a standard practice for many years. The hybrid bermudas are even greater thatch producers that can't be properly managed without a dethatching and renovation program.

The real key to thatch management is a total management program rather than waiting until serious problems develop.

Unless a thatch control program is put into practice within

the first year after establishment, low thatch-producers like perennial ryegrass or turf-type tall fescues should be considered for most general turf areas. Common bermuda should be used instead of hybrid bermudas. Because, where the management level is moderate to low, a quality turf can seldom be maintained with grass species that are naturally high thatch-producers. **LM**

—The preceding information comes from Dr. William B. Davis, "Turf Managers' Handbook" by Drs. W.H. Daniel and R.P. Freeborg, Dr. A.J. Turgeon in his text "Turfgrass Management," and Dr. James B. Beard in his text "Turfgrass: Science and Culture."

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 20 **MANAGER/SUPERINTENDENT:** Arborist, Architect, Landscape/Ground Manager, Superintendent, Foreman, Supervisor
 30 **GOVERNMENT OFFICIAL:** Government Commissioner, Agent, other Government Official
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| E <input type="checkbox"/> Irrigation Services | J <input type="checkbox"/> Turf Weed Control | O <input type="checkbox"/> Other (please specify) _____ |

4. WHAT IS YOUR ANNUAL BUDGET FOR EQUIPMENT, CHEMICALS, SUPPLIES? (please check one)

- 1 Less than \$50,000 2 \$50,000-\$100,000 3 \$100,001-\$250,000 4 \$250,001-\$500,000 5 More than \$500,000



Tractor comes with front and rear attachments

Cub Cadet's model 7274 compact tractor features a 27 hp, 3-cylinder diesel engine with direct fuel injection, hydrostatic power steering, a fully-synchronized gear drive with two-state clutch, and a wet disc brake system.

It will be on exhibit at Expo 96 in Louisville, Ky., next month.

For more information, phone (216) 273-4550 and mention LANDSCAPE MANAGEMENT, or

Circle 314



Utility trailers ideal for landscape use

Triton Corp. offers a unique line of aluminum utility trailers for homeowner or landscape use. Lightweight, rust-free mainframe provides years of reliable use, the company says. Standard features: extruded mainframe; hassle-free lighting and wiring; lifetime marine plywood deck. Tilt and Ramp models, and full line of accessories, are available.

It will be on exhibit at Expo 96 in Louisville, Ky., next month.

For more information, phone (800) 232-3780 and mention LANDSCAPE MANAGEMENT, or

Circle 316

Versatility from this riding rotary mower

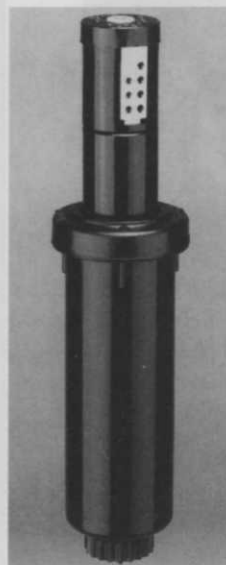
The 4000 Series is the pinnacle of the Excel Hustler line, the company says. Four front-mount models feature true zero-degree turning. Diesel and gasoline powerplants range from 30 to 54 hp with mowing widths ranging from 60 inches to more than 12 feet. These tractors can power the widest range of attachments in the industry, Excel claims.

For more information, phone (800) 395-4757 and mention LANDSCAPE MANAGEMENT, or

Circle 317

Water from 7 ports

The V-1550 Series sprinkler has Toro's exclusive MultiMax nozzle with TruJectory. The nozzle has a matrix design that



sprays water simultaneously from up to seven uniquely-engineered ports. With a simple turn of a screwdriver, flow can be set from 1 to 9 gal./min. The TruJectory system adjusts spray trajectory from 7 to 25 degrees without interrupting the water stream.

For more information, phone (909) 688-9221 and mention LANDSCAPE MANAGEMENT, or

Circle 318

Fungicide now in one-pound jar

You can now buy W.A. Cleary's 3336 WP systemic fungicide in a one-pound,



loose pack, re-sealable jar.

Diseases covered for turf and ornamentals are the same ones on the current WP/WSB label: anthracnose, dollar spot, brown patch, pink snow mold, summer

patch, fusarium blight, necrotic ring spot and stripe smut.

For more information, phone (800) 524-1662 and mention LANDSCAPE MANAGEMENT, or

Circle 319

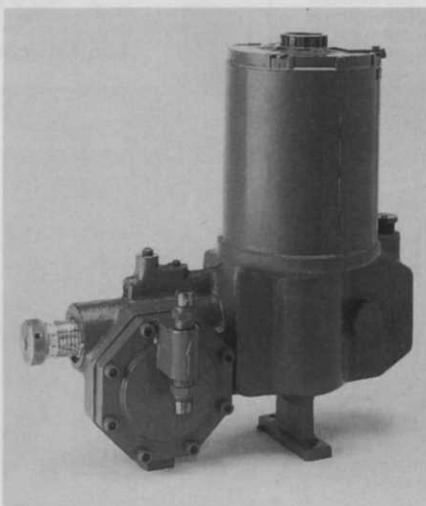


Grass is saved with irrigation guard

The Broyhill Co. is now offering a flexible grass guard for sprinkler heads. The GrasStop uses green, non-toxic, natural-looking, weather-resistant and easy-to-trim material to form a guard zone around all types and locations of sprinkler heads.

For more information, phone (402) 987-3412 and mention LANDSCAPE MANAGEMENT, or

Circle 320



Diaphragm pump performance comes at minimum cost

Series 500-E "dia-Pumps" from Neptune Chemical enable you to upgrade from packed piston pumps to all the advantages of a true hydraulic diaphragm pump at only a minimal cost.

Series 500-E diaphragm pumps do not need greasing or packing replacement, and do not leak on the floor.

Circle 321

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VM 160 P/H	VEHICLE	160	20 250	PTO or HYDRAULIC
VM 200 P/H	VEHICLE	200	20 250	PTO or HYDRAULIC
TM 100	TRAILER	100	20 250	6HP KOHLER
TM 200	TRAILER	200	20 250	6HP KOHLER
TM 300	TRAILER	300	20 250	6HP KOHLER
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Circle No. 121

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Circle No. 119

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by Fredric R. Haskett

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LANDSCAPE management

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For all ads under \$250, payment must be received by the classified closing date. We accept VISA, MASTERCARD & AMERICAN EXPRESS. Credit card orders are accepted by phone.

ISSUES	CLOSING DATES
August 1996	7/8
September 1996	8/8
October 1996	9/6
November 1996	10/8
December 1996	11/6

(Please call Sales Rep to confirm dates.)

SEND AD COPY WITH PREPAYMENT TO:

Dan Hoke, **LANDSCAPE MANAGEMENT**, 7500 Old Oak Blvd., Cleveland, OH 44310.
For more information call: 1-800-225-4569 or 216-891-2762, Fax: 216-826-2865.

Receive FREE information on products and services advertised in this issue.

LANDSCAPE
management

JUNE 1996

*This card is void
after September 15, 1996*

NAME _____
TITLE _____
FIRM _____
ADDRESS _____
CITY _____ STATE _____ ZIP _____
PHONE (____) _____ FAX (____) _____

I would like to receive (continue receiving)

LANDSCAPE MANAGEMENT each month: Yes no

Signature: _____ Date: _____

1. MY PRIMARY BUSINESS AT THIS LOCATION IS: (check only ONE in either A, B or C)

A. LANDSCAPING/GROUND CARE AT ONE OF THE FOLLOWING TYPES OF FACILITIES:

- | | |
|---|--|
| 01 <input type="checkbox"/> 05 Golf Courses | 08 <input type="checkbox"/> 40 Private/Public Estates & Museums |
| 02 <input type="checkbox"/> 10 Sport Complexes | 09 <input type="checkbox"/> 45 Condominiums/Apartments/Housing Developments/Hotels/Resorts |
| 03 <input type="checkbox"/> 15 Parks | 10 <input type="checkbox"/> 50 Cemeteries/Memorial Gardens |
| 04 <input type="checkbox"/> 20 Rights-Of-Way, Maintenance for
Highways Railroads & Utilities | 11 <input type="checkbox"/> 55 Hospital/Health Care Institutions |
| 05 <input type="checkbox"/> 25 Schools, Colleges & Universities | 12 <input type="checkbox"/> 60 Military Installations & Prisons |
| 06 <input type="checkbox"/> 30 Industrial & Office Parks/Plants | 13 <input type="checkbox"/> 65 Airports |
| 07 <input type="checkbox"/> 35 Shopping Centers, Plazas & Malls | 14 <input type="checkbox"/> 70 Multiple Government/Municipal Facilities |
| | 15 <input type="checkbox"/> Other (please specify) _____ |

B. CONTRACTORS/SERVICE COMPANIES/CONSULTANTS:

- | | |
|--|---|
| 16 <input type="checkbox"/> 105 Landscape Contractors (Installation & Maintenance) | 20 <input type="checkbox"/> 125 Landscape Architects |
| 17 <input type="checkbox"/> 110 Lawn Care Service Companies | 21 <input type="checkbox"/> 130 Land Reclamation & Erosion Control |
| 18 <input type="checkbox"/> 112 Custom Chemical Applicators (Ground & Air) | 22 <input type="checkbox"/> 135 Extension Agents/Consultants for Horticulture |
| 19 <input type="checkbox"/> 120 Tree Service Companies/Arborists | 23 <input type="checkbox"/> 140 Irrigation Contractors |
| | 24 <input type="checkbox"/> Other Contractor or Service _____ |

C. SUPPLIERS:

- 25 210 Sod Growers, Turf Seed Growers & Nurseries
26 215 Dealers, Distributors, Formulators & Brokers
27 220 Manufacturers

2. WHICH OF THE FOLLOWING BEST DESCRIBES YOUR TITLE? (check ONE only)

- 28 10 EXECUTIVE/ADMINISTRATOR: President, Owner, Partner, Director, General Manager, Chairman of the Board, Purchasing Agent, Director of Physical Plant
29 20 MANAGER/SUPERINTENDENT: Arborist, Architect, Landscape/Ground Manager, Superintendent, Foreman, Supervisor
30 30 GOVERNMENT OFFICIAL: Government Commissioner, Agent, Other Government Official
31 40 SPECIALIST: Forester, Consultant, Agronomist, Pilot, Instructor, Researcher, Horticulturist, Certified Specialist
32 50 OTHER TITLED AND NON-TITLED PERSONNEL: (please specify) _____

3. SERVICES PERFORMED: (check ALL that apply)

- | | |
|--|---|
| 33 <input type="checkbox"/> A Mowing | 41 <input type="checkbox"/> I Landscape/Golf Design |
| 34 <input type="checkbox"/> B Turf Insect Control | 42 <input type="checkbox"/> J Turf Weed Control |
| 35 <input type="checkbox"/> C Tree Care | 43 <input type="checkbox"/> K Paving, Deck & Patio Installation |
| 36 <input type="checkbox"/> D Turf Aeration | 44 <input type="checkbox"/> L Pond/Lake Care |
| 37 <input type="checkbox"/> E Irrigation Services | 45 <input type="checkbox"/> M Landscape Installation |
| 38 <input type="checkbox"/> F Turf Fertilization | 46 <input type="checkbox"/> N Snow Removal |
| 39 <input type="checkbox"/> G Turf Disease Control | 47 <input type="checkbox"/> O Other (please specify) |
| 40 <input type="checkbox"/> H Ornamental Care | |

4. WHAT IS YOUR ANNUAL BUDGET FOR EQUIPMENT, CHEMICALS, SUPPLIES? (please check one)

- | | |
|---|---|
| 48 <input type="checkbox"/> 1 Less than \$50,000 | 51 <input type="checkbox"/> 4 \$250,001-500,000 |
| 49 <input type="checkbox"/> 2 \$50,000-\$100,000 | 52 <input type="checkbox"/> 5 More than \$500,000 |
| 50 <input type="checkbox"/> 3 \$100,001-\$250,000 | |

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

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UNITED STATES



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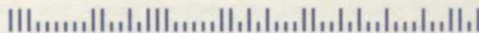
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after September 15, 1996

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FIRM _____
ADDRESS _____
CITY _____ STATE _____ ZIP _____
PHONE (____) _____ FAX (____) _____

HAVE A SALES REP CALL ME 18 (A)

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118	136	154	172	190	208	226	244	262	280	298	316



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Only one thing matters when it comes to fungicides. Results. And Thalonil™ delivers top results. In university trials, Thalonil performed as good as, or better than, the competition. Research shows Thalonil sticks, protects and has superior

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Since Thalonil's™ introduction, turf professionals have used it with confidence, knowing they'll get the results they need. Today, Thalonil is the choice for excellent disease control in turf. Results still don't lie. Thalonil works in tests and in turf management programs.



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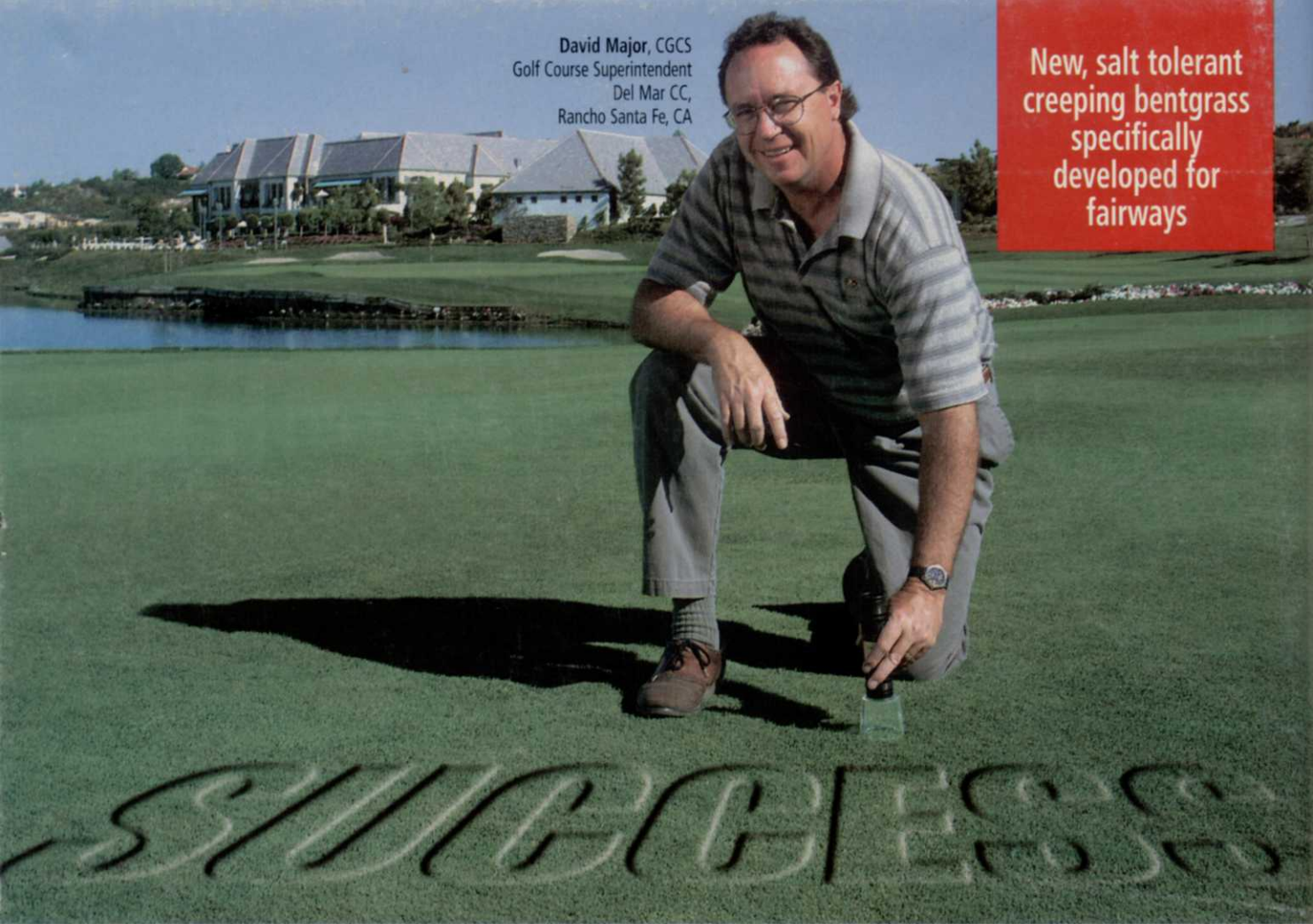
Terra International, Inc.
P.O. Box 6000
Sioux City, Iowa 51102
1-800-831-1002

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David Major, CGCS
Golf Course Superintendent
Del Mar CC,
Rancho Santa Fe, CA

New, salt tolerant
creeping bentgrass
specifically
developed for
fairways



Ninth hole, Del Mar CC; Joe Lee, architect

"Seaside II Has Success Written All Over It."

I resodded high stress areas in my PennLinks fairways with Seaside II nearly a year ago, and I am very pleased with its performance. I selected Seaside II with improved dollar spot disease resistance and salt tolerance to address our two major turf challenges; the coastal influence and potential sodium buildup from irrigation. I find Seaside II a strong ally to our PennLinks fairways, and

in the future, we will slit seed with Seaside II, where needed, to enhance turf quality.

Our bentgrass fairways make Del Mar Country Club unique to southern California, and spares us overseeding bermudagrass every winter season. Seaside II complements our PennLinks greens and tees, too.

Seaside II has success written all over it.
- David Major

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The 'Penn Pals': Penncross, Penneagle, PennLinks, PennWay Blend, PennTrio Blend, NEW Penn A-1, A-2, A-4, G-1, G-6 and Seaside II

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