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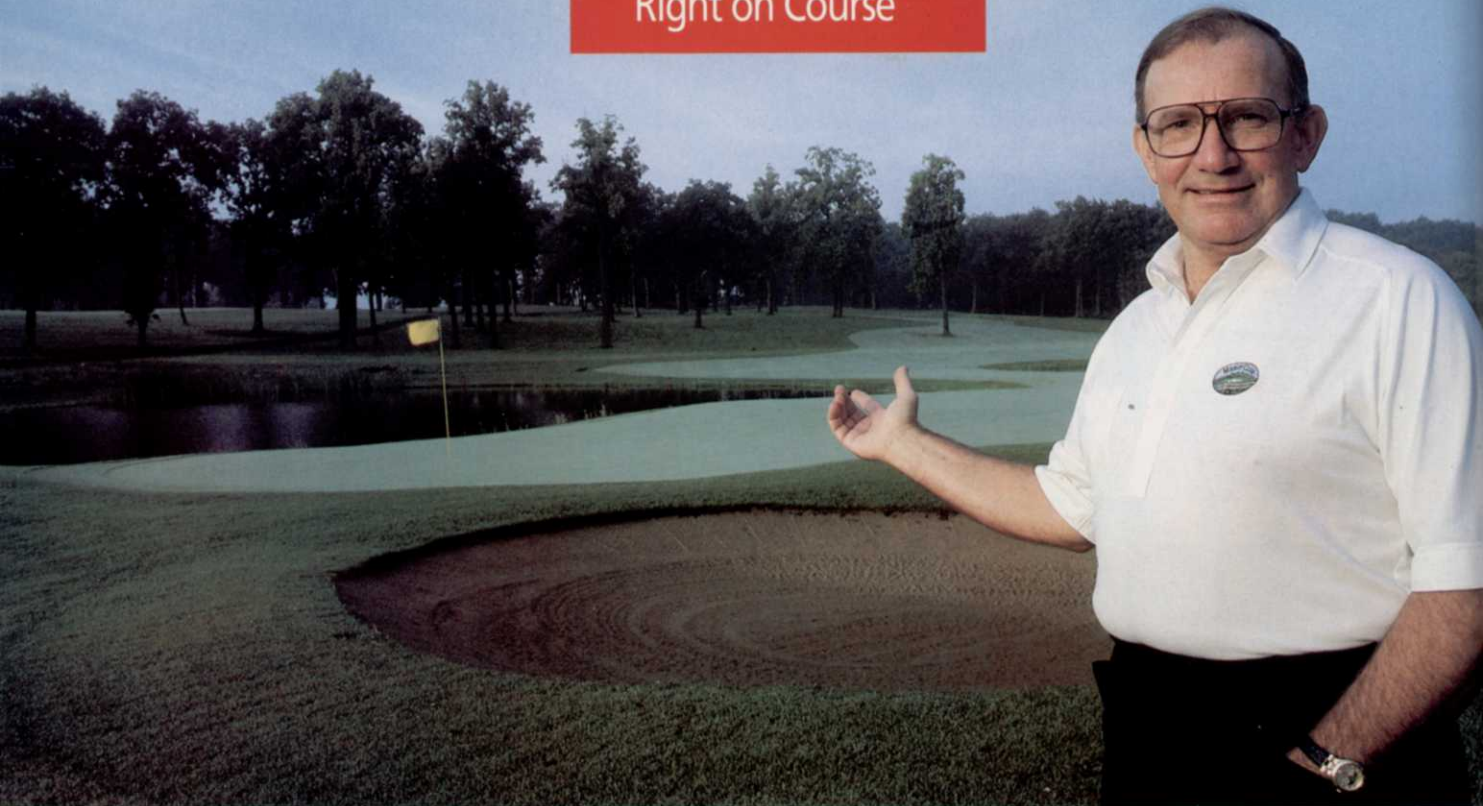
**Getting the
bite on insects**

**Selecting the
right dealer**



**g
ers**

The Penn Pals:
Right on Course



Oscar Miles, CGCS, overlooks the 6th hole at the Merit Club, Libertyville, Illinois.

PennLinks Greens. Penneagle Fairways. Penncross Tees. The 'Penn Pals' Are Picture Perfect At The Merit Club.

Superintendent Oscar Miles, with Club President Ed Oldfield's affirmation, specified all the grassing of this Robert M. Lohmann designed club. With a clean canvas and open palette, Oscar began with PennLinks greens, Penneagle fairways and Penncross tees, framing them with bluegrass/fine fescue/wildflower and prairiegrass roughs. You couldn't paint a more attractive picture.

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Oscar articulates it best: "The unique coloring of the 'Penn Pals' contrasts beautifully with the grassing around them, defining the target areas. And with the dew on the bents early in the morning, they're a marvelous work of art."

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Oscar L. Miles

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Golf Course Superintendents Association of
America, 1421 Research Park Dr., Lawrence,
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International Society of Arboriculture, P.O.
Box 908, Urbana, IL 61801; (217) 328-2032.

International Turfgrass Society, Crop & Soil
Environmental Sciences, VPI-SU, Blacksburg,
VA 24061-0403; (703) 231-9796.

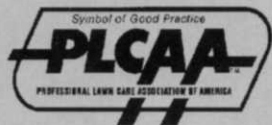
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03031-1094; (603) 673-3311.

National Golf Foundation, 1150 South U.S.
Highway One, Jupiter, FL 33477; (407) 744-
6006.

Ohio Turfgrass Foundation, 2021 Coffey Rd.,
Columbus, OH 43210; (614) 292-2601.



Professional Grounds Management Society,
10402 Ridgland Rd., Suite 4, Hunt Valley, MD
21030; (301) 667-1833.



Professional Lawn Care Association of
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135, Marietta, GA 30068-2112; (404) 977-5222.

Responsible Industry for a Sound
Environment, 1155 15th St. NW, Washington,
D.C. 20005; (202) 296-6085.



Sports Turf Managers Association, 401 N.
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644-6610.

Turf and Ornamental Communicators
Association, 8400 Normandale Lake Blvd.,
Suite 500, Bloomington, MN 55437; (612) 832-
5000.

AS WE SEE IT

TERRY McIVER, MANAGING EDITOR



A lesson from the President: always keep your promises

In his State of the Union speech of February 17, President Clinton made it official: he was to move ahead with a plan to raise income taxes and implement new levies, most notably an energy tax.

If this troubles you, there is a way to salve your disappointment: always keep your promises.

Private enterprise and government are both sustained by the promises made to customers and voters, respectively.

You campaign for employees, suppliers, customers and perhaps sub-contractors as a politician campaigns for votes. (In what is a bold rhetorical move, President Clinton says the American people are also "customers" of the government. Unfortunately, it would take this entire March issue to expose the faults of that analogy. For one thing, the Better Business Bureau would never be able to handle all the complaints!)

As a businessman, you promise prospective employees a specified salary, periodic raises, excellent working conditions, well-tuned equipment and support.

You promise suppliers on-time payment; you might even promise them your loyalty.

Your advertising is truthful. You promise service to your customers, pricing that matches quality work, and advice on how best to satisfy their landscaping or lawn care needs.

Certainly, any of those three groups may themselves prove untrustworthy, in which case the contract is null and void, and you're left a bit wiser. But in the best of times, when *they* play it straight, *you* do the same.

And forget about making excuses. The only one they're likely to accept is, "the weather made me do it." But when the birds sing and the sky is blue and cloudless, your course is clear.

Compare the relative consequences of a broken promise, to you as a business owner, and to your customers:

An energy tax, if passed, will mean an estimated seven-and-a-half cent per gallon gouge by 1996. If you own a fleet of 20 vehicles, and each one averages 15 gallons a week, that's \$1170 per year *extra* in gasoline tax. And don't forget mower fuel.

Mr. and Mrs. Jones are new homeowners, excited about the prospects of a well-designed, properly-built landscape, followed up by dependable maintenance.

But your estimate proves impossible to meet. You promised a certain price to get the job, rather than stress to them the cost of quality. You cut corners on equipment and training. The post-emergence weed control is late, and their yard looks like hell, just in time for their daughter's wedding party.

I wouldn't want to be there when Mr. Jones calls.

Planning is essential in the prevention of broken promises. Clinton, if we're to believe his claim that he "imagined" the deficit to be lower, could be called guilty of poor planning, although I believe he knew what would happen, especially with a Democratic Congress by his side. Rather than say what he planned to do, he lied to the people rather than tell the truth during the campaign.

The best and the bravest among us, regardless of profession, are those who keep their promises, especially when compelled to renege.

Plan ahead. Know your company's limitations. Know your market, and be careful of what you say.

And no matter how much it hurts, never, ever break a promise.



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LANDSCAPE MANAGEMENT

INCORPORATING LAWN CARE INDUSTRY

MARCH 1993 VOL. 32, NO. 3

COVER FEATURE

11 Controlling spring weeds

As March comes, so do the first weeds of the season, invading turfgrass areas everywhere. Warm-season tips by Dr. Tim Murphy of the University of Georgia begin on page 11, cool-season on page 16.

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Though the engine is only part of what you'll be purchasing when you go to your lawn mower dealer, it's an important part, and you should know the options available.

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Use your pallet of experience to paint a colorful picture when meeting a prospective customer. Your first impression is the most important.

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Obtaining the correct soil pH can be tricky. You may have to amend the soil, depending on turf species and existing soil conditions.



LAWN CARE INDUSTRY

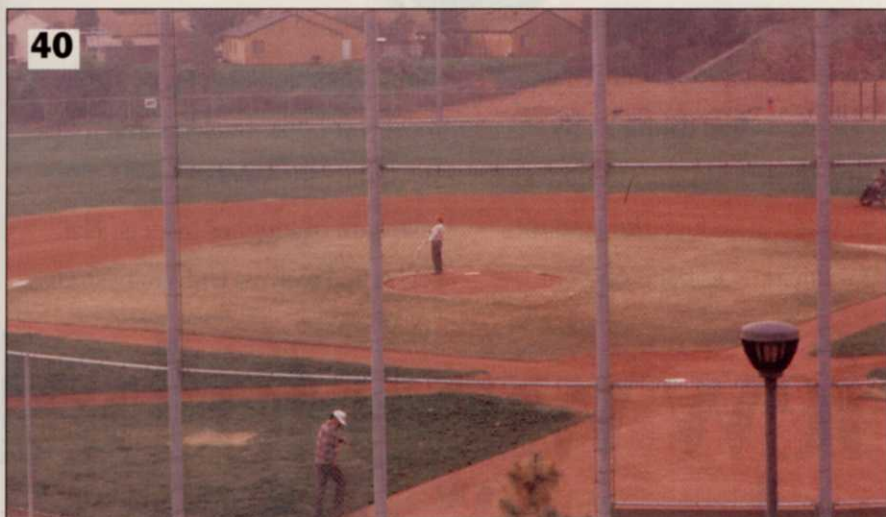
66 Crabgrass, a tough foe

Proper fertilization and mowing allow turfgrass to out-compete crabgrass, but pre-emergents are still very popular. Also: tips for better product applications, a rundown of newer products that give turfgrass pros more options.

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Spring-Green Lawn Care's 'biological' program stresses fertility, cuts herbicide use, receives customer approval.



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The nymph of the tiny *Ixodes dammini* is most abundant in woodlots. Nymphs are responsible for 70 percent of Lyme disease cases.

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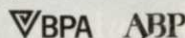
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You might think using less insecticide means you'll have to put up with more insects. But that's not necessarily the case. Because *how* you use your insecticide is as important as *how much* you use. With

the right tactics, you can use a lot less and still get excellent results.

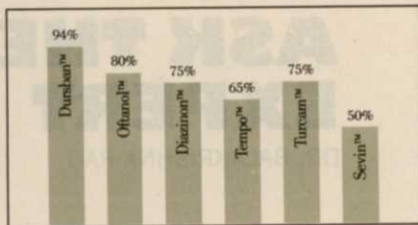
Here's a good example. By mixing insecticide with insecticidal soap, you can reduce the amount of insecticide you need on your

ornamentals by about fifty percent. Insecticidal soap controls most soft-bodied insects and mites. By adding insecticide, you'll also take care of tougher insects, like scales and worms. University studies



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suggest you may get better control than you get with insecticide alone.

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Now, we realize you probably

ance your hate for insects ironment.

first present at the same time the black locust tree blooms. Make your insecticide application then, and you'll get the most efficient, effective control.

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Why Adults Should Spend Time Catching Bugs.

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ASK THE EXPERT

DR. BALAKRISHNA RAO

Anticipating droughty conditions

Problem: If we experience another water shortage this summer, I'm sure restrictions will be imposed. Are there any products that will stretch our rainwater and help alleviate the stress which will be placed on our lawns and trees? (The first thing I read is your informative column—keep up the good work.) (New York)

Solution: The past several years, many parts of the country experienced extended periods of dry weather, leading to drought-related problems of established turf and plants.

Reports indicate that proper fertilization, preferably prior to drought but also during or after, helps promote deeper and healthier grass and tree roots. Potassium in the fertilization program will help develop thicker cell walls and make plants more drought hardy. Consider providing proper fertilization to improve overall plant health.

Other cultural practices such as mulching for trees helps maintain soil moisture and prevents weed establishment.

If the soil is compacted, consider aerification to promote better rooting and infiltration of water and fertilizer.

Water trees infrequently and deeply. Generally, for most clay types of soils, two inches of water per week is sufficient to wet the top 12 inches of soil. For sandy soils, watering twice a week should be sufficient. Since most of the active roots are in the top 12 to 18 inches, this will help maintain good root growth.

The soil may repel water if it is very dry (hydrophobic). In this situation, an application of dishwashing (soapy) water or a commercial wetting agent such as Aquagro would be beneficial.

To improve water holding capacity, a number of polyacramide gel products can be used. These should be amended into the soil and can be tried on a small scale if you are not familiar with them. Our experimental results have been variable.

For lawn areas, the same cultural practices are beneficial. During drought periods, use greater proportions of low-burn fertilizer. Water the turf one inch per week for most clay soils and two times a week for sandy soils.

When such watering is not possible, some extension personnel recommend infrequent light watering (syrringing) to keep the turfgrass crown alive. Research information on this is lacking.

Another important factor is mowing. Cut the turfgrass blade at the recommended cutting height. Generally, if in doubt, maintain the cutting height for cool-season grasses at 2½ inches. This will help conserve moisture and improve density, color and greater surface area for photosynthesis.

Residual activity on insecticides

Problem: Where can information be found that gives residual activity time for various insecticides such as Dursban, Sevin, diazinon and malathion? (Michigan)

Solution: Residual activity of most of the pesticides can be found in a publication entitled "Pesticide Information Manual," edited by the Northeastern Regional Pesticide Coordinators and published by the Cooperative Extension Service, USDA. For the most up-to-date information, contact the manufacturers of specific pes-

ticides. The residual activity of some of the insecticide available in the green industry is as follows:

Insecticide	Plant surface	Unexposed surface	Soil
diazinon	1 week	2 months	10 days
malathion	1-3 days	2 weeks-1 month	short residual
Dursban	few days	several weeks	9 weeks-1 year
Sevin	2-10 days	3-4 months	3 weeks

Grass clippings on lawns

Problem: The removal and disposal of yard waste in general and grass clippings in particular presents a major problem in the future because of new regulations. I would appreciate your opinion on leaving grass clippings on the lawn. (Ohio)

Solution: Reports indicate that many states in the U.S. will have regulations on yard waste, including grass clipping disposal, in the near future. In the past couple of years, a number of articles were written in various magazines regarding these issues (LM, October, 1990). Also, a number of private companies and municipalities are showing interest in dealing with this problem. Contact your city officials and cooperative extension service to find out more about these activities.

Reports suggest that return of clippings over an extended period of time tends to reduce the turfgrass quality under intensive turfgrass culture. Therefore, you may want to consider clipping removal under these conditions. Clippings should be removed when the plates are too long or they have a high potential for disease development.

Turfgrass maintained under a low-intensity fertilizer program can benefit by returning the clippings. These clippings release nitrogen to the soil, which can in turn be used by the turfgrass plant. This would help reduce the total amount of nitrogen needed by the plant. In general, returning the clippings can provide up to one pound of actual nitrogen over a period of one year.

Where feasible, consider using a mower that would shred or mulch the clippings to aid in decomposition.

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

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

LANDSCAPE MANAGEMENT

INCORPORATES LAWN CARE INDUSTRY

Post-emergence warm-season turfgrass weed control

One of the keys: the tolerance of warm-season grasses to post-emergents decreases in hot weather, drought and/or high humidity.

by Tim R. Murphy, Ph. D.
University of Georgia

Unlike pre-emergence herbicides, which must be applied at certain times of the year, post-emergence herbicides provide the turfgrass manager with viable options to control weeds over the entire year.

A complete chemical weed control program can be based on post-emergence herbicides. However, most post-emergence herbicides usually cause temporary

injury to turfgrasses. Therefore, the primary use of post-emergence herbicides is to supplement the level of weed control obtained with the use of pre-emergence herbicides.

Post-emergence herbicides offer several advantages relative to the use of pre-emergence herbicides. This group of herbicides can be applied on a spot treatment or as-needed basis directly to a weed infestation. Pre-emergence herbicides are usually applied to the entire turfgrass area. Spot treatments of post-emergence herbicides are less expensive than broadcast applications of pre-emergence herbicides. Post-emergence herbicide control may be used on newly sprigged or sodded warm-season turfgrasses. In areas that are scheduled to be overseeded or renovated, the majority of post-emergence herbicides can be used prior to renovation.

Problem weed management—Here are some effective ways of controlling the more persistent weeds which you, as a landscape manager in the southern part of the U.S., will come in contact with:

Common bermudagrass: Unless it is the desired turfgrass, common bermudagrass is an aggressive, competitive weed in southern turfgrass-

es. Multiple applications of Vantage can be used to suppress bermudagrass in centipedegrass. In zoysiagrass, repeat applications of Acclaim at three-week intervals during the summer months will suppress common bermudagrass growth. Prograss has recently been registered for the suppression of actively-growing common bermudagrass in St. Augustinegrass.

Bahiagrass: Repeat application so MSMA or DSMA at 7- to 10-day intervals will control bahiagrass in MSMA/DSMA-tolerant turfgrasses. In labeled warm-season turfgrasses, DMC will effectively control "Pensacola" bahiagrass. In centipedegrass, repeat applications of Vantage at 10- to 14-day intervals will suppress bahiagrass growth and seedhead development.

Dallisgrass: A difficult-to-control warm-season perennial. In bermudagrass or zoysiagrass, two to four repeat applications of MSMA or DSMA will be necessary to control this weed. Also, a non-ionic surfactant should be used with MSMA or DSMA to control dallisgrass. Stay on the application schedule (two to four applications, each at a 5- to 10-day interval) for proper control.

Nutsedge: Basagran T/O will provide good control of yellow nutsedge, but not purple nutsedge. Monthly applications of MSMA or DSMA in tolerant turfgrasses during the late spring and summer months can be used to suppress the growth of both species.

With the exception of bahiagrass and carpetgrass, Image can be used in warm-



Winter weeds are at home in dormant bermudagrass.



Virginia buttonweed remains the most tenacious of warm-season weeds.

season turfgrasses for yellow and purple nutsedge control. The addition of MSMA to Image generally improves nutsedge control in MSMA tolerant turfgrasses. A repeat application, six to eight weeks after the first application of Image or Image + MSMA will be required to control nutsedge during the summer months.

Prostrate spurge: Repeat applications of two-way or three-way broadleaf herbicides can be used to control this summer annual. In bermudagrass, low rates of Sencor will effectively control emerged prostrate spurge. Research conducted in Florida has shown that DMC will effectively control prostrate spurge in bermudagrass.

Virginia buttonweed: Still probably the most difficult to control. Monthly applications of a two-way or three-way herbicide will be needed during summer months. Recent research in Alabama and Mississippi has shown that a tank mix of 2,4-D + metsulfuron has potential for control.

—The author is an extension agronomist specializing in weed science at the University of Georgia.

continued on page 14

Post-emergence suggestions

- Apply post-emergence herbicides to small, actively-growing weeds. Perennial and annual weeds that are growing under good soil moisture conditions at moderate air temperatures (60°-90° F) are easier to control with post-emergence herbicides than weeds that are stressed due to adverse environmental conditions.

- Do not use when turf and weeds are under stress. The tolerance of warm-season turfgrasses to post-emergence herbicides decreases at air temperatures greater than 90° F, when turfgrasses are drought stressed or when they are growing under high soil moisture and high relative humidity conditions. Herbicides that contain 2,4-D, dicamba, mecoprop, dichlorprop, imazaquin, MSMA and DSMA should not be applied at high air temperatures since there is an increased risk of unacceptable turfgrass injury. Always

follow the most restrictive warning that is shown on the label.

- Single applications at high rates generally cause more turfgrass injury than repeat applications at low rates. Additionally, single, high-rate applications often do not control perennial weeds. The repeat application is usually made at an interval of 7 to 14 days after the first application, or when re-growth of the weed is noted.

- Coordinate mowing schedules. Generally, mowing should be delayed three to four days prior or after a post-emergence herbicide application.

- Do not apply immediately before rainfall or irrigation.

- Use surfactants and crop oil concentrates according to label directions.

- Calibrate all spray equipment and train the operator.

—Dr. Murphy



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Solvang, CA

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Jeff Kidder, Superintendent,
MARRIOTT'S CAMELBACK
GOLF CLUB,
Scottsdale, AZ

"Poly-S works great. We've eliminated one fairway application with it and plan on using it in the fall after a ryegrass overseeding."

John Hoofnagle, Superintendent,
VALLEY COUNTRY CLUB,
Aurora, CO

"I really like the color Poly-S gives my fairways and the even greening."

Randy Scafturon, Superintendent,
RIVERSIDE COUNTRY CLUB,
Chehalis, WA

"The new Poly-S fertilizers are more economical and have a higher nutrient availability"

William Twig, Superintendent,
THE WITCH,
Myrtle Beach, SC

"Great Product"

Jimmy Geter, Superintendent,
THE FARM
Rocky Face, GA

"We have been very satisfied with Poly-S. It's given us consistently good performance with good, even color."

Pat Holt, Superintendent,
HUNT VALLEY GOLF COURSE,
Hunt Valley, MD

"Poly-S is a good product. It spreads real nice and holds color real well. The residual lasted three months for us."

Scott Fischer, Superintendent,
JUPITER ISLAND COUNTRY CLUB,
Hobe Sound, FL

"The membership at the club was complaining about tight lies in the fairway and wanted us to change the cutting height. The improvement in turf quality after applying Poly-S led many to believe we had raised the height of the cut."

Kevin West, Superintendent,
OLYMPIA FIELDS COUNTRY CLUB,
Olympia Fields, IL

"Excellent response and longevity. We're very pleased with Poly-S."

Thomas Schlick, Superintendent,
MARRIOTT'S GOLF COURSE
AT WINDWATCH
Hauppauge, NY

"Poly-S spread so easily that our application rates required downsizing"

Brian Conklin, Superintendent,
GRAYLING COUNTRY CLUB,
Grayling, MI

"The best fertilizer we've ever seen on this place. Fairways look incredible!"

Joe Forden, Superintendent,
AUTHER PACK GOLF COURSE,
Tucson, AZ

"The results with Poly-S have been tremendous. I've never seen grass respond this well to anything else. The increase in density and color retention has been just amazing."

Scott Venable, Superintendent,
TAM O'SHANTER GOLF COURSE,
Canton, OH

"I really like Poly-S. It gives you slow, lengthy release and good greening. And the spreadability is great. No dust, no odor problem. It performs well with the extreme temperatures we get here in the desert."

Bill Rohret, Superintendent,
SUNRISE COUNTRY CLUB,
Las Vegas, NV

After only one year, over 4,400 turf managers have switched to Poly-S technology, making it one of the fastest growing fertilizer lines in history.

The best thing about Poly-S is that it performs as promised. Its unique, patented multiple coating system assures higher nutrient efficiency (no unreleased nitrogen) and consistent, extended residual for better greening without surge growth. And because Poly-S offers

the capability for selecting specific release rates, it has proven its effectiveness under a variety of agronomic conditions in every region of the country.

Poly-S is making a difference on courses nationwide, but the only proof that really matters is on your own turf. For more information about Poly-S fertilizers, contact your Scott Tech Rep today. Or call 1-800-543-0006.



Poly-S Technology

Table 1.

POST-EMERGENCE HERBICIDES, WARM-SEASON TURFGRASS

Common name	Trade name	Uses
asulam	Asulox	Grassy weed control in St. Augustinegrass
atrazine	Aatrex, others	Pre- and post- broadleaf and grass weed control
bentazon	Basagran T/O	Primarily used for yellow nutsedge control
bromoxynil	Buctril	Broadleaf weed control on seed or sod farms only
2,4-D	numerous formulations	Broadleaf weed control
2,4-D + dicamba	Eight-One; Phenabane 801	Broadleaf weed control
2,4-D + dichlorprop	Weedone DPC Amine; Weedone DPC Ester	Broadleaf weed control
2,4-D + mecoprop	Lescopar; 2 Plus 2	Broadleaf weed control
2,4-D mecoprop + dicamba	Trimec Classic; Trex-san; Three-Way	Broadleaf weed control
2,4-D + mecoprop + dichlorprop	Weedestroy Triamine; Weedestroy Tri-Ester	Broadleaf weed control
dicamba	Banvel	Broadleaf weed control
diclofop-methyl ¹	Iloxan	Goosegrass control in bermudagrass
diquat ²	Diquat	Winter annual weed control in dormant bermudagrass
DSMA	numerous formulations	Grassy weed control in bermudagrass and zoysiagrass
ethofumesate	Prograss	Pre- and early post- annual bluegrass control in overseeded bermudagrass. Common bermudagrass suppression in St. Augustinegrass.
fenoxaprop	Acclaim	Annual grass control and suppression of bermudagrass in zoysiagrass
glyphosate	Roundup	Winter annual weed control in bermudagrass
imazaquin	Image	Purple nutsedge and wild garlic control in warm-season turfgrasses (except bahiagrass) and certain broadleaf weeds
mecoprop	Mecomec; Lescopex	Broadleaf weed control
mecoprop + 2,4-D + dichlorprop	Southern Trimec	Broadleaf weed control
MCPA + mecoprop + dicamba	Weedestroy Triamine II; Weedestroy Tri-Ester II	Broadleaf weed control
metribuzin	Sencor Turf	Goosegrass control in bermudagrass, and prostrate spurge and numerous winter annual broadleaf weeds
metsulfuron	DMC	Controls 'Pensacola' bahiagrass, wild garlic, prostrate spurge and numerous broadleaf weeds
MSMA	numerous formulations	Grass weed control in bermudagrass and zoysiagrass
MSMA + 2,4-D + mecoprop + dicamba	Trimec Plus	Grass and broadleaf weed control in bermudagrass and zoysiagrass
pronamide	Kerb	Annual bluegrass control in bermudagrass
sethoxydim	Vantage	Annual grass control and suppression of bahiagrass in centipedegrass

¹ Diclofop-methyl has a state label for use in Alabama, Florida, Georgia, Mississippi, North Carolina and South Carolina.

² Diquat has a state label in Arkansas, Louisiana, Mississippi, Oklahoma, Tennessee and Texas for winter annual weed control in dormant bermudagrass.

Source: Dr. Murphy

Table 2.

WARM-SEASON TURFGRASS TOLERANCE TO POST-EMERGENCE HERBICIDES

HERBICIDE/TURF	BAHIA	BERMUDA	CENTPEDE	CARPETGRASS	ST. AUGUSTINE	ZOYSIA
asulam	NR-S	T ¹	NR-S	NR-S	I-T	NR
atrazine	NR-I	S(D)	T	NR-T	T	I
bentazon	T	T	T	NR-T	T	T
bromoxynil	T	T	T	NR-I	T	T
2,4-D	T	T	I	I	S-I	T
2,4-D+dicamba	T	T	S-I	I-T	S-I	T
2,4-D + dichlorprop	T	T	I	I-T	S-I	T
2,4-D + mecoprop	T	T	I	I-T	S-I	T
2,4-D + mecoprop + dicamba	I-T	I-T	S-I	I-T	S-I	T
2,4-D + mecoprop + dichlorprop	T	T	I	I	I	T
dicamba	T	T	I-T	T	S-I	T
diclofop-methyl	NR	T	NR	NR	NR	NR
DSMA, MSMA	NR-S	T	NR-S	NR-S	NR-S	I
fenoxaprop	NR-S	NR-S	NR-S	NR	NR-S	T
glyphosate ²	S(D)	S(D)	S	S	S	S
imazaquin	NR-S	T	T	NR-I	T	T
MCPA + mecoprop + dichlorprop	T	T	I	I	I	T
mecoprop	T	T	S-I	I	S-I	T
metribuzin	NR-I	T	NR-S	NR-S	NR-S	NR-S
metsulfuron	NR-S	T	T	NR	T	I-T
pronamide	NR	T	NR	NR	NR	NR
sethoxydim	NR-S	NR-S	T	NR-I	NR-S	NR-I

T= Tolerant at labeled rates I= Intermediate tolerance; use at reduced label rates S= Sensitive; do not use this herbicide D= Dormant applications recommended NR=Not registered for use on this turfgrass ¹Labeled only on 'Tifway' (419) bermudagrass and St. Augustinegrass

² Bahiagrass and bermudagrass are tolerant to glyphosate when completely dormant.

Source: Dr. Murphy

continued on page 16

Only Basagran T/O Gets To The Root, Rhizome And Tuber Of Yellow Nutsedge.

Unlike other herbicides which only burn back yellow nutsedge above the surface, Basagran® T/O herbicide travels down into the roots, rhizomes and tubers to make sure yellow nutsedge doesn't come back.

With Basagran T/O, an over-the-top application is all it takes to get to the bottom of your yellow nutsedge problem. And while it's tough on weeds like yellow nutsedge, Basagran T/O is gentle on nearly all established turfs. It's even safe as a directed spray near some of your favorite ornamental varieties.

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any job — pint or 1 gallon jug.

Don't let annual sedges and yellow nutsedge take root. Call 1-800-878-8060 today for complete information on Basagran T/O.

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to complex
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BASF



Post-emergence control of cool-season weeds

Contact or systemic? Selective or non-selective? Ester or amine? The astute turfgrass manager can make the proper herbicide choices after identifying problem.

■ The best way to control annual weeds is through a careful cultural program, producing a dense, healthy stand of turfgrass. By paying close attention to proper mowing height and frequency, fertilization and irrigation, annual weeds can be kept to a minimum.

Specific weed problems, then, can often be indications of unfavorable environmental conditions for turfgrass growth, according to Dr. Al Turgeon of Penn State University. In his book "Turfgrass Management," Dr. Turgeon gives instances:

"Large infestations of knotweed frequently occur where severe soil compaction limits turfgrass growth. Ground ivy often invades under trees where insufficient sunlight results in the decline of Kentucky bluegrass and other shade-intolerant turfgrasses. The presence of red sorrel is usually indicative of acid soil conditions."

According to Dr. Prasanta Bhowmik of the University of Massachusetts, a good weed control program consists of the following steps:

- 1) knowing whether the specific problem is a grassy or broadleaf weed;
- 2) knowing whether the weed's lifecycle

Table 1.

POST-EMERGENCE GRASS AND SEDGE CONTROL

COMMON NAME	TRADE NAME	MANUFACTURER	COMMENTS
DSMA	DSMA liquid	Riverdale, Drexel	Controls crabgrass and nutsedge. Repeat applications are needed for nutsedge control. Discoloration may occur in fescue and bentgrass.
	Methar 30	W.A. Cleary	
	Broadside, DSMA 81%	Vertac	
MSMA	Daconate 6	ISK Biotech	Controls crabgrass, nutsedge. Repeat applications needed for nutsedge control.
	Drexar 530	Drexel	
	MSMA 6.6	Drexel	
fenoxaprop	Acclaim	Hoechst-Roussel	Can be tank-mixed with residual pre-emergence and post-emergence broadleaf herbicides.
bentazon	Basagran	BASF	Controls only sedges. Repeat applications are necessary.
dithiopyr	Dimension	Monsanto	Can be tank-mixed with Acclaim. Apply to crabgrass with three tillers or less. Can be applied with fluid fertilizer or other registered pesticides.

Source: Dr. Prasanta Bhowmik, Univ. of Mass.

is annual or perennial; and

- 3) selecting the most effective herbicide.

Post-emergence herbicides can be either contact or systemic. Contact herbicides enter and destroy the parts of the weed plant in which they come in contact. Systemic herbicides are translocated through the plant following absorption and are, therefore, more effective than contact herbicides for controlling perennial weeds, according to Turgeon.

Grassy weeds—Annual grassy weeds, most commonly crabgrass, are probably the biggest weed problem facing landscape managers. The preferred method of crabgrass control is with pre-emergence herbicides. However, when this method does not completely work, post-emergence herbicides must be used.

Post-emergence control of annual grassy weeds is becoming popular because of inte-

grated pest management programs which include scouting for weed presence.

For turfed areas that have not had a history of crabgrass invasion, skipping the pre-emergence application and spot-treating with a post-emergence product could be employed. The advantage of this approach is flexibility and potential cost savings; the drawback is that you must tolerate a certain level of crabgrass before treating.

Until 1987, the only available post-emergence crabgrass material was MSMA. According to Dr. Bruce Branham of Michigan State University, two applications 10 to 14 days apart are required for effective control. In addition, MSMA products can be phytotoxic under summer's hot, humid conditions.

However, a product called Acclaim (fenoxaprop) is now on the market. On young crabgrass (two tillers or smaller), you



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A new MCPA broadleaf herbicide
in a dry, sprayable concentrate

A major advancement in Trimec technology. A broad-spectrum, patented MCPA post-emergence broadleaf herbicide for use on ornamental turfgrass. Packaged in pre-measured, water-soluble bags. Just drop the packet into the spray tank, and you're ready to help keep America beautiful. Contains 32.4% MCPA; 14.5% MCPP; and 3% dicamba as active ingredients.

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- Stays in solution — not a suspension
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can often get 95 percent or higher control, Branham observes.

Broadleaf weeds—Some control of annual broadleaf weeds is obtained from pre-emergence herbicides used for annual grass control. However, complete control is not possible, Dr. Turgeon says; therefore, some post-emergence applications may be required whether pre-emergents are used or not.

A successful post-emergence weed control program for broadleaves is contingent on proper herbicide selection, uniform application and proper dosage. The herbicide selected should depend on the weeds to be controlled and the turfgrass which is to be treated. Mixtures of two to three herbicides are commonly used because the combinations are more effective than any single herbicide.

With the exception of MCPP, 2,4-D is the primary component of most multiple-herbicide mixes. And there are differences in efficacy among the different mixtures. However, the most important factor controlling efficacy is the type of formulation used.

Choose a formulation best suited to your needs. Ester formulations, which are oil soluble, tend to penetrate the leaf better than amines, which are water soluble. So esters are generally better weed control products than are corresponding amines.

According to Dr. Branham, amines should always be used in the spring when

plant material is breaking dormancy, actively growing, and very susceptible. Esters can and should be used in the summer when weeds are starting to harden off and are less susceptible; and in the fall when non-target plants are hardening off for the winter and are much less susceptible to injury from volatile broadleaf herbicides.

Most hard-to-control weeds are perennials: wild violet, woodsorrel and ground ivy, for instance. These weeds have extensive root systems, which must be killed. In general, spring herbicide application is standard; but post-emergence herbicides can also be applied in the fall for certain weed species like ground ivy, hawkweed, plantain, wild strawberry and thistles. The fall treatment also controls many seedlings of winter annuals (like common chickweed, corn speedwell and henbit) that germinate in late August or early September.

Non-selectives—Non-selective herbicides are used to control all vegetation and therefore are not normally used in a turf weed control program.

They are, however, useful for edging around trees and for controlling weeds in the cracks of sidewalks and driveways where they are often combined with a pre-emergence herbicide like Surflan to provide long-term residual weed control.

Non-selective herbicides can also be used to control weeds in mulched planting beds or gardens by directing the spray only on the weeds present.

Table 3.

SUGGESTED TREATMENTS FOR HARD-TO-CONTROL BROADLEAFS

Ground ivy (*Glachoma hederacea*): Use Turflon D, Super Trimec or Weedone DPC. Very difficult to control in summer. Fall application is desirable.

Prostrate knotweed (*Polygonum aviculare*): Same post-emergents as ground ivy. Summer control difficult.

Creeping speedwell (*Veronica filiformis*): Use Turflon D, Weedone DPC or Trimec. Several other speedwell species are also difficult to control. Can be controlled with pre-emergence application of Dacthal 6F.

Spurge (*Euphorbia supina*): Use Turflon D, Trimec or Weedone DPC. Spring or summer application desirable. Can also be controlled with pre-emergence spring application of Dacthal, PreM, Team or Dimension.

Wild violets (*Viola spp.*): Use Turflon. Usually requires follow-up application in one to four weeks.

Yellow woodsorrel (*Oxalis stricta*): Use Turflon D, Super Trimec, Weedone DPC, Pre-M, Team or Dimension. Spring application of pre-emergents will control oxalis.

Source: Dr. Bhowmik

Table 2.

BROADLEAF HERBICIDE MIXTURES FOR POST-EMERGENCE WEED CONTROL

HERBICIDE	TRADE NAME	RATIO	MANUFACTURER
2,4-D + MCPP	2 Plus 2	1:1	ISK Biotech
	Lescopar	1:2	Lesco
	2,4-D + MCPP	2:1	W.A. Cleary
2,4-D + 2,4-DP	Chipco Weedone DPC Ester	1:1	Rhone-Poulenc
	Chipco Weedone DPC Amine	1:1	Rhone-Poulenc
	Turf D + DP Ester	1:1	Riverdale
2,4-D + dicamba	8-1 Selective Herbicide	8:1	Lesco
	Riverdale 81 Selective Weed Killer	8:1	Riverdale
	Riverdale 101 Weed Killer	10:1	Riverdale
2,4-D + 2,4-DP + MCPP	Weedestroy Triamine	1:1:1	Riverdale
	Weedestroy Triester	1:1:2	Riverdale
MCPA + MCPP + 2,4-DP	Weedestroy Triamine II	1:1:1	Riverdale
2,4-D + MCPP + dicamba	Three-Way Selective Herbicide	1.5:0.009	Lesco
	Trimec Classic	1.5:1	PBI Gordon
	Bentgrass Selective	0.5:1.5:0.2	Lesco
	Triplet	2.44:1.3:0.22	Riverdale
2,4-D + triclopyr	Turflon D Ester	2:1	DowElanco
	Turflon II Amine	2.6:1	DowElanco
triclopyr + clopyralid	Confront Amine	3:1	DowElanco

Source: Dr. Bhowmik

Lawn mower engines: what are the choices?

Though the engine is only part of what you'll be purchasing when you visit your lawn mower dealer, it's an important part.

■ When buying new lawn mowers, the landscape manager faces a variety of options, ranging from deck size to ground speed to mulching capabilities. Often overlooked is the engine that is part of the mower—a very important part, indeed.

Generally speaking, landscape managers like the following attributes on their lawn mower engines:

- easy starting;
- heavy duty, long life, dependable;
- quiet running;
- good guarantees/warranties; and
- fuel efficiency.

Also, make sure the most-serviced parts on the engine offer easy access.

Time saved working on equipment in the repair shop translates into a more dollar-efficient business.

Most engine manufacturers are doing their best to meet federal and California Air Resources Board (CARB) engine emission standards before they officially go into effect (see Chart 1). The federal standards become law in 1999.

Gary Wilson of Onan in Minneapolis, Minn. says prospective buyers should also look for **broad range torque** "for the power to do the work at the widest variety of RPMs possible."

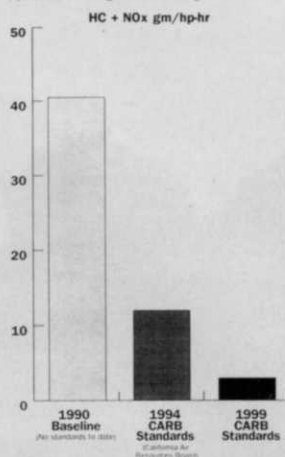
Some of the options available include **piston cooling jets** and **full pressure lubrication**, Wilson says. The piston cooling jets on larger engines (16 hp and up) can save engine wear. And full pressure lubrication will impact significantly on engine and bearing life.

Other things to look for are **electronic starter** (versus recoil) and large **gas tank capacity** (for fewer refilling stops, resulting

Chart 1

Total Allowable Emissions

(Hydrocarbons & nitrogen oxides from engines under 225 cc.)



Source: Briggs & Stratton

in less downtime).


If you've got money to spend, an **over-head valve** is a good investment. OHV engines deliver more horsepower with less displacement and engine weight. They also run cooler, with less carbon build-up and longer life. According to some manufacturers, OHV engines are up to 30 percent more fuel efficient.

See Chart 2 for a list of the major players in the domestic lawn mower engine market.

—Jerry Roche

Chart 2

ENGINES FOR COMMERCIAL LAWN MOWERS

Manufacturer	Model	HP	Tank size	Shaft	OHV?	Notes	Circle No.
Briggs & Stratton	Quantum	4.0,5.0	1.0-1.6 qt.	vertical	no	electric start optional easy control system auto-type air cleaner	301
	Indust. Plus	5.0-18.0	1.5-4.0 qt.	horiz.	no		
	Vanguard	4.0-18.0	5.0-7.2 qt.	both	yes		
Honda	GX series	2.2-13.0	1.5-7.4 qt.	horiz.	no	vert. shaft optional	302
Kawasaki	FA series	1.7-5.2	1.2-2.8 qt.	both	no		303
	FB460V	12.5	n/a	vert.	no		
	FC series	5.0-17.0	n/a	vert.	yes		
	FE series	3.7-11.1	2.6-6.8 qt.	horiz.	yes		
	FG series	3.6-7.5	3.2-6.3 qt.	horiz.	no		
KF100D	10.0	2.1 gal.	horiz.	no			
Kohler	Command	5.0-22.0	n/a	both	yes	auto comp. release electronic ignition	304
	Magnum	8.0-23.0	n/a	both	no		
Onan	Performer	16.0-20.0	n/a	both	no	electronic ignition aluminum block	305
	Elite	12.5-14.0	n/a	vert.	yes		
Tecumseh	Pro 5, XLPro5	5.0	1.5 qt.	vert.	no	8.46 cu. in. displacement 12.6 cu. in. displacement best for lawn tractors	306
	Vector 5	5.0	n/a	vert.	no		
	15HP OHV	15.0	n/a	n/a	yes		

Source: LM survey, February, 1993



DIMENSION®. Crabgrass that doesn't lose sight

A good game of golf depends on an intricate combination of variables; it's a fragile thing. So is the environment.

Dimension® turf herbicide lets you complement both.

Its season-long control of crabgrass contributes to the kind of playing surface golfers need for a good game. Yet, as tough as Dimension is on crabgrass, it doesn't forget nature's delicate balance.

That's because the properties of Dimension include very low use rates. You only put down a fraction of the active ingredient needed with other turf herbicides. Plus, Dimension has low mobility in the soil. And it won't leave unsightly stains.

Dimension is also exceptionally safe on most turfgrasses. You can use it to control a variety of weed species on fairways, roughs, tees and greens* — without causing root injury.



control, from spring to fall, of the environment.

In addition to its environmental characteristics, Dimension gives you unparalleled flexibility. It's the only turf herbicide that can control crabgrass with either a preemergence or early post-emergence application. Or, with a preemergence application of new Dimension on fertilizer, you can keep fairways and roughs healthy and keep crabgrass away.



To do a better job of looking after your course, without overlooking the environment, call: 1-800-323-1421.



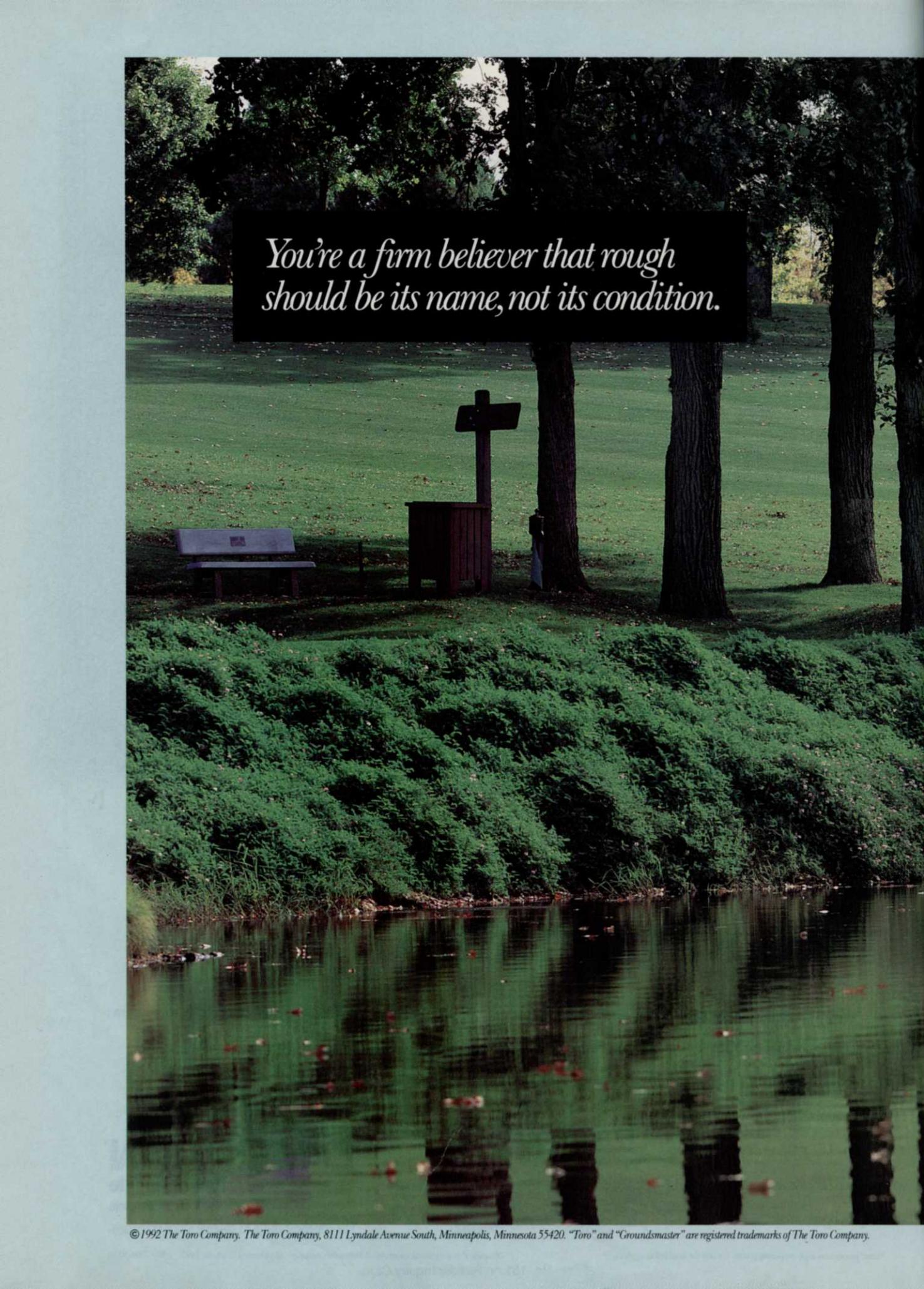
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Turf Herbicide
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The toughest thing to emerge since crabgrass.

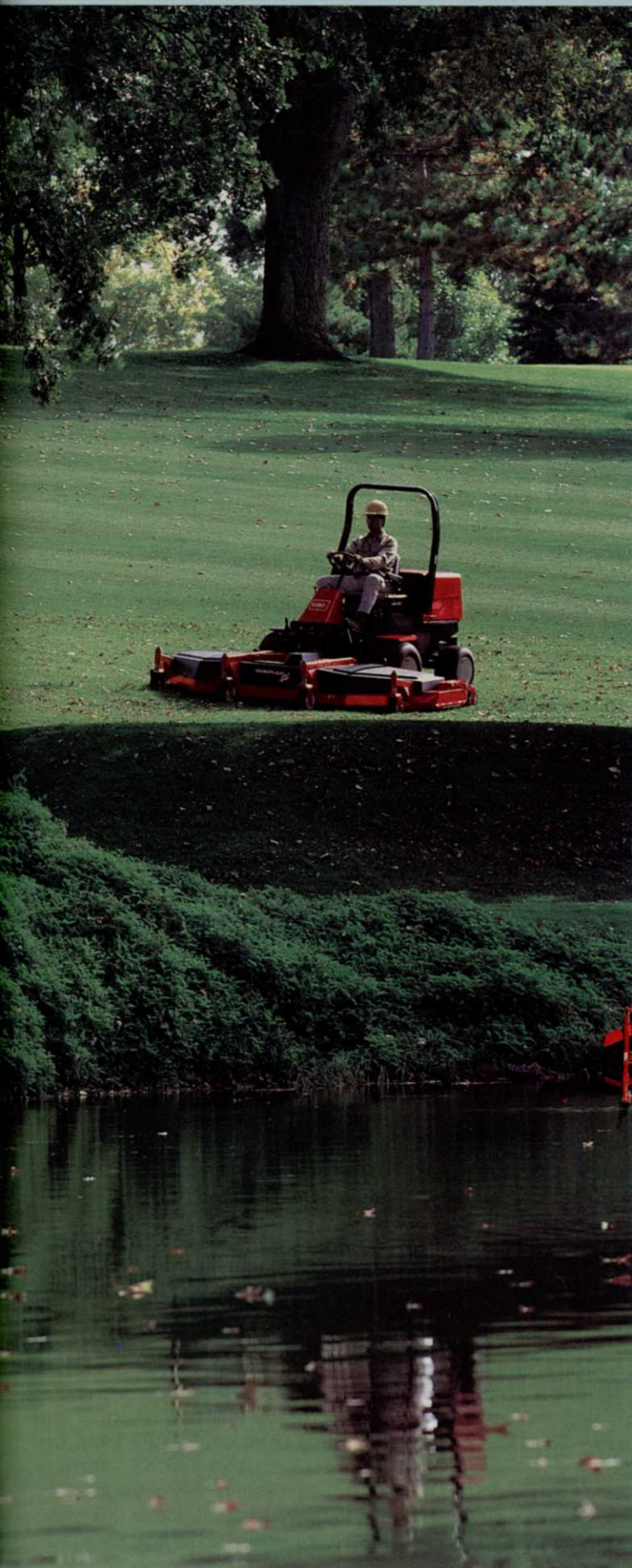
*Some precautions apply on putting greens. Consult the label before applying.

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Circle No. 161 on Reader Inquiry Card

A photograph of a park scene. In the foreground, a calm pond reflects the surrounding greenery and trees. The middle ground features a dense thicket of green bushes along the water's edge. Behind the bushes, a wooden bench sits on a grassy area. To the right of the bench is a wooden signpost with a cross-shaped top. Several large, mature trees with thick trunks stand in the background, their leaves creating a canopy. The overall atmosphere is peaceful and well-maintained.

*You're a firm believer that rough
should be its name, not its condition.*



*R*oughs can be beautiful.

And playable. If you've got the time. Toro's

Groundsmaster® 455-D cuts that time in half.

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Extremely maneuverable, it gives you a consistently superb quality of cut at higher heights. Even around trees, bunkers and other obstacles. That means you have more time to spend on other areas of your course.

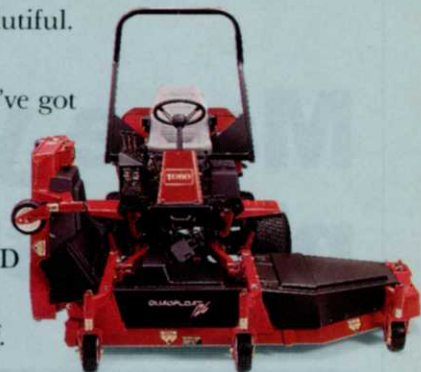
It's one more way Toro has worked with golf course superintendents

for well over half a century. To provide

you with all the precision engineered

tools you need.

Especially when the going gets rough.



Groundsmaster® 455-D. Extreme maneuverability means increased productivity with superb quality of cut.



Groundsmaster® 580-D. 16' cutting width plus great moves. Also available: compact, nimble Groundsmaster 223-D.

you with all the

precision engineered

tools you need.



Helping You Put Quality Into Play.™

Circle No. 155 on Reader Inquiry Card

Make your sales pitch snappy

Use your pallet of experience to paint a colorful picture when first meeting a prospective customer. More on p. 26.

■ When trying to sell your landscape services, you'll never have a better opportunity than your first.

So say three landscape managers who were part of an Associated Landscape Contractors of America (ALCA) panel session at the Green Industry Expo last November.

"Sales presentations are made up front, not at the tail end," says Mike Guthrie of Ground Control Landscaping, Orlando, Fla.

"I *show* the client I want to work for him," adds Judson Griggs of Lied's Nursery, Sussex, Wis. "That starts with the first phone call. No matter how busy you are, you've got to show some excitement and genuine interest. That first phone call can make or break you."

Guthrie says he'll send prospective customers a brochure and references. An offer to drive them to some of Ground Control's properties is not out of the ordinary. "I *want* them to check me out," he notes. "I know they won't hear anything but good things."



Griggs:
what about
customer?



Hillenmeyer:
what about
competition?



Guthrie:
what about
brochure?

Face-to-face—The first interview is all-important.

Guthrie suggests arriving at the site 30 to 45 minutes early. "Drive it, walk it," he says. "Tear the (existing) landscape apart, but don't get negative."

Griggs says you should "try to go in without any pre-conceived notion of what the landscape should look like.

"Shut up and listen to your client, initially," says Griggs. "You want to find out what makes them tick. If they don't tell you, you have to start asking the right questions. Get them talking so you can understand their goals. Explore what they're telling you; don't take it at face value."

Griggs says this process is very personal, especially on a residential property. You have to use open-ended questions, take a lot of notes, or even take a tape recorder along.

"In most instances, people are interested in getting the most for their money," Griggs notes. "We like to tell the client we'll meet his objectives in the shortest time at the lowest possible cost. We tell him we'll be responsible for the whole exterior environment."

One of the initial keys is trying to establish a budget. That way, you know what design suggestions are possibilities and you can begin throwing ideas at the prospective client. "Make sure you and the client are both on the same page," Griggs interjects.

Talking money—Then comes the preliminary budget.

"I develop a preliminary concept, but I'm not spending a lot of time on it," notes Griggs. "You paint the picture of what they should expect. I might throw

out a couple ideas and get the client's reaction.

"The preliminary budget has some round numbers to get the client making decisions. I'll also let them know what's *not* in the budget, so there are no surprises later."

Negotiated bids are handled slightly differently.

"On a negotiated bid, we try to find out as much about the customer and the competition as possible," says Steve Hillenmeyer of Hillenmeyer Nurseries, Lexington, Ky. "Talk to other employees at the company. Ask questions. I like to make the first visit a fact-finding mission."

"When you sit down with those people, you'll be amazed at what they'll tell you. A few will even tell you what their budget is."

Guthrie adds, "Negotiating usually gets down to man-hours. There comes a time when you have to do some value engineering. There are decisions you have to make, and it's a give-and-take; you have to weigh each individual situation."

All three do complete and total analysis bids or budgets, depending on whether the job is negotiated or not. Most of the bids/budgets are many pages long (see example).

In the final analysis, remember that there's usually a reason the prospective client gave you that first telephone call. From that point on, "there's a real fine line between sales and BS," Guthrie notes, and it's up to you to toe that line, and to convince the customer that you're the best company for the job.

—Jerry Roche

DESCRIPTION	QUANTITY	UNIT PRICE	TOTAL PRICE
Site Preparation	1	1,200.00	1,200.00
Planting	1	1,200.00	1,200.00
Irrigation	1	1,200.00	1,200.00
TOTAL BUDGET			\$1,200.00



For mowing performance features, nothing else can make this cut.

Superior greens start with superior greens mower features. And the all-new Greens King® 422 is loaded with them.

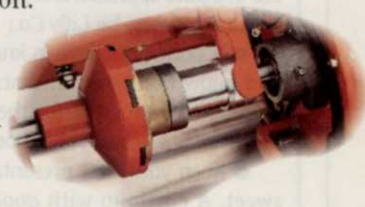
Exceptional side-to-side, front-to-rear balance and a more compact roller base help accentuate your greens' details, rather than your mower's limitations.

Our new 11-blade, electronically balanced reel delivers an unbelievably smooth cut, even down to 5/64." Plus, our exclusive Turf Groomer® option simply produces faster, truer, healthier greens than any imitator.

Clutch performer.

No other walking greens mower can touch the 422 for reliability. Our all-new clutch has been tested out to the equivalent of 70 years of operation, without any adjustment or lubrication.

The same eye for quality extends throughout this unique machine—from our space-age, long-life bearings and bushings, to the most durable drive belts made, to the powerful, high-efficiency 4-hp, 4-cycle OHV Honda engine.



With features like drop out drive drum, reel and bedknife, and easy, slide-apart traction roller with built-in differential, the Greens King 422 cuts maintenance time as neatly as it cuts grass.

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Jacobsen Division of Textron, Inc.

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90 DAYS
SAME AS CASH
See Your Dealer
For Details

Breaking the ice

When prospecting for commercial clients, get to the point and show you can deliver.

■ Prospecting for and winning new commercial clients takes more than just being in the right place at the right time.

If you want that office park or corporate headquarters contract, you've got to prove you can handle the project to begin with, and have some references to back it up.

Here's what three buyers for major Indiana-based companies told us they like to see in a sales approach and presentation:

Linda Byers, Eli Lilly Co.:

● "Contractors have to know the business and know their own limitations." If you're mailing to a prospect for the first time, the brochure has to be an attention-getter.

● Keep your first presentation short and sweet. A portfolio with *good quality* photographs is important.

● Leave the boots at the office; dress like a pro to match the surroundings.

Ed Grenier, American United Life Insurance Co.:

● "Just about anything that complements the product we sell is an asset," and that includes the property.

● "The best advertising is the finished product. If I can drive by and see something that is beautiful and attractive, that's the best advertising there is."

● *Active* association membership is a plus.

● In the initial meeting, appearance, sense of humor and knowledge of the business all count.

Nick Rush, Cummins Engine Co., Inc.:

● "I talk to others in the profession to find out who they might recommend."

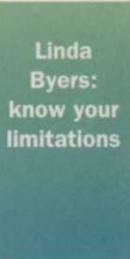
● "Be persistent; let us know you're out there. Be capable, professional and trustworthy. Show that you're able to live up to the expectations of the project."

● At the close: cost (not necessarily the lowest), quality, ease of delivery, communication skills and trustworthiness win the day.

—Terry McIver



Nick Rush:
be
persistent



Linda Byers:
know your
limitations



Ed Grenier:
first
impressions
count



Primary salt damage is found along areas along roads.

Helping landscapes recover from snow and ice damage

You and your customers might be surprised to see all the damage done by winter snow plows and salt. Here are some spring fix-it suggestions.

by James E. Guyette

■ Even a successful winter snow and ice removal program can rub salt into the spring wounds of landscape managers when they take stock of the damage done to turf

and plants.

Heavy use of salt or other materials, including urea and other alternative products for ice-melting on sidewalks, streets and parking lots, can damage concrete and harm bordering lawns and ornamentals.

"Around homes, it's common for March rains to wash heavy amounts of residual ice-melting products into neighboring turf," says Dr. Bill Pound, turfgrass specialist at Ohio State University. "This raises the soil's salinity level. Salt draws water out of grass roots and burns roots that it touches. At high saline concentrations, this can damage or kill grass."

Pound receives phone calls every spring from people seeking advice about plants injured or killed by winter ice control. Most calls come from landscape contractors who maintain pavements around institutions such as hospitals, and who spread heavy amounts of deicing materials to clear sidewalks and driveways.

Pound says to use only enough material to melt the ice and snow, or alternatives such as sand, or sweeping up any excess salt residues before they're washed into neighboring lawns or flowerbeds.

In many cases hard rainfalls will wash salt out of the soil, allowing it to recover. "It all depends on how much rain and water you move through that profile," says Pound. But in some circumstances, turf damage may have already occurred. In late winter or early spring, yellow or brown strips up to two feet wide will appear along the pavement.

continued on page 31

Use only enough de-icing material as is needed to melt the ice.





The inspiration for the world's
finest utility vehicle
came from an unlikely source.

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ALL OTHER UTILITY VEHICLES HAVE



The similarities are striking. They're all tough and rugged, yet they go about their business in a quiet manner. Each carries a low center of gravity, keeping them stable and always on their feet. Heavy loads are not a burden. And they roam in places where others fear to tread.

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Introducing the new Gator 6x4 and 4x2 from John Deere. The only utility vehicles

made today for both on-turf and off-road work.

These two Gators do have their differences. The 6x4 (six wheels, four-wheel drive) is powered by an 18-hp, liquid-cooled V-Twin engine.

As for the 4x2 (four wheels, two-wheel drive), its power comes from a rugged 10-hp, air-cooled engine.

But it's what the Gators share that sets them apart from the rest.

Stability, even in uncertain times. Besides a low center of gravity, the Gators feature an off-set operator's seat for better balance. Three turns lock-to-lock steering for precise maneuvering.



and 4x2 from John Deere

JUST BECOME ENDANGERED SPECIES

Even hip restraints and a passenger grab handle for extra support.

Right next to stability is durability. Like their namesake, the Gators are rugged, inside and out. On the inside are wet-disk brakes, a heavy-duty transaxle, and an

arc-welded frame with unibody construction.

On the outside, you'll notice the fully-independent front suspension, forged rear-axle housings, and the quality, ribbed-box construction.

But it's in the performance category where the Gators truly dominate. With the lowest ground pressure in the industry, low sound levels, a differential lock, and hefty

payload and towing capacities.

Their numbers are even more impressive, as you'll see on the following page.



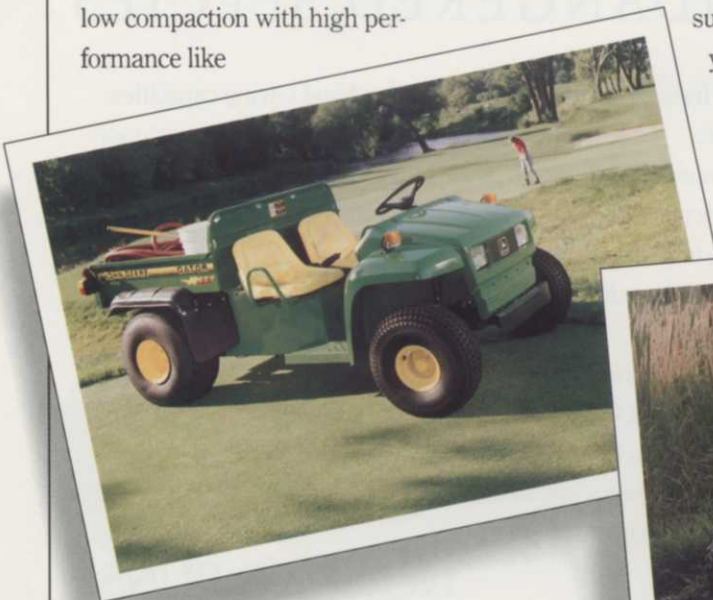
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Off-road or on-turf, the best of both worlds

Whether they're down on the farm, or just off the green, the Gator 6x4 and 4x2 are always within their element. No other utility vehicles combine low compaction with high performance like

these two do. And, when stability, durability, comfort, and ease of operation are considered, it's easy to see why the John Deere Gators are such a rare breed. Test drive one today at your local John Deere dealer.



4x2

6x4

Engine

Make
Type
Cylinders
Valving
Horsepower (SAE J1940)
Lubrication
Cooling system

KH1
4-cycle gas
1
Overhead valves
10
Full pressure
Air

KH1
4-cycle gas
2
Overhead valves
18
Full pressure
Liquid

Fuel system

Capacity

5.0 U.S. gal. (18.9 L)

5.0 U.S. gal. (18.9 L)

Transmission

Type
Differential lock
Ground speed
Transaxle
Brakes

Continuously variable transmission (CVT)
Standard; hand operated
0-15.5 mph (0-25 km/h)
Fully enclosed; oil bath
Wet-disk in transaxle

Continuously variable transmission (CVT)
Standard; hand operated
0-15.5 mph (0-25 km/h)
Fully enclosed; oil bath
Wet-disk in transaxle

Steering

Rack and pinion with Ackerman-type geometry

Rack and pinion with Ackerman-type geometry

Ground pressure, max.

With 200 lb. operator only
Fully loaded vehicle

5.6 psi (.39 kg/cm²)
7.5 psi (.53 kg/cm²)

6.9 psi (.49 kg/cm²)
7.1 psi (.50 kg/cm²)

Dimensions

Length (without bumper)
Length (with bumper)
Width
Height (overall)
Weight (incl. fuel/fluids)
Payload capacity (including 200 lb. operator)
Turn clearance circle

99.6 in. (253 cm)
100.2 in. (255 cm)
59.8 in. (152 cm)
43.6 in. (111 cm)
800 lb. (364 kg)
900 lb. (408 kg)
22 ft. (6.7 m)

103.9 in. (264 cm)
104.5 in. (266 cm)
59.8 in. (152 cm)
43.6 in. (111 cm)
1015 lb. (457 kg)
1200 lb. (544 kg)
24.8 ft. (7.6 m)

(Specifications and design subject to change without notice.)



**NOTHING RUNS
LIKE A DEERE®**





To replace larger areas, strip the top two inches of topsoil in April.

"The extent of damage depends on the amount of salt and the type of grass. Tall fescue tolerates high saline levels the best, followed by perennial ryegrass, fine fescue and Kentucky bluegrass," says Pound.

If an entire strip dies, replace the dead turf and top two inches of topsoil in April in Midwestern climates, says Pound. But if you're dealing with a Kentucky bluegrass lawn and only parts have turned yellow, green grass will eventually fill in the damaged areas.

Ryegrass won't fill in, so reseed in early

spring.

"The need for topsoil replacement is only there if you want to replace the turf immediately," Pound points out, noting that many landscape managers use a sod cutter for this task. It's best to get a handle on the situation by doing some checks in the dead of winter. "I encourage people to take some soil samples." With a test for soluble salts, a reading above 150 indicates a saline level capable of killing grass.

—The author is a freelance writer specializing in the green industry. He maintains his office in South Euclid, Ohio.



Tall fescue tolerates salt better than other turf.

Wildflower seeding: pick best method for your site

■ The goal of wildflower seeding is simple—an even distribution of seed with good seed-to-soil contact.

That's not always easy to do, however, because of the great variation in the size of wildflower seed. Some species produce seed smaller than a pinhead while others may be several times larger and of a different shape.

Even so, a landscape manager can seed many sites with either a manual or tractor-pulled cyclone spreader, spreading them with a blending agent like sand or vermiculite. Also, some suppliers coat their seeds to make them easier to distribute, with at least one supplier using multi-colored coating so that appli-



Soil on this site has been loosened and is relatively weed-free, a good start for wildflower establishment. (Photo courtesy American Seed Trade Association)

The same site weeks later shows the results of good soil preparation and effective seeding. (Photo courtesy American Seed Trade Association)



cators can, at a glance, see how effectively they're dispersing seed.

Larger seeding projects call for different seeding strategies. Craig Steffens with the Texas Highway Department says his department uses three methods to broadcast wildflower seeds:

1) The most effective and expensive method is with a drill-type seeder where a rip shank forms a groove in the soil, seeds are dropped, and then a culti-packer comes back over to assure good seed-to-soil contact.

2) Another method used by the Texas DOT is a piece of chainlink fence weighted down (with rocks or a railroad tie) and dragged
continued on page 34

Plan for winter in the summer

■ The best way to avoid getting plowed under by winter snow and ice removal is to think winter in summer. Consider the snow when planning the landscape.

In snowy climates, any landscape plan has to be checked to make sure it leaves places to pile snow. Failure to ponder this point can leave you with a mountain of problems come the following spring: dead ornamentals, damaged lawns and irate customers.

Dr. Bill Pound, Ohio State University: "Be careful about what you plant and where you plant it." A strip of mulch around landscaped edges can reduce costs if snowblower damage is a recurring problem among your customers.

Joseph Hudak, a Westwood, Mass. landscape architect: "Avoid brittle plants whenever possible. Day lilies are one of the least sensitive plants for abuse. They're used a great deal in Canada along highways where they salt things to death."

Trees alongside driveways need special attention. Plan or prune so that you avoid low-hanging horizontal branches when the plow comes.

"The more snow they have the more they will hang down. If you have branches that won't clear the cab, you won't have any branches."

If you or your clients use a snowblower, look out for those tight hedges. "You've got that barrier staring you and your snowblower right in the kisser." Snowplows, snowblowers and salt can bring damage to any type of plantings along driveways and sidewalks. A misguided plow blade can easily strip away big chunks of grass and anything else in its way.

John M. Bass, Lawn Master, Midvale, Utah: Pounding in stakes in the fall, and maintaining fallen ones throughout the winter, can also help reduce lawn and bed damage. "We'll go out and mark the curbs so when we're pushing snow we'll know where to push it to."

Phil Jorgenson, Tuff Turf, Merriam, Kansas: "The main thing is taking corners." It's great customer relations to repair any plow damage free of charge. It can be an excellent advantage to you when compared to other plowers, such as off-season construction contractors and the like, who are unable or unwilling to guarantee that the proper repairs will be made.

—J.E.G.

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Preemergent Herbicide.
It's tough against weeds,
gentle on ornamentals
and your budget.

Weed control is top priority with PENDULUM™ WDG herbicide. It's highly effective against most annual grasses and many broadleaf weeds, stopping them dead in their tracks as they germinate.

Yet there's a gentle side to PENDULUM, too. Its active ingredient, pendimethalin, makes it safe for labeled ornamentals. So you can spray over the top of established trees, shrubs, flowering bedding plants and ground covers.

Advantage To Over-The-Top Weed Control.



For added ease-of-use and convenience, PENDULUM now comes in a premeasured water-soluble package.

And when you get right down to it, PENDULUM costs less per treatment than Surflan¹ and other preemergents. The result? Top performance and a more beautiful bottom line.



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WDG herbicide

Good in beds.

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¹Trademark, Dow/Elanco

behind a tractor or pick-up truck over the area to be planted. This is usually done over existing vegetation, roughing up the area enough to allow seeds to get into the soil.

3) The least expensive, but also the least productive, of the three methods is the collection of wildflower hay from existing plantings. This is then re-distributed over the area to be planted. The germination rate of the wildflowers is generally low.

Wildflowers can also be planted with a hydroseeder or hydromulcher. Hydro-machines can seed slopes where it is impossible to use tractor-drawn seeders. Organic glues (tackifiers), when sprayed with the hay or straw mulch, help hold the seeds in place.

Some contractors have had trouble with small wildflower seed getting hung up in the machines or in the mulch itself. Consider doing the seeding and mulching in two steps, seeding first and mulching second, or increase the seeding rate for the wildflowers.

The combination of seed, water and mulch may allow you to extend the wildflower planting season. The mulch moder-

ates temperature variations, and protects new seedlings from summer's high temperatures.

There is no "right" or "wrong" method of establishing wildflowers. Each site will

be different and each situation will present its own challenge.

— Laura Martin, Wildflower Group, American Seed Trade Association.

Seeders just for wildflowers



J-Thom 42 Wildseeder: for large-scale wildflower seedlings.

■ The growing popularity of wildflowers spurs the development of specialized new seeding equipment.

The J-Thom 42 Wildseeder is a no-till drill seeder that can plant up to 14 varieties of wildflower seed in one pass and 100 seed

varieties at different applications, says its manufacturer. It's particularly suited for highway departments, commercial growers and research centers.

Contact: Wildseed, Incorporated, 1101 Campo Rosa Road, P.O. Box 308, Eagle Lake, Texas 77434. 409-234-7353.

The Truax Wildflower Seed Planters can be transported in the back of a pickup, and can be pulled onto a site with an ATV or garden tractor. Features on the two models (WF-24 and WF-32) include vertical row dividers to prevent sliding of seed when seeding on slopes, and both auger agitators and seed metering picker wheels in the fluffy box.

Contact: Truax, 3609 Vera Cruz Ave., No., Minneapolis, Minn. 55422. 612-537-6639.

Albright Seed Company
1482 Unit A Francis St.
Ontario, CA 91761

Applewood Seed Company
5380 Vivian St.
Arvada, CO 80002

Baldwin Seed Co. of Alaska
Box 3127
Kenai, AL 99611-3127

Bitterroot Native Growers
P.O. Box 566
Hamilton, MT (zip code?)
406/961-4702

Daehnfeldt
1100 Southeast Jackson St.
Albany, OR 97321
503-928-5868

Environmental Seed Producers
P.O. Box 2709
Lompoc, CA 93438
805/735-8888

Great Western Seed Co.
810 Jackson Street SE, PO Box
387
Albany, OR 97321
503-928-3100

LESCO, Inc.
20005 Lake Road
Rocky River, Ohio 44116
216/333-9250

Lofts Seed Inc.
Chimney Rock Road
PO Box 146
Boundbrook, NJ 08805
908/356-8700

McLaughlin's Seeds
Buttercup's Acre
Mead, WA 99021-0550
509/466-0230

Medalist America
1490 Industrial Way, SW,
Albany, OR 97321
503/926-0126

Northplan/Mountain Seed
PO Box 9107
Moscow, ID 83843
208/882-8040

Northrup-King
7500 Olson Memorial Highway
Golden Valley, MN 55427
800/445-0956

Pennington Seed
PO Box 290
Madison, GA 30650
404/342-1234

Turf-Seed, Inc.
PO Box 250
Hubbard, OR 97032
503-651-2130

SSS Seeds
PO Box 1275
Carpinteria, CA 93010
805/684-0436

Sharp Bros. Seed Co.
PO Box 140
Healy, KS 67850
316/398-2231

Stock Seed Farm
R.R. 1, Box 112
Murdock, NE 68450
402-867-3771

Vermont Wildflower Farm
Dept. BK, Route 7
Charlotte, VT 05445-0005
802/425-3500

Wildflower Carpet
1325 South Colorado Blvd.,
Suite 404, Denver, Colorado
80222
303/756-7943

Wildseed Farms, Inc.
PO Box 308
Eagle Lake, TX 77434
409/234-7353

Willamette Seed Co.
PO Box 791
Albany, OR 97321-0277
503/926-8883

Wind River Seed
Route 1, Box 97
Manderson, WY 82432
307/568-3325

Wildflower seed suppliers

Cactus Seed Company
50505 E. County First Street
Roll, AZ 85347
602/785-9605

Cenex Seed
PO Box 608, 951 Rundell Road
Gering, NE 69341
605-336-0623

Clyde Robin Seed Co.
3670 Enterprise Ave.
Hayward, CA 94545
415/785-9425

Jacklin Seed Co.
W 5300 Riverbend Ave.
Post Falls, ID 83854

Johnny's Selected Seeds
RFD 1, Box 2580
Albion, ME 04910

Jonathan Green
PO Box 326
Squankum-Yellowbrook Road
Farmingdale, NJ 07727
908/938-7007

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New Primo™ for turf growth management makes grass grow shorter, denser, greener, and healthier.

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What A Surprise When The Flower Beds Also Perked Up.

And it's amazing what gets done when a crew has even a few free days a month to do the little extra things. So if you've got areas on your course that you'd like to spend more



time on (while you spend less mowing tees, fairways, and roughs) try new Primo.

It can make virtually everything on your course look good. Especially you.

It Makes The Best Grass Even Better.

How and where to use geotextiles

■ Geotextiles control soil erosion in a variety of landscape settings:

- ✓ditches ✓slopes, ponds
- ✓acid slopes ✓storm channels
- ✓embankments ✓shorelines

Golf course applications include:

- ✓embankments ✓cart paths
- ✓bridges ✓fences
- ✓bunkers ✓greens

The primary purpose of geotextiles is to prevent soil erosion. They also save labor by requiring less repair to eroded land.

Most geotextile manufacturers tout the lightweight quality of their product. Weight is important. Most repair projects require multiple rolls of material.

Root reinforcement is another quality of the best geotextiles. The purpose here is to permit root growth, and provide an anchor for secure rooting.

Texture of erosion control products varies, from mesh-like to perforated polymers.

Unlike weed control fabrics, which allow no air or sunlight through, erosion control products allow seed germination. The materials' ability to retain or allow moisture to penetrate is the key to early establishment of grasses and the subsequent permanent control of erosion of newly-graded slopes and ditchlines. Post-winter seeding, if needed, can be applied through the matting.

Akzo Industrial Systems Company of Asheville, N.C., offers the following step-by-step instruction when using its Enkamat for lining a typical 8-foot side slope ditch:

1) Shape and compact the ditch to specifications and dress the site so it is free of rocks, soil clumps or large vehicle tracks. Cut side slope shelves and check slots.

2) Starting downstream, cut terminal



Phillips Fibers' Supac geotextile fabric separates sand from subsoil in bunkers, helps filtration and drainage, and provides structural stability.

slot and align the initial roll along the ditch center line. Stake into slot, then backfill. Roll the mat upstream over refilled terminal and stake. Progress upstream with peaked side down, working across the check slots and pinning with temporary stakes to maintain tension and alignment.

Tuck mat into slots and stake. Stretch mat about five percent before staking.

3) Side rolls should follow in staggered sequence behind the initial roll. Working outward from the ditch center line, overlap the first roll by four feet with another roll and lay it upslope onto the side slope shelf.

4) Proceeding upstream, stake overlaps and mat edges on side slope shelves at three-foot intervals.

5) Repeat steps 3 and 4 with the

remaining side slope roll.

6) If splicing a new roll is necessary, use three-foot overlaps and shingle downstream.

7) Secure the upstream roll ends in a terminal slot.

8) Back-fill and tamp soil into check slots and both upper and lower terminal slots.

9) Seed area.

The most important installation tip is that the material should be securely anchored to dry ground before seeding. Overlap should be approximately four feet, at three- to five-foot intervals.

Mats are usually secured by wooden stakes or metal or plastic staples that penetrate the soil about six inches.

—Terry McIver

WHERE TO FIND GEOTEXTILES

✓ **Advanced Drainage Systems, Inc.**, 3300 Riverside Dr., Columbus, OH 43221.
Circle No. 300 on Reader Inquiry Card

✓ **Akzo Industrial Systems Co.**, P.O. Box 7249, Asheville, NC 28802; (704) 258-5050.
Circle No. 301 on Reader Inquiry Card

✓ **Contech Construction Products, Inc.**, P.O. Box 800, Middletown, OH 45042; (513) 425-5896; makers of Eromat, a clean, weed-free, knitted straw blanket.
Circle No. 302 on Reader Inquiry Card

✓ **Environmental Protection, Inc.**, P.O. Box 333 Mancelona, MI 49659.
Circle No. 303 on Reader Inquiry Card

✓ **Greensia International, Inc.**, 3807 Wilshire Blvd., Suite 1118, Los Angeles, CA 90010; (213) 382-7070; makers of Greensia seeded fabric.
Circle No. 304 on Reader Inquiry Card

✓ **Phillips Fibers Corp.**, P.O. Box 66, Greenville, SC 29602-0066; (502) 583-6591.
Circle No. 305 on Reader Inquiry Card

✓ **Reemay, Inc.**, 70 Old Hickory Blvd., Old Hickory, TN 37214.
Circle No. 306 on Reader Inquiry Card

✓ **Research Products Corp.**, P.O. Box 1467, Madison, WI 53701; (800) 334-6011; Earth-Gard temporary erosion control blankets.
Circle No. 307 on Reader Inquiry Card

✓ **Synthetic Industries, Inc.**, Construction Products; 4019 Industry Dr., Chattanooga TN 37416; (800) 621-0444; Landlok erosion mats.
Circle No. 308 on Reader Inquiry Card

BIOTURF NEWS

'Total System' for turf based on balance between organics and cultural practices

Canadian company shows clients that results of organic turf care programs are worth the wait.

■ It's got to make the skeptics sit up and take notice.

A 25-year-old company reduces chemical pesticide and synthetic fertilizer use by 80 percent for a majority of its 4000 customers using a fish-based fertilizer.

Is it because John Edmonds' company is in Halifax, Nova Scotia? Is the turf that much different up there?

Nope. Edmonds Landscape and Construction Services, Ltd.—run by John and his brother Roger—says it has made a success of organics by way of thorough education, patient customers and an effective fertilizer.

Edmonds' conversion to organic turf care began in 1989 when it developed its "Organic Pro Lawn, Earth, Tree and Shrub Care" programs. Employee training came first, followed by customer initiation.

"After demonstrating that organic soil management practices were more advantageous to the landscape in the long term," says Edmonds, "clients gradually began realizing that synthetic pesticides

and fertilizers were an unnecessary step in the landscape management process."

The secret: build up a healthy topsoil and let the natural soil biology do its thing. Some properties are now in the third year of the organic program, and, according to Edmonds, none of the properties is showing any strain. There's less chemical leaching, less thatch buildup, and better disease/insect/drought resistance.

John Edmonds, left, and biology professor David Patriquin are studying the fertility and soil-building properties of different compost materials.



Find the right formula—The next major step was to hit on a product that worked. Edmonds collaborated with National Sea Products, Ltd., to produce SeaGreen 7-7-7 fish-based fertilizer. NSP

now sells SeaGreen across the country. The company also continues to research the efficacy of various other organic fertilizers. Organics expert, Dr. David Patriquin, and the Edmonds staff are also researching the viability of using spent brewery grain as an organic soil amendment.

Current experiments involve the use of white clover seed in lawn mixes to fix atmospheric nitrogen into usable plant nutrients. (see sidebar).

An Integrated Pest Management system relies on pest identification and population monitoring to best determine the proper control method to use, and when. Proper soil conditions such as drainage, fertility, pH and soil structure are all key components.



The grounds around Summer Gardens, a Halifax condominium complex, show the results of the SeaGreen program.

IN THIS ISSUE

Healthy soil's the key to successful synthetic programs
Organic program in practice at Idaho golf course
Listing of biorational pesticides

TOTAL SYSTEM RESEARCH

■ John Edmonds' "Total System Organic Management" focuses on turf care in the urban/suburban environment by using "specific management strategies and products to create ecologically healthy environments at relatively low costs."

One part of the company's research is taking place on turf plots established on the grounds of "The Oaks" at St. Mary's University in May of 1992. Laboratory, greenhouse, growth chamber and outdoor lysimeter experiments are also being conducted at Dalhousie University. The Oaks plots were established on two soil types, one a newly-imported topsoil and others on severely degraded soil.

Locally available waste products are being compared with synthetic NPK fertilizer treatments and control plots using no soil amendments. The waste products tested include:

- an agricultural compost;
- unprocessed brewery waste;
- SeaGreen fish byproducts;
- three grass mixes, including a custom "Ecomix"; an off-the-shelf mix; and a mix of two tall fescues, one with clover, and one without clover;
- rock-phosphate in the "no-clover" mixes.

Greenness was assessed visually, and by chlorophyll measurements using a Minolta chlorophyll meter.

Greenness was found to be roughly proportional to the total nutrient applications. In July and August, the control plots were darkest green on the better field, and the brewery waste and Seagreen plots were darkest on the field of degraded soil.

According to the Edmonds report, results showed that it is possible to achieve sustained high quality of turfs with organic management, and that it is important not to over- or under-fertilize, and to select mixes for organic use.

Similar intensive tests have been conducted for chinch bug control and weed control. To obtain a copy of the company's Greenfacts Special Research Edition, contact Edmonds Landscape and Construction Services, 2675 Clifton St., Halifax, N.S. B3K 4V4; or fax your request to (902) 455-9956.

"Some of our high-profile properties haven't had any chemicals applied on them for two years," says Edmonds, "and chinch bugs are not a problem. That's not the case for chemically-treated lawns." A

\$5 million company, Edmonds Landscape and Construction Services was awarded the Canada Award for Business Excellence in 1991 for what was viewed as a valuable, death-defying—and apparently success-

ful—business feat.

A composting program began last year. Backyard composters are given free to regular landscape maintenance clients.

—Terry McIver

Healthy soil the key to turf care science

Biological soil management may be the 'missing link' in making IPM programs work.

by Joel Simmons,
EarthWorks, Inc.

■ Man's survival has always depended on his ability to work the land.

As man became more civilized, so did his skills at agriculture and horticulture and his understanding of the importance

of proper soil management. Today, many farmers, fruit growers and turf managers are re-evaluating the importance of the soil and gaining an understanding for the concepts of biological soil management.

Rediscover the basics—Biological soil management is based on solid agronomic principles that date back decades, if not centuries. Dr. William Albrecht, the former head of agronomy at the University of Missouri, wrote in the late 50s and early 60s of the importance of maintaining a healthy soil. Today, the agriculture industry is making major changes in its outlook toward the importance of soils, as farmers continue to lose

topsoil at alarming rates.

The practice of eco-agriculture is being led by government and universities in the U.S. and the world over.

Many in the turf industry are starting to realize the advantages of natural programming. An effective program depends on an understanding of the agronomic principles behind biological soil management.

For years now, we have been focusing on plant growth, and have ignored the soil. We must build a healthy soil first, which allows for ample nutrition, and a healthier plant.

The principles—There are four basic agronomic principles that have to be considered to build a healthy soil. Those are, in descending order of importance:

- air management;
- water management;
- decay management; and
- nutrient management.



**Simmons:
use
synthetics
after soil
biology
problems are
solved.**

characteristics.

Water: easy to waste—Water management addresses the problems of too much or too little water availability. Too much water creates an anaerobic environment, which depletes oxygen from the soil, and affects microbial activity and nutrient release. Too little water can produce the same results: poor microbial viability and limited nutrient uptake. Again, soil structure will have a significant effect on water mobility. A richly organic soil will provide both the pore space to allow water to drain through, and the sponging properties that will hold water.

From decay comes life—Decay management is a concept that few of us understand, but it is here that more of our focus should be placed, because it is here that biological soil management has its greatest impact.

The soil's micro-organisms decompose the organic compounds which release plant available nutrients. Humus is the final phase of decomposition that includes the use of organic matter, synthetic and natural plant foods and the remains of soil organisms themselves. It provides a significant buffering effect for excess moisture, temperature, acidity, alkalinity and salts. This reduces plant stress and increases insect, disease and weed tolerance.

Air and water mobility must be available for sustainable microbial activity. Soil micro-organisms need very much the same kind of environment that we need: air, water and nourishment. Nourishment

for soil microbes is supplied by organic matter: carbohydrates, sugars, proteins, vitamins and minerals, just to name a few.

Plant foods vary—Without proper microbial activity, synthetic nutrients are not mobilized and assimilated to plants.

As one example of microbial involvement in plant food availability, the urea molecule is transformed to nitrate, one of the forms that plants can utilize, due to the urease enzymes that are produced by these organisms. To generate these enzymes, energy from soil-available carbohydrates is necessary (humus).

Lime—which is simply calcium and/or magnesium carbonates—is often ignored as an important element.

Adjusting pH is critical because most soil organisms thrive in a limited range of acidi-

ty or alkalinity. Perhaps even more important is the need to provide calcium—and a smaller percentage of magnesium—as primary plant foods for soil microbes and landscape material. Calcium/magnesium content and ratios in the soil are also essential for building soil structure because of the valence or electrical attraction that exists between soil colloids and these two nutrients.

The over-use of synthetic fertilizers eventually destroys soil aggregates due to excessive salt accumulation. Simple and complex carbohydrates found in humus are oxidized or broken down, and used as an energy source in order to accommodate overloads of non-protein nitrogen. As the soils die, air space or granulation is reduced, creating compaction.

Compacted, low oxygen soil no longer retain moisture or support adequate life forms to stimulate digestion. The interdependent cycle has been ruptured, plant stress leading to insect and disease pressure has begun and subsequent "rescue chemistry," in the form of pesticides, is needed. The soil and the plants become dependent on chemicals, like plant in a hydroponic medium.

Formula for success—"Biologically friendly," turf care programs improve the soil structure with organic matter: compost, natural organic fertilizers or even grass clippings.

When synthetic products are used, proper IPM practices should be followed. Biological soil management will greatly enhance IPM and may be the "missing link" in truly making IPM work. Use those synthetic fertilizers that have the least harmful effect on the soil.

For example,

- use fertilizers with lower salt indexes. Chlorine, found in some plant foods, is very detrimental to microbial life;

- increase the amount of organic matter allows for a reduction in total nitrogen for the year;

- consider natural organic-based bridge products;

- use less reactive sources of phosphorus such as colloidal/rock phosphates.

With these four agronomic principles in mind, you'll get the most out of the soil. There will be more available nutrients, less plant stress and less dependence on pesticides.

—Joel Simmons is president of *Earth Works Natural Lawn & Garden Care, Inc.*, Martins Creek, Pa.

The relationship between these four principles is significant. Without good air management, the other three cannot produce healthy soil. If water management is not up to par, proper air, decay and nutrient management is difficult. Most of us in the business of growing plants have over-emphasized the focus of nutrient management (i.e. fertilization) without considering the interdependence that exists among air, moisture, decay and fertility.

A program that keeps all four of these principles in mind assures you of good results; lessens plant stress; and reduces the need for pesticides. This may sound simplistic, but it works.

Unfortunately, our industry is focused on products that are designed to manage nutrients, often at the expense of air, water and decay management.

The breathing soil—Air management insures that there is ample oxygen in the soil. Soil compaction strangles air movement and depletes oxygen availability. A well-balanced turf program must first address compaction. Too often, this is done by aeration or top-dressing, short term treatments which ignore the fundamental causes of the problem.

Usually, the soil needs to be physically changed by adding composts, natural /organic fertilizers or other organic materials.

These can be worked in over time, or in combination with aeration. Managing oxygen in the soil also requires the proper ratios of cations (positively-charged nutrients) and anions (negatively-charged nutrients).

Measurable imbalances, due to either excesses or deficits of particular plant foods, will cause the soil to take on adhesive

Build up a healthy soil to allow for ample nutrition and a healthier plant.

Organic program mix shows results on Idaho golf course

The organic turf care program at Stoneridge Golf Club started slowly, but positive results were soon evident.

by Dan Eskelson,
Clearwater Landscapes, Inc.

■ In an effort to achieve a high level of environmental compliance and responsibility, Stoneridge Golf Club, Priest River, Ida., began utilizing integrated pest management (IPM) strategies 1988.

The season of 1991 brought to fruition some of our endeavors at Stoneridge, when three distinct disease occurrences were successfully controlled without the use of synthetic fungicides.

The following definition of IPM, selected from several we have seen, best exemplifies our approach:

"...a decision-making process for determining *if* you need pest suppression treatments, when you need them, where you need them and what strategy and mix of tactics to use. In IPM, treatments are not made according to a predetermined calendar. They are made only when and where

monitoring has indicated that the pest will cause unacceptable economic, medical or aesthetic damage. Treatments are chosen and timed to be most effective and least disruptive to natural mortality factors."

Stoneridge Golf Club:

- Lies in a Northern Idaho mountain valley at an elevation of 2500 feet;
- Native trees include red and white firs, western larch, ponderosa pine and hawthorne.
- Soils range from coarse sand and gravel to heavy silt loams.
- The greens mix is a shallow hodgepodge of different sands and silt, with plenty of fist-sized rocks.
- Penncross creeping bentgrass predominates the greens at about 95 percent.
- Symptoms of take-all patch, Ophiobolus patch, leaf spot and Fusarium blight are some common diseases in our area. The existence of those pathogens and possibly others resulted in the regular, preventive use of various contact and systemic fungicides until late in the 1988 season.

At this time, during my first year at Stoneridge, I began to investigate the underlying causes of seemingly endless disease problems. Soils were found to be distinctly layered at a depth of three inches. An anaerobic black layer was present on two of the greens.

IPM in practice— The following season a cultural program was implemented on four putting greens. This involved the use of natural organic fertilizers and a biostimulant (made by a cold temperature extraction process from 15 different sea plants.) The greens chosen varied from being traditionally healthy to highly disease prone.

The slow process of improving soil microbial activity and increasing plant vigor involved considerable faith and patience on everyone's part, but well before the end of the season, noticeably positive results were obtained:

- Disease incidence remained about the same, severity was definitely reduced;
- Recovery from disease damage after curative fungicide application was more rapid than it had been on control greens.
- Color was acceptable, but not as verdant as on those that were still on the traditional fertilizer program.
- Clipping yield was markedly reduced, with no loss of shoot density.

All greens were placed on this program in 1990 with one variation. Due to extreme cool spring soil temperatures and resultant lack of microbial activity, one application of a synthetic organic greens fertilizer at 0.5 lb. N/1000 sq. ft. was applied to initiate early growth and color.

Our natural nitrogen was supplied from a commercial natural organic, composts and fish emulsion at 3.0 lb. N/1000 sq. ft./year.

Potassium was supplied by the previous materials, sea plant extract and biannual application of sulfur-coated sulfate of potash to approximate a 1:1 NK ratio. Phosphorus was supplied by bone meal, applied at .75 lbs./1000 sq. ft., well in advance of any reseeding efforts.

Balanced top growth—with no surges—has produced reliable and predictable putting surfaces. Reduced clipping yield has saved greensmowing time. With regular foliar sprays of liquid compost and fish emulsion, color has equaled or surpassed that produced by synthetic fertilizers.

Suppressing disease naturally—Our first experiments with natural disease suppressants were promising but not totally effective. Fairly high rates of sea plant extract (7 oz./M) and a natural enzyme product were applied to control take-all patch at seven-day intervals. The disease was arrested but recovery was slow.

The addition of "compost soup" (see sidebar) increased the program's effective-



A diseased section of the first green at Stoneridge was aerated with 3/8-inch solid tines, and the holes filled with screened compost. Symptoms were gone in a week.

ness immensely. I had learned about it through research at the University of Bonn's Institute of Plant Diseases in Germany. A compost soup mixture was being used there to control non-turf-grass diseases such as Phytophthora, Botrytis and other fungal diseases. Apparently, active ingredients in the compost do not actually kill fungi but prevent them from colonizing plants.

Thatch reduction— I believe that regular use of sea plant extract and natural organics has helped us maintain the bentgrass thatch layer at one-quarter inch or less, without regular sand topdressing.

Although sand topdressing has been a time-tested, effective method of thatch control for many, we found that we could invariably count on disease stress soon after the completion of this process at

Stoneridge.

We decided to try using screened compost as a topdressing. It involves just slightly more brushing and clean-up time than with sand. To counter graining, we regularly brush with a home-built tool just prior to mowing.

Costs a bit more— In terms of the cost effectiveness of our IPM program, we have had to consider several factors. First, commercial natural organics are slightly higher in cost than high-quality synthetics.

The slow, even release of the natural organics, however, has allowed us to reduce our synthetic fertilizer program by almost 50 percent.

The large savings here are only partially offset by the purchase of biostimulants. Fish emulsion costs less than \$50 per year for regular foliar application to greens.

For topdressing after green aeration, cost was more than one-third greater

than it would have been with local sands. This extra cost was offset by the fact that we did not use fungicides during the 1992 season.

—Reprinted in part with permission of Golf Course Management magazine.

Ed. note: Ken Eskelson is now owner of Clearwater Landscapes, Inc., Priest River, Idaho.

"Please understand I am not 'anti-chemical' (whatever that means)," wrote Eskelson to Bioturf News. "I do believe, and have learned from experience, that a healthy soil will produce healthy plants, requiring few, if any, curative inputs. This is not always possible (i.e. putting greens stressed by mowing heights of 1/8-inch.) I feel it important to work for cultural systems with as few synthetic inputs as possible."

Specific products used by Eskelson at Stoneridge included Ringer Greens Restore fertilizer; Emerald Isle Pana Sea and Pana Sea Plus sea plant extracts; Safer's insecticidal soap; and Dipel Bacillus thuringiensis for webworms, cutworms, tent caterpillars, etc.

The 10,000 annuals at the course receive fish emulsion and sea plant extract in the beginning in the seedling stage.

RECIPE FOR COMPOST SOUP

■ Here's Dan Eskelson's recipe for the compost soup used for disease prevention. The base is produced in Missoula, Mont., from digested sewage sludge and wood wastes (sawdust, wood chips and finely shredded bark.).

The aerated piles must first reach temperatures of 170° F and higher, to destroy any harmful bacteria or weed seeds that may be present.

- 1) Fill burlap sacks and suspend them in large plastic trash barrels filled with water.
- 2) Brew for 10 to 14 days
- 3) Strain directly into spray tank. Use a nylon stocking as a strainer to prevent clogged spray nozzles.
- 4) A 40:60 soup-to-water ratio worked at Stoneridge. In the event of increased disease severity, experiment with a stronger mix.
- 5) Mix about 40 gallons of soup with 60 gallons of water in a 100-gallon spray tank.
- 6) Sea plant extract and fish emulsion are usually added.

Yield: 100 gallons covers 50,000 square feet of golf greens.

Cost: one man hour/week plus \$45 per year for the commercial product. The compost is purchased in bulk and is relatively inexpensive. Still, it is the program's costliest IPM-related item.

Ecogen moves forward on nematode research

■ Ecogen Australia Pty. Ltd. has established a cross-licensing agreement with the Commonwealth Scientific and Industrial Research Organization of Australia (CSIRO). CSIRO's Division of Entomology is a worldwide leader insecticidal research.

Under terms of the agreement, Ecogen gets co-exclusive rights to patents which CSIRO holds in insecticidal nematode fermentation, formulation and production

processes. CSIRO receives co-exclusive rights to Ecogen Australia nematode formulation patents.

Insecticidal nematodes are microscopic roundworms that seek out and attack insect larvae either in the ground or in plant stems.

Since 90 percent of all insects live in soil during some part of their lifecycle, there is a substantial opportunity in the nematode-based biopesticide market for Ecogen's products.

Ecogen has been involved in nematode

research since March of 1992, when it acquired the bio-insecticide business of Bioenterprises Pty Ltd. of Australia and created Ecogen Australia.

The newly-formed company develops and commercializes biopesticides using nematodes.

In addition to the cross-licensing agreement, Ecogen and CSIRO are entering into discussions to identify areas of potential cooperation in research and development, including insecticidal nematodes and insect attractants and pheromones.

PRODUCTS

THE BIORATIONAL ARSENAL

■ *The following is a list of those biorational pesticides available to the landscape, golf and lawn care industries. Some, it should be remembered, are harmful to beneficial and non-target organisms. Use those products with caution.*

Bacillus thuringiensis is a bacterial pathogen for the control of many worms and caterpillars. The bacteria has no effect on humans, other vertebrates plants or other insects other than the larval stage of moths and butterflies.

Soaps can be effective on spider mites and soft-bodied insects such as aphids, mealybugs and whiteflies.

Potassium soap sprays, such as insecticidal soap are more effective than household soaps when three tablespoons are mixed in one gallon of water. Some plants may be susceptible to soaps. Test spray a few leaves and wait three to five days to spot burn.

Horticultural oils are effective controls for a few difficult pests like scales. The oil simply coats the insect and suffocates it. Oils can burn plants if applied during unfavorable temperatures

Some of the new highly-refined oils show less burn potential. Vegetable oils have been reported to control some insects.

The **Neem** tree is the source of Azadirachtin. It is a growth regulator, anti-feedant and repellent. It is not labeled for edible crops. It controls many insects, but may be hazardous to fish and aquatic organisms.

Nicotine is an alkaloid found in the

leaves of many species of plants, but is usually obtained commercially from tobacco. Relatively non-toxic to beneficial organisms, birds and bees. It is toxic to humans and should be handled with care. It biodegrades rapidly with little residual affect. Trade name: Black Leaf 40.

Cosmos lacustac is a biological grasshopper control agent. A naturally-occurring disease protozoa formulate on a bran bait. consumption drops within 10 days, but grasshoppers live for more than 22 days. Effective against the American grasshopper, and most others, but no the Lubber grasshoppers.

Diatomaceous earth is a talc-like powder made from the silica remains of a class of marine algae.

Will also kill beneficial insects, such as bees and parasitic wasps. Not effective in humid weather.

Quassia is made from the bark of a Latin American tree; it kills aphids, sawflies and caterpillars.

Rotenone is a botanical insecticide which controls many species of insects including external parasites of animals like fleas and ticks. It is harmless to warm-blooded animals, but will kill beneficial insects and fish. Short lived, so repeat applications are needed.

Ryania is derived from the ryania shrub of South America. Reportedly safe to humans and other warm-blooded animals. Effective against worms, but is short lived. Is usually combined with rotenone and pyrethrum; sold as Triple Plus and R-50.

Sabadilla is made from the ground seeds of the sabadilla lily. It's reported to control a broad range of insect pests. It too is short lived, as are most botanical insecticides. Sabadilla dust and seed irritates the mucous membranes of humans and is toxic to honeybees.

Pyrethrum is made from the pyrethrum flower. It will control a vast array of insects pests. It is described as relatively non-toxic to ladybeetle larvae and honeybees. It is readily metabolized by warm-blooded organisms without lasting ill-effects. Some commercial products also contain non-natural ingredients. Pyrethroids are synthetic pyrethrins, which have longer lasting residues.

Beneficial nematodes attack cutworms, mole crickets, beetle larvae, wireworms and sod webworms, as well as other soil dwelling insects. A symbiotic bacteria inside the nematode parasitizes and kills pests within 48 hours. Beneficial nematodes are labeled for lawns, gardens and houseplants.

Commercially available nematodes include BioSafe, Scanmask and some improved strains.

Sticky traps, such as Tanglefoot and Stickem, are found at garden centers. A home made trap can be made with a shallow tray filled with beer and flour.

Apply at the trunk of plants. It can also be applied to yellow poster-board squares which are hung or placed near plants. Insect in the sticky trap.

Source: Newsletter of the Florida Landscape Maintenance Association, January 1993.

PRODUCTS

Product converts thatch to nourishing humus

Thatch Biodigest from Springfield, Virg.-based Envirogenesis, is described as a powerful collection of bacteria strains that aggressively break down thatch and convert it to humus.

The objective of biological thatch control is to accelerate the process of thatch decomposition. In a test conducted by the University of California at Edgewood Tahoe Golf Course, 300 Kentucky bluegrass and creeping bentgrass plugs were pulled and measured. Thatch levels extended three inches below the surface.

Six weekly treatments of Thatch Biodigest resulted in a 53 percent thatch reduction six months later. According to the company, its biotechnology concentrates naturally-occurring microorganisms to a level thousands of times greater than that normally found in nature. This results in a super-accelerated breakdown of thatch into humus.

Envirogenesis says Thatch Biodigest increases turf disease resistance and restores turf to a balanced ecosystem.

Circle No. 221 on Reader Inquiry Card

Biostimulants made to enhance plant growth

Damaged or stressed turf and landscape plants, or establishing turf and ornamentals can now be treated with applications of CytoGro and CytoFe, two new biostimulants from Plant BioTech, Inc., of Corrales, NM.

CytoGro is an EPA-registered hormone biostimulant designed to enhance the natural growth of grasses. CytoFe is a mix of CytoGro and 5 percent chelated iron, to promote root growth and green up.

PBT says that an early spring application will promote tiller, rhizome or stolon growth, and help develop a deep root system to give the turf a rapid start after winter. Newly-emerged seedlings sprayed with CytoGro will speed establishment and increase canopy development.

Research by Dr. Dick Schmitt of Virginia Polytechnic Institute has shown that CytoGro applied to bluegrass and other turf will relieve stress from irrigating with saline water by stimulating new root development and root system saline tolerance.

Circle No. 222 on Reader Inquiry Card

Grace, PJ Margo open neem processing plant

W.R. Grace & Co and PJ Margo Privat Limited of Karnataka, India, recently began what is being called the world's first commercial-scale facility to produce neem-based biopesticides.

Initial capacity of the plant is 20 tons of neem seed per day, according to Grace, which has provided the process technology for the project and will purchase product from the plant.

Extracts from the Indian neem tree include the biopesticide azadirachtin, which attacks and controls more than 200 types of insect pests as well as some species of mites and nematodes.

The neem-based extracts are harmless to birds, mammals and beneficial insects such as bees.

Grace-Sierra its neem-based biopesticides to horticulturists under the trademark Margosan-O. The biopesticide is also marketed under license from Grace through the Minneapolis-based Ringer Corp. to consumers under the trademark BioNeem.

Circle No. 223 on Reader Inquiry Card

LETTERS

■ Thank you for this added service! We want to keep an open mind about all products on the market, but at this time we see no need to make any changes.

We offer a non-pesticide program for both turf and ornamentals, but of over 1000 customers, only 15 or so want it; of those 15 there is a heavy turnover since the average time they can stand weeds or insects is the time it takes their neighbor's lawn to look better than theirs! Thanks for keeping us informed.

—Jon Hart, Greenturf, Gaithersburg, Md

■ How nice to find someone who thinks biologicals are for real.

I have controlled algae in my lakes for the past three years with microbes.

We have also applied microbes to our greens for disease control. And yes, it did take a very long time to show results. I have not applied a fungicide to our greens since July 20, 1992. The sad fact is that we can not prove that the microbes are reduc-

ing disease incidence. Good luck!

—Don Parsons, Old Ranch C.C., Seal Beach, Calif.

■ I have been in the lawn care business for eight years. The handwriting is definitely on the wall. If the industry is going to survive and grow, more natural products must be used, and applications will have to be "risk free," or nearly so.

I'm very pleased you're doing your part by providing more information.

—Jim Tiller, DeYoung Landscape Services, Grand Junction, Mich.

■ Thank you for "Bioturf News." Presently, I don't offer any "environmentally friendly" pest control. I've investigated some products and found they just wouldn't fit into my service line. I am interested in bio-control products and hope I can use them in the future. Please put me on your subscribers list.

—Steve Candelori, Specialized Landscape Services, Pittsboro, NC.

BIOTURF NEWS

For the professional landscaper, lawn care operator and golf course superintendent interested in learning more about how organic turf care can supplement existing chemical control.

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BIOTURF NEWS



For the Latest Developments in Biological, Organic and Natural Turf Care!

With our October premier publication of *Bioturf News*, we at *LANDSCAPE MANAGEMENT* magazine continued our commitment to give you the best possible coverage of green industry happenings.

Bioturf News is our new, bi-monthly review of current research and development in "biological, organic and natural" turf care. In 1993, it will exist independently of *LANDSCAPE MANAGEMENT*.

Some alternative turf care products can't be ignored.

Independent University research has determined them to be viable forms of insect, weed and disease control.

Many of our readers have also formed opinions of biological and

organic products.

Some say biological and organic products are too expensive and take too long to show results.

Others believe customers should have a choice. And still others are probably wondering what all the excitement's about.

Our job, as an industry information source, is not to tell you what to think, but to simply relay the information to you—as soon as we can and in the best way possible—and let you take it from there.

There are two sides to every story. Your opinions count, and we want to know what you think of these products. Have you tried alternative turf care products? If so, what were the results?

To make *Bioturf News* the most useful green industry news source it can be, we will always welcome your questions and comments.



Jon Miducki
Publisher



Terry McIver
Editor



Bioturf News will be a bi-monthly newsletter reporting on biological, organic and natural products for the specialty turf market. But you have to subscribe in order to receive it. To receive your free, one-year subscription, please return the coupon below to:

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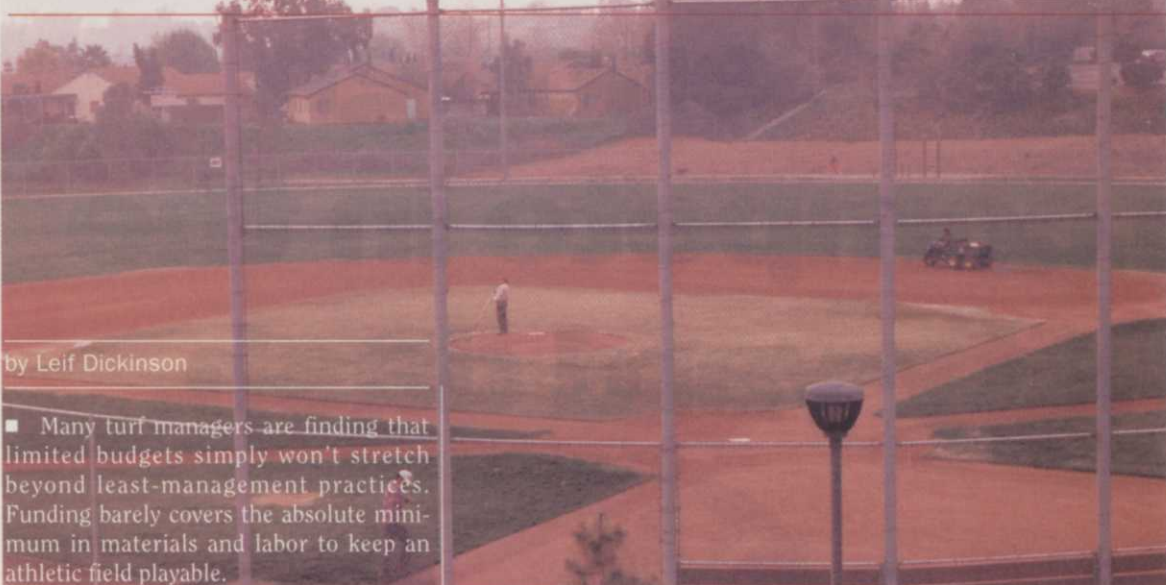


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'Least management' methods for neighborhood fields

Small towns, high schools or community colleges may need a little help from their friends.



by Leif Dickinson

■ Many turf managers are finding that limited budgets simply won't stretch beyond least-management practices. Funding barely covers the absolute minimum in materials and labor to keep an athletic field playable.

Because there's a growing awareness of injury liability, turf supervisors are trying new plans and practices. Still, fields used for unsupervised play receive little attention. Care beyond basic mowing and occasional fertilization depends entirely on what funds are budgeted and how much volunteer help can be recruited.

Personnel—Team players and other volunteers can perform much pre-game preparation work with proper supervision like normal maintenance crews, or even savvy coaches.

On the high school and community college level, coaching staffs and players can establish playing standards by the amount of their cooperation. Often, an unwritten agreement can be made where the team is expected to handle the day-to-day and pre-game tasks, while the maintenance staff handles the more technical procedures and those involving power equipment.

At the other end of the scale, it's not uncommon to have as few as two people in charge of an entire 40-acre park, including baseball, softball, soccer and football facilities. Even when staffs are larger, these people have little time for fine-tuning playing fields. Little League

and senior league supporters pitch in to bring the quality of the fields up.

Frequently, the spearhead of a volunteer-assisted municipal program is a local business person with a love of sports but little turf experience. By working closely with such willing volunteers, turf managers have been able to achieve results far better than least-management budgets would allow.

Infields—It's important on low-maintenance fields to find a workable infield mix. In southern California, most such fields use 60 percent clay and 40 percent brick dust for the mound and home plate. The rest of the infield is a mix of 60 percent brick dust and 40 percent clay.

The infield may be composed of 100 percent skinned area in little-used and low-budget fields. Warning tracks also may be skinned surfaces.

Scarifiers are frequently low budget, ranging from nail drag on up. For example, the excellent program put together by Jeff Barnes at Red Hill Field in Rancho Cucamonga, Calif., uses a scarifier with a straight blade and weights, set up with a double-bar pull chain. Lug bolts can be

set from ½-inch to 2½ inches deep to scarify or rip up the field as needed. Weights are added to adjust the depth. Lug bolts are used for ripping two or three times per year because of heavy use.

At most lower-budget fields, scarifying is done on an as-needed basis. The brick dust mix is worked to a depth of ¼ to ½-inch before a game or series.

If mechanical equipment is available for infield preparation, crews start in the center and work to the perimeter, avoiding the mound, bases and batter's box. These sections are raked by hand.

Landscape rakes are used to level the surface after scarification, and the area is watered lightly.

The field can then be marked as the budget permits. In most cases, chalk is used to denote the batter's box and baselines. The outfield is painted only if funds allow. Often, special chalking and painting is budgeted only for special tournaments or major games.

Cultural practices—Many fields are heavily scheduled. To manage wet weather situations, a portion of the budget may be invested in products such as

Scarifiers, like the kinds used at Red Hill Field in Rancho Cucamonga, Calif., are frequently low budget.

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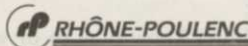
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Circle No. 145 on Reader Inquiry Card

'LEAST MANAGEMENT TIPS'

CONSIDERATION	NORMAL MANAGEMENT	'LEAST MANAGEMENT'
Scarification	2 to 3 times per year	as needed
Mowing	twice a week	once a week
Edging	once a month	twice a year
Irrigation	supplemental	supplemental
Fertilization	spring, summer, fall	spring, fall
Overseeding	late fall	none (heavy fall fertilization)
Weed Control	pre-/post-emergence herbicides	pre-emergence herbicides
Insect/Disease Control	as needed	none
Aeration	2 to 3 times per year	as needed for compaction

Source: the author

Diamond-Dry, which can be raked into the infield mix to bring a too-wet field into playable condition.

Mowing frequency is determined by budget. Though most turf managers can't devote time to creating a striping pattern in the grass, all alter directions with each mowing to maintain a cleaner cut.

Where funds are available, the infield and skinned areas receive some type of supplemental irrigation. Even the money-strapped facilities have found that it's more costly to rebuild a turf field than to keep it alive by watering.

Soil testing once a year for pH and fertility levels is a wise budgetary move. The test results help tailor fertilization programs to specific needs, possibly cutting

Even the money-strapped facilities have found that it's more costly to rebuild a turf field than to keep it alive by watering.

fertility needs.

The optimum time to verticut and dethatch bermudagrass is during the playing season, which is advantageous for the turf but not good for the playing schedule. A compromise is often made, tackling these procedures only as neces-

sary, and timing them as late in the season as possible, but early enough so the grass is still actively growing. Fertilizer is a big variable in maintenance programs. Turf managers with smaller budgets use the slow-release fertilizer products to stretch fertilization benefits over a longer period.

—Leif Dickinson is assistant turf course superintendent for the Los Angeles Turf Club and Santa Anita Park. He is a graduate of the University of Maine, completing the program in horticulture and sports turf management at Mount San Antonio College, and a member of the Sports Turf Managers Association. He extends special thanks to Merton Johnson and Jeff Barnes for their assistance.

Use customer complaints to secure company loyalty

■ If one of your customers—whether he be a landscape client, a member of the golf course, a citizen using one of your athletic fields—has a complaint, you have a tremendous opportunity to build customer loyalty, but it depends on how you choose to satisfy that complaint.

A survey by the U.S. Office of Consumer Affairs shows that whenever customer complaints are successfully resolved, 73 percent of the complainers would return to buy that product or ser-

vice again.

Conversely, when customers had minor problems but did not complain, nearly 67 percent would not buy the same product or service again. The three reasons mentioned most often for not complaining were:

- Customers felt complaining wasn't worth their time and effort
- They believed complaining wouldn't do any good;
- They didn't know how to or where

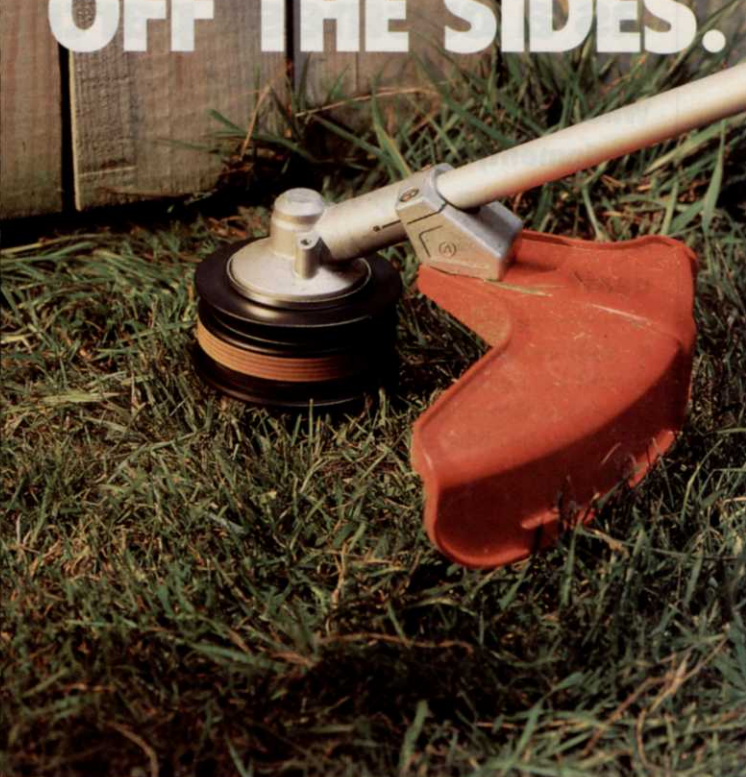
to address complaints.

To handle complaints successfully, and better insure customer loyalty, you should:

- 1) Listen to the customer's entire complaint. Don't interrupt; let them say all that's on their minds;
- 2) Sympathize with them, and be sure to communicate sincerity;
- 3) Avoid justifying or making excuses; the customer doesn't want to hear any excuses;
- 4) Ask questions;
- 5) Agree on a course of action;
- 6) Inform and involve others who need to know;
- 7) Monitor the progress in resolving the complaint.

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Circle No. 149 on Reader Inquiry Card

Picking the right dealer as a business partner

When you need new equipment, chemicals or seed, do you shop for the best price, or the best deal?

■ Your equipment/seed/chemical dealer should be a partner in your business, experts say. What is good for your business is good for his. What is bad for your business is bad for his.

Nowhere else in the country is a landscaper more of a "partner" to his dealer than at KEI Enterprises in Cudahy, Wis. Rich Wilbert is KEI's landscape division supervisor and Rick Rollo is director of KEI's commercial equipment dealership. They talked, together, about their relationship during the Associated Landscape Contractors of America annual conference last November.

Here are the points, in descending order of importance, most landscapers admit they sell their services:

- 1) on quality that the customer establishes;
- 2) on performance;
- 3) on reliability;
- 4) on availability; and
- 5) on price.

Here are the points, in descending

order, most landscapers buy their equipment, according to Rollo:

- 1) on price;
- 2) on availability;
- 3) on reliability;
- 4) on performance; and
- 5) on quality.

Note anything unusual with the two above lists? "Eighty to ninety percent of all the people I deal with buy exactly the *opposite* of the way they sell," observes Rollo. "This needs to be reversed. You need to buy the way you sell."

For instance, "you should demand your partner train your people," Rollo continues. "Make him aware of that right away—that's part of the partnership. We, as a distributor, feel that if we get a fair price for a machine, we have a responsibility to the customer."

Rollo and Wilbert cite eight keys to picking the proper dealer:

● **Who and what is available?** This includes the types of equipment and the people you want to deal with. Go talk to a few to see if you can build a relationship.

● **Are replacement parts and service a part of the deal?** "Ask your salesman at your time of purchase for one of its parts. If they don't have it, you may be out of luck when your equipment breaks down," Wilbert suggests.

● **What programs are available?** What



Rollo: You can find some imaginative manufacturers.



Wilbert: Out of luck when equipment breaks down?

kind of financing, tax-free or tax-supported rebates, leases, national and regional programs? "There are some imaginative manufacturers out there," notes Rollo.

● **Is back-up equipment available?** What will the dealer do for you? What warranties will be in effect, both pre- and post-breakdown?

● **What about demonstrations?** "Can you take it to your site and operate it where you will be using it?" Rollo asks. "At that time, you can easily involve your operators. If an operator doesn't buy into the program, he'll do anything he can to destroy the equipment."

● **Does the dealer have references?** "Dealers will tell you their machines can do a lot of things," Wilbert observes. "You need someone who can tell you if the equipment can be used in a situation similar to yours."

● **What's the warranty?** Length and type are good indications of how much confidence a manufacturer has in a piece of equipment. "If this person's your partner, he'll go to bat for you on warranties," says Rollo.

● **Does the salesperson inspire trust, knowledge and understanding?** "He must understand your business and your applications," Wilbert says.

Manufacturers are just beginning to offer their dealer/distributors more assistance in customer relations, the pair notes. For instance, Rollo will ship or air-freight a part that he doesn't keep in stock as an added service to his valued customers.

Finally, remember that your dealer is in the business of making a profit. And if he or she can make a fair profit on the equipment or chemicals or seed being sold to you, he can afford to offer the service that goes with it.

—Jerry Roche

Maintenance prolongs mower life

■ If you want your lawn mowers to last, treat their engines with the same respect you show your car's engine, says a Penn State University machinery specialist.

Read the owner's manuals and follow the directions for maintenance, says James Garthe, instructor in agricultural and biological engineering. Pay strict attention to the viscosity and quality of oil used in the engine.

"The wrong oil shortens your engine's life by causing overheating and excessive wear on valve guides, seals and main bearings," he says. "Use high quality engine oils containing additives that buffer corrosive acids generated during fuel combustion."

Keeping the air filter clean also extends your mower's life.

"If the air filter is dirty, minute particles of silicon can eventually get into the internal moving parts," Garthe says. "A dirty air filter also keeps air from getting to the engine and affects the air/fuel ratio that governs combustion. The engine has to work harder, wasting energy and fouling the spark plug with deposits."

Other hints:

● Check spark plugs regularly. Carefully scrape deposits from the plug with a pocket knife or wire brush.

● Change oil while it's still warm to drain suspended contaminants.

● If you keep your mowers in a damp location, consider coating them with a silicon spray to keep moisture out and discourage rust. Covering with a plastic tarp also keeps moisture—and rodents—out.



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Halting soil erosion on your landscape sites



This roadside planting was done with conservation in mind.

The old adage about an ounce of prevention will help you avoid erosion-related environmental problems.

by Fred Kelly



A thick turf cover protects underlying soil on slopes.

■ Soil erosion is a landscape manager's nightmare. Not only can it cause unsightly gullies and sediment bars around your site, but it can also result in off-site damage to adjoining properties and pollution of surface waters.

The problem can be worsened when a site has been fertilized or treated with pesticides. The nutrients and agrichemicals may adsorb to the soil and leave the site with the sediment.

Many thousands of dollars are spent annually to correct the effects of soil erosion. Believe it or not, sediment is the number one pollutant of surface waters in this country. It makes a lot more sense to prevent soil erosion in the first place.

The rate of erosion from a particular site can be predicted with a reasonable degree of accuracy. The Universal Soil-Loss Equation (USLE) and Wind Erosion Equation (WEQ) combine critical erosion factors to yield an average soil loss, expressed in tons per acre per year.

Naturally, the soil type at a give site is the starting point in beginning the erosion estimation process. Different soils have different tolerance for development and disturbance. The Soil Survey for your county can provide a wealth of informa-

tion on the characteristics of local soils. The County Soil Survey and information on both the USLE and WEQ can be obtained from your local USDA Soil Conservation Service or Soil Conservation District office.

Each site, however is unique in regard to erosion potential. The landscape professional can become proficient at recognizing potential high-risk areas just by using a little common sense.

1) Generally, sandier soils will erode more easily than finer-textured soils.

2) Slopes that are steeper and longer will erode more severely than flatter, shorter slopes.

3) Where vegetation is spotty and not providing a contiguous cover, soil will erode. But with a vigorous turf cover, the underlying soil is protected.

4) When rainfall-induced runoff flows across the site in a concentrated fashion, such as in a natural depression or draw, it will often speed up and erode much more than where the water is flowing in a widely-dispersed sheet at a slower speed. Concentrated flows cause gullies.

5) Lastly, parts of the country that have more annual rainfall will generally pose a greater risk than low rainfall areas.

This is an over-simplification of the science of erosion prediction. But it's worth some consideration because landscape managers can help themselves, their clients and the environment by thinking about prevention before correction is necessary.

Plan ahead—Any project you undertake should have a logical sequence of construction. This sequence should not only consider contractor or material availability, but also getting any erosion-control structures such as diversions, basins,

drains or swales in place and seeded before the structure will handle runoff.

● Planned pipe outlets should be stabilized with rock rip-rap or other suitable materials before concentrated runoff will come through.

● Rough grading should be planned to prevent diverting runoff into possible trouble spots.

● Don't clear portions of a wooded or well-vegetated site until absolutely necessary.

Keep it under cover—Nothing prevents soil erosion better than vegetation. The denser and more sod-like, the better. Good seeding, liming and fertilizing practices make the process go a whole lot quicker.

● Placing mulch over a seeding is mandatory. Make it clean straw or salt hay, at a rate of at least three bales per 1000 sq. ft.

● If a site needs to be protected only temporarily, use a quick-establishing annual grass like annual ryegrass. In some cases, a heavy application of mulch held in place with an environmentally-friendly tacking agent can also suffice.

● Low-maintenance slopes on a site should be protected with more permanent, wood mulches along with spreading perennial groundcovers. The Soil Conservation Service has developed some superior cultivars like 'Chemung' crownvetch and 'Lathco' flatpea.

Watch your back—Any erosion problems on your site may be causing havoc off



Stabilize pipe outlets with rock rip-rap or other suitable materials.



Soil erosion ruined this tennis court.



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FACTORS AFFECTING EROSION

FACTORS IN USLE:

rainfall
soil type

length and steepness of slopes
crop cover or groundcover
agricultural factors, like contouring

FACTORS IN WEQ:

soil susceptibility to wind movement
unsheltered distance along prevailing winds
soil moisture
windspeed
vegetative cover
ridge roughness



Soil erosion ruined this tennis court.

your site. This results in an environmental problem, and often a public relations nightmare.

Be aware of what your practices are doing to the lands and waters beyond the site. Consider waters coming into your site from outside. Be prepared to handle the storm flows you may be getting from upstream or uphill. Consider your neighbors and take care of the site the way

you'd like to see it if you were outside the fence.

Soil Conservation Service and local Soil Conservation District personnel can help you. Publications are also available.

The Soil Conservation Service is in the phone book listed under "U.S. Government, Department of Agriculture." Your Soil Conservation District is listed under "County Government."

For more information, contact your local office or the National Association of Conservation Districts, P.O. Box 855, League City, TX 77574-0855.

—The author is Assistant State Resource Conservationist for the Soil Conservation Service in New Jersey.

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43 ways to bring luck out of hiding

If you want to get lucky, you've got to give luck a fair chance.

by Ed Wandtke

■ During this past convention season, I heard many green industry company owners speak about how lucky another company in their same market has been. Lucky because of significant profitability, high company recognition, great image or community recognition.

Are you a lucky person? How does luck happen? Can you be the beneficiary of luck? Or is luck just something that happens to other people?

For many owners, luck means being willing to try something new because it appears to be what customers say they want. For others, it may mean hearing about an idea that is working in another market, and then trying it. To other owners, it may be listening to, and then trying, the ideas of some adventurous person.

Taking a chance on something new or trying out another person's idea may be a way of finding luck. Try doing something different! If you are not trying something new every year, luck isn't being given a chance.

The following ideas are but some of the ways you can get out of the rut of boredom or repetition and into a new direction for your future. Luck can happen if you give it a chance.

1) Make decisions faster. The more you make, the better the chance of being right. Even if you are wrong, you can change your decision later.

2) Be impulsive. Try something new, even if you haven't examined all of its negative and positive consequences.

3) Start a new hobby, or reactivate an old hobby.

4) Wear a sport coat and tie to work. (Beware of employees who change their approach in dealing with you.)

5) Don't wear a sport coat and tie to work. Looking like one of your employees can improve relationships and informal communication.

6) Drive to work a different way for a while.

7) Go to the library today and select a

book to read. Finish it this week.

8) Spend a day with an industry consultant. It will seem like you've gone to school for a whole semester.

9) Visit an unusual place. Be adventurous. Desert, snow, mountain climbing, Grand Canyon, the Amazon River.

10) Take a vacation on a cruise ship.

11) Don't come into the office for two weeks.

12) Reorganize your business.

13) Give creativity a chance. Let others tell you how they wish you'd operate.

14) Don't listen to anyone. Trust your own instincts.

15) Listen to everyone. You never know where a good idea will come from.

16) Steal ideas! Try them and improve on them.



17) Team up with an unusual employee.

18) Start a new company training program.

19) Have an employee present a new training topic.

20) Pursue a failure. Procter & Gamble undertakes projects doomed to fail.

21) Make a new friend.

22) Evaluate old friends and acquaintances.

23) Share your company's revenue performance and/or "inside" information with employees.

24) Attend a business management seminar this year.

25) Spend half of your time with non-

employees. Vendors and distributors are a great source of information.

26) Spend half of your outside time with radicals, visionaries and other non-conformists.

27) Change your duties. Make someone else important.

28) Encourage ingenuity. Let employees set their own work performance criteria for a week.

29) Have a topsy-turvy day. Switch jobs for a day. Allow others to make one change in new position.

30) Activate curiosity. Have a hide-and-seek day for your employees. Use customers, personnel, company data, community locations, colloquialisms, slang, synonyms, nicknames. Let employees compete to find the answers.

31) Spend a day talking to your four largest customers.

32) Take on a community service project.

33) Start a company "hall of fame" for outstanding performances.

34) Vary your diet. Eat a different cereal each day.

35) Take your shoes off when at your desk.

36) Make coffee, or bring in donuts for all the employees.

37) Want to become creative. Go to a park and let your mind work creatively. It is difficult to get creative behind a desk or in familiar surroundings.

38) Avoid being average in all things.

39) Be the first to work in

the morning.

40) Come to work late.

41) Use your computer for all of the tasks one day.

42) Take a computer course.

43) Get a feel for the real workers at your company. Talk and work with various employees during the next week to see what they are doing, why they are doing it, and what is on their minds.

—The author is a principle at Wandtke & Associates Management Consultants, 2586 Oakstone Rd., Columbus, OH 43231. For more information, phone (614) 891-3111.

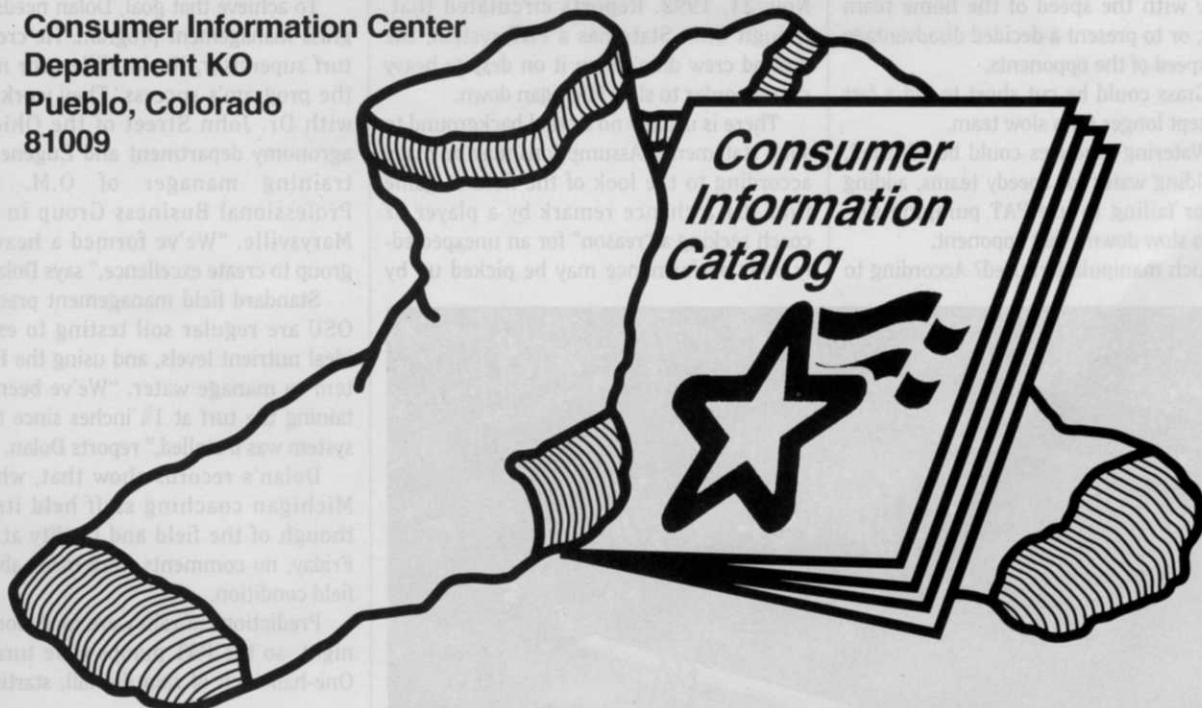
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Creating a 'home field advantage'

Is it the job of the athletic field manager to create equal opportunity for all athletes, or to make sure the home team has an edge?

by Steve and Suz Trusty

■ You hear it, occasionally from sports broadcasters, frequently from losing coaches. The playing field wasn't level. Some turf management practice was manipulated, perhaps unfairly, to give the home team an advantage. This charge is made most frequently at the college or professional level, yet it may surface at high school games, or in highly competitive inter-city sports.

Is such manipulation possible? You bet it is:

- Baseball fields could have specially beveled basepaths angled to comply with the speed and ability of the home team players.

- Baseball skinned areas could be kept hard-packed and fast, or slightly soft and slow.

- The length of the turf—for baseball, football or soccer fields—could be gauged to comply with the speed of the home team players, or to present a decided disadvantage to the speed of the opponents.

- Grass could be cut short to aid a fast team; kept longer for a slow team.

- Watering practices could be adjusted, withholding water for speedy teams, adding water or failing to use PAT pumping systems, to slow down a fast opponent.

Is such manipulation used? According to



reports, seldom, if at all.

The sports turf manager's prime objective is healthy, thriving turf that provides a safe, highly playable surface for the athletes. This objective is long-term. It extends over the total playing season. To alter optimum care procedures for one game jeopardizes that long-term objective, and puts in question the professionalism of the sports turf manager.

Why do these accusations persist? Perhaps because of sports broadcasters, journalists and coaches. For instance, many readers might have heard this "reason" given for the 13-13 tie game between Ohio State and Michigan universities on Saturday, Nov. 21, 1992. Reports circulated that, though Ohio State has a PAT system, the ground crew didn't turn it on despite heavy rain, in order to slow Michigan down.

There is usually no factual background to such statements. Assumptions may be made according to the look of the field at game time. Or a chance remark by a player or coach seeking a "reason" for an unexpectedly poor performance may be picked up by

the media as fact.

Ohio State athletic facilities director Mike Dolan has been in the sports turf management field for 35 years. He spent 10 years with the Cincinnati Reds before going to Ohio State.

"We're constantly shooting for field excellence," Dolan says. "We have established—and seek to retain—a solid, stable turf with good rooting. We want to maintain the field in ideal playing conditions."

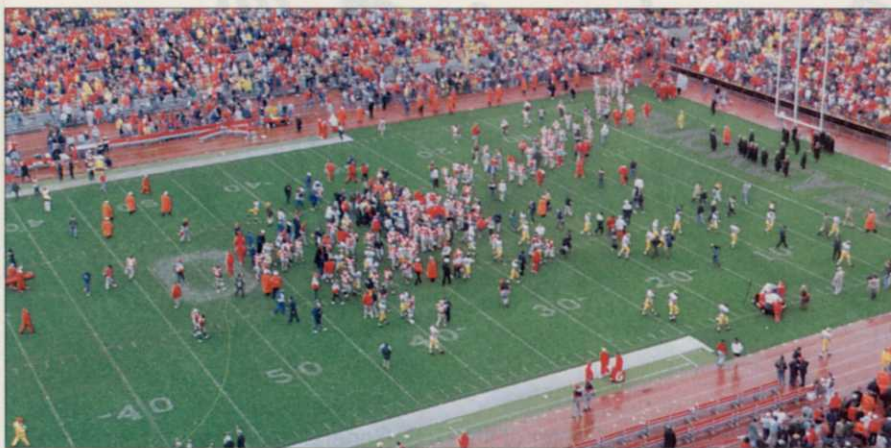
To achieve that goal, Dolan needs a good grass management program. He credits his turf supervisor, Kevin Miller, for much of the program's success. They work closely with Dr. John Street of the Ohio State agronomy department and Eugene Mayer, training manager of O.M. Scott's Professional Business Group in nearby Marysville. "We've formed a heavy duty group to create excellence," says Dolan.

Standard field management practices at OSU are regular soil testing to establish ideal nutrient levels, and using the PAT system to manage water. "We've been maintaining the turf at 1¾ inches since the PAT system was installed," reports Dolan.

Dolan's records show that, when the Michigan coaching staff held its walk-through of the field and facility at 2 p.m. Friday, no comments were made about the field condition.

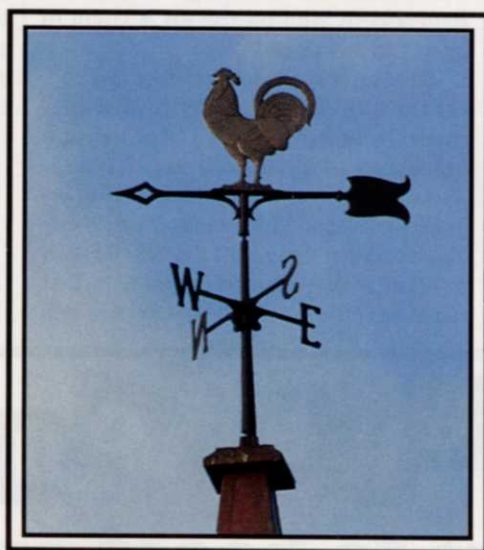
Predictions of rain were made for Friday night, so the PAT pumps were turned on. One-half inch of rain did fall, starting at 3

Before (top) and after photos of the Ohio State University football stadium on Nov. 21, 1992 show that the turf held up under extremely wet conditions.



continued on page 56

N



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a.m. Saturday. The rains had subsided by early Saturday morning.

On Saturday, at game time, nothing yet was brought to the attention of the field grounds department by either of the coaching staffs. Dolan made a point of checking with the grounds superintendent, who had been on-site throughout the day on Saturday, to verify that fact.

"Most people thought the field was in good shape, the best of the three years since the natural turf was installed.

Comments were on what great shape the field was in, and on the good stand of grass," reports Dolan.

What most sports turf managers are concerned with, and in reality all that they should be concerned with, is that the playing field provided is safe and playable.

As Dolan says: "It's unthinkable that any professional sports turf manager would create a condition that might threaten the safety of an athlete or cause a problem that might be detrimental to the overall turf pro-

gram. It's our job to create an equal opportunity for all athletes for competition on a safe, playable surface. They all put their pants on the same way—and the all play on the same surface."

—The authors are partners in *Trusty & Associates*, which provides consulting services to the horticultural trade. Steve is vice-chair of the *Public Relations Committee of the Sports Turf Managers Association*, 401 N. Michigan Ave., Chicago, IL 60611; phone (312) 644-6610.

Shake Out

competitors to boost productivity

Are some of those 'price cutters' in reality just more sophisticated business people?

by Ed Wandtke

■ So far in the 1990s we have seen the impact of a tighter economic climate in the green industry.

The recent sale of the ChemLawn divi-

sion of Ecolab to ServiceMaster at a very discounted price suggests that the green industry may be going through some rough times.

During the past three years, many green industry companies that had been in business for more than 10 years suddenly



Some tools require a lot of time and manpower ...

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lost customers and employees, and thus experienced lower profits. Many owners attribute this to the influx of lowball competitors, who don't know how to operate at a profit, in the late 1980s.

These newer owners might just be more sophisticated business people. Their companies usually are very cost competitive and efficient in service delivery. They also offer the quality the customer wants.

If you have been experiencing business reduction, loss of profitability, or increased pressure from competitors, examine your company through the eyes of a critical businessman, and re-design the services your company offers or the methods in which you do business.

Industry consolidation—As more consolidations and company closings take place in the green industry, you have to address many cost challenges.

One method is to return to the basics. Specialize in landscape service, landscape design and installation, chemical lawn service, and so on.

Many companies have discovered that diversifying their business often leads to a

dilution of the efforts of top management (the owner), and one or more of the new services just don't seem to grow as fast or as large as the owner thought possible. People *do* make a difference, and an owner needs to examine how far he can delegate responsibility before he runs out of qualified employees.

During this period of consolidation in the green industry, some companies need to upgrade or add employees with the needed skills to improve or fill voids in the company. Examine the supply of potential candidates and choose those who possess the skills you need to grow and improve profitability. The cost for a quality individual may be high, but the results should show the initial investment was worth the risk.

Marketing/profitability—Computerization has become a reality. Some software can perform marketing functions. Determine if your management information system provides you with timely service information: missed applications; cancellations; service calls; employee productivity.

And never use the excuse that you're too busy. Next year may be too late.

Look at the approach you have been taking to attract and retain customers. I see companies improve customer retention to 85 and 90 percent. Who says you should have a 30 percent cancellation rate each year? Maybe your customers are coming aboard for the wrong reason or your company is not delivering on promises.

Now is the time to do a customer survey to check on customer attitudes about your service before the season starts in order to reduce cancellations this coming season.

Make this the year to examine the efficiency and productivity of your entire operation. What if you operated with one less office worker or hired a part-timer instead of a full-time employee?

Other survival tips:

- Establish production standards.
- Train employees so they can meet those standards.
- Reward them when they exceed the standard performance.

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How to get the bite on insects

As the calendar rolls into March, the appearance of insects means new business for the astute lawn/landscape company.

■ If you are the owner or manager of a lawn care or landscape company, you know how important and often frustrating it can be to deal effectively with some insects—but it can be done.

Deer ticks—which carry and transmit the Lyme disease spirochete, frequent lawns, yards, parks, playgrounds and wooded areas, especially in northeastern states—are a genuine health risk. Bites from nymphs are believed to account for up to 90 percent of recent Lyme disease cases, as reported in a Tarrytown, N.Y. symposium, which 12

authoritative scientists and more than 120 public health officials attended.

Deer ticks, which are active in May and June, cling to vegetation along paths in wooded areas and attach themselves to mice, chipmunks, raccoons, birds and even domestic pets. The ticks imbed their mouth parts into the skin.

A single application of carbaryl and chlorpyrifos on infected areas in early summer can control the ticks and reduce Lyme disease risk up to 90 percent, says Dr. Durland Fish of New York Medical College. However, since ticks are carried by animals, they can and often do return within weeks.

Other recommended treatment for deer ticks include spraying suspect grass, shrubs and flowers with insecticides such as Deet (diethyltoluamide), diazinon and malathion.

The **billbug** presents a formidable foe to lawn and landscape contractors, especially

in north central states. Infestations begin in mid-June. Billbugs cause large lawn areas to turn thin and yellow, and don't green-up after July rains. But since the same symptoms can also be caused by drought, chemical burn or turf diseases, lawns should be monitored carefully for billbug activity.

Billbug adults can be monitored in mid-March through July with simple pitfall traps, notes Dr. Frederick P. Baxendale of the University of Nebraska at Lincoln. A container such as a coffee can is filled with alcohol and set in the suspect lawn with the rim level even with the soil surface. This easily traps any bugs. Change the container twice a week.

Insecticides registered for controlling billbugs are Oftanol, diazinon, Turcam, Dursban, Sevin and Mocap. They should be applied when adult activity is first detected

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Changing your soil pH for maximum turf growth

Obtaining the correct soil pH can be tricky. You may have to amend the soil, depending on turf species and soil conditions.

■ Soil acidity or alkalinity can have an effect on turfgrass health. Acidity and alkalinity are measured by pH (potential hydrogen) values: any pH value below the neutral 7.0 is acidic; anything over 7.0 is alkaline.

Turfgrasses grow best at pH values of 6.0 to 8.0. pH values below about 5.5 begin to have adverse effects on both soils and plants, and values below 5.0 are

indicative of real trouble.

Ryegrasses and bluegrasses do not tolerate marked acidity. Wheatgrass, buffalograss and gramagrass tolerate even alkaline soil conditions. On the other hand, bentgrass and fescues tolerate slight soil acidity. Sheep fescue and centipede grass usually prefer acid soil conditions with a pH of 4.3 to 5.8. On neutral or alkaline soils, centipede frequently becomes chlorotic from lack of iron.

Raising pH—Low pH results in symptoms of mineral imbalance. The grass lacks the bright green color of good vigorously growing turf, is fairly unresponsive to fertilizer and may have a high proportion of brown leaves.

As a general rule, if the pH values are below 6.0, liming is needed. There is no danger in mild acidity, and outside of humid regions of the U.S., liming is not needed since soils are more alkaline.

Liming should be done periodically, at amounts adequate to forestall serious acidity (see Table 1). The most practical and easily obtained material to correct soil acidity is finely ground limestone. (This is not to be confused with burnt lime—

TABLE 2.

SOIL REACTION RANGE FOR GOOD TURF GROWTH

COOL-SEASON GRASSES	pH RANGE
1. Wheatgrass, fairway	6.1-8.6
2. Kentucky bluegrass	5.8-7.5
3. Rough bluegrass	5.8-7.2
4. Canada bluegrass	5.7-7.2
5. Annual and perennial rye	5.8-7.4
6. Colonial and creeping bent	5.6-7.0
7. Red and chewings fescue	5.6-6.8
8. Tall fescue	5.5-7.0
9. Bluegrass, annual	5.5-7.0
10. Velvet bentgrass	5.2-6.5
11. Red top	5.0-6.5
12. Sheeps fescue	4.5-5.8
WARM-SEASON GRASSES	pH RANGE
1. Bahiagrass	6.5-7.5
2. St. Augustinegrass	6.3-7.8
3. Gramagrass	6.1-8.6
4. Buffalograss	6.1-8.0
5. Bermudagrass	5.7-7.0
6. Zoysiagrass	5.5-7.0
7. Carpetgrass	5.2-6.7
8. Centipede grass	4.3-5.8

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and when the insect is in its larval stage, advises Dr. Baxendale. When treating for larvae, the turf should be watered before and after application. Aeration helps move the insecticide into the rootzone where the larvae are feeding.

"In many cases," Baxendale emphasizes, "timing of applications is more important than the particular insecticide used. Billbugs are tough to kill, and timing is critical."

Most **clover mites** live indoors. They don't bite people or eat food or household items, and are easily removed from indoor areas such as floors and rugs with an ordinary vacuum cleaner. But if they are a continuous problem in homes, one solution is to remove all grass and weeds next to the foundation of infested buildings. Leave a strip of bare soil at least 18 inches wide. Replant it with zinnias, marigolds, chrysanthemums, roses or salvia, because these plants don't attract clover mites.

European pine sawflies that attack and defoliate European pine trees, Christmas tree plantings and those of Scotch, Austrian and mugho pines, are black-headed and have grayish green larvae. They like to feed in clusters at the ends of pine branches in the worm stage, and can cut most of the needles from branches very quickly. A tree is often severely damaged before the worms are even detected, but they can be controlled by spraying the trees with acephate, malathion or diazinon.

The **European pine shoot moth** larvae

feeds at the base of new shoots of pine trees and shrubs. Damage appears as brown, curled shoots or "candles," but by the time this happens the worms have ceased feeding and have progressed to the pupae state. Moths emerge shortly afterwards and lay eggs for the next generation.

To control the hatching worms, treat infested pines with a spray containing dimethoate (Cygon, De-Fend) in mid-July.

Cankerworms, commonly referred to as inchworms, are dark green or black and are famous for defoliating elm trees. They usually eat all the leaves except for the veins, and, as adults, move about from tree limb to limb, on a silken thread or drop to the ground.

Sprays containing Sevin, malathion, acephate or *Bacillus thuringiensis* (Thuricide, Dipel, Biotrol) will control cankerworms, especially if they are less than half grown.

Bronze birch borers, which are actually small beetles, attack birch trees. They emerge as adults from holes left in the bark and usually infest a tree's upper limbs first. Damage can be detected by already dead branches or by the foliage which becomes pale green. To control these pests, apply a spray containing dimethoate (Cygon) liberally and thoroughly when the eggs are hatching. Repeat the spray three weeks later to control any hatching bugs.

—*Bess Ritter May, the author of this article, is a freelance writer operating out of Philadelphia, Pa.*

quicklime—nor hydrated lime, which is used in the building and construction industry.) Ground limestone should be very finely ground to be fully satisfactory.

If you need to apply limestone, be sure to allow enough time for it to work. Even in warm, moist soils, some weeks are

required for enough of the lime to dissolve.

Only enough lime should be applied to correct the acidic condition. Alkaline soil conditions caused by an excessive lime application limit the availability of certain nutrients as much as an acidic condition.

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Insects, Their Damage and Their Control

INSECT	DAMAGE	CONTROL
European pine sawfly	Christmas, Scotch, Austrian, mugho pines	carbaryl (Savarin), acephate, malathion, diazinon
European pine shoot moth larvae	new shoots of pine trees and shrubs	dimethoate (Cygon, De-Fend)
Cankerworms (inchworms)	elm trees	Sevin, malathion, acephate or <i>Bacillus thuringiensis</i> (Thuricide, Dipel, Biotrol)
bronze birch borer	birch trees	dimethoate (Cygon)
deer ticks	carry lyme disease bacteria	carbaryl and chlorpyrifos in liquid or granular formulation; Deet (diethyltoluamide), diazinon, malathion
billbugs	large areas of yellow, thin and dead turf which often needs reseeding	Oftanol, diazinon, Turcam, Dursban, Sevin, Mocap
clover mite	very little, unsightly appearance	Indoors: vacuum cleaner for floors and rugs; pyrethrin, in pressurized spray cans, for windowsills. Outdoors: malathion or dicofol

TABLE 1.

POUNDS OF FINELY-GROUND LIMESTONE REQUIRED TO CORRECT SOIL ACIDITY

PH	CONDITION	SOIL REACTION POUNDS OF LIMESTONE PER 1000 SQ. FT. OF LAWN AREA			
		LIGHT SANDY SOILS	MEDIUM SANDY LOAM	LOAMS/SILT LOAMS	CLAY LOAMS
4.0	Excessively acid	90	120	165	200
4.5	Very strongly acid	80	105	150	180
5.0	Strongly acid	70	90	120	150
5.5	Moderately acid	45	60	90	120
6.0	Slightly acid	25	30	45	60

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continued from page 60

Shoot growth can also be retarded by high rates of lime applied to established turfs growing on strongly acid soil.

It is best to apply lime when grass leaves are dry, so the material will sift down to the soil. Watering immediately after spreading not only washes the dust off the leaves, but also carries the material onto moist soil where its action can begin.

Lowering pH—Soils that are waterlogged, rarely leached, irrigated with water containing calcium and magnesium,

or limed excessively can develop moderately alkaline pHs of 7.5 to 8.4.

A decline in turfgrass vigor usually occurs on alkaline soils. High pH may result in symptoms of lime-induced chlorosis.

Alkaline pHs (above 7.5) can be corrected by applying an acidifying material: elemental sulfur, gypsum (CaSO_4), certain fertilizers such as ammonium sulfate and iron sulfate, or aluminum sulfate. The last, however, can be toxic to turfgrasses if not properly used.

Elemental sulfur can be applied in a mix with sand or topdressing material. The rate of a single application should not exceed 5 lbs./1000 sq. ft. Do not apply sulfur during mid-summer stress periods.

—Sources: "Turf Management Handbook" by Howard B. Sprague; "Turfgrass: Science and Culture" by James B. Beard; "Practical Turfgrass Management" by John H. Madison; and "Lawns" by

Making turf diagnosis easier

■ The Plant and Pest Diagnostic Clinic (PPDC) at Ohio State University recently published this list of the top 10 factors you should include when writing or calling a college or university about a turf problem:

1. List all symptoms. Describe the general appearance of the turf. Does it look waterlogged, dried or scorched? Have any patterns or color changes occurred? A clear color photograph is the best visual aid.

2. Pattern of development. Does the problem appear in full sun or shade? Do the affected areas occur near irrigation lines, high traffic areas, sidewalks or buildings? Does it occur in low, moist places?

3. Amount of turf affected. How much of the lawn, green or field is affected? Do lawns nearby show similar symptoms?

4. Crop. Please list grass varieties planted, so consultants can determine which grass is more affected by the pathogens.

5. Seeding date. Was the lawn seeded or sodded recently, or is it a mature lawn?

6. Time of infection. When did symptoms first appear? What were the weather conditions prior to symptoms? Did the condition worsen coincidentally with an environmental or cultural change?

7. Treatments. When, at what rate, and what chemicals or fertilizers were applied? Was the grass irrigated before or after treatment? Send any samples of turf before fungicide applications were made. Fungicides prevent or impair culturing results.

8. Irrigation. Specify frequency, amount and time of day that irrigation is applied, if any.

9. Cultural practices. Was the turf aerated or topdressed? When? Did the problem occur afterward? How long afterward?

10. Environment. What amendments have been added to the soil? Include the results of recent soil tests, if applicable.

Key to long-lived landscapes: the right plant for the right spot

■ Whether soil is too wet, too dry, too shady or too steep, there are beautiful, hardy plants that will thrive in these conditions.

"The trick to a low-maintenance, long-lived landscape is selecting plants best suited to grow in the climate and soil conditions," says Dr. J. Robert Nuss of Penn State University.

Overly wet soils occur in low-lying areas and are produced by springs, a high groundwater table or nearby ponds or streams. "Wet areas can support a wide range of exotic plants, many of which grow nowhere else," Dr. Nuss

observes.

For clayey soils, he recommends coltsfoot, Siberian iris, perennial sweet pea, red maple, American hornbeam, pin oak or arborvitae.

"If you want to grow annuals in clay soil, you will need to work in a generous amount of organic material," he says. "Unless you're willing to spend time adding a lot of organic matter to clay soil, it's best to stick with plants whose roots easily penetrate clay."

Other plants to use for specific growing conditions are listed in the adjacent chart.

PLACING PLANTS APPROPRIATELY

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impatiens
sweet alyssum
scarlet sage
blue sage
verbena
wild iris
many violets
many wildflowers
alder
dogwood
pussy willow
weeping willow
magnolia
mountain laurel

DRY, SHADY AREAS

columbine
lily of the valley
bleeding heart
balloonflower
daylily
boxwood
false cypress
holly
hemlock
pine
yew
barberry
cotoneaster

SUNNY, DRY AREAS

marigold
zinnia
four o'clock
geranium
cosmos
yarrow
butterflyweed
daylily
lupine
oriental poppy
many orn. grasses
prickly pear cactus
crownvetch
sedum

Source: Dr. J. Robert Nuss

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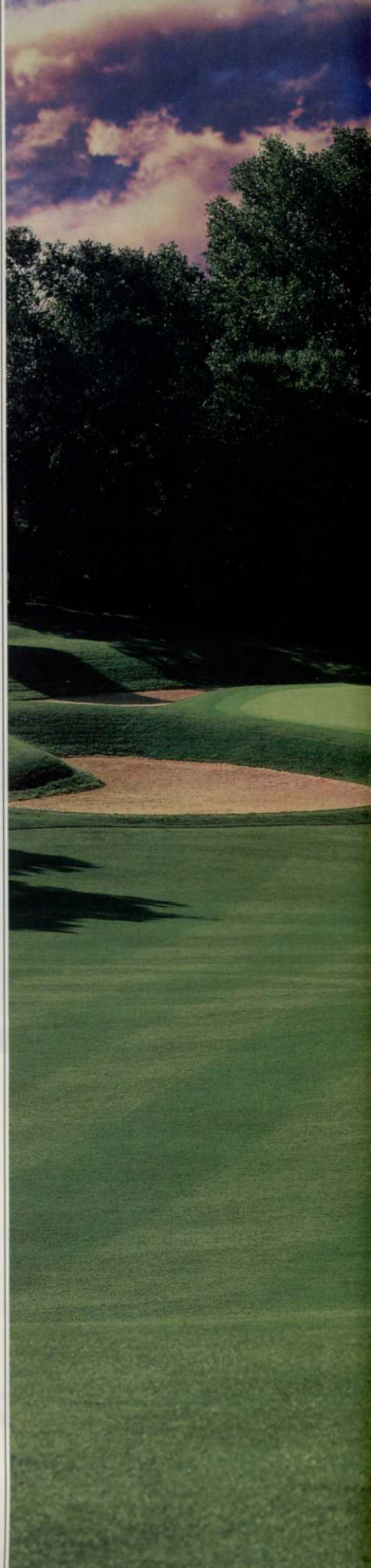
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Pre-emergents applied early in spring give good control, too

Proper fertilization and mowing allow turfgrass to out-compete crabgrass, but sometimes pre-emergents needed.

■ Most LCOs would be tickled if they could apply a pre-emergent about two weeks prior to crabgrass germination. That way the material would be in place to kill emerging seedlings and still, probably, be active through the 8- to 10-week period of additional crabgrass germination.

LCOs usually can't be so precise with



No wonder homeowners hate crabgrass in their lawns. (photo courtesy Monsanto)

applications. Routing pressures won't allow it. They have to treat some lawns much earlier in the spring.

Not to worry, says Dr. Clark Throssel, associate professor of agronomy at Purdue University. Pre-emergents applied earlier in the spring, when soil temperatures are low, should still be effective when the crabgrass germinates.

The reason: soil microbes don't start breaking down pre-emergents until the soil temperature rises. Crabgrass, a prolific seed producer, starts germinating when soil temperatures climb to around 55-60° F. for three to five days in a row.

"Once that seed starts to germinate, its development occurs rapidly and your opportunities, particularly using pre-emergence herbicides, to control crabgrass vanish very quickly," explains Throssel.

Crabgrass is one of the home lawn's biggest curses and the LCO's biggest enemies.

It germinates later in the spring than most other plants. (In the far south it can germinate year-round.) Although the first frost signals its end, in the dog days of summer, when the sun is high and hot, crab-



Clark Throssel: properly mowed, fertilized, watered turfgrass will crowd out crabgrass.

grass is one of the toughest, most defiant weeds in the lawn. From a homeowner's viewpoint it's an ugly sight—squat, spreading, broad-leafed, and light green.

The best longterm strategy for keeping it at bay is proper fertilizing, watering and mowing. Crabgrass won't germinate in the shade of healthy turf.

"Keep the mowing height up," advises Throssel. "It creates a dense turf which shades the soil surface and reduces the amount of (crabgrass) seed that germinates. It makes the turfgrass more competitive with the crabgrass plants."

Even so, just about any appearance of crabgrass in lawns is unacceptable to most homeowners. That's one of the big reasons they hire lawn care professionals.

Throssel spoke about crabgrass at the PLCAA Convention this past November.

—Ron Hall

Tips for better product applications

■ So you've been a lawn applicator a few years and you think you're a hotshot.

Even so, you probably need a refresh-er. Now, as the season starts, is a good time for it.

That's not to say that what you're doing is wrong. No two applicators have exactly the same spray/spread techniques. Likely, all you'll have to make is slight changes in your application technique, or adjustments in your delivery equipment.

"We tend to become very complacent in our application techniques. We don't



Pre-season practice session, spraying water over your parking lot, good way to sharpen application skills. (photo courtesy TruGreen/ChemLawn)

really focus on this," says TruGreen/ChemLawn regional technical manager Bob Avenius.

In fact, Avenius advises that when a particular product isn't giving the results it should, examine first how the product is being put down.

Common spray application faults:

- putting down too much product in trim areas and on turns,
- not overlapping during passes over the lawn,
- over-pressurizing backpack sprayers,

continued on page 69

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Newer products give additional crabgrass control options

Flexibility. That's what several of the newer herbicides give turfgrass managers in controlling annual grassy weeds, says Fred Haskett of the J.C. Erlich Co. in Reading, Pa.

The products are:

- **fenoxaprop-ethyl**, a post-emergence herbicide, introduced several years ago and marketed under the trade name Acclaim, and,

- **dithiopyr**, with both pre- and post-emergence activity and sold as Dimension.

Haskett, the company's lawn & tree division manager, says these materials "add another tool and lessen our dependence on the methods we used in the past." They don't, however, eliminate the use of pre-emergence products, he stresses. The Pennsylvania company uses Acclaim to deal with two situations, says Haskett:

1) where a pre-emergent failure necessitates a retreat to satisfy a customer, and

2) on a mid-summer sale to a new customer whose property has a significant crabgrass problem.

He says Acclaim effectively controls germinated crabgrass up to



Haskett: encouraging results from tests.

Tips (continued from page 66)

- not holding the nozzle at the correct height off the turf,

- walking too fast or too slow.

Technicians using granular product are sometimes guilty of:

- not checking spreader settings,

- not filling their spreaders with enough material or too much material,

- not using a spreader shield or cover,

- holding the handle of the spreader so high that the box isn't level,

- walking too fast or too slow,

- not walking in a straight line.

Avenius says faulty application techniques are usually easy to correct, but first they have to be identified. Videotape is often an excellent help.

Want a down-and-dirty check on how you're doing? Spray water over your company's asphalt parking lot, just like you're making an application on a lawn. Then calculate how much water you've applied and what the pattern looks like as it dries. That way you get to see where there's been too much applied or too little.

To monitor or check spreader settings, keep a Lesco gauge handy, and use it often.

"Regardless of what products we use, unless we put these products down correctly, we'll never get the results we need," says Avenius, who works out of Indianapolis.

—Ron Hall

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the four-tiller stage. When the plant gets larger, a higher rate of the product is needed along with the use of a surfactant.

Also during 1992, J.C. Erlich evaluated Dimension on about 90 properties, primarily those requiring spring seeding, or those coming onto the program in mid-season. Results were encouraging, says Haskett.

With this new product, an LCO should be able to seed in the spring and then come back (in late May or early June in Pennsylvania) with an application of dithiopyr to take care of crabgrass both before and after its germination. Also, broadleaf controls can be applied at the same time.

He says his company's most experienced technicians will continue to evaluate dithiopyr this season in field conditions.

In theory anyway, these newer turf-grass herbicides should allow some LCOs to apply fertilizer only during their first application round—if not to all their lawns, to at least their best lawns. This would reduce costs for this first application while extending the time the LCO has to control crabgrass.

Haskett shared his ideas during a presentation at the PLCAA Conference in Indianapolis this past November.

—Ron Hall



Emerged crabgrass, easiest to control when plant youngest. (photo courtesy Monsanto)

Desert landscaper believes quality work delivers profits—eventually



Gustafson appears tiny beside this sahuaro cactus near his home on the outskirts of Tucson.

Steve Gustafson says competition is good but too many 'also-rans' in Tucson market keeps prices and wages low.

■ Steve Gustafson, owner of Blooming Desert Landscape, Tucson, Ariz., is a big man who wears big, dusty cowboy boots.

With the scraping and crunching these boots are making on the crumbling granite, it's unlikely he'll surprise any critters, which is fine with him. His destination is a 55-foot-plus sahuaro cactus (*Carnegiea gigantea*). It's just a 15-minute walk through tugging, thorny brush from his house.

"If I could just buy this piece of property, can you imagine what I could do with it?" says Steve, daydreaming of the ultimate desert landscape he could design with this grandpappy cactus as its crowning glory.

It weighs at least four

tons. He's counted 72 "arms" growing from it. How long has it been growing there? 200 years? Steve thinks longer, long enough at least to see the city sprout and grow out toward it.

There are millions of sahuaro in Southern Arizona. Nothing is as noticeable in the desert unless it's the craggy mountains that surround Tucson. Even the mountains appear to be covered with quills, which are the sahuaro.

But, there's only one Steve Gustafson.

At 39 he's a bear of a man, with an animated, sun-reddened face. A fascinating conversationalist, his language is peppered with anecdotes of both flora and fauna although he's a relatively recent arrival to the Arizona-Sonora Desert. He was raised and educated in Portland, Ore. He landed in Tucson, doing post-doctoral work at the University of Arizona, Tucson.

He left academia and research because he says he'd rather work in the practical and applied aspects of horticulture.

"I became involved in landscape work when I was about nine with my three brothers. We mowed and took care of about 30 lawns," says Gustafson. "As the older brothers went to college, the younger ones took over. I was the last one."

He continued to work on yards as he earned degrees at Portland State and a Ph.D. in horticulture at Oregon State University. Now his goal is to be recognized as one of Tucson's best landscape contractors.

That, says Gustafson, is a tall order. Profits are getting harder and harder to dig out of the crowded Tucson landscape market, he says. He guesses there are

about 50 legitimate firms and maybe twice that many "also rans" in Tucson. That's one reason why industry prices and wages are low here, he says.

Starting from a meager \$6,000 investment in 1985, his company topped \$400,000 in sales within two years. Then, harsh reality arrived in the form of debts and client bankruptcies. He had to rethink his company's direction, as he set about rebuilding both its customer base and its profitability.

He now targets Blooming Desert at the residential market, specifically custom homes. (Design/build accounts for about 80% of his sales, maintenance the remaining 20%.)

These efforts show hope. As the residential home market in Tucson warmed, several of his landscapes earned citywide recognition as award winners.

These efforts included both informal and semiformal groupings of desert plants. Cactuses stand out in his landscapes. There are more species of cactuses in the Southwest, more than anywhere else on earth. They come in all sizes and shapes—barrels, balls, sticks and paddles. Gustafson combines them in landscapes with other desert species like aloes, agaves and yuccas.

"We use materials that minimize the harshness of local conditions, but also materials that will do well over time," says Gustafson. "Not everything we use is native, but it has to fit in with and help beautify the harsh environment here."

Decorative gravel around the plants helps keep weeds down but Steve says he still has to apply pre-emergents about twice a year. Even desert plants must be fertilized regularly, says Gustafson, with insecticides used as needed.

"Just because we don't have a lot of lawns to mow, there's still a lot of pruning and horticultural activities we've got to get done," he says. "In fact, I think I could argue that you have to be a better horticulturist here."

Gustafson says Blooming Desert Landscape will continue to sell and deliver the highest quality work it can. Then, he hopes, his company can command better prices for its work.

"We've learned to take the good with the bad, but we think that hard work and perseverance will eventually pay off," says Gustafson. "even though we're still working. And waiting."

—Ron Hall



This Blooming Desert Landscape installation project earned Gustafson city beautification award.

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Circle No. 152 on Reader Inquiry Card

Wisconsin LCO is satisfied with results of new weed program

Spring-Green Lawn Care's 'biological' program stresses fertility, cuts herbicide use, receives customer approval.

■ When, just over a year ago, Steve Good redirected his company into a "biological" program, he was admittedly apprehensive.

After all, his Spring-Green Lawn Care franchise had been successful as a traditional application company as it grew toward \$1.4 million in annual sales in and around Racine, Wis., in the far southeast corner of the state. "People aren't always receptive to change, especially when what you did in the past worked," says Good.

But he felt he had to make fundamental changes in product choice and product application to deliver the new earth-friendly service he wanted to market. The catch: these changes had to work. Spring-Green had to continue to give homeowners 1) green lawns and 2) weed-free lawns. Or they'd leave.

One change in the program involved grassy weed control; and, Good realized, nothing irks a homeowner more—especially one paying for professional service—than a healthy crop of crabgrass in their lawn.

But Good knew the credibility of his company's new efforts would suffer if it continued to blanket-apply pre-emergence herbicides each spring to control grassy weeds.

So, along with switching to organic-based fertilizers, Good abandoned blanket pre-emergence applications in favor of targeted, as-needed applications of a relatively new material, dithiopyr, marketed under the trade name Dimension Turf Herbicide. (Its manufacturer, Monsanto, claims the herbicide has both pre-emergence and early post-emergence activity.)

As Spring-Green technicians walk a lawn, applying granular organic-based fertilizer (Spring Valley Turf Products), they also scout for breakthrough grassy weeds, which they then spot-treat using Solo backpack sprayers. They also treat turf borders. Good says his company backs up its service with the guarantee of a retreat.

"The success of the whole program

depends on your technicians," says Good. "If the technicians don't take the backpack sprayers out of their trucks and use them, you're going to have trouble."

Spring-Green didn't change its program without first directing a strong educational effort at its customers.

"We're retraining our customers," says Good. "We tell them that a strong, healthy

turf is going to resist crabgrass infestation. We also leave mowing and watering instructions with them. It's working great."

Of the approximate 1500 customers served by his company, only about six still request the traditional program, says Good.

"For a while, the phone rang all the time with people who were pleased. People told their neighbors that we were not broadcasting lawn chemicals, and just taking care of what is needed."

—Tobi Bolt



Steve Good, kneeling, and Dion La Meer of Spring-Green say the best defense against weeds is healthy turfgrass and technicians who know how to scout.

Write for PLCAA ad guidelines

■ Lawn care advertising continues to be scrutinized at the state and federal level.

To help lawn care professionals provide information about their products and services that isn't misleading or incomplete, the Professional Lawn Care Association of America (PLCAA) developed advertising guidelines that apply to all communications with the public and customers.

"The advertising practices of our industry continue to receive a lot of attention from state and federal regulators," says Tom Delaney of PLCAA. "Lawn care professionals need to keep in mind that advertising, by definition, includes all communications with customers and the public,

including letters and any statements made over the phone or in person."

The guidelines include information LCOs need to know about EPA and FTC advertising standards. They describe language that is considered misleading, conflicting or unsubstantiated. They also explain what to say about safety claims.

"All lawn care professionals should have this document on hand when they're developing their advertising materials and company literature," says Delaney.

For a free copy, send a self-addressed, stamped envelope to: *PLCAA Advertising Guidelines*, 1000 Johnson Ferry Rd., Suite C-135, Marietta, GA 30068-2112.

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Circle No. 123 on Reader Inquiry Card

Deer tick risk smallest on turf

The nymph of tiny *Ixodes dammini* most abundant in woodlots. Nymphs are responsible for 70 percent of Lyme disease cases.

by Deborah Smith-Fiola

■ Chances of having a deer tick attach itself to you are measurably less on maintained and mowed lawns than in the woods or around property edges, fences or brush.

That's significant because the deer tick (*Ixodes dammini*) is the vector (carrier) of debilitating Lyme disease, which is most common in some areas of the Northeast, but has been reported in the Midwest also.

Actually, it's an immature stage of the deer tick, its nymph, that's believed to cause 70 percent of all Lyme disease cases. But, it's not so easy to know when the tick is present. While the adult deer tick is the size of a sesame seed, its nymph is about half that size.

When New Jersey researchers wanted to find out just where people are most likely to

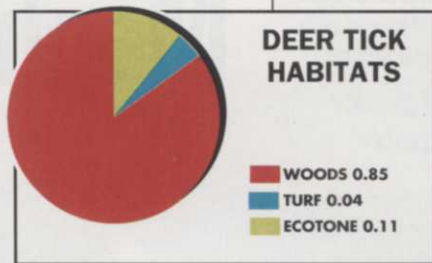
encounter deer tick nymphs they selected 34 residential homesites of 1/2 acre to 1 1/2 acres in Ocean County, New Jersey's Lyme disease hot-spot. They grouped the sites into three specific habitats: the woods, the ecotone (or "edge" of the woods, where the woods meet the lawn), and the turf.

During May and June, they combed the homesites for immature ticks. Late spring is when the nymphs are most active. It's also when people are outdoors a lot.

Of the tick nymphs they found, about 85 percent were in the woods. That's where the immature tick has the greatest chance of finding hosts—mice, birds, rabbits, opossums, raccoons and other small vertebrates.

The ecotone/edge of the woods contained 11 percent of the immature deer ticks.

Turfgrass lawns yielded just 4 percent of the nymphs. They may have ended up in the turf after dropping off an animal host, when fully fed (engorged), where they molt to the nymph stage. Immature deer ticks rarely move more than 10 feet from where they molted, and were mostly found in lawns close to the ecotone (within 4 to 6 feet) if present at all.



Homes with wooded buffers between yards had a large amount of edge habitat, and had a greater number of ticks. Untended borders had more ticks than did landscaped borders. Woodpiles or brushpiles held more ticks nymphs too, probably because there were also more mice there. Mice are a key animal host for immature ticks.

Other studies in New York and Connecticut found 68 percent of deer ticks (all stages) in the woods, 21 percent in the ecotone, and 2 percent in the lawn. Ornamental planting beds yielded 9 percent.

Factors adding to the risk for encountering deer tick nymphs and contracting Lyme disease include: presence of pets (especially dogs), deer paths, birdbaths, woodpiles, brushpiles, bird feeders, and other items or practices which encourage wildlife near the home or encourage people to enter the woods.

Methods of personal protection (repellents, tucking pants into socks) are also necessary in high risk sites. Pesticides labeled for deer tick control can be targeted to high-risk deer tick habitats.

—The author is an entomologist and member of the New Jersey Governor's Council for Lyme Disease.

Tulsa LCO says clients like their lawn care information on video

by Brad Johnson

■ How many lawn care professionals have the time to sit down with every new customer and explain exactly what we can and cannot do with our service? Usually, we simply leave the expectations of our new customers to chance. That's risky.

What about those customers who don't mow and water properly? Do we just hope that our services will offset their mistakes?

Two years ago we wanted to do something about unrealistic expectations and poor cooperation from customers. But, what really moved us to action was an extensive winterkill in our Tulsa marketplace in 1990. Trying to explain to customers, many of them cancelled customers, why the winterkill was not our fault, led us to produce a customer education video, "Side by Side."

We put the 15-minute video to use during

the 1992 season. It explains:

- What our service can and cannot do.
- Proper mowing and watering practices.
- Insect, disease and weed control.
- Fertilization.
- How customers can help us give them better results.

We've tried written customer education manuals. We've used newsletters, and still do. But, some customers don't read them. Given a choice, it seems, most would rather watch a short video than read.

This past season we used about 450 videos in distributing to over 1,000 of our new customers at our company. We simply left a copy of the video, along with a pre-paid mailer (\$1.05 in postage) in their invoice bag with their initial application.

We also left a survey concerning the video to complete and send back to us. Most customers viewed the video and commented positively.

Also, over 70% of the customers sent the video back after viewing. Many videos were used three, four and five times during the season.

This season we're going to use our video as a marketing tool also. We'll be distributing them with leads in 1993 and allowing our prospects and new customers to just keep the video. We believe this will not only generate more leads with the offer of a free video, but will also lead to a higher closing rate.

Does the video really lead to higher customer retention rates, fewer service problems and, in the end, higher profits? After just one year, we really can't say how much our video affected these areas. But, we're convinced they generated better customer relations and cooperation. Many clients said so.

We also believe that companies who make the effort to educate their customers will be ahead of the competition in the 1990s. Our experience with video suggests it's one of the education/communication tools that works, and is affordable.

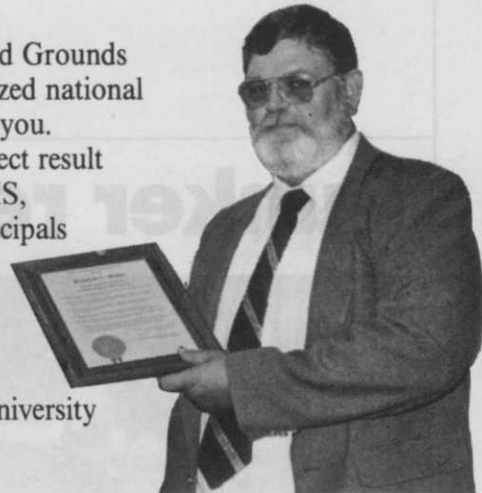
—The author is owner of green up! Inc. For more information about video, contact Customer Solutions in Tulsa, Okla.; (800) 779-2196.

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Bunker renovation



It may be necessary to repair or replace the existing drains or install new drains where none existed.

Step by step on how to make renovation decisions.

■ At times, a golf bunker may require some renovation: enlarging to original size, repairing drainage, replacing all the sand, or a combination of any of these.

Whatever the reason, first determine whether the bunker serves a function and is justified. This should be done with the aid and advice of your course architect.

Bunkers are designed and placed on a golf course to perform specific functions:

- to set shot value (strategic),
- to control shots or moving balls (safety),
- to keep balls from water or out-of-bounds (retention),
- to better define the hole (directional) and
- to improve eye appeal (aesthetic).

In evaluating a renovation program, you may determine that a bunker serves no function and may best be removed.

Enlarging—The bunker may only

require being placed back to its original form. Usually, the built-up rolls that form when the bunker closes in will indicate the original shape.

Take a paint gun and re-define the margin, being careful to maintain the shape and allow for exterior drainage. You don't want surface water draining into the bunker. Take hand edgers or sod spades and cut the new margin approximately six to eight inches, depending on the amount of sand to be replaced. Remove the old material (excellent for repairs and depressions), replace with new sand, and blend into the existing sand.

Drainage repair—It may be necessary to repair or replace the existing drains or install new drains where none existed. This means removing all material in the drainage area. Old drains should not be re-used as this cost is minimal. Old trenches should be upgraded and relined. New trenches should be a minimum of 12-by-12 inches and have a grade of 1 to 1-1/2 percent. All trenching, with the exception of the main line, should run perpendicular to the water flow.

The main line should run through the drain path of the bunker with the required minimum slope to the exit.

Tile should be slotted to accept water but prevent gravel. Experience has shown that wrapped tile promotes clogging. Place the tile on a graded slope of gravel 1 to 1-1/2 inches deep. Secure the tile to prevent floating and cover with pea gravel (1/4 to 3/8 inch) to a depth of approximately four inches. Leave two inches of trench to accept some sand to fill out the trench; prevent mixing the pea gravel into the sand during the raking operation.

If you are going to leave the trenches exposed for any length of time, be sure to cover the gravel with this sand layer to prevent contamination.

Replacing sand—If all the sand in the bunker is to be replaced, it must be removed down to a firm base. This could entail replacing some sand with a heavy material that will compact to prevent excessive depth of the sand layer.

Every superintendent has his or her own method of removing the old material, be it experience or trial-and-error. I have found that the least messy procedure is a rented Bobcat, two dump trucks (beg, borrow or steal), and two to three dozen sheets of outside, low-grade 3/4-inch plywood.

Keep your trucks on the car paths. Lay the sheets of plywood to the bunker and run the Bobcat over this roadbed. Reverse the procedure when placing the new sand. You will find the cost of plywood and rental of a Bobcat well worth the expense. In any case, save the hand edging until last to remove all scars of the operation.

When spreading the new sand, be careful not to disturb the base or drains. Do not run vehicles over the drains as they may crush your tile.

In any bunker renovation involving drainage, carry your outside tile (solid only) to a creek, lake, culvert or surface drain. You will find that anything less will be unacceptable.

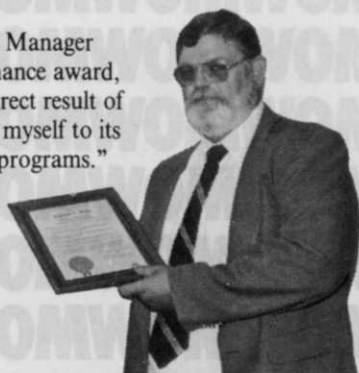
—The author of this article, Al Frennette, CGCS, passed away in September, 1992. It originally appeared in "Through the Green," the publication of the Georgia Golf Course Superintendents Association, and is used with their permission.

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Respect, once earned, must be maintained

by Greg Christovich

Several times in my career, I have found myself feeling as though I was not getting the proper respect for my position. My insecurity about how my peers, subordinates and superiors viewed my position made me feel uncertain about my abilities, and the tendency was to withdraw from visibility—"drop out of sight"—to avoid any further pain.

Many professional superintendents go through the same thing, whether they've been on the job for years, or they've just arrived at a new position. What most managers don't realize is that their perceived lack of respect is caused by their failure to nurture and develop that respect for the long term.

So how does a successful manager earn a high level of respect from others throughout his or her career? It's not easy, but here are some things that I learned,

some the hard way:

1) Don't ever start believing that you've "arrived."

When you finally land that first superintendent's job, or when you've gotten a "prestige" job that's finally paying you what you're worth, don't stop doing the things that got you there. Keep your sleeves rolled up and stay aggressive. The manager who gets comfortable gets complacent, and it shows in his/her work.

I once worked with a superintendent who was having morale problems with his staff. As it turned out, the superintendent was coming to work at 7:30 and was missing some quality time with his crew. Complacency led to a loss of respect.

2) Know that you can't please everybody all the time.

 But maintain an openness and respectful attitude toward all, even those you don't agree with.

Perhaps the greatest advice I ever got was from Johnny Burns, superintendent at

Charlotte (N.C.) Country Club. One day a member walked up to us and noisily complained about the condition of the greens. Mr. Burns told him "thank you" for his concern and feedback, and the member left with a feeling that he was important and respected. Most importantly, he respected the superintendent for taking the time to listen. Johnny's advice to me later? "When someone complains, you first must satisfy their need for acknowledgement, then you have to be like a duck in the rain: let it roll off your back."

Don't hide from the loudmouth types, but don't let what they say break you down. You can't please everybody.

3) Get to know your peer group,

 and stay in touch with them.

At most clubs, the superintendent is on a parallel management level with the golf director or professional, tennis professional, executive chef and controller. The super should know that he or she is part of this management team and that a spirit of cooperation can further mutual respect.

The super who does not have regular contact with the rest of the team becomes "invisible," and mutual respect

continued on page 79

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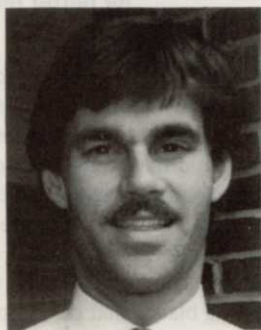
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is not possible.

Lastly, I think each of us needs to know that management of any kind has its thankless moments, and these times should not be misinterpreted as a lack of respect.

The more we continue to feed and care for our own image (the way we do our golf courses), the more respect we'll earn and keep for ourselves in the eyes of others.



—The author is general manager of Selva Marina Country Club in Atlantic Beach, Fla.

Lab services critical to growth of golf, claims turf diagnostician

■ Proper laboratory testing and consulting can prevent the need for early renovation, according to Steve McWilliams, president of Turf Diagnostics & Design, Olathe, Kans.

"Good testing pays off in many ways," says McWilliams. "For example, if a developer builds a golf course that plays well the first season due in part to proper green physics, there's a big payoff in selling housing, attracting new members and building repeat business for the course."

However, if renovation is ultimately needed, quality lab work is especially critical at that time also, says Chuck Dixon, TD&D's president of technical operations.

"An on-site quality control testing program should be implemented to ensure that the construction materials delivered to the site conform to the design specification," says Dixon.

"Following these fundamental procedures creates a classic win-win situation for everyone."

Firms like TD&D can run a variety of tests on sand, turf and soil that can pinpoint a problem and correct it in just a matter of hours, Dixon notes.

In some instances, consulting firms will send a representative to the course to take a look at everything and take the appropriate samples. In other instances, all that is needed is for the superintendent to send the appropriate sample to a testing lab.

"Many clients mail us a sample, we test it and overnight the results back to them," says Dixon. "Time is (sometimes) of the essence, and we are prepared to respond quickly."

TD&D and companies like it can also consult on the optimal mixes for greens, sandtraps and fairways, using the experience they've gained in the past in soil science and lab testing.

So if your course is considering any renovations, the best place to start is with a good laboratory that will test existing materials for you and provide consulting

Liability can take many considerations

Affirmative action, safety are important.

■ Robert Ochs, attorney for the Golf Course Superintendents Association of America, says affirmative action, as defined by the Civil Rights Act of 1964, should be a consideration of most superintendents.

"The act prohibits age, sex, religious or race discrimination in any form," says Ochs. "It requires a minimum of 50 employees and an 'effect on interstate commerce.' This means that if just one of your members is from out of state, it applies to you."



Ochs: best advice is to 'document, document, document.'

Having an affirmative action plan in place can do nothing but benefit your course, Ochs notes.

"If you do have an affirmative action plan, it sets you apart; if you don't, it can be used against you."

Affirmative action plans should be updated on at least an annual basis, he says.

The most important factor in proving yourself in court is an obvious attempt to satisfy the moral requirements set by law. Much of this is just common sense. But documenting your actions and making an attempt to recruit minority groups through local colleges will help.

"If you've given it the 'old college try,' you've satisfied the moral requirement," Ochs told GCSAA members at the organization's annual conference.

When it comes to this and other legal action that may be taken against you and/or your course, he says you should "document, document, document." He prefers handwritten notes to yourself that you can file away.

"They don't have to be fancy," Ochs admits. "Those handwritten notes are fabulous. They're great evidence in a court of law because they show the obvious intent for you to be a 'reasonable man.'"

"If you think something is significant,



Aerification can help break up soil layering and create a healthier putting surface.

Aerification practices for bentgrass greens

Many kinds of machines available for breaking up layers, Georgia expert says.

■ Aerification can alleviate the problems caused by layering on bentgrass greens, according to Dr. Bob Carrow of the University of Georgia.

"The presence of fine-textured layers on bentgrass greens causes the most problems," says Carrow, "although not all layers are bad. But once layering starts, it can become a snowballing effect. Even a very well-built USGA green can develop layers."

Wetting agent injections can help hydrophobic sands while aeration can help hard, compact coarse-textured sandy soils, Carrow claims.

One of the excellent machines to aerate away layers is the Toro Hydroject, which

uses high-pressure water. "It doesn't disturb the surface, it mixes any layers, and it can be done quite often," Carrow says. Though golf course superintendents can't topdress immediately after using a Hydroject, they can inject some liquids other than water—like wetting agents—with the machine.

Another deep aerifier is the Vertidrain, which penetrates up to 18 inches into the soil. "The Vertidrain doesn't distinguish between good and bad layers," says Carrow. "It will decrease rooting, but on bermudagrass the roots left will be much more viable. In the case of bentgrass, this effect becomes a negative."



Carrow: Aerate at least once a year for better results.

write it down. And even if you never use it, you're out nothing."

Another liability consideration is the safety of people on your course, both employees and golfers, he says.

You are always "under an obligation to act as a 'reasonable man.'" Which is nothing more than using common sense in everything you do relating to the safety of the course.

"Your insurance company is a valuable resource when it comes to liability risks," Ochs says.

Also, "posting is the cheapest form of insurance, and it's so easy to do."

—Jerry Roche

Deep drills like the Floyd McKay are good devices to use in both coarse and sandy soils, Carrow states. This spring, the company should have a new prototype for the golf course market ready. On the other hand, "turf conditioners" like the Yeager-Twose sub-aerifier, works better on fine-textured soils. The Yeager-Twose machine uses vibrating blades that can drop materials into slots in the soil.

"If I had a well-built USGA green, I'd still want to do at least one core aeration a year," Carrow concludes. "It's unusual not to build layers, and aerification is still very effective at breaking up those layers."

—Jerry Roche

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WHAT'S NEW IN COURSE MAINTENANCE

Divot repair goes North

■ Frank Dobie at The Sharon Golf Club, Sharon Center, Ohio, has a new approach to repairing divots, outlined in the August, 1992 issue of "Northern Ohio Turf."

"In 1990, we initiated divot repair of tees and fairways with divot mix containers mounted on each golf car," claims Dobie. "Although filling divots from car-mounted containers is standard procedure on southern courses, not much has been done in the North."

Even though he was directed by the club president to start the program, Dobie did not like the idea at first. Among its problems:

- 1) messiness on the part of golfers using the scoops;
- 2) lost scoops;
- 3) open buckets, allowing mix to get wet and difficult dispense;
- 4) players overfilling divot holes;
- 5) players missing the divot hole with the mix; and
- 6) possibility of seeding bentgrass into divots in the rough.

Dobie went ahead anyway and purchased some convenient plastic bottle dispensers made by Club Car, which were easily mounted and had small pouring spouts to keep wetness out. In trials with members, he got "very positive" results.

The first step was to inform and educate members via the monthly newsletter; the next was to install dispensers on each side of the golf cars.

The divot mix is prepared by first spreading 30 gal. of topdressing mix on asphalt to dry in the sun. 10 lbs. Isolite, 2 cups Penneagle bentgrass seed and 3 lbs. of 12-24-14 slow-release fertilizer are then mixed in with a rake. A closed container of the mix is kept outside the pro



Dobie: new divot treatment is successful

shot where clubs are unloaded. Bag boys fill the dispensers when golf cars come in from play.

"We ask players to discard the turf divot in the nearby rough or place it on the floor of the golf car," notes Dobie. "We will be experimenting with a small container mounted on each car for old divots and other debris."

"We see a higher percentage of divots repaired now than ever before. Staff man-hours are much less with this method. Most of all, it heightens the players' awareness of golf etiquette and gives them an active role in maintaining a finer course."

Is 'big bang' affecting courses?

■ The technological boom in golf equipment may soon make many of today's golf courses obsolete, says Paul Fullmer, executive secretary of the American Society of Golf Course Architects.

"The next generation of John Daly wanna-be's could render many courses too short to challenge skilled players," says Fullmer. "The increased carry from high-tech balls and clubs makes it impossible for great old courses to host tournaments. In fact, every recent U.S. Open has undergone extensive lengthening

prior to hosting the event."

"Can anyone argue that Fred Couples, Davis Love and Daly are challenged by the length of any of today's holes?" he asks. "Lightning-fast greens with steep slopes, small target greens, long grass roughs or narrow fairways can't completely compensate for par-5s that are easily reachable in two shots."

Bunkering is also a concern for superintendents. "The bunkering at landing areas often has to be revised so that it comes into play as the architect originally intended," says Fullmer.

These changes make the courses more difficult for the average player, Fullmer contends.

"I think it would be good for golf course architects to join with others in the industry to consider limiting the levels of technology being introduced. Certainly, technology helps players post lower scores, but we have to make sure that advances do not push existing courses to the brink of extinction."

GCSAA international—in big way

■ The growing worldwide demand for the education and training of golf course greenkeepers and superintendents is a driving force in increasing the scope of the Golf Course Superintendents Association of America.

The GCSAA has begun international operations with the following programs:

● The GCSAA sent a fact-finding contingent to the Pacific Rim last year, which led to opening a Pacific Rim office and the first-ever Pacific Rim Golf Course Conference this month.

● It also sent a contingent to visit the South Africa Golf Course Managers and Greenkeepers Association last September. The GCSAA representatives then went to Malaga, Spain to visit with the Asociacion Espanola de Tecnicos en Mantenimiento de Campos de Golf.

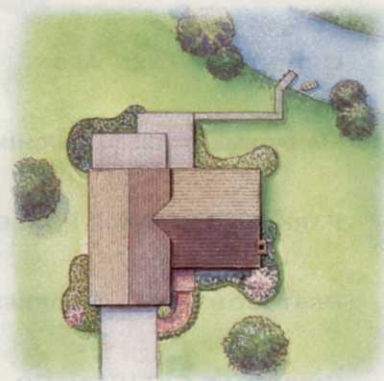
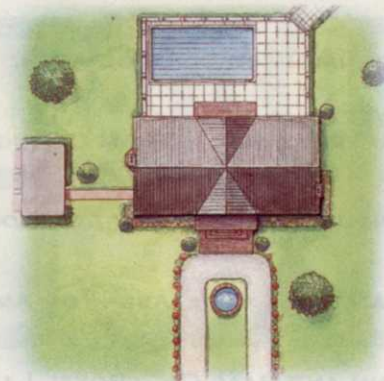
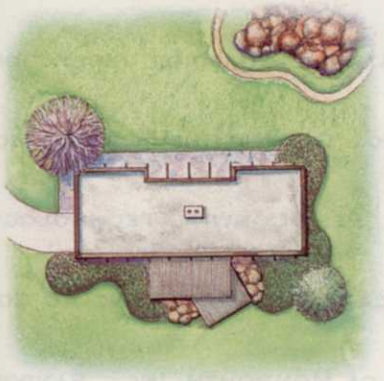
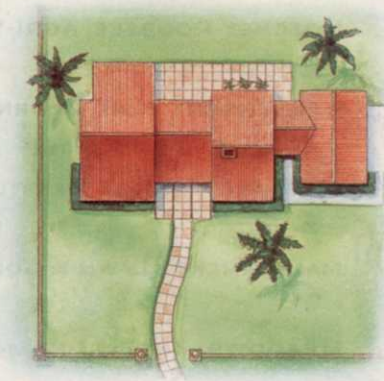
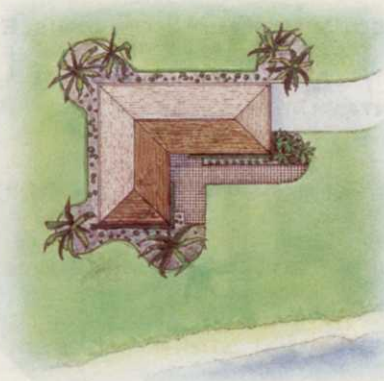
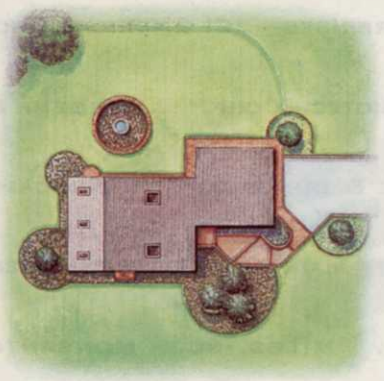
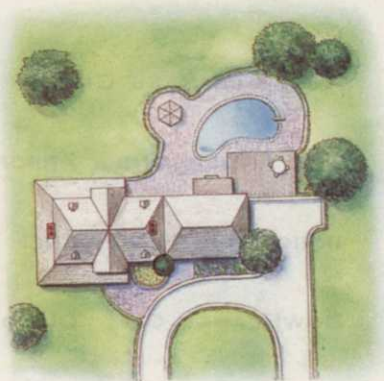
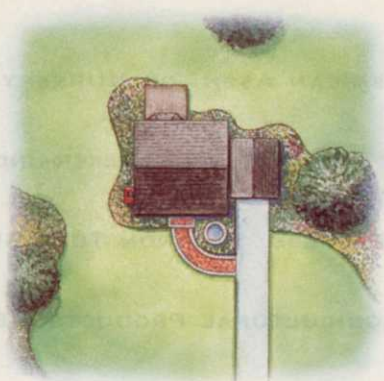
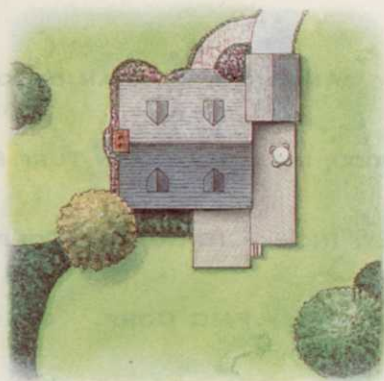
● In late November, 1992, GCSAA director of education David Bishop taught a course on bentgrass to the Japan Turf Superintendents Association.

The GCSAA opened its Pacific Rim office in Singapore. Address is GCSAA (Singapore) Pte. Ltd., 2 Jurong East Street 121, #04-21C, IMM Building, Singapore 2260. Telephone there is 65 568 2224 and fax is 65 568 2473.

The countries served by the GCSAA/Pacific Rim are Australia, China, Hong Kong, India, Indonesia, Japan, Malaysia, New Zealand, the Philippines, Republic of China (Taiwan) and Thailand.

"In areas where local superintendent/greenkeeper organizations exist, GCSAA is responding to their invitations to provide educational programming," says Bishop. "In other areas, such as much of the Pacific Rim, GCSAA is committed to providing direct delivery of technical and educational assistance when and where it's needed."

Others making the foreign trips were general counsel Robert Ochs, Pacific Rim manager Don Bretthauer, past president William Roberts, CEO John Schilling and senior director of operations Diana Green, along with Dr. Nick Christians of Iowa State University.



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Treated seed for overseeding minimizes diseases

Superintendents who overseed cool-season grass mixtures into existing warm-season combinations also raise disease potential for infections caused by *Pythium* and other fungi, according to Dr. Terry Vassey of Horry-Georgetown Technical College in Conway, S.C.

To reduce the risk of damaging seed and seedling diseases, especially where intensive turf management is necessary for

year-round play, superintendents should always use a fungicide. They may overseed with fungicide-treated seed or apply foliar fungicide spray as diseases appear, says Dr. Vassey.

"*Pythium* can wipe out large sections of overseeded golf courses. When course quality and playing ability goes down, it can be devastating," he says.

"During establishment of overseeded

stands, when more water and fertilizer is used to sustain growth—combined with temperatures still reaching 85 to 90 degrees—you have the perfect conditions for disease."

One of the most prevalent and destructive turf diseases is the soilborne fungus *Pythium*, which thrives in warm, moist soils and causes damping off. *Rhizoctonia* and thatchborne *Fusarium* fungi can also cause seed rots, seedling blights and damping off.

Many superintendents spend an estimated \$35,000 to \$50,000 for annual overseeding, Dr. Vassey points out. While this cost is budgeted, he adds, supers don't want to pay it twice, which can happen if *Pythium* or other fungal epidemics arise, causing a need for another seeding.

Good drainage and carefully managed irrigation can help reduce the incidence of diseases, but since the host—turf—can't be eliminated, most turf professionals recommend a systemic fungicide treatment that provides extended seedling protection against pathogens.

Dr. Vassey's comments appeared in Vol. 2, Issue 2 of "Turfgrass Tillers," a newsletter from Gustafson, Inc., Plano, Texas.

For more information on warm-season disease control, consult the May, 1992 issue of *LANDSCAPE MANAGEMENT*.

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HOT TOPICS

Foreclosed properties: a new profit opportunity?

GRANITE SPRINGS, N.Y.—Amid the cycle of fluctuating economic conditions, the maintenance of foreclosures/relocations offers a significant opportunity for landscapers.

Personal bankruptcies and corporate downsizing has led to a dramatic increase in residential home foreclosures and relocations. Banks and institutional owners of such foreclosed properties contract out their resale and management to large, regional real estate brokers, which have emerged because of the tough economy. These brokers prefer to find one reliable and reputable landscape maintenance company to service all their accounts in a given area.

Maintenance of these properties is a necessity, predicated by local town zoning laws and aesthetic concerns. That translates into abundant work and profits. There is opportunity, for those inclined, to

expand well beyond the normal foundation of their clientele.

Real estate agencies and banks have no practical experience in the landscape management sector. The product is simple: that properties be kept in a presentable condition year-round with clear access (clear of snow and organic debris).

By offering a broad flat price rate in which all work performed in a given geographical area is the same, real estate brokers know what to expect and do not have to be concerned with contracted out properties on an individual basis. And the recommendation of your landscape services to the new property owner is what truly makes this an area any eager, aggressive landscape manager cannot overlook.

—The author, Christian Zenk, is chief operating officer of Zenk Country Landscapes, Granite Springs, N.Y.



Foreclosed homes require minimum maintenance and attention, but can be big money-makers if contracted correctly, says Chris Zenk.

Maintaining foreclosures...

Keys to success

- Know the primary sources of work (real estate agencies, banks)
- Incorporate into existing business (serviced any time)
- Minimum maintenance means maximum profit
- All money guaranteed at closing
- Document all work
- Insist your company's name be mentioned at closing (provide business cards)
- Network your services
- Separate crew for foreclosures/relocations

Requirements

- Contractual agreement with prices and/or workrate
- Flexibility to respond to request for estimate
- Authorization to begin work on each property
- Willingness to expand your service area significantly
- Certification as a vendor (\$1 million liability insurance minimum)
- Camera required for before/after photos (for confirmation and documentation of completed work)
- Facsimile machine, copier, computer, and answering service or secretary

—C. Zenk

INSIDE

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Good news, bad news on pesticide front

WASHINGTON—The new administrator of the U.S. Environmental Protection Agency has asked Congress to ease a current law that prohibits trace amounts of some pesticides in foods.

At issue is the "Delaney Clause," which was passed in 1958. According to the *New York Times*, "The EPA has been in a dilemma about enforcing the Delaney Clause since the mid-1980s when studies began to show that residues of pesticides used on fresh food tended to be present at higher levels after processing."

Carol Browner, named EPA chief in December by Pres. Bill Clinton, believes the scientific community "knows more about these chemicals than we did 35 years ago," and that "these foods (containing the pesticides) are safe."

Several Congressional committees are expected to hear the EPA's new arguments against the Delaney Clause, including the Senate Labor and Human Resources Committee led by Sen. Edward Kennedy (D-Mass.), and the House Energy and Commerce subcommittee headed by Rep. Henry Waxman (D-Calif.).

Turfgrass resource guide being written by U.Ga.'s Karnok

ATHENS, Ga.—The Turfgrass Science Division of the Crop Science Society of America is compiling information for a "Turfgrass Management Teaching Resource Guide."

The purpose of the guide is to provide information regarding available teaching resources for individuals involved in turfgrass education or training in high schools, two- and four-year programs, extension, and private industry.

The various resource materials to be included are: videos, slide sets, computer software and services, books, periodicals, posters, etc. The guide will provide complete ordering information, including the individual, company or agency name, address, phone and fax numbers and any costs.

If you have or know of any potential teaching aids that should be included, contact Dr. Keith J. Karnok, Agronomy Dept., Plant Science Bldg., University of Georgia, Athens, GA 30602. His phone number is (707) 542-0931 and fax number is (707) 542-0914.

The action by Browner is not expected to signal a general relaxation of current laws governing the use and sale of other pesticides.

"This is a major, major issue, the number one issue in the ag market right now," says Allen James, executive director of Responsible Industry for a Sound

Environment (RISE). "It could be bad news for specialty pesticides. It could further damage the image of pesticides in general.

"If a product has a large ag use and that use is lost, then how valuable does that product become in the specialty market? It might not be valuable enough to keep it in the specialty area."



Circle No. 141 on Reader Inquiry Card

Barricade[®]

Readers take on ChemLawn, chemicals, certification

Technical staff at ChemLawn praised

To the editor:

Having been a ChemLawn employee for 15 years, I was interested in reading your articles covering the history of ChemLawn (Oct., Nov., Dec., 1992 issues). Unfortunately, I feel that you have left out a very integral part of the ChemLawn story, the technical staff.

The technical training, combined with program development and research that was superior to any in the industry, provided the operation portion of the company the expertise that allowed ChemLawn to be years ahead of the industry.

S. Gary Custis
Kansas City, Mo.

Well said. That staff, which often helped us with articles for the magazine, was the best in the lawn care industry during ChemLawn's heyday. It should be a welcome addition to TruGreen's roster.—Ed.

Reader disputes 2,4-D arguments

To the editor:

I'm writing in reference to your editorial "Is the struggle for 2,4-D finally nearing a climax?" (Page 1, January, 1993 issue.)

Considering the fact that your magazine incorporates *Lawn Care Industry*, one would hardly expect you to take any other position than the one you have: basically "pro-pesticide" and "pro-2,4-D." You represent an industry which desperately needs the economical, and possibly irreplaceable herbicide, to help keep turf areas weed-free.

However, before you are so quick to write off the new 2,4-D study as foolhardy and a waste of money, several other factors should be considered. Especially if 2,4-D really is "the most widely used herbicide in the world."

We have read of the National Cancer Institute farm worker study, which points to a link between 2,4-D and non-Hodgkin's lymphoma. In 1991, we also read of another study linking malignant lymphoma in dogs with 2,4-D contact. Both of these studies have been criticized as "unreliable" due to "methodology."

But what really makes it all rather haunting is the established link between Agent Orange and non-Hodgkin's lymphoma in Vietnam veterans. Agent Orange

was a combination of 2,4-D and 2,4,5-T. While most of the health problems related to Agent Orange have been attributed to the dioxin contaminants resulting from production, it seems likely that 2,4-D could also be a culprit.

Agent White, a combination of 2,4-D and picloram, was also used in Vietnam between 1962 and 1971. Some 17 million gallons of Agents Orange and White were sprayed over the southeast Asian countryside, which would make Vietnam the ideal place to include in any comprehensive new study.

Individual pesticide applicators are constantly reminded to "triple rinse" empty pesticide containers. Perhaps this latest study is the industry's "triple rinse" on 2,4-D. Twenty-two million dollars seems like a bundle to spend on a new safety study, until the person afflicted with lymphatic cancer is a personal friend or family member. Then, it is "only money."

Our first wish should be to find the truth about 2,4-D, no matter how expensive or inconvenient the truth may be to the lawn care industry.

R.M. Donnan
Donnan Landscape Services
McMurray, Pa.

We at LANDSCAPE MANAGEMENT seek the truth as much as anyone. The truth is that—so far—no reliable tests have established a relationship between 2,4-D and any kind of cancer in humans. The National Cancer Institute recently announced, coincidentally, that it will soon begin a more thorough study of farm workers to try and corroborate the results of earlier, less reliable tests.—Ed.

Other certification programs are cited

To the editor:

When I saw my December issue, I was ecstatic...

...But it appears you people didn't do your homework very well. You failed to look at Florida and, I'm sure, other "deep

South" states ("Certifying the Industry," page 8). Here in Florida, we have the Florida Landscape Maintenance Association, which provides three certification programs.

I agree fully with your article: as an active member of the Gulf Coast FLMA, I see our biggest problem being apathy, ignorance, lack of professional self-esteem. Here in Collier County, there are approximately 1,500 licensed lawn care companies (and who knows how many fly-by-nights) who do more than just cut grass. The majority have been in business for several years or more; why they don't want to upgrade their image is beyond me. As I personally see it, they're doing just fine, don't need us, and can't see the need for professional unity, much less certification. (I wonder what if doctors and dentists had the same attitude toward the AMA and ADA?)

I am a Certified Landscape Maintenance Supervisor. It provides great personal satisfaction and keeps me in touch with what's new, what's being considered; and I have the privilege of meeting a lot of great people, who are each a wealth of knowledge.

As a woman in what is considered a man's field, I have to work harder in order to be taken seriously. Certification shows and reminds your peers that you have gone—and continue to go—that extra mile to work in an industry that demands physical labor. Success in this field requires a consciousness, a true dedication, and—above all—a love for what we do.

Shirley K. Koger
Naples, Fla.

We didn't mean to slight state certification programs in our article. But our coast-to-coast readership dictated major emphasis on national programs available to readers. Minor emphasis—as space allowed—was placed on state programs, though many state programs are the equal of the better national programs.—Ed.

NEXT MONTH:

- ☐ Our annual insect control guide, authored by Dr. Harry Niemczyk of Ohio State and Dr. Don Short of the University of Florida.
- ☐ A special "LM Reports" on hardscaping materials you can incorporate into your landscapes for maximum aesthetic appeal and profit.

PGMS votes to release Shulder



Shulder: leaving after 17 years at the PGMS

HUNT VALLEY, Md.

—The Board of Directors of the Professional Grounds Management Society voted not to renew the contract of executive director Allan Shulder at its fall meeting.

"We wanted to move forward faster than we have been," said PGMS president John Michalko of Case Western Reserve University, Cleveland, Ohio. "It was a total board decision."

There are no specific plans to name a replacement, as the position may or may not be re-defined. Until that time, PGMS marketing director John Gillan is serving as interim director.

Shulder, who was informed of the board's decision following its November meeting in Indianapolis, had served as the PGMS's first full-time executive director since 1985. His contract expires March 31st.

During his 17 years as part- and full-time executive director, the PGMS has grown steadily in membership and programs. Three years ago, the PGMS became involved with the Associated Landscape Contractors of America and the Professional Lawn Care Association of America to create the Green Industry Expo. The society has more than 1500 members in the U.S. and at least six foreign countries.

Turf seedsmen cited

AROUND THE COUNTRY—News of interest from U.S. marketers of turfseed:

● **Dr. C. Reed Funk** accepted a royalty check from **Mike Robinson**, president of Seed Research of Oregon, for \$182,000 for sales of the following turfgrass varieties developed by Seed Research in conjunction with Dr. Funk: SR4000, SR4100 and SR4200 perennial ryegrasses; SR3000 and SR3100 hard fescues; SR5000 chewing fescue; Titan and SR800 tall fescues; and SR2000 Kentucky bluegrass.

● **Dr. Gerard W. Pepin** has been named executive vice president and general manager of Pickseed West, Tangent, Ore. Dr. Pepin will continue to oversee Pickseed's research, but **Donald Floyd**, who

joined the company in 1990, will be turfgrass breeder responsible for all day-to-day research activities.

● **Dr. Richard Hurley**, vice president and director of research of Lofts Seed, has been honored with the Outstanding Achievement Award from the Rutgers Turfgrass Alumni Association.

● **Royce R. and Sheldon Richardson** of Farmers Marketing Corp., presented \$100,000 in royalties to the New Mexico Crop Improvement Association for sales of NuMex Sahara bermudagrass developed at

New Mexico State University.

● The University of Arizona received \$14,000 in royalties from Seed Research of Oregon, \$14,000 for sales of SR1020 creeping bentgrass, developed by **Dr. Robert Kneebone**.

The University of Rhode Island received \$12,500 for sales of Providence bentgrass, developed with **Dr. Richard Skogley**.

● Lofts Seed's Golf Course Service and Support Division has expanded with the addition of **Kevin Driscoll** and **John Ferrell**.

THE CLOCKWORK ACCURACY OF PRECISION TIMING

VT 12

CONTROL SWITCH SET HOUR

TURN THIS KAT ONLY TO SET

Barricade

Circle No. 142 Reader Inquiry Card

Mulching while mowing can save your department or your customer big bucks

ROCKVILLE CENTRE, N.Y.—For every half-acre you mow with a mulching mower, you can save \$693 in clipping disposal fees, according to a study by the Rodale Institute Research Center and Garden Way.

According to Dr. Terry Schettini of Rodale, "homeowners with a half-acre lawn in this area (Kutztown, Pa.) could generate 4.65 tons or 1,390 cu. ft. of clippings, and fill at least 346 36-gallon trash bags." Using an average town or community disposal fee of \$2 per bag, the typical homeowner with a half-acre lawn would pay at least \$693 per year in disposal fees—not to mention the cost of purchasing bags.

Schettini also said returning grass clippings to the test plots "seems to make them look healthier and grow more vigorously."

The study proved that returning grass clippings to the sod could provide the fertilization equivalent to 121 lbs. total nitrogen, 17 lbs. total phosphorus and 101 lbs. total potassium per half-acre.

Results from another study conducted at Cornell University seems to support Dr. Schettini's observation about turf appearance when mowed with a mulching mower.

The Cornell study showed 40 percent more growth when the grass was cut by a mulching mower instead of a rear bagger. The lawn was also healthier and more lush when treated with a slow-release natural organic fertilizer, according to results published by Dr. A. Martin Petrovic and Panayiotis A. Nektarios.

'National Lawn Care Month' coming in April

MARIETTA, Ga.—April is National Lawn Care Month, when the lawn care season officially begins for the more than 100 million people who spend a billion hours tending our nation's lawns, parks and sports turf areas every year.

"It's fitting that we celebrate our lawns in April, a month of renewal, and a month when we begin to spend more time outdoors," says Ann McClure, executive director of the Professional Lawn Care Association of America (PLCAA).

Every year, Americans tend a national lawn the size of Indiana—about 25 million acres.

Researchers get a feel for how you can save up to \$1,386 per acre in clipping disposal fees, as they conduct a survey on the efficacy of commercial mulching mowers in the field.



HOT STUFF

Toma honored nationally—twice

CHICAGO—George Toma, recognized as the nation's leading keeper of professional athletic fields, has been honored by the Sports Turf Managers Association and CBS-TV, home of the "All-Madden" football team.

Toma received the Harry C. Gill Memorial Award at the STMA's annual meeting in Indianapolis late last year. He followed that by being honored by John Madden for his work preparing Candlestick Park for the NFC championship game Jan. 17th.

"Toma is admired by sports figures from owners and managers to players and promoters," said Dr. Jim Watson of the Toro Company. "He is often sought out by players who simply want to say 'Thanks for a field that permits outstanding play.'"

The Gill Award is given to a sports turf professional who has made significant contributions to sports turf management and represented the sports turf industry with dedication, enthusiasm and professionalism. The Madden award is given to NFL players and personnel who personify his football philosophy: hard work and a "whatever-it-takes" attitude.

A co-founder of the STMA, Toma has spent more than 40 years in the industry.



George Toma: dual honors for the veteran turf manager

ALCA releases client sensitivity report

RESTON, Va.—The Associated Landscape Contractors of America has released its Crystal Ball XIV Report: "Client Sensitivity in the Total Quality Landscape Contracting Company."

The report builds on the past two years' reports on total quality in the industry. This year's study continues to look deeper into the very center of the total quality concept. It further discusses the true test of a company's progress toward total quality by empowering every employee to practice continuous improvement. It explains how each employee becomes an internal client, and how to go about understanding and satisfying the external client, the customer.

Copies of the report may be obtained for \$5 (ALCA members) or \$15 (non-members, plus \$1.50 shipping and handling. Write ALCA at 12200 Sunrise Valley Dr., Suite 150, Reston, VA 22091; phone (703) 620-6363 or fax (703) 620-6365.

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Now, just one, cost effective application is all it takes to consistently control crabgrass, goosegrass, foxtail, prostrate spurge and other problem weeds all season long, no matter what the season.

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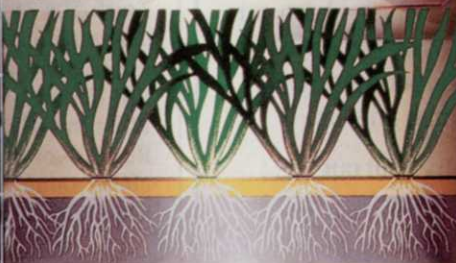
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INFO CENTER

Useful literature and videos for LM readers

TECHNICIAN'S MANUAL...

The Landscape Horticulture Center for Personnel Development offers a training manual for landscape management technicians. It can be used for hands-on training in the field, tailgate talks, and in-house training sessions. Safety is stressed in all sections. The guideline covers turf care, aeration, fertilization, soil conditioning, overseeding, renovation, shrub and tree care, flower bed care, weed control, small engines, irrigation service and repair, and more. The copyrighted training manual is \$14.95, including shipping and handling. Phone (800) 359-6647 with your Visa and MasterCard orders, or send a check to: LHCPD, 2509 E. Thousand Oaks Blvd., #109, Westlake Village, CA 91362.

DR. ROBERTS WRITES...

A booklet titled "Turfgrass and the Environment," written by the former director of the Lawn Institute, Dr. Eliot C. Roberts, and his wife Beverly, is available through the Georgia Turfgrass Foundation Trust. The 34-page booklet is a scientific review of turfgrass. Copies are available for \$10 (\$5 for GTFT members). Write the GTFT at 5198 Ross Rd., Acworth, GA 30102 or phone Doug Moody at (404) 975-4124.

TREE BROCHURES...

Two International Society of Arboriculture brochures, "Plant Health Care" and "Avoiding Tree and Utility Conflicts," are now available. The former is a holistic approach to plant care while the latter is a helpful guide for planting trees responsibly. Both are targeted to the consumer. They can be purchased as part of a series that consists of a display contain-

ing 100 of each of six different titles for \$51.95. They can also be purchased separately for \$8 per 100. Both can be ordered pre-paid from the ISA, P.O. Box GG, Savoy, IL 61874; or fax Visa or MasterCard orders with card number and expiration date to (217) 355-9516.

SPRAYING MANUAL...

This innovative agricultural spray manual is a complete reference work, including such topics as proper tip selection, droplet size and calibration info, and more. It is available by contacting Mike Mikaelian at Bete Fog Nozzle, P.O. Box 311, Greenfield, MA 01301; (800) 235-0049.

FOR SEEDSMEN...

"Atlantic Seedsmen's Association—The First 40 Years" is an 80-page book chronicling the history of the ASA. Checks for \$14 for each book should be made payable to the ASA and mailed to Dr. John E. Baylor, 298 McCormick Ave., State College, PA 16801.

PLANT HEALTH GUIDE...

The first edition of the "Plant Health Guide" is available from Meister Publishing Co. for \$34 plus \$3 postage and handling. It contains complete product listings for more than 47 crops; registered pesticides; how to control blights, rots, wilts, cankers, molds, etc. Write Meister Publishing, 37733 Euclid Ave., Willoughby, OH 44094; phone (216) 942-2000 or fax orders to (216) 942-0662. MasterCard and Visa accepted.

GOING UNDERGROUND...

A pamphlet titled "Protecting Yourself and Others During Underground Boring" is now available from Ditch Witch. The pamphlet discusses the

**Take it from John Hooks
Senior Vice President of
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"We started experimenting with mefluidide to reduce mowing and trimming costs even before they called it *Embark*," says John Hooks, "and I can assure you that these items in my hands, which make up the PBI/Gordon PGR Demo Kit, can teach you in one season what it has taken us many seasons to learn about using PGR's."



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Everett Mealman, Chairman and Chief Executive Officer PBI/Gordon Corporation



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It's really quite simple. You increase the growth of your profits by reducing the growth of your grass.

The experience of Post Properties, Inc. is indicative.

Post Properties, Inc., headquartered in Atlanta, is the premier developer and manager of garden apartment communities totaling some 16,000 units throughout the Southeast. Characteristically their landscaped areas are 35% turfgrass; and 65% ornamental plantings, flower beds, jogging trails, recreation facilities and water.

"Cosmetic image is vital to our success," says John Hooks, senior vice president of Post, "but it puts a strain on maintenance costs." Hooks goes on to say that edging turf adjacent to amenity areas with a mechanical edger can take as much time as mowing the rest of the turf.

"This is what got us started experimenting with mefluidide," says Hooks, "and we have found that, by using Embark Lite, our original edging schedule of once every two weeks can be reduced to every four to six weeks with absolutely no discoloration problems.

"Subsequently, we have found countless ways to use Embark Lite," continues Hooks. "Including broadcasting on tall fescue to reduce the cost of mowing. And, interestingly, our expertise with Embark Lite has been very valuable to us in our program of branching out into the maintenance of properties other than those owned by Post."

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potential danger of striking buried electrical cable. In addition, a video on the same subject is available. For more information, call Ditch Witch at (800) 654-6481.

TWO NEW HARDBACKS...

Prentice Hall has published the second editions of "Landscape Operations" and "Practical Horticulture." The former, written by Leroy G. Hannebaum, discusses management, methods and materials. The latter, written by Laura Williams Rice and Robert P. Rice Jr., is 418 pages long. For more information, write Prentice Hall, Englewood Cliffs, NJ 07632.

APPLYING GRANULARS...

A common sense guide to the proper handling of granular pesticides is now available from Nor-Am Chemical Co. The full-color, four-page booklet is free. For your copy, write Nor-Am Specialty Product Division, P.O. Box 7495, Wilmington, DE 19803 or phone (302) 477-3000.

SHIGO ON ARBORICULTURE...

A new book titled "Modern Arboriculture" by Dr. Alex Shigo costs \$45. The 440-page hardback features 311 large clear diagrams and 16

large full-color photos. Also, you can order a "Modern Arboriculture" slide package with 120 new color slides plus a script for \$79. For more information, write Shigo and Trees, Associates, 4 Denbow Rd., Durham, NH 03824-3105; phone (603) 868-7459; or fax (603) 868-1045.

NEW TREES...

"Landscape Plants for the 21st Century" by Erik A. Neumann lists 65 superior plant introductions from the U.S. National Arboretum. The trees and shrubs are described in the 72-page book, which costs \$7.50 plus \$1.50 shipping and handling for each copy. Send check or money order to Friends of the National Arboretum, 3501 New York Ave., NE, Washington, DC 20002 or call (202) 544-8733.

WATER CONSERVATION...

Easy Gardener has expanded its free 12-page booklet "Every Drop Counts" to include two pages of additional information and instruction on bird feeding and tree care. The easy-to-read, full-color booklet offers helpful hints on how to select and hang birdfeeders, as well as tips on how to avoid tree damage when using power equipment. For a copy, write "Every Drop Counts," Easy Gardener, P.O.

Box 21025, Waco, TX 76702.

TELEPHONE TECHNIQUES...

For just \$69 (National Landscape Association members) or \$99 (non-members), you can own a "Landscape Telephone Techniques" kit, available from the NLA. Each kit contains a manager's manual, a manager's cassette tape, a participant manual, six participant workbooks, a participant cassette tape and a blank practice cassette tape. It can be used over and over to train employees. For your copy, send check payable to NLA, 1250 I Street, NW, Suite 500, Washington, DC 20005.

RESTORING LANDSCAPES...

The "Landscape Restoration Handbook" is a joint publication of the USGA and the New York Audubon Society. It is a comprehensive guide that shows how to obtain natural landscape benefits like better water quality, less erosion, lower maintenance, less chemical use, and plant and animal species diversity. Target readers are golf course superintendents, landscape planners and horticulturists. For more information on ordering the 650-page book, phone Lewis Publishers at (800) 272-7737 or the USGA at (800) 336-4446.

GREEN INDUSTRY EVENTS

MARCH

16-17: New England Landscape Exposition, Center of New Hampshire, Manchester, N.H. Contact: Guy Hodgdon, New Hampshire Landscape Association, 45 Elwyn Rd., Portsmouth, NH 03801; (800) 639-5601.

22-24: Preventive Maintenance of Buildings and Grounds, University of Wisconsin, Madison, Wis. Contact: Dr. Raymond C. Matulionis, 432 N. Lake St., Madison, WI 53706-1498; (608) 263-3372.

26-28: ALCA Student Field Days, SUNY Cobleskill (N.Y.). Contact: ALCA, 12200 Sunrise Valley Dr., Suite 150, Reston, VA 22091; (703) 620-6363.

APRIL

12-13: Southeastern Turfgrass Conference, Tifton, Ga. Contact: Dr. Glenn W. Burton, Coastal Plain Station, P.O. Box 748, Tifton, GA 31793; (912) 386-3360; fax (912) 386-7005.

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Pendimethalin
Nothing beats pendimethalin.

Always read and follow label directions carefully.

Circle No. 102 on Reader Inquiry Card

JOB TALK

Garden retreat a safe haven for patients

Designing a garden for victims of Alzheimer's disease required knowledge of the symptoms and patients' special needs. Safety was the top priority.

by Craig R. Brown, ASLA

■ In 1988, The Renaissance, a suburban Cleveland, Ohio, retirement community, decided to add a courtyard for its elderly residents afflicted with Alzheimer's disease.

The Arbor Garden opened in the spring of 1990, and it now offers a soothing, stimulating and secure escape for patients who require special attention.

HWH Architects Engineers Planners, Inc. of Cleveland was chosen to handle the project. The biggest concern of the board of trustees was that the designers realize the ways Alzheimer's can affect its victims, and that the design be executed accordingly.

Knowledge of victims' behavior patterns would be necessary, not only for the patients' safety and enjoyment, but to maximize the experience for other visitors and minimize the amount of required supervision.

Alzheimer's victims are easily bewildered by simple skills, which can lead to extreme frustration that can thrust the victim into panic or harmful behavior. Designers had to protect the patient from himself, and still have enjoyable surroundings.

Two items were most important: patients must be kept away from walls or from seeing beyond the courtyard. A glimpse of the outside could frustrate patients who realize they can no longer move about freely. They might also try to escape by climbing

walls, fences or trees, risking injury or disorientation and panic.

Walkway design was important; the garden would need paths that permit both leisurely strolls and frenetic pacing—frequent traits in victims who try to diffuse the nervous energy often associated with Alzheimer's.

These walkways would need to double back on themselves, returning to a central location. Singular avenues that lead to landscape features or seating areas could confuse or disorient some patients when they reach a "dead end," and simply forget to turn around.

The courtyard was installed in a corner of the assisted-living residence hall. Architects designed a curved brick wall about six feet high, matching the original brick.

An old-fashioned garden arbor is the focal point of the courtyard. It's situated on a central access outside the main sliding glass doors that lead from the patients' recreation area. The arbor itself is a massive, wood-frame structure supported by eight-foot high brick piers.

The arbor is visible from anywhere in the garden, so patients can always remain oriented to their surroundings. The walkway leads to and through the arbor from several directions and also has glider seats set underneath. This allows users to sit and rest in filtered shade while observing other people, birds, flowering shrubs or hanging, rustling vines.

The surface walkway, although not as visually attractive as the arbor, is arguably the most important design element. Concern was for the type and color of material to be used. Because users are primarily elderly and physically handicapped, only minor grade change was acceptable. The pavement was made as smooth as possible, with no joints or cracks to trip us wheelchairs, canes, crutches or walkers.

Asphalt was ruled out, despite its smooth surface. The drawback was the heat it would generate on warm summer days, especially in the small, enclosed garden space.

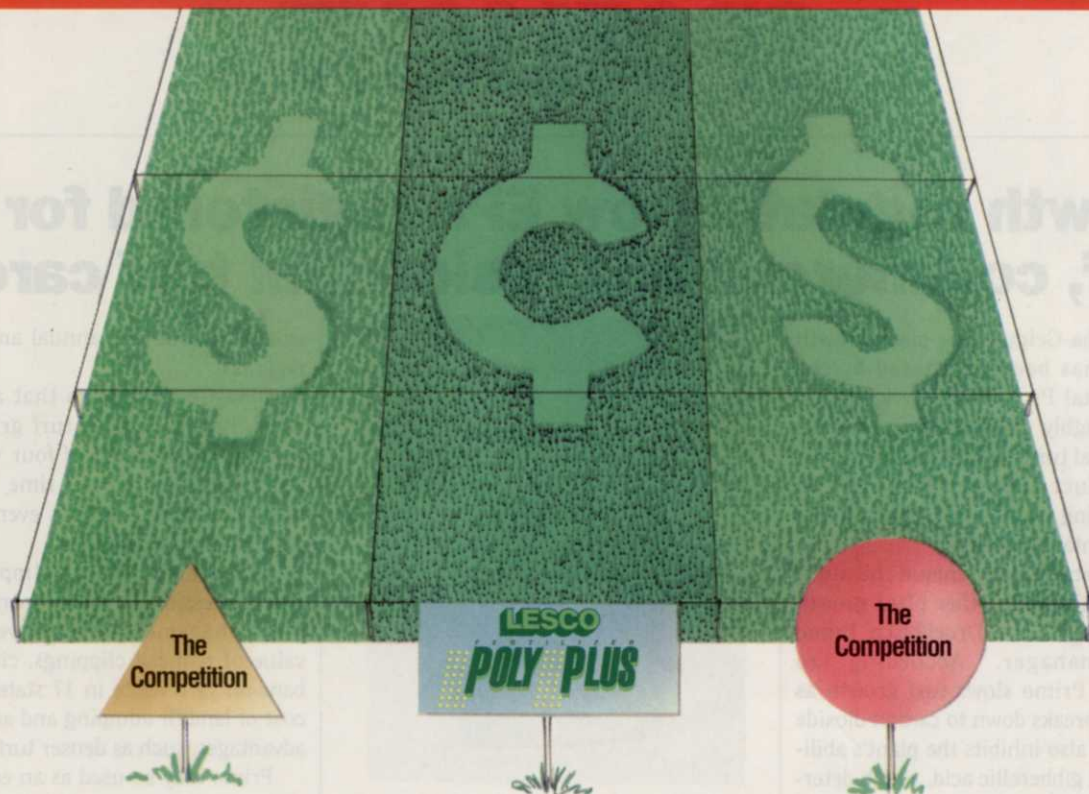
An extra-thick concrete surface was chosen, slightly pitched for runoff, but otherwise level. The base material was carefully installed and compacted to minimize subsequent movement or settling. The full perimeter of the walkway was then sub-drained to collect sub-surface moisture before it could seep under the concrete, minimizing any freeze-thaw action from harsh northern climate. A rose-colored admixture softened the glare, and only cost about 25 cents more per square foot.

—The author is manager of site planning, HWH Architects Engineers Planners, Inc.



The Arbor Garden walkway returns to a central area. The planter is for patients who like to grow flowers or vegetables.

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PRODUCT SPOTLIGHT

Growth regulator now EPA-registered for golf, commercial and residential turf care

■ Primo, Ciba-Geigy's new plant growth regulator, has been registered by the Environmental Protection Agency (EPA) for use on highly maintained commercial and residential turf, and golf courses.

The product had been through two years of testing by all user groups under an Experimental Use Permit.

"Primo features new, unique chemistry that's not available in other plant growth regulators," says Bernd Druebbisch, Primo product manager. According to Druebbisch, Primo slows turf growth as needed, and breaks down to carbon dioxide and water. It also inhibits the plant's ability to produce gibberellic acid, which determines cell elongation and internode length.

Use on all turf species—Primo may be used on all major warm- and cool-sea-



son turf species, including bahiagrass, common and hybrid bermudagrass, centipedegrass, St. Augustinegrass, zoysiagrass, bentgrass, Kentucky bluegrass, red

and tall fescue and annual and perennial ryegrass.

Ciba-Geigy reports that at standard rates, Primo reduces turf growth by 50 percent for a period of four weeks. This reduces the amount of time required to mow a property, perhaps even helping to eliminate mowing cycles.

Primo also reduces clippings. Lawn care professionals, landscapers and mowing management firms have noted the value of reduced clippings, citing landfill bans on yard waste in 17 states, increased cost of landfill dumping and aesthetic turf advantages, such as denser turf.

Primo may be used as an edging material around ornamental beds, trees, curbs and other areas, and will not injure non-target plants or trees.

Circle No. 191 on Reader Inquiry Card

PRODUCT REVIEW

Drainage matting product is perfect for use on decks

Enkadrain is a lightweight, durable alternative to gravel for landscape planters, roof decks and plaza slabs, Akzo Industrial Systems says.

By replacing the conventional four to six inches of gravel, the Enkadrain matting offers landscapers considerable savings in weight and cost of hauling.

The matting is described as a polyester filter fabric heat-bonded to a resilient nylon matting of open, three-dimensional construction.

During rainy weather, the filter fabric allows water to drain, while holding back the adjacent soil. By providing proper drainage, problems can be avoided.

According to Akzo, Enkadrain helps prevent root rot and promotes even more root development in planters of any size.

Circle No. 192 on Reader Inquiry Card

Artificial bentgrass divot-proof, suitable for range use

A new simulated bentgrass tee surface has been developed by U.S. Indoor Golf Inc., according to president Irving Bookspan.



The surface features two inches of polypropylene filled with three types of aggregate fiber. It has a shock pad underneath with a simulated rootzone and vertical draining system.

Bookspan says golfers can't take divots

from the tee turf, and placing tees into it is easy, no matter what the weather conditions.

The holes produced by the tees are naturally refilled by the aggregate fibers when the tees are removed.

The surface is also perfect for driving ranges, and a similar, low-maintenance simulated bentgrass surface has been developed for greens, according to Bookspan.

Circle No. 193 on Reader Inquiry Card

Turf-type tall fescue gets plant protection status

Pickseed West, Inc., recently announced that the United States Department of Agriculture issued Plant Variety Protection to Shortstop turf-type tall fescue.

Dr. Jerry Pepin, Pickseed's executive vice-president says Shortstop is a slower-

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PRODUCT REVIEW

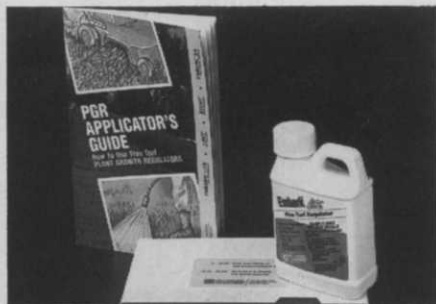
growing, uniform variety, with very dark green color and medium fine leaf texture.

Shortstop performed well in the recent National Tall Fescue Test, ranking first overall among 65 varieties for lowest vertical growth rating. Shortstop also ranked in the top five for turf quality, genetic color, leaf texture and brown patch resistance in the 1991 results of this test.

Circle No. 194 on Reader Inquiry Card

Kit gives a preview of new turfgrass growth regulator

PBI/Gordon Corporation is offering a turfgrass growth regulator preview kit



containing a 124-page booklet, 14-minute video and free product for up to 4000 sq. ft. of turf.

The kit is available to turf managers, lawn care operators, and mowing contractors interested in learning how Embark Lite Fine Turf Regulator can reduce the time and expense of mowing, trimming and clippings disposal.

Circle No. 195 on Reader Inquiry Card

EPA grants approval for turf herbicide label update

Monsanto company has obtained approval from the Environmental Protection Agency for an updated label for Dimension turf herbicide. The revisions further define and expand application procedure information and precautions.

The updated label includes recommendations that Dimension not be applied to turf that has been stressed from temperature extremes, lack of moisture, improper fertilization, soil pH imbalance, use of other chemicals, insects, diseases or mechanical operations.

According to Monsanto, best results are obtained when Dimension is applied to turf that has a well-developed rooting sys-

tem using conventional liquid application equipment with flat-fan nozzles.

The updated label includes turfgrass species distinctions for applying Dimension to certain varieties of creeping bentgrass, fine fescue, bermudagrass and colonial bentgrass. The new label includes a warning for application to older varieties of creeping bentgrass such as Carmen, Cohansey and Seaside, colonial and browntop bentgrasses and Tifgreen or 328 hybrid bermudagrass due to potential for turfgrass injury.

Circle No. 196 on Reader Inquiry Card

New utility vehicles rugged, stable, with good traction

John Deere's "Gators" are new all-purpose turf and off-road vehicles. Their design is rugged, with aggressive traction, stability and light maneuverability.



The 10-hp Gator 4 x 2 has on four wheels, with 2-wheel drive and differential lock. A single-cylinder, air-cooled engine supplies the power. The cargo box is 10 cu. ft., and hauls up to 500 lbs.

The 18-hp Gator 6 x 4 rolls on six wheels and has a 4-wheel drive and differential lock. It's powered by a twin-cylinder, liquid-cooled engine. The larger model has an 11 cu. ft. cargo box hauls 800 lbs. Total payload capacity with operator and passenger is 1200 lbs.

Halogen headlights are standard. Other features include rack-and-pinion steering and internal wet disk brakes.

Circle No. 197 on Reader Inquiry Card

Five-gang fairway mower cuts low to the ground

The new five-gang fairway mower from Jacobsen Division of Textron, the LF-3810, cuts a 115-inch swath with five, 7-inch diameter, 10-blade reels.

Thanks to the company's down-pressure spring system, the mower follows ground contours more precisely for a qual-



ity cut, even with heights as low as 3/8-inch, and mowing speeds up to 7.5 mph.

The mower's 389-hp diesel engine is isolation mounted between the front drive wheels for quiet operation, less vibration and better traction.

Circle No. 198 on Reader Inquiry Card

Companies sign pact to research, market fungicide

The O.M. Scott & Sons Company has signed an exclusive agreement with Sandoz for tolcolfos-methyl fungicide, also known as Risolex.

Scotts has been screening tolcolfos-methyl fungicide since the 1980's. The agreement between the two companies leverages Sandoz's strong position in control technology, and Scotts' applied research, development and marketing strength.

Risolex is being touted for its brown patch and snow mold control attributes, whether alone or in a fungicide pre-mix. Effective on both cool- and warm-season turf, Risolex has the potential to be the active or component ingredient in up to six products in the company's line.

Registration for Risolex is anticipated to occur in early 1994. Product sales could begin in 1995.

Circle No. 199 on Reader Inquiry Card

Material handlers carry the big loads, are easy on turf

Mustang Manufacturing Co. is promoting the payload capacities of its material handlers: from 20 to 91 cu. ft. (one to six tons), ideal for larger golf course projects.

continued on page 110

LANDSCAPE MANAGEMENT

**Cover-to-cover
readership,
every month,
from read-
ers who
count!**

Dear Editor,

Feb. 2, 1993

I'm writing this letter, to let you know, how much your magazine has meant to me. I own a small company in Campbellsville, Kentucky. I started my lawn care company in February, of 1989. From day one, I've done everything by myself. I started out just mowing, trimming shrubs, whatever I could get. Two years ago, I started into the chemical lawn care. Last year I bought out, a nearby company to get their accounts. At one time, I was mowing over (70) seventy lawns a week, 50/50 residential/comm., plus spraying about (60) sixty clients, (5) times a year.

Now, I only mow around 40 lawns per week, covering (12) counties, because I have almost (300) clients I spray, covering (12) counties, (most of Central Kentucky). Plus, I signed a new contract last year to take over grounds maintenance at nearby Campbellsville College. It's a 50 acre facility, which covers mowing, tree/shrub care, athletic fields and chemical applications. I mow alot of my commerial accounts at night where feasible. To give me more time in the day, to spray lawns; or be at the college. I like doing it all myself, including all office work and bookkeeping, because I always know what's going on, what I've completed, and where I stand financially. I'm very busy, and need all the help I can get.

As you can see, I get useful advice and suggestions from when I read your magazine, I really appreciate your magazine. It has helped me several times in the past. Articles on expanding and using more services, to maybe just a small tip in a special department. I just wanted to let you know that your magazine doesn't just get thrown over on a shelf, it gets read, cover to cover.

Thank you, so much!
Yours Truly,

Rob Harris
owner/operator
HARRIS LAWN CARE
P. O. Box 277
Campbellsville, KY 42719

LANDSCAPE MANAGEMENT's BPA-audited circulation provides advertisers with 45,106 captive readers each month in the four key categories most frequently specified by those wishing to reach the green industry:

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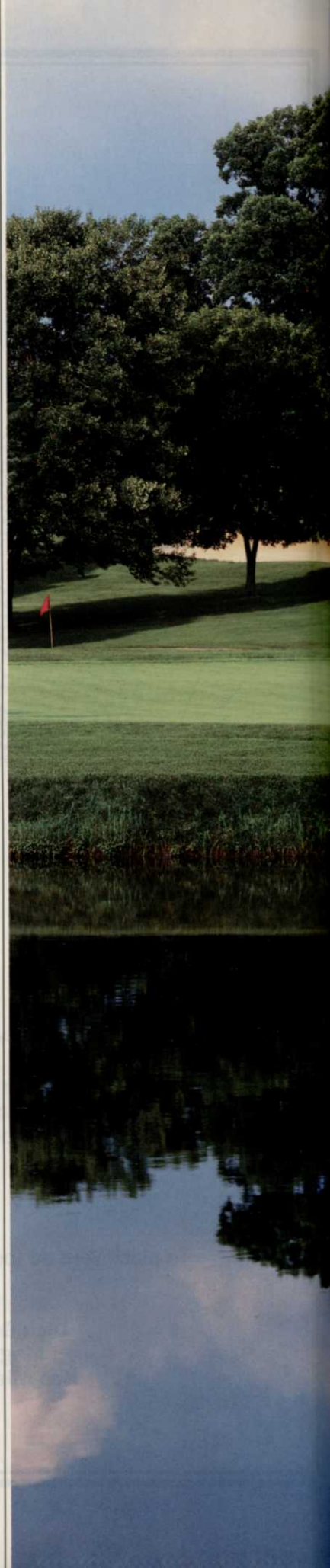
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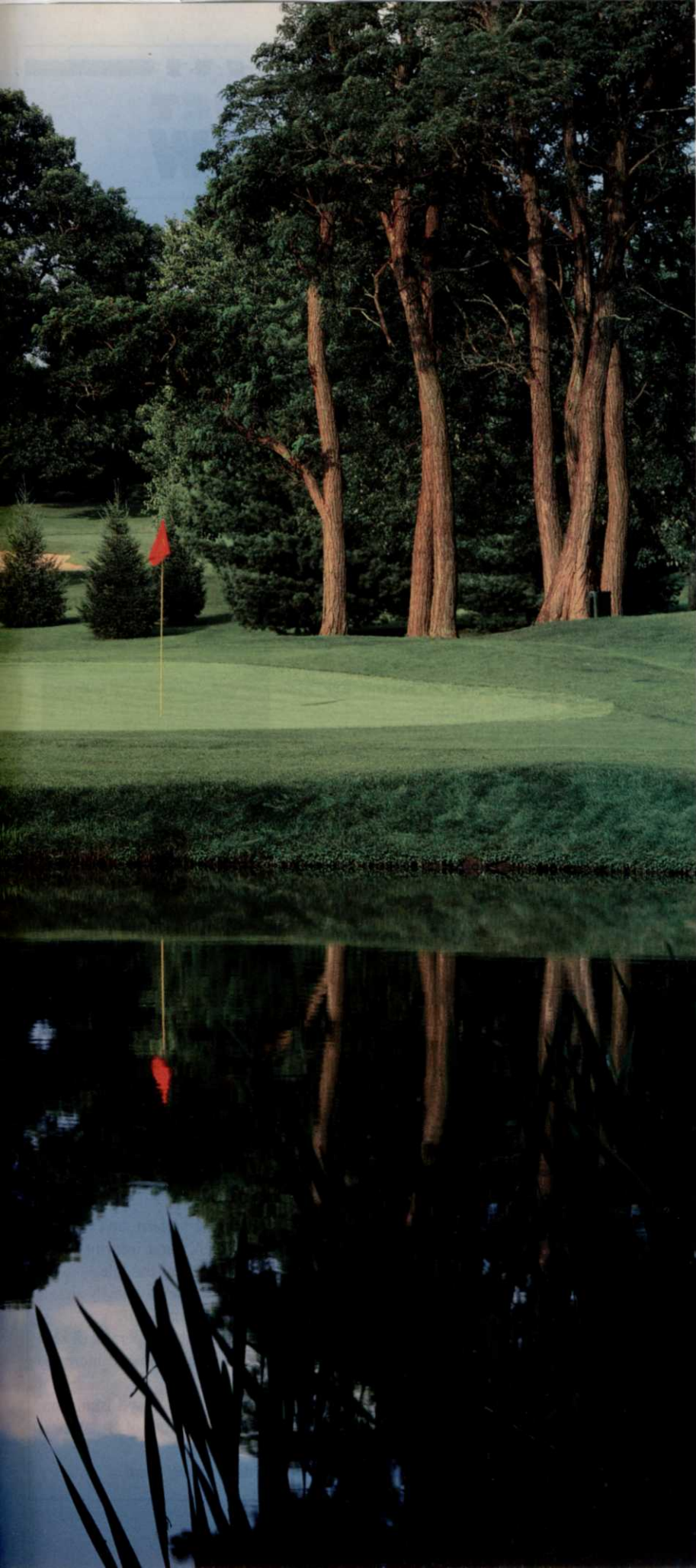
19

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93

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Add to that the fact that it's a low-odor compound available in 6.2% granular as well as 80% water soluble powder. Now you can understand why it is the fastest growing grub insecticide on the market.

For more information, contact Miles Inc., Specialty Products, Box 4913, Kansas City, MO 64120. (800) 842-8020.

The time is right for DYLOX.



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Circle No. 127 on Reader Inquiry Card

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Circle No. 147 on Reader Inquiry Card

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SHOWCASE
**PRODUCT
 REVIEW**

Mustang says golf course superintendents have found material handlers particularly useful for reconstructing greens and sand traps, as well as a general utility vehicle for hauling material. Most importantly, Mustang says these vehicles can carry maximum capacity loads across turf without causing damage.

Several models of two- and four-wheel drive material handlers are available. The two-wheel drive models have rear-wheel steering, and the four-wheel drive models have up to 30 degrees articulation and 10 degrees oscillation.

Circle No. 200 on Reader Inquiry Card

New broadleaf herbicide is dry-sprayable

Encore DSC (dry sprayable concentrate) is the newest broadleaf herbicide marketed by PBI/Gordon. Encore is a patented formulation containing MCPA.

Packaged in dissolvable, water-soluble bags, the product reduces worker exposure and requires no measuring. Container disposal problems and triple-rinsing are also eliminated.

When applied to foliage, Encore DSC provides a broad spectrum of weed control and may be used on most types of lawns except St. Augustinegrass and dichondra.

Treated areas may be seeded safely three to four weeks after application.



Circle No. 201 on Reader Inquiry Card

Soil temperature control system installed

A soil temperature control system raise temperatures below ground, resulting in better turf growth, according to BioTherm, makers of Turf-Temp.

Tubing is placed in an even pattern across the green area, and is connected to special manifolds below the skirt. A choker layer of sand is added, and 12 inches of rootzone mixture.

The supply and return lines are then connected to the heat module discreetly located away from the green.

A water mixture circulates through the system, and multiple soil sensors below the surface of the green, send information to the electronic soil thermostat located at the heat module.

The Turf-Temp was recently installed under a heavily-shaded green at the Palos Verdes Golf Club in Petaluma, Calif.

Superintendent Steve Young reports that temperatures have gone from 39 to 50 degrees, with improved color and increased leaf growth.

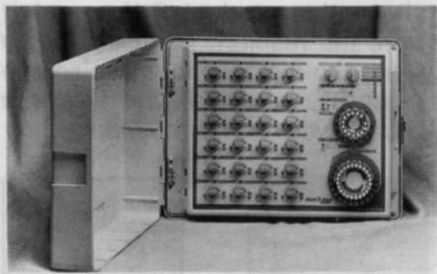
The system's Megatube is super flexible for easy installation. The tubes are resistant to chemicals, and each foot of Megatube is under warranty for 10 years.

Circle No. 202 on Reader Inquiry Card

PRODUCT REVIEW

Turfmaster controller combines circuitries

Turfmaster, a state-of-the-art hybrid electromechanical controller, has been introduced by Rain Bird Sales.



The unit combines electromechanical and micro-electronic circuitry. It is capable of fully automatic, semi-automatic or manual operation. All of the programming is through user-friendly dial or lever switches and push/pull pins.

One of the Turfmaster's key features is "Cycle and Soak," which allows the terrain to absorb water at its own pace. The unit also has a non-volatile memory which keeps time during power outages for a minimum of five days.

Circle No. 203 on Reader Inquiry Card

Broadcast spreader patrols landscape borders cleanly

Spyker Spreaders has added the "Border Patrol" broadcast spreader to its line of equipment.

The unit prevents spreading on walks,



drives and other selected areas. It ensures a clean spread, does not produce a burn line, and operates with the touch of a toe.

The Border Patrol deflects the product uniformly across the spread band. It diverts the spread pattern from the left side of the spreader to the front and right side only.

Circle No. 204 on Reader Inquiry Card

Track weather conditions to predict product applications

The Envirocaster is a field installed, predictive instrument designed to monitor the environmental conditions when plant disease and pests become most active.

The computer-driven system is automated and PC compatible.

Neogen Corporation has developed forecasting models for a wide variety of outdoor management practices.

Each Envirocaster holds up to six models per module. A full-equipped unit can monitor air temperature; relative humidity; degree days; leaf wetness; rainfall; soil temperature at two depths; wind speed and direction; soil moisture and dewpoint.

Circle No. 205 on Reader Inquiry Card

Improved aerator unit now follows ground contours

Ransomes America Corporation has made some improvements to its Ryan GA-30 aerator.

The GA-30 now features a free-floating aerator head, which closely follows the contours of the turf. According to Ransomes America, this provides more consistent core cultivation.

Ground pressure is lowered, thanks to new, larger tires. The once optional Windrower attachment is now standard equipment on all GA-30 aerators. The Windrower has double blades to gather cores to the center in the area behind the unit. This prevents tires from crushing the cores on the next pass.

New speed controls operate independent of the aerator drive, to help the operator maintain aerating speeds on slopes.

Circle No. 206 on Reader Inquiry Card

Apply wetting agent with accuracy, consistency

Aquatrols has introduced Dilute 'n Shoot, a new application system designed especially for applying AquaGro-L concentrate.

According to the company, the Dilute 'n Shoot is a hand-held, hose-end proportioner capable of siphoning concentrated AquaGro-L out of the attached five-quart bottle and mixing it with enough water to ensure turf safety, even under the most

stressful weather conditions.

Developed by Aquatrols in response to turf managers' requests, Dilute 'n Shoot is



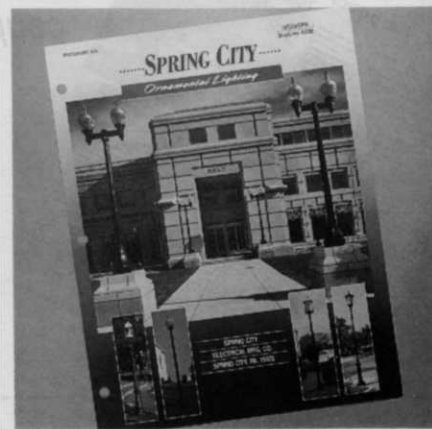
intended as an alternative to applying AquaGro-L with a sprayer and watering it in. It's portable, and can be taken out for use on greens and tees, or to treat localized dry spots.

Circle No. 207 on Reader Inquiry Card

Ornamental lighting info is yours for the asking

A six-page, full-color brochure from Spring City Electrical Manufacturing Co. shows the company's full line of historically authentic, cast iron, ornamental lighting.

The brochure shows the many styles available, and describes its lighted or



unlighted cast iron bollards which thematically harmonize with lighting post styles.

Spring City says it can produce custom-designed orders and historical lighting reproductions.

According to the company, cast iron is an ideal material for lighting fixtures: vibration resistant, sturdy, low-maintenance and corrosion-resistant.

Circle No. 208 on Reader Inquiry Card

The Key to Your Long-Term Nitrogen Needs

Top-quality NITROFORM® Slow-Release Nitrogen provides predictable feeding during turf growth cycles when soil microorganisms are most active. That's why a single application of this 38-0-0 nitrogen continues to be released beyond a single season. NITROFORM works equally well when applied on top of soil or in soil mixes used for ornamental trees and shrubs, and it's even compatible with many pesticides. Sold as straight NITROFORM in a powder for spraying and in two different granular sizes



for dry application, this versatile nitrogen is also available in blends from your distributor or blender.

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IMPORTANT: Please remember always to read and follow carefully all label directions when applying any chemical.

PRODUCT REVIEW

Seeder carries 30-bushels, mounts to many tractors

Land Pride's newest seeder is a 10-foot primary seeder that is able to carry 30 bushels of seed.



The seed box is a welded, water-tight compartment with a double-wall lid and a V-shaped bottom for complete clean-out of seed. Its fluted seed cups meter precise amounts and can be set to accommodate a wide range of seeding requirements.

The seed cups are driven off of the front roller of the seeder, to insure an uninterrupted flow of seed. A wind-protected seed splash board fans the seed out evenly across the width of the seeder.

The seeder has cast iron wheels, mounted loosely around a steel pipe. The first row of packer wheels pulverizes the clods and pushes other rocks down into the seed bed. As the seed is dropped just ahead of the second row of packer wheels, the seed is firmly pressed into the soil.

Circle No. 209 on Reader Inquiry Card

Liquid deicer contains potassium and acetic acid

Cryotech Deicing Technology is now marketing an environmentally-safe liquid highway de-icer.



C-92 Liquid Commercial deicer is made from potassium and acetic acid, which is

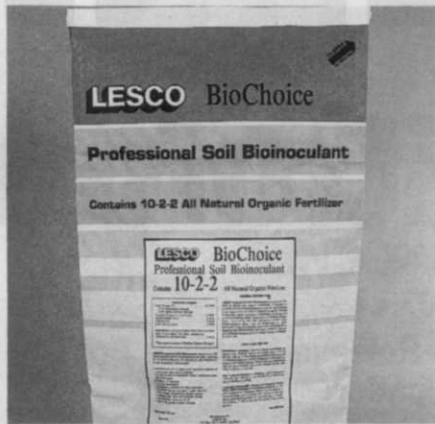
the principal component of vinegar.

Cryotech says C-92 is specially developed to clear snow and ice on highways and bridges, plus other asphalt or concrete and steel structures such as parking decks and sidewalks. It may be used for direct application or as a pre-wetting agent with solid deicers.

Circle No. 210 on Reader Inquiry Card

Soil bioinoculant contains naturally-found microbes

Lesco's new Professional Soil Bioinoculant 10-2-2 is a premium mixture of naturally-occurring soil microorgan-



isms, enzymes and nutrients. It is a low-odor, natural organic fertilizer carrier.

According to Lesco, the product reintroduces soil microbes that have been depleted by cultural and chemical practices.

A depletion of soil microbes may increase plant susceptibility to certain soil-borne disease pathogens.

Professional Soil Bioinoculant contains more than 200 million microorganisms per gram of product. Application provides a slow release source of nitrogen and other nutrients to increase soil microbial activity and improve plant health and growth.

Circle No. 211 on Reader Inquiry Card

Surface aspirating aerator for water two, 12 feet deep

The Toro Surface Aspirating Aerator is suited for bodies of water from two to 12 feet deep.

The unit injects atmospheric oxygen into the water at a high velocity, for an

effective and environmentally safe method of air circulation in a pond.

The system eliminates sprays and splashes while reducing odors, controlling algae and eliminating stratification. The longer bubble hang time created by the horizontal water movement maximizes the oxygen transfer.

The aerator is available in one, two and three-hp models with high efficiency TEFC motors to minimize maintenance.

AquaScape Technologies manufactures a complete product line of pond water quality management equipment distributed exclusively through the Toro Worldwide Distribution Network.

Circle No. 212 on Reader Inquiry Card

Wood fiber mulch product line ships in early spring

Wood Recycling, Inc. introduces its all-new virgin wood fiber mulch product line.

The company will begin to ship four new products in the spring of this year.

WRI offers Refiber brand fiber mulch in 50-lb. bales, palletized and stretch wrapped for easy handling.

The most unique aspect of the product is that it is manufactured from recycled wood waste.

Circle No. 213 on Reader Inquiry Card

Hydro-seeder controls are all within reach of the driver

GeoQuip's new Hydroseeder is made of 100 percent stainless steel, and is totally driver-operated. All controls, including a remote spray gun are within the driver's reach.



Stainless steel tanks are an advantage, says GeoQuip, because they never require relining.

The driver-operated design cuts labor costs. From the cab, the driver controls the pump engine throttle, and gates to the

Landscape Management...it's all you really need...pass it on...

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LANDSCAPE MANAGEMENT

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PASS IT ON!

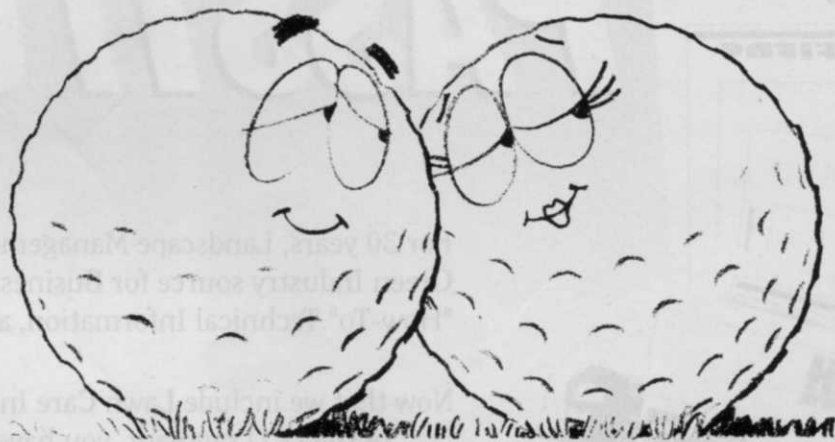
For 30 years, Landscape Management has been your Green Industry source for Business Management "How-To" Technical Information, and Industry News.

Now that we include Lawn Care Industry's coverage of the LCO segment, you have more reasons than ever to read LM and... **PASS IT ON!**

Your crew, a partner, technicians or even customers... LM's editorial, useful, timely and understandable will help you and other professionals with your work, and in promoting the benefits of healthy attractive turf.



This Week, Set Aside 4 Hours And Play A Round



With Someone Special.

Get out and play. And remember, when you share your love of golf
you have something the two of you can share for a lifetime.

Golf... Share The Experience.



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This Week, Set Aside 4 Hours And Teach Your Youngster



About The Birds And The Tees.

Take your son or daughter out to play. And remember, when you share your love of golf you have something the two of you can share for a lifetime.

Golf...Share The Experience.

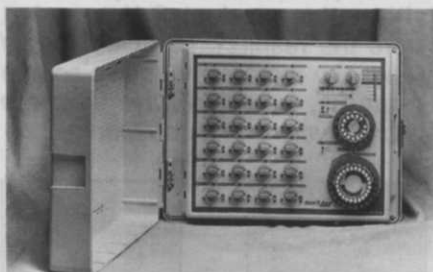


1150 South U.S. Highway One, Jupiter, Florida 33477 • (407) 744-6006

PRODUCT REVIEW

Turfmaster controller combines circuitries

Turfmaster, a state-of-the-art hybrid electromechanical controller, has been introduced by Rain Bird Sales.



The unit combines electromechanical and micro-electronic circuitry. It is capable of fully automatic, semi-automatic or manual operation. All of the programming is through user-friendly dial or lever switches and push/pull pins.

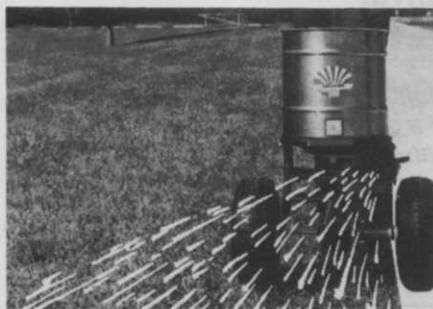
One of the Turfmaster's key features is "Cycle and Soak," which allows the terrain to absorb water at its own pace. The unit also has a non-volatile memory which keeps time during power outages for a minimum of five days.

Circle No. 203 on Reader Inquiry Card

Broadcast spreader patrols landscape borders cleanly

Spyker Spreaders has added the "Border Patrol" broadcast spreader to its line of equipment.

The unit prevents spreading on walks,



drives and other selected areas. It ensures a clean spread, does not produce a burn line, and operates with the touch of a toe.

The Border Patrol deflects the product uniformly across the spread band. It diverts the spread pattern from the left side of the spreader to the front and right side only.

Circle No. 204 on Reader Inquiry Card

Track weather conditions to predict product applications

The Envirocaster is a field installed, predictive instrument designed to monitor the environmental conditions when plant disease and pests become most active.

The computer-driven system is automated and PC compatible.

Neogen Corporation has developed forecasting models for a wide variety of outdoor management practices.

Each Envirocaster holds up to six models per module. A full-equipped unit can monitor air temperature; relative humidity; degree days; leaf wetness; rainfall; soil temperature at two depths; wind speed and direction; soil moisture and dewpoint.

Circle No. 205 on Reader Inquiry Card

Improved aerator unit now follows ground contours

Ransomes America Corporation has made some improvements to its Ryan GA-30 aerator.

The GA-30 now features a free-floating aerator head, which closely follows the contours of the turf. According to Ransomes America, this provides more consistent core cultivation.

Ground pressure is lowered, thanks to new, larger tires. The once optional Windrower attachment is now standard equipment on all GA-30 aerators. The Windrower has double blades to gather cores to the center in the area behind the unit. This prevents tires from crushing the cores on the next pass.

New speed controls operate independent of the aerator drive, to help the operator maintain aerating speeds on slopes.

Circle No. 206 on Reader Inquiry Card

Apply wetting agent with accuracy, consistency

Aquatrols has introduced Dilute 'n Shoot, a new application system designed especially for applying AquaGro-L concentrate.

According to the company, the Dilute 'n Shoot is a hand-held, hose-end proportioner capable of siphoning concentrated AquaGro-L out of the attached five-quart bottle and mixing it with enough water to ensure turf safety, even under the most

stressful weather conditions.

Developed by Aquatrols in response to turf managers' requests, Dilute 'n Shoot is



intended as an alternative to applying AquaGro-L with a sprayer and watering it in. It's portable, and can be taken out for use on greens and tees, or to treat localized dry spots.

Circle No. 207 on Reader Inquiry Card

Ornamental lighting info is yours for the asking

A six-page, full-color brochure from Spring City Electrical Manufacturing Co. shows the company's full line of historically authentic, cast iron, ornamental lighting.

The brochure shows the many styles available, and describes its lighted or



unlighted cast iron bollards which thematically harmonize with lighting post styles.

Spring City says it can produce custom-designed orders and historical lighting reproductions.

According to the company, cast iron is an ideal material for lighting fixtures: vibration resistant, sturdy, low-maintenance and corrosion-resistant.

Circle No. 208 on Reader Inquiry Card

MARKET SHOWCASE

RATES: \$105 per column inch for 1x insertion; \$100 for 3x insertion; \$95 for 6x insertion; \$90 for 9x insertion; \$85 for 12x insertion (one inch minimum). Frequency based on a calendar year. For ads using a Reader Inquiry Number, add \$30 to the total cost of the ad per issue. For ads using a second color standard red, blue, green or yellow only, add \$65 to the total cost of the ad per issue.
Send ad copy with payment to: Susan Ramseth, LANDSCAPE MANAGEMENT, 7500 Old Oak Blvd., Cleveland, Ohio 44130, or call (800) 225-4559 ext. 742 outside Ohio; (216) 891-2742 inside Ohio; FAX (216) 826-2685.

HELPWANTED



CENTRAL PARK CONSERVANCY

The Central Park Conservancy, a progressive non-profit organization, dedicated to the restoration and preservation of New York City's Central Park, is seeking candidates to fill the challenging position of Area Manager. Responsibilities will include management of a newly instaffed landscape surrounding a man-made lake. General maintenance of buildings, playgrounds and hard surfaces is also included. Daily management of field personnel, accurate recordkeeping required.

Successful candidates must have horticulture education/field experience. A valid driver's license required. Supervisory experience necessary. If you are an organized, responsible, quality oriented individual who meets these requirements, send resume to:

Kathleen Dooley, Director of Human Resources
Central Park Conservancy
830 Fifth Avenue
New York, NY 10021

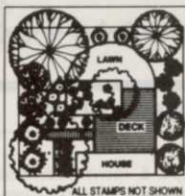
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Progressive Northern NJ Firm seeks outstanding candidate to manage 6 man crew. The right individual will possess a Horticultural degree and have 3 years hands-on experience. Excellent communication skills are required. Competitive salary and full company benefits.

Please forward resume in confidence to:
PO Box 623, Livingston, New Jersey 07039
or call Mr. Scott at 201-992-0633.
EOE M/F

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FOR SALE

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for

LAWN CARE OPERATORS

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50 West Broad Street, Suite 3200

Columbus, OH 43215

(614) 221-2398

Contact:

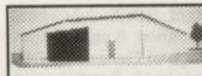
Richard P. Bersnak, President

or

Jeanne Bartkus

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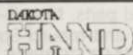
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Lompoc, CA 93438
Ph: 805-735-8888



Circle No. 253 on Reader Inquiry Card

Landscape Management, March 1993 121

EQUIPMENT FOR SALE



TREE TRANSPLANTER

Lightweight, Variable Size Rootball (16" - 28"). Component Adaptable (sprayer, logsplitter, dump box, post-hole digger). Available in 3 models (towable, bucket mount, 3 pt.).

MID DAKOTA CORP.

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GSA Contract No. GS-00F-5442A SIN No. B37



SOFTWARE

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1 # 1



To get a FREE 90 page information booklet on the #1 software for the lawn and tree care industry

Call Toll Free:
1-800-422-7478

Real Green Computers
1970 Winner Street, Walled Lake, MI 48390

Circle No. 251 on Reader Inquiry Card

RATES: \$1.25 per word (minimum charge, \$40). Bold face words or words in all capital letters charged at \$1.50 per word. Boxed or display ads: \$105 per column inch-1x (one inch minimum); \$100-3x; \$95-6x; \$90-9x; \$85-12x. (Frequencies based on a calendar year). Agency commissions will be given only when camera-ready art is provided by agency. For ads using blind box number, add \$20 to total cost of ad per issue. Send ad copy with payment to Susan Ramseth, LANDSCAPE MANAGEMENT, 7500 Old Oak Blvd., Cleveland, OH 44130 or call 216-891-2742. Fax Number 216- 826-2865.

BOX NUMBER REPLIES: Mail box number replies to: LANDSCAPE MANAGEMENT, Classified Ad Department, 120 W. 2nd St., Duluth, MN 55802. Please include box in address.

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LANDSCAPE MANAGEMENT
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216-891-2742-Phone 216-826-2865-Fax

Self motivated, conscientious, personable Horticulturist 17 years in green industry plus college seeks more than another dead end. Willing to learn and/or relocate upper Mid-west or Rockies. Contact Chris Brake, Rt. 1 Box 176, Odessa, MO 64076. (816)633-8231 evenings. 4/93

Entry level landscape architect. BSLA, July 1993. 5 years experience in maintenance, 3 years experience design/build. Knowledge of Generic CADD, Land CADD, Interior planting, basic Spanish. Will relocate. Contact Edward Clark (school), 597 Clark St., Morgantown, WV 26505, 304-291-6183. (Permanent) 201-265-9475. 4/93

LANDSCAPER/ARBORIST: Seeking landscape maintenance opportunity. Western Mass. Expertise in site location, nutrient requirements, disease, pest control. 18 years experience, Massachusetts Certified Arborist, Stockbridge School of Agriculture, UMass, Amherst, MA. Resumes/references: S. Nietupski, 18 Mineral St., Easthampton, MA 01027. 3/93

BUSINESS OPPORTUNITIES

LET THE GOVERNMENT FINANCE your new or existing small business. Grants/loans to \$500,000. Free recorded message: (707)448-0330. (OLB) 3/93

NOW... LEARN PROFESSIONAL LANDSCAPING AND GARDENING AT HOME! Accredited program provides thorough training in all phases of commercial and residential landscaping. Diploma awarded. Free brochure describes program and opportunities in detail. Lifetime Career Schools, Dept. LF0113, 101 Harrison St., Archbald, PA 18403. 9/93

BUSINESS OPPORTUNITIES

MAUI HAWAII: Landscape & lawn business opportunity for sale. Established 5 years. Commercial accounts. Grossing \$275,000.00. Very high net profit. Low overhead. Terms \$129,000 down pmt. Owner financing balance. Call Michael Capuano (RA) 808-874-4008. 3/93

EDUCATIONAL OPPORTUNITIES

GRAYSON COLLEGE, Denison, Texas: Two-year technical program in Golf Course and Turf-grass Management. 18-hole golf course on campus. Dormitories, placement assistance, financial aid and scholarships available. Contact: GCC, 6101 Grayson Drive, Denison, TX 75020. 903-463-8653. 5/93

EQUIPMENT FOR SALE

PIPE LOCATOR INEXPENSIVE! Locates, traces underground drain, water pipe lines of clay, PVC, ABS, steel, cement. Finds sprinklers, valves, clogs. Bloch Company, Box 18058, Cleveland, Ohio 44118. (216)371-0979. TF

NEW AND USED BROUWER EQUIPMENT: Mowers - VACS - Fork Lifts - Harvesters - and full line of replacement parts. Contact Ed or Glenn Markham at 1-800-458-3644. TF

FOR SALE: 1986 Vermeer three spade mounted on Mack - RD 600, 10 wheeler. Ready to go to work. \$47,500. Day 508-897-7244, evening 508-692-2292. 3/93

EQUIPMENT FOR SALE

FOR SALE: Used Brouwer Sod Harvesters. Excellent condition. Ready to go. Call Brian for parts. **HUBER RANCH SOD NURSERY,** Schneider, IN. Phone (800)553-0552. 3/93

HYDRO-MULCHERS AND STRAW BLOWERS: New and used. **JAMES LINCOLN CORPORATION,** 3220 S. Jupiter Rd., Garland, TX 75041. (214)840-2440, (800)551-2304. TF

LAWN SPRAYING TRUCKS- *1976 Chevy-C60, new 366 engine, good rubber, 1250 gal. dual compartment tank, Myers pumping system, dual hose reels. Well maintained. Excellent working truck; \$6,800. *1977 Chevy-C50, 350 engine, good rubber, 800 gal. tank, hydro pump, single hose reel. Well maintained. Ready to spray. \$4,800. Call Ron @ (410)795-7900. 3/93

NEW/USED EQUIPMENT AND RENTALS— Asplundh, Hi Ranger, Holan and Lift-All Forestry Bucket Trucks, Chip Trucks and Chippers. Mirk, Inc., (216)669-2000, 7629 Chippewa Road, Orrville, Ohio 44667. TF

SPYDERS- New/Used/Rebuilt. Full line of replacement parts and update kits. Kubota, Ruggerini, Kohler and Onan engines and parts. Nichols-Fairfield torque hubs. We repair and rebuild Spyder hydraulic pumps and motors. **FAST SERVICE,** Call or write: Mobile Lift Parts Inc., 5402 Edgewood Rd., Crystal Lake, IL 60012. (815)455-7363, (800)397-7509, FAX (815)455-7366. 3/93

FOR SALE: Jacobsen HF-5 1986 Diesel. Very good condition. \$6,500. (313)653-5695. 3/93

REINCO HYDROGRASSERS and power mulchers in stock. Opdyke Inc., (Philadelphia Area) 215-721-4444. TF

BUCKET TRUCKS: Straight Stick, Corner Mount and Knuckle Boom Cranes. Brush Chippers - New Morbark Disc and Drum Style. New Rayco Stump grinders. Best prices anywhere. Used Chippers - Asplundh, Morbark, etc. 2 to 8 usually in stock. Sprayers, Dumps, Stakes, Log Loaders, Crew Cab Chip Box Dumps, Railroad Trucks, 50 in stock. Sold as-is or reconditioned. We also buy your surplus equipment. Opdyke's, Hatfield (Philadelphia Area). 215-721-4444. TF

BUCKET TRUCK: Hi Ranger 65', 57', 50'. Skyworkers with chip boxes. Asplundh bucket trucks with chip boxes. Asplundh brush chippers. Bean 55 gal. sprayers. Pete Mainka Enterprises, 633 Cecilia Drive, Pewaukee, WI 53072. 414-691-4306. TF

Finn Hydroseeders, Mulch Spreaders, Krimpers, Pit Burners, Fiber Mulch & Tackifiers. New & Used. **Wolbert & Master, Inc.,** P.O. Box 292, White Marsh, MD 21162. 410-335-9300, 1-800-234-7645. TF

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FOR SALE

Sprayer: Graham 300 gallon Pick-up unit. Tufflex Tank, 1010 Bean Pump, 8hp Kohler with electric start, mechanical agitation. Electric Hannay Reel. ChemLawn Gun. \$2200.00. Excellent Condition. Call (616) 677-5223. 3/93

FOR SALE: COMPUTER Slice System w/ALTOS 3068/80 Megabytes hard drive, 2 user w/printer, U.P.S. Call Hardy (404) 977-0981. 3/93

FOR SALE: Used Foley Reel Sharpener with Lapper. Jacobson Blitzer Units. New and Used Parts. (719) 683-2599. 3/93

MAKE MORE MONEY with safe, efficient employees. Free catalog of over 100 professional training videos available from California Polytechnic State University. Perfect for landscape construction and maintenance companies, grounds crews, designers, etc. Call 1-800-235-4146. 6/93

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MEYER Z-52 ZOYSIA SOD FOR SALE. VAMONT AND TUFNOTE BERMUDAGRASS SOD. FORKLIFT DELIVERY. SERVING THE MID-ATLANTIC REGION. OAKWOOD SOD FARM, SALISBURY, MD 410-742-3086. 3/93

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NEED EMPLOYEES? We can fill any employment need you may have. We have hard-working, reliable and loyal Mexican workers to fill any job from laborer to foreman. We may also have the professional you have been looking for, from supervisors, architects to managers. Call Bob Wingfield (214) 634-0500. 4/93

Pumps - Wanner D-10 and D-25 Hydra-cell. New, reconditioned parts and complete 24 hour repair service. Call Industrial Services Co., 614-965-4112. New Lawn Care Hose Reel Swivel. 4/93

SOFTWARE

TurfWorks™ - Your Best Buy. Version 4.0 just released. Customer/Job Tracking, Automatic Scheduling, Invoicing, Receivables/Cash Application, Monthly Statements, Chemical Usage Tracking, Marketing, Sales Analysis and more. Online help. Affordable price. Send \$4.00 and disk size for demo. Bellanger Group, 50 Clarkson Center, Suite 422, Chesterfield, MO 63017, 314/537-2025. 5/93

Route Manager System for scheduling and accounts receivable record keeping. Serving the Lawn Care Industry since 1982. List price \$350. Fortunate Computers, 46 N. 4th Street, Coplay, PA 18037. 800-275-0620. 12/93

PLANTS COMPUTER SOFTWARE offers a comprehensive plant database with over 960 characteristics, including maintenance and disease/pests. Reviewed as one of the best! Call 619-345-7120 for free brochure. 3/93

HELP WANTED

GOLF COURSE REMODELING AND CONSTRUCTION FOREMAN: Tired of the rat race? Move to beautiful Northwest Montana. We are looking for an enthusiastic individual to implement our golf course remodeling and construction projects. Application Deadline: March 15, 1993. Send resumes to Meadow Lake Resort, Attention: Bruce Lutz, 1415 Tamarack Lane, Columbia Falls, MT 59912. Phone: 406-892-7601 ext. 2635. 3/93

LANDSCAPING/OPERATIONS: Hermes Landscaping, a well established contracting company, is seeking a self-motivated, professional manager to handle the operations of a Commercial Landscaping and Sprinkler Division. Must have a B.S. degree, 2-4 years of experience, people skills and hands-on supervisory experience. Send resume and salary history to: Hermes Landscaping, Inc., P.O. Box 14336, Lenexa, KS 66215. EOE. 3/93

SALES REPRESENTATIVE


Great opportunity for energetic, self-motivated individual for full-time sales. Interesting and challenging work in So. California for a distributor of specialty agricultural chemicals. PCA licenses and degree in biological science required. Excellent company benefits.

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ADDRESS _____

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HELP WANTED

GROUNDS MAINTENANCE Sales/Supervisor
This position offers the opportunity for the right person to realize their full potential. Must have turf grass knowledge, Agronomy degree desired, and horticulture experience necessary. If you qualify, send resume to: Commercial Landscape Systems, 7207 Old Statesville Rd., Charlotte, NC 28269, Fax: 704-596-0599. 3/93

LANDSCAPE MAINTENANCE SALES — Large established landscape, irrigation, and maintenance firm in Tampa Bay area. Experience in bid preparation required. Send resume to P.O. Box 22501, Tampa, FL 33622. 3/93

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INCREASE YOUR BUSINESS & KEEP YOUR CUSTOMERS with a customized, professional newsletter. You choose the articles and title! **FREE** marketing tips and information! **Special introductory offer!** For free sample and details, call TotalControl Inc. (800)432-5528. In Pennsylvania call (215)430-3960. TF

ORGANIC LANDSCAPE MAINT

LANDSCAPERS interested in reducing the use of agricultural chemicals! Subscribe to **BUGS Flyer**, the premier environmental landscape quarterly. Discover the latest environmentally sound landscape products, techniques, and resources. Professional subscriptions \$18.00. **BUGS, Dept. LM, PO Box 76, Citrus Heights, CA 95611.** 4/93

WANTED

Wanted to Buy: Used TS44A Vermeer tree spade. Must be reasonably priced and easy access to Evansville, Indiana. Call 812-423-9401. 3/93

Wanted: Truck mounted tree spade with a 50" Vermeer spade. Phone 414-876-2928. Elkhart Lake, WI. 3/93

Wanted: Jacobsen Greensking Diesel greens-mower(s). Poor pro starting own course prefers low time machines, but what you got? All details first letter, please. Will pay all cash. Will pick up anywhere in USA or Canada. Please write Frank Whibley, RR2, Orillia Golf & CC, Hawkestone, Ont., Canada L0L 1T0. Ph. 705-325-0678. 3/93

WANTED TO BUY Sand injection machine (Davison Internation or equal) for the purpose of providing turf drainage. Any condition. (516)586-8842. 4/93

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Advertising is**
✓ EASY
✓ EFFECTIVE
✓ ECONOMICAL!



UNTREATED

TREATED
with 5-oz. FeRRROMEAC AC
per 1,000 square feet.

FeRRROMEAC® Liquid Iron's rapid greening effect is illustrated in this 50,000 sq. ft. zoysiagrass lawn at Liberty Park, a development of Torchmark Development Corporation, located along I-459 in Birmingham, AL. It was photographed 48 hours after the right side was sprayed with FeRRROMEAC

Liquid Iron. To conduct the demonstration, Landscape Services Inc. divided the lawn with a plumbline on June 5, 1991, and walked the treatment on the turf, using a ChemLawn gun. LSI supervisors are shown admiring the difference before spraying the rest of the turf.

They Got the Green Without the Growth

Read how one of the largest landscape maintenance and installation contractors in the South achieves brilliant, long-lasting green without excessive growth or expense by relying more on FeRRROMEAC® Liquid Iron and less on nitrogen.



Everett Mealman,
Chairman and
Chief Executive Officer
PBI/Gordon Corporation

"It's our belief that there are two basic factors that have a bearing on our success as landscape maintenance and installation contractors," says Carl Love, maintenance supervisor, chemical division of Landscape Services Inc. (LSI), headquartered in Birmingham, Alabama. "They are: the health and appearance of the turf and ornamentals we manage; and customer satisfaction."

Obviously, LSI is doing well on both

counts, as witness the fact that they are one of the largest companies of this kind in the South.

Their program for zoysia and Bermuda consists of a special fertilizer formulation that is designed to rely more on Ferromec than on nitrogen to supply the color. Five fertilizer applications per year are made . . . one every 40 days during the growing season, with a custom-tailored fall application that varies from year to year. Ferromec is the major component in this program to assure maximum green-up.

"This schedule gives us what we like to call *show turf*," says Love, "and yet the cost is more than competitive. Best of all, it doesn't result in excessive topgrowth that occurs when you rely completely on nitrogen for color."

So much for healthy, beautiful turf and reasonable costs.



Carl Love

But how about the way they treat their customers?

"Customers want to know that you appreciate their business. They need to know that they can depend on you for special requests as well as day to day maintenance. Ferromec, with its fast, brilliant green-ups, is a real jewel in our customer relations program. Our customers see immediate results from a visit and know that, no matter what the occasion, their landscape will pass the test."

How's that for *treating* your customer right!

Love goes on to say that LSI has tested many liquid irons, but says that none of them measure up to Ferromec.

"Ferromec is ideal," Love contends. "It *always* works! It works *fast*! The color lasts *longer*! It's economical . . . and perhaps most important of all in this environmental age . . . it gives us the *green without the growth*."

Why FeRRROMEAC is superior to other liquid irons

Ferromec is formulated by a patented process which creates a stable solution of urea and iron sulfate. The nitrogen in Ferromec, being in urea form, carries the iron into the plant quickly and efficiently. Although stable in solution, the urea and iron quickly break down after being absorbed by the plant.

Thus Ferromec produces a radiant green *fast!* . . . usually within 24 hours, depending on conditions.

Yet the amount of nitrogen in Ferromec is so miniscule that you get this dramatic green without the unwanted topgrowth associated with heavy nitrogen fertilization. The color generally lasts through five to six mowings.

Furthermore, the urea in Ferromec holds the iron in a Ferrous state. Thus that portion of a Ferromec spray treatment which misses the leaves and falls to the ground can still be slowly absorbed through the roots.

If you, like Carl Love, want the "green without the growth" try Ferromec — the liquid iron you can rely on.



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FeRRROMEAC® AC



Over \$100,000 in scholarships already presented to Rutgers University turfgrass students

Excellent Dark Color: When compared to other tall fescues, Rebel Jr provides the deep, dark color preferred by turf professionals.



The darker color of Rebel Jr is apparent in these test plots comparing Rebel Jr to other tall fescues.

Less Clippings: The lower, slower growth rate of Rebel Jr results in easier mowing and 30% less clippings. However, it is proven to have an advantage over the current, much-talked-about "extreme dwarfs"; as Rebel Jr does not grow so slowly that the plant's rate of establishment, vigor, tolerance to traffic and stress, or recuperative qualities are affected. The moderately slow growth rate of Rebel Jr is a distinct advantage over that of the extreme dwarf varieties.

Rate of Establishment: While Rebel Jr displays moderately slow growth, its rate of establishment is faster than the extreme dwarf varieties such as Bonsai.



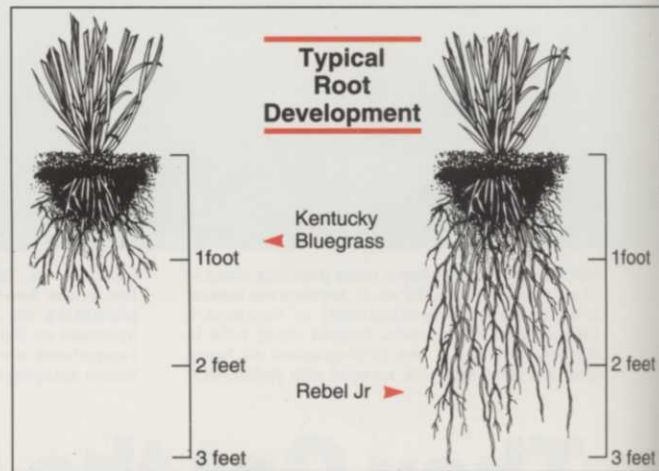
The dense, slower growth of Rebel Jr can be seen one week after mowing.

Top Performance with Less Maintenance: Rebel Jr from seed or sod is adaptable to full sun or moderate shade. It needs only low to medium maintenance and uses 25% less fertilizer than Kentucky bluegrass.



Rebel Jr will give excellent performance in sun or shade. It's ideal for use in hard-to-maintain areas such as golf course green banks, slopes and bunker faces.

Improved Drought Tolerance: A deep, extensive root system allows Rebel Jr to display excellent drought tolerance.



Recommended Seed Mixtures for Sun or Shade

HOME LAWNS

100% Rebel Jr Tall Fescue
or
90% Rebel Jr Tall Fescue
10% Baron or Nassau
Kentucky Bluegrass

or
34% Rebel Jr Tall Fescue
33% Rebel II Tall Fescue
33% Tribute Tall Fescue

GOLF COURSE ROUGHS

90% Rebel Jr Tall Fescue
10% Georgetown Kentucky Bluegrass

or
30% Rebel Jr Tall Fescue
30% Rebel II Tall Fescue
20% Tribute Tall Fescue
10% Palmer II Perennial Ryegrass
10% Georgetown Kentucky Bluegrass

ATHLETIC FIELDS

80% Rebel Jr Tall Fescue
10% Palmer II Perennial Ryegrass
10% Baron or Nassau Kentucky Bluegrass

or
30% Rebel Jr Tall Fescue
30% Rebel II Tall Fescue
20% Tribute Tall Fescue
10% Palmer II Perennial Ryegrass

10% Baron or Nassau Kentucky Bluegrass

UTILITY TURF

100% Rebel Jr Tall Fescue
or
34% Rebel Jr Tall Fescue
33% Rebel II Tall Fescue
33% Tribute Tall Fescue

GOLF COURSE BUNKERS

Rebel Jr Tall Fescue Sod
or
Rebel Jr, Rebel II and Tribute Tall Fescue Sod

Use Rebel Jr wherever a tall fescue is suitable. You'll get dark color, moderately slow growth and top performance in sun or shade.



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