

LM REPORTS: SOIL TESTING ANALYSIS

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Bill Byers completely renovated all 36 fairways at Des Moines Golf and CC over a period of three years ... nine in 1985, nine in 1986 and the remainder in 1987.

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*Bill Byers, CGCS
Des Moines Golf and CC, Iowa*



was slit-seeded into the surface. When play resumed in seven days, members had the option of playing from the germinating fairways or taking a drop in the rough.

Bill finds that lightweight mowing keeps the *Poa* population in control. "I used the clippings for garden mulch one year, that resulted in a terrific stand of *Poa*. This illustrates the effectiveness of removing clippings and seed heads."

Overall, the new Penneagle fairways require less water than trying to maintain the old bluegrass/*Poa* fairways, and Penneagle proved to be drought tolerant during the dry summers.

"Bentgrass fairways are in demand in our area. Other courses in Des Moines have

made the switch," says Bill, "And we find that our player satisfaction is up 500%."

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ALCA

Associated Landscape Contractors of America, 12200 Sunrise Valley Dr., Suite 150, Reston, VA 22091; (703) 620-6363.

American Sod Producers Association, 1855-A Hicks Rd., Rolling Meadows, IL 60008; (708) 705-9898.

Golf Course Superintendents Association of America, 1421 Research Park Dr., Lawrence, KS 66049-3859; (913) 841-2240.

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.

National Arborist Association, The Meeting Place Mall, P.O. Box 1094, Amherst, NH 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.

PGMS

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Turf and Ornamental Communicators Association, 8500 Normandale Lake Blvd., Suite 1200, Bloomington, MN 55437; (612) 831-8515.

AS WE SEE IT

JERRY ROCHE, EDITOR-IN-CHIEF



Are we finally getting our message to the masses?

You would think that *Mother Earth News* magazine would be the last place you would see an article complimentary to some of the professional landscaper/golf course superintendent's tools.

"Tools," in this case, refers to fertilizers and the various pesticides used to maintain healthy, beautiful trees, shrubs and turfgrasses.

Yet, in the June/July issue of the aforementioned environmentally-oriented publication aimed at consumers, an article by Lane L. Winward titled "The Natural Lawn" painted a pretty accurate picture.

"Many individuals define...synthetic...as something that is unnatural and therefore undesirable. In the case of fertilizer, this is not quite true," Winward correctly points out in the article. "Most synthetic fertilizers are made up of the exact same elements as natural fertilizers. The only difference is that synthetic fertilizers are more concentrated."

Winward goes on to accurately describe the foibles of turf maintenance. He says that biological pest controls have yet to be perfected, and that "organic methods of weed control [hand-weeding, cultural controls] are simple to recognize but difficult to put into practice."

Most importantly, Winward sums up the article by saying: "The beauty that is presented by deep green carpets of grass is too great to risk its being lost because such methods [fertilizer and pesticide use] are not ecologically responsible."

It sounds like he's saying the risk/benefit scales (the ones we hear so much about when discussing pesticides) clearly tip toward the use of pesticides to preserve our beautiful lawns.

This, unless I miss my guess or am misunderstanding him, is the point we in the green industry have been trying to make for years.

Winward, incidentally, knows whereof he speaks. He is author of "The Healthy

Lawn Handbook...with Practical Tips from a Professional Landscaper."

He is also owner of Action Mowing, Lawn & Landscape in Salt Lake City, Utah. He claims to have had more than 7,000 clients over the years, including about 150 regular clients this year. Though "Action" doesn't apply any fertilizers or pesticides, the company does make recommendations to its customers.

"I've worked with extension service people across the United States to get my information," Winward contends. "I've also tried everything in my book."

Even though Winward says he has occasionally been taken to task by some fertilizer and pesticide manufacturers, he is very pragmatic about pesticide applications. In a telephone conversation with LANDSCAPE MANAGEMENT, he casually mentioned a nearby city that was forced into aerial insecticide applications because of overwhelming mosquito populations. This is okay, he told us, because mosquitos are vectors for many diseases, and the public had to be protected.

"[Nonetheless], research needs to be done to find alternatives, and alternatives are being found," he said.

To re-state our point: We didn't expect to see such a well-balanced article in a publication like *Mother Earth News*, but—quite frankly—it's refreshing.

Perhaps—just perhaps—the industry is slowly making inroads toward getting the public to accept *judicious* use of fertilizers and pesticides in the urban setting.

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BPA ABP

ASK THE EXPERT

DR. BALAKRISHNA RAO



Controlling Dutch elm disease

Problem: What progress has been made in controlling Dutch Elm disease? (Minn.)

Solution: There is no major new information that I am familiar with on Dutch elm disease management. The current most popular approach is to monitor for disease activity, bark beetle insect activity and management; sanitation; and systemic trunk injection of Arbotect fungicide.

Monitoring for early flagging symptoms on the crown and selectively pruning at least 10 feet into the clear wood without vascular discoloration is recommended for sanitation purposes. Trees showing more than 20 percent crown infection need to be removed promptly. Reports also indicate that elms should not be pruned during insect vector, the elm bark beetle flight period.

Insecticide treatment is recommended for managing elm bark beetles which transmit the fungus during feeding in the crotch area. However, insecticidal treatments are now being questioned because of the difficulty in providing thorough coverage, potential drift problems (chemical trespass), and the need for several treatments (for multiple insect generations). An alternative management approach which involves Arbotect fungicide treatments in place of bark beetle treatments is now being researched.

University of New York researchers reported that several pyrethroids provided better protection from twig feeding than methoxychlor insecticide in laboratory studies.

Reports indicate that a three-year injection rate of Arbotect fungicide at or slightly below the root flare would give better distribution of fungicide and protect the susceptible elm from Dutch elm disease infection. Root flare treatment is found to be better than injecting elsewhere on the trunk.

Do sulfur-coated fertilizers affect pH?

Problem: What is the effect of sulfur-coated fertilizers on soil pH? Should this be a consideration in their application? (Pa.)

Solution: Richard Rathjens, senior agronomist on our staff, made the following comments regarding your question:

Sulfur-coated ureas used for turfgrass fertilization can range from 32 to 37 percent nitrogen and 12 to 18 percent sulfur. One-half pound of sulfur would be applied if a sulfur-coated urea containing 37 percent N and 18 percent S was used at a rate of 1.0 lb. of N per 1,000 sq.ft. If sulfur coated urea was the only source of N used, and four applications were made throughout the year, then 2.0 lbs. of sulfur would be applied annually.

If the objective is to lower the soil pH, 2.0 lbs. of sulfur would be applied annually. If the objective is to lower the soil pH, applying 2.0 lbs. of sulfur would be helpful. However, depending on pH and soil type, as much as 50 lbs. of S per 1000 sq.ft. may be need-

ed to lower the pH to 6.5. Rather than using sulfur-coated urea, a better approach would be to use elemental sulfur which contains 85 to 99 percent sulfur.

Our soil testing laboratory does not recommend using elemental S to acidify alkaline soils for these reasons:

- many soils in the eastern U.S. are alkaline because they are derived from calcium containing rock which resists acidification;
- unless turfgrasses fail to respond to normal fertilization practices and elements like iron are deficient, the benefit of acidifying the soil is questionable; and
- when added to the soil, sulfur forms sulfuric acid, which can be toxic to plants. For this reason, extreme caution must be used when applying concentrated forms of sulfur, such as elemental sulfur.

Bentgrass injury related to weed control?

Problem: Last summer we experienced quite a bit of injury on bentgrass after we made a broadleaf weed control application. We have used the herbicide as suggested using a liquid spray system. We feel that part of the problem is drought related. Could it be chemical related, too? (Pa.)

Solution: You mention that the injury symptoms became evident after the broadleaf herbicide application. This would suggest that either the herbicide alone could have been responsible and the appearance of injury symptoms was coincidental with the herbicide application. It may help to inspect other lawns with bentgrass in the immediate vicinity to determine if injury occurred and, if so, what combination of factors was involved.

Bentgrass requires relatively short mowing and plenty of water for good growth. The turf is often stressed in the summer as the temperature increases and moisture decreases. Turf which is drought stressed is more susceptible to injury from herbicides. Broadleaf herbicides containing 2,4-D are particularly injurious to bentgrass. Review and follow label specifications for best results.

Dr. Balakrishna Rao is Manager of Technical Resources 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.



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IT'S A WHOLE NEW BALLGAME.

Seasonal color: Separating good from great

Landscape contractors and golf course superintendents reveal how they're satisfying clients' demand for reds, blues, yellows.

■ Today's landscape customers and golfers want to put more color into their homelife, working day and even recreational lives. And they want it for more than the few months of summer and early fall.

These clients increasingly are asking green industry professionals to provide this color with plant material, either flowers and/or interestingly colored/textured woody plants. Color isn't just strictly beds of annuals, as eye-catching as they almost always are. More and more customers—property managers, homeowners, golfers—want more imaginative uses of colorful plant material.

Here are the comments of some landscape professionals on the changing role of color:

Tom Deml, Somers Companies of Wisconsin, Stevens Point, Wisc.—"More customers are asking for plants that keep their color longer, and plants with different leaf colors and textures," says Deml. Examples: red barberry, gold mound spirea and gold flame spirea.

Also, some clients specifically ask for plantings that retain color and interest (red twig dogwood) or plants that provide food for wildlife/songbirds in winter.

Clay Crosley, Findlay Country Club, Findlay, Ohio—Though most of the club's landscape color is in the clubhouse area, Crosley and his wife Sandy (course horticulturist) are trying to spread the effect

around. "We're trying to establish more beds on the course," he says. We've got lots of impatiens and marigolds, and I'm trying tiger lilies along creekbanks. We try as many new things—like some of the stuff I see in magazines—as we can. But you have to remember that color is more expensive, time-consuming and labor-consuming." The Crosleys put in 475 flats of annuals this spring. "People don't have to be good golfers to enjoy the course," Crosley says.

Kathy Valentine, The Plant Professionals, Lansing, Mich.—Demand from the company's interior plantscape business forced it to offer outside bed plantings too. This spring, a research/manufacturing client hit hard by layoffs, demanded cheerfully bright annuals in its landscape—for the first time. "They wanted to improve the morale of the remaining employees," says Valentine.

Kurt Kluznik, Yardmaster, Painesville, Ohio—"People are looking at the money they're putting into annuals. Once they've looked at it for a couple of years, they're more apt to plant perennials," says Kluznik. Yardmaster routinely offers flowering plants, as an add-on sale, and promotes bulb sales and plantings each fall also. "People expect the grass to be cut and the plants to be pruned, but it's the color they remember from year to year," says Kluznik.

James W. Zindel, Zindel's Tree and Lawn Care, Decatur, Ill.—Two recent examples of customers asking his company to turn up the color include a woman asking that the evergreens on her property be replaced by deciduous shrubs, and a priest helping plan a colorful display of flowers at the entrance to his church. "He was definite about what he wanted. 'I want it to be a beautiful sight,' he (the priest) said," recalls Zindel. "So, we put in some bright and vivid colors."

Jerry Merrill, Merrill Quality Landscapes, Rexburg, Idaho—"A lot of people have been telling me they want to get away from the solid green look," says Merrill. "Usually, they say they'd like to see something like flowering shrubs. They seem to be a hot item right now, and I kind of like some of the new spireas with their different blossoms and shapes."

Mark Smith, Bobby Byrd Lawn & Landscape, Charlotte, N.C.—"People still like annual flowers, something that we can change for them every spring and fall," says Smith, a manager at this busy maintenance firm. In the spring: begonias, impatiens, geraniums. In the fall: pansies. They bloom all winter in Charlotte.

Kenneth Gerlack, Contra Costa Landscaping, Martinez, Calif.—"Our customers seem to really like to spruce up their entrances and focal points of their landscapes. Here in California, we change annuals twice a year, summer and winter." Winter color means pansies and violets; in summer, it's marigolds and petunias. The extra water needed by some of the plants, however, is a drawback, considering the current water shortage in this state. "If we had a normal year, and water wasn't quite so scarce, the demand for color would just go crazy," Gerlack notes.

Warren Klink, Urith Inc. (Urban Thickets), Hamilton, Ohio—"There is more interest in seasonal displays," believes Klink. More customers are moving toward perennials. Customers are more sophisticated, and they want to be a part of the "process of color" from the first tender, green shoots of the plant, through its blossoming, and even into its decline, says Klink.

"Some dormant plants in winter are almost as interesting as when they're blooming. It's our job to make the customer aware of alternatives in addition to the impatiens," he adds.

Low maintenance bedding plant annuals

■ "The easiest way to have a low-maintenance flower bed is to select flowers that essentially take care of themselves," says Terry Humfeld, executive director of the Professional Plant Growers Association.

Some annuals need regular grooming, others do not. To stimulate continuous blooming (from late spring through early fall), it may be necessary to cut back or pinch off existing blooms ("dead-head") once they begin to fade. Marigolds, snapdragons and zinnias need to be regularly dead-headed. However, ageratum, alyssum, begonias, impatiens, portulaca and vinca don't need dead-heading.

Some annuals need to be pruned to become bushy or to avoid becoming spindly, while others are naturally basal branching.

For example, grandiflora petunias, snapdragons and zinnias should be cut back to stimulate lateral branching, preferably when they are being transplanted. However, because multiflora petunias,



nicotiana, pansies, verbena and vinca naturally remain bushy, they save time by not needing periodic pruning.

Humfeld suggests these steps to make annuals easier to care for:

1) Transplant species requiring similar moisture requirements into the same flower bed.

2) Match each species to its optimum light requirement.

3) Mulch soon after the bedding plants have been transplanted.

4) Plan your design and keep it simple.

For easy-to-maintain flower beds, consider using the 20 types of flowering plants recommended by the PPGA in the accompanying chart.

—For more information on bedding plants, write or call the Professional Plant Growers Association, P.O. Box 27517, Lansing, MI 48909-0517; (517) 694-7700.

◀ Pansies are a time saver; they require little or no periodic pruning.

TOP-SELLING BEDDING PLANTS FOR 1992

Species	Spacing	Height	Light	Moisture	Colors
Sweet alyssum	10-12"	3-5"	partial shade to sun	avg. to dry	white, pinks/roses/peaches, purples, yellows
Begonia (fiborus)	7-9"	6-10"	partial shade to sun	average	white, pinks/roses/peaches lavenders, oranges, reds, bicolor
Dusty Miller	6-8"	8-10"	partial shade to sun	dry	silver
Geraniums	10-12"	10-15"	sun	moist	white, pinks/roses/peaches lavenders, oranges, reds, yellows, bicolor
Impatiens	8-10"	6-18"	partial shade to sun	moist	white, pinks/roses/peaches, lavenders, oranges, reds, bicolor
Impatiens	10-12"	10-18"		moist	white, pinks/roses/peaches, oranges, reds, bicolor
French marigolds	3-6"	5-10"	sun	average	yellows, golds, oranges, bicolor
Pansies	6-8"	4-8"	partial shade to sun	moist	white, pinks/roses/peaches, purples, oranges, yellows, blues, browns
Petunias	10-12"	6-12"	sun	avg. to dry	white, pinks/roses/peaches, lavenders, reds, purples, yellows, bicolor
Salvia	6-8"	12-24"	partial shade to sun	avg. to moist	white, pinks/roses/peaches, reds/burgundy, purples, oranges
Tomato	12-15"	24-72"	sun	average	(fruit), reds/burgundy, oranges, yellows
Vinca	6-8"	12-14"	partial shade to sun	any	white, pinks/roses/peaches, bicolor

Source: Professional Plant Growers Assn.

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COLORFUL LANDSCAPE PERENNIALS

Variety	Height	Spacing	Comments	Colors
Pentas	10-36"	20"	Pest resistant, good color to soften a group planting. Will survive freeze if cut back beforehand. Heavy feeder, likes water, low maintenance. Year-round color without replant.	white, pinks, roses, mixes, lavender
Melampodium	6-12"	15"	Drought tolerant, sheerable, low fertilizer, low maintenance, upright. Good accent color. Lasts 5 months.	yellow
Dwarf hibiscus	8-15"	24"	Low, compact plant. Likes water until established. Low maintenance. Pest: whitefly.	reds, yellows
Crossandra	8-15"	15"	Heavy feeder. Drought resistant after established. Survives freeze if covered. Low maintenance, uniform height.	oranges, yellows
Lantana	10-24"	24"	Very low maintenance, low fertility, drought tolerant, sheerable.	creams
Verbena 'Polaris'	10-36"	15"	Drought tolerant, responds to sheering, heavy feeder. Pest: whitefly.	lavenders
Salvia 'Uglinosa'	15-36"		Good perennial. Drought tolerant. Responds to sheering. Heavy feeder.	blues

Source: Post Properties, Atlanta, Ga.

TREES/FALL COLOR

Common name	Latin name	Colors
Japanese maple	<i>Acer palmatum</i>	reddish, from orange to purplish
Kousa dogwood	<i>Cornus kousa</i>	" " " "
Sweetgum	<i>Liquidambar styraciflua</i>	" " " "
Sassafras	<i>Sassafras albidum</i>	" " " "
Viburnums	<i>Viburnum spp.</i>	" " " "
Norway maple	<i>Acer platanoides</i>	yellows and golds
Beeches	<i>Fagus spp.</i>	" " " "
Tulip tree	<i>Liriodendron tulipifera</i>	" " " "
Star magnolia	<i>Magnolia stellata</i>	" " " "
Shrubs, vines		
Glossy abelia	<i>Abelia x grandiflora</i>	reddish, from orange to purplish
Chokeberries	<i>Aronia spp.</i>	" " " "
Cotoneaster	<i>Cottoneaster spp.</i>	" " " "
Bayberry	<i>Myrica pensylvanica</i>	" " " "
Virginia creeper	<i>Parthenocissus quinquefolia</i>	" " " "
Witchhazels	<i>Hamamelis spp.</i>	yellows and golds
St. Johnsworts	<i>Hypericum spp.</i>	" " " "
Spicebushes	<i>Lindera spp.</i>	" " " "

Source: Jo Mercer, Univ. of Delaware extension



Mother Nature severely tested NuStar before its discovery.

Jacklin Seed Company found the mother plant of its NuStar Kentucky bluegrass in the unlikely place — a roadside in eastern Washington 40 miles from civilization. An environment so arid that less than ten inches of precipitation fell each year. NuStar was green — all other plants around it were brown from drought.

After years of official testing at Rutgers University, NuStar passed with flying colors. In fact, this moderately dense, dark green bluegrass ranked in the top ten out of 228 varieties in overall turf quality during the Rutgers trials. NuStar received top marks against powdery mildew and summer patch, plus excellent resistance to leafspot, melting out and leaf rust. NuStar also scored high against wilting due to drought.

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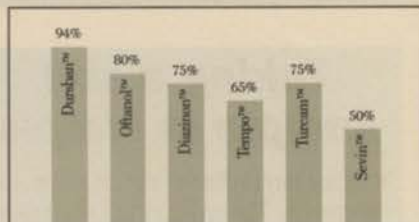
Here's an example. Mixing insecticide with insecticidal soap can reduce the amount of insecticide you need on your ornamentals by



about 50 percent. 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 suggest you may get better control

A few ways to balance with your love for the env





Studies show that Dursban delivers better chinch bug control at lower rates than other insecticides.

than you get with insecticide alone.

Knowing exactly when to apply insecticide helps, too. One way to monitor mole crickets, chinch bugs, webworms and cutworms is by mixing 1/2 oz. of dish soap in two

gives you so much control at such a low rate. Dursban also controls fire ants. It's available in water-soluble packets. And it can be bio-monitored, which can reduce the likelihood of over-exposure.

Once your hate for insects ironment.

gallons of water and sprinkling it on a four-foot area of turf. If eggs have hatched, this soapy mixture will flush insects to the surface, and you can apply insecticide

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Turf pros can't flunk if they test clients' soils

A basic soil test gives the landscape manager a fertility blueprint and opportunity for profitable add-on offerings.

■ Soil testing is a valuable part of landscape management. Golf course superintendents have known this for years.

Increasingly lawn care business owners are embracing soil testing too.

They're rediscovering (ChemLawn has long made client soil tests a part of its programs.) how much customers value soil tests. From an agronomic standpoint, soil tests of clients' properties—once every three years is probably adequate—allows a lawn/landscape company to offer a more precise fertility program.

Regularly offering professional soil tests can help lawn/landscape business people accomplish two goals:

- retain more of their present customers,
- increase revenues from substantially more customers.

It's surprising, then, how few lawn/landscape professionals routinely sell soil tests for client's properties, particularly in light of the modest cost and time required.

This is a service that many lawn care customers say they value. They realize that most soils aren't perfect for growing acceptable turfgrass.

Poor turf common—This is evident in the latest Pennsylvania Turfgrass Survey. Home owners and even lawn care companies listed "poor soil" as the worst problem they face.

Yet, while more than half the golf course superintendents in the survey listed soil testing as one of the cultural practices they regularly use in turfgrass management, professional lawn providers barely mentioned it.

A basic soil test can reveal a lot; it can tell whether the soil is acid or alkaline, and shows whether levels of potassium and phosphorus are deficient or acceptable.

More complete test measures other nutrients and micro-nutrients too. (The amount of available nitrogen in the soil can change rapidly so tests for N aren't really needed.)

An informal survey by LANDSCAPE MANAGEMENT suggests that many lawn professionals build their turf fertilization programs on university recommendations. Or on what competitors do. Or can sell?

They test the soil on a client's property *only* when there's a turf problem, a persistent problem. On receiving the analysis of the soil on that property, they often assume that all (or most) soils in that neighborhood are pretty much the same. Then they use the same fertilization regimen on them all.

Why guess?—This is guessing, even though it usually gives acceptable results on most lawns, says Dr. Chuck Darrah, consulting turfgrass agronomist and general manager of CLC LABS, Columbus. Even so, soils can be markedly different within a community. They often vary from the backyard to the frontyard of a single property.

By not including soil tests as part of their service—a service that a client pays for either as an add-on service or built into the total cost—lawn care business people are seemingly working against their own bottom lines. They're passing up opportunities to provide legitimate and, perhaps, badly needed remedial services to at least some of their customers, says Darrah.

Likely, they're wasting product too. A prescription fertility program developed from an understanding of the soil on a client's property results in stronger turfgrass. Healthier turfgrass withstands environmental stresses, insects and/or diseases better than struggling turfgrass.

Apart from vital agronomic information, a soil test can also be a powerful marketing tool. It provides lawn professionals with expert documentation, from an independent source if a lab is used, to justify the value of their services to clients.

The valuable information gained from soil testing can and should be shared with clients to reaffirm their choice of the lawn professional as *their* lawn professional.

—Ron Hall

Taking a soil sample is simple

■ Some turf professionals test client soils themselves. They possess the equipment, expertise and time to do this. Typically they start by determining soil pH. Then they measure such nutrients as phosphorus and potassium.

Most lawn/landscape businesses, however, find it more convenient and cost effective to mail soil samples to a testing facility. This is relatively simple procedure, produces consistently reliable reports, and is surprisingly inexpensive.

Soil samples can be mailed either to a commercial laboratory or one at their state university. Generally, the cost is about the same.

Consult with local extension personnel, a nearby golf course superintendent, or contact the state university extension department. Then contact the laboratory to see if it has any special requirements before sending your soil samples.

To take a soil sample you need only a soil probe (available from most lawn/garden suppliers), a clean bucket, and soil sampling supplies, usually supplied by the testing lab:

a) At ground level (not thatch level) take 10 to 15 plugs (2 to 2-1/2 inches deep) from different areas of the lawn. The larger the lawn, the more samples you should take. On most lawns, it probably won't take more than five minutes to actually take the samples.

b) Don't take samples from areas where fertilizer or lime have spilled or from poorly drained areas. Either the spring or the fall, prior to fertilizing, are excellent times to take samples.

c) Keep records of how and where you took samples. Mix them together in the bucket, and then dry the soil samples. (Samples of obviously different soils in a particular sampling area should be put in individual paper bags and appropriately marked.)

d) Place one cup of the mixed soil in a container. Mark your name, address and sample number on the container for your records.

e) Provide the laboratory with the most precise information you can about plant growth in the sampling area.

f) Once you've found a lab that gives you accurate, predictable and understandable test data, stick with it so the results you get from test to test are consistent.

—R.H.

Professional do-it-yourself soil test kits

<u>Company</u>	<u>Name of soil tester</u>	<u>Purpose</u>	<u>Comments</u>
ELE International Inc. Soiltest Products Div. 86 Albrecht Drive, Lake Bluff, IL 60044 (708)295-9400 Circle No. 310	A-6A Soil Test Kit	Measures available nutrients and pH of agricultural soils.	Comes with 60-page soil handbook, inexpensive refill kits available.
	A-7A Combination Kit	On-site tests for complete diagnosis of soil fertility.	Rugged carrying case, booklet included, 23 lbs.
	Nitrates, Phosphorus, Potassium, pH kits, Soil Texture Set	Kits for specific chemical analysis. Classify soils according to clay-silt-sand content.	Soiltest, Inc., has a complete line of soil testing kits and apparatus.
Kel Instruments Co., Inc., P.O. Box 54, Wyckoff, NJ 07481 (201)847-8353 Circle No. 311	Kelway® Soil Acidity and Moisture Tester Model HB-2	Measures soil acidity and moisture content. Tells when to add lime; provides guide for how much to add.	Requires no chemicals. Needs no battery or other power source.
	Kelway® Model SST	Soluble salts tester.	Fast readings of conductivity of a soil solution.
LaMotte Company PO Box 329, Chestertown, MD 21620 (410)778-3100 Circle No. 312	Soil pH meters	Determines lime requirement of soil.	Three meters: analog, digital, Pocketester
	Turf lab field units (4 models)	Colormetric analysis of turf soils.	Can be used in field or lab. <i>LaMotte Soil Handbook</i> furnished.
	Electronic soil lab, Model DCL-12	Tests for 15 soil factors including available forms of macronutrients, micronutrients.	The DC-1600 Colormeter instantly analyzes color reactions developed in nutrient tests.
	Dissolved salts meters	Conductivity reading of soil extract can be converted into reading of total dissolved salts	Three meters: analog, digital, Pocketester.
Spectrum Technologies, Inc., 12010 S. Aero Drive, Plainfield, IL 60544 (815)436-4440. Circle No. 313	Soil & water pH meter	On-the-spot meter to determine pH of soil and/or spray water.	LCD digital display. Power by 2 CR-2025 lithium batteries. Weight 40 grams.
	Cardy NO ₃ , K ⁺ , & Na ⁺ meters	Measures nitrate, potassium, and sodium.	Standard accessories: case, deionized water, sampling sheet, kit for 15 soil samples.



Results of a soil test must be easy to interpret and should make recommendations to optimize a fertilization program, says Charles Darrah (right), CLC LABS, Columbus.



Joe Popovic, (left) owner of Firelands Lawn Care, Norwalk, Ohio, says soil tests provide valuable information to share with clients.

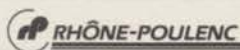


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Aeration: a breather for tired turf



easier it is for moisture to penetrate the thatch layer.

Aerifying too early in the fall or in late spring gives weeds a place to nest: lespedeza, prostrate spurge, purslane and crabgrass.

Landscapers can feel comfortable charging between \$10 to \$12 per 1000 sq.ft. Charge \$12 to \$15 per 1000 for areas that require more time, such as housing complexes or large corporate sites.

The following chart lists the different aeration methods and their benefits to the turf.

—Terry McIver

You should be willing to try anything that makes the turf look better. And that includes—especially—soil aeration.

■ If only life were always so simple: you make money, your customer is happy and the turf is healthy. That's what happens when you add soil aeration to your service contracts.

Everyone knows that aeration works, it's just that—in the case of landscapers—the service is not offered as regularly as fertilizing or dethatching.

Think about aeration for this coming September and October; it can be that extra you've been looking to add to your list of services. The deciding factor should be the proven fact that aeration relieves soil compaction, and prepares the turf for the summer traffic or winter dormancy.

Aeration goes a long way in complementing pesticide and fertilizer applications. As it opens a channel between soil layers, it removes part of the problem soil and permits topdressing and refilling with more compatible material.

Cool-season grasses are best aerated in the spring and fall, to coincide with foliar growth. If you aerify in late fall or early spring, the lawn is susceptible to winter annual weed germination from knawel, speedwell, henbit and chickweed, and annual weeds like knotweed.

Water infiltration is closely related to aeration. The less compacted the turf, the

Aeration methods and benefits

Hollow tine, spoon, screw devices

Method	Tine diam.	Depth of penetration	Spacing	Soil loosened ¹	Soil brought to the surface ²	Moisture required ³
a. tractor-drawn	1/2-3/4"	3-6"	6"	2	2-4	FC
b. drum-type	1/2-3/4"	2-3"	2-3"	1	2-4	FC
c. verti-drain	hollow tine	10-12"	1-8"	4-5	2-4	FC-DFC
d. vertical tines	2/3-7/8"	3-5"	2-6"	2	3-5	FC
e. deep-drill	1/2-3/4"	5-10"	5"	1	2	FC

Solid tine

Method	Tine diam.	Depth of penetration	Spacing	Soil loosened	Soil brought to the surface	Moisture required
a. verti-drain	1/2-1"	12-16"	1-8"	4-5	1	DFC
b. shatter core	1/2-3/4"	3-5"	2-6"	2-4	1	DFC
c. Aera-vator	1/2"	3-1/4"	4"	2-5	2	FC-DFC
d. quad tine	1/4"	2-3"	2"	1	1	FC

Slicing

Method	Tine diam.	Depth of penetration	Spacing	Soil loosened	Soil brought to the surface	Moisture required
a. straight tine	n/a	3-7"	6-12"	1	1	FC
b. straight blade	thin width	2-4"	4"	1	1	FC
c. offset lines	1/3-1/2"	6-8"	7"	2-4	1	DFC

Spiking

Method	Tine diam.	Depth of penetration	Spacing	Soil loosened	Soil brought to the surface	Moisture required
Not powered by motor; penetrates by machine weight	Knife-like blades	1/4-2"	1-2"	1	1	FC

High pressure water injection (Toro Hydroject)

Tine diam.	Depth of penetration	Spacing	Soil loosened	Soil brought to the surface	Moisture required
n/a	4-20"	3-6"	2-3	1	FC-DFC

Subaerification

Method	Tine diam.	Depth of penetration	Spacing	Soil loosened	Soil brought to the surface	Moisture required
vibration	blades	2-8"	9-10"	4-5	1	DFC

Grooving

Method	Tine diam.	Depth of penetration	Spacing	Soil loosened	Soil brought to the surface	Moisture required
Power-driven blades	Used for renovation, not routine cultivation	1-5"	1-5"	1-4	4-5	FC-DFC

¹Soil loosened: 1=none; 5=most effective

²Soil brought to surface: 1=none; 5=most effective

³FC=field capacity; DFC=drier than field capacity

Source: Dr. Robert Carrow, Univ. of Ga.

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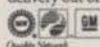
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Surflan is so mild it can be applied over the top of delicate ornamentals.

our 40-page book, The Nursery And Landscape Guide To Responsible Pest Management. It also contains information on better ways to con-



Actually, the most this picture is containi

germinating all season long. It can greatly reduce your use of post-emergence herbicides and hand-weeding in your ornamentals.

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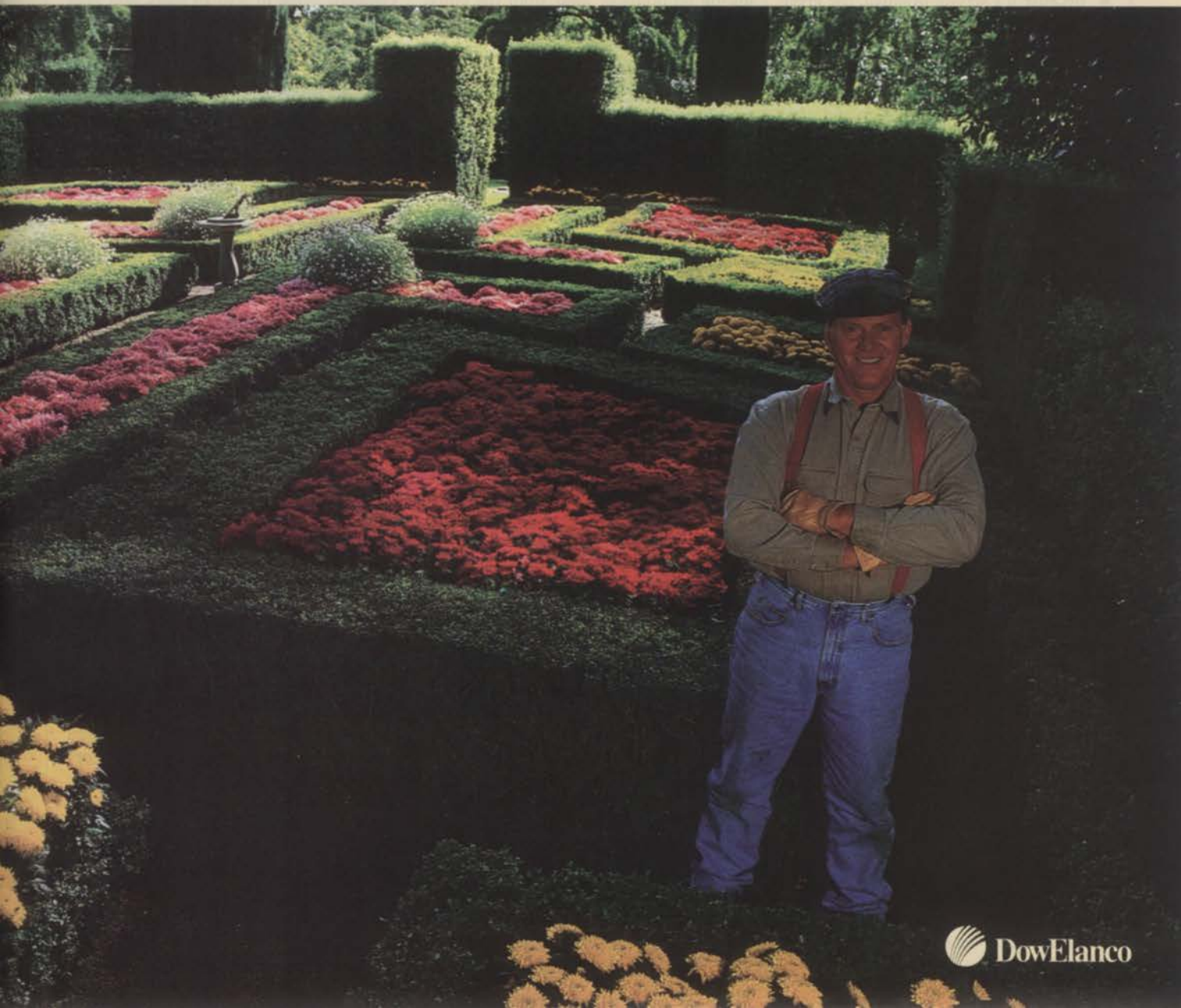
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st beautiful thing about ned in the top 1" of soil.



Employee relations: Being a better boss

These ideas might help your employees want to go to work, rather than making them feel they have to.

by Bill Pensyl

■ Because it's service-oriented, the green industry's most important asset is its employees. Well-trained and dedicated employees are its backbone.

Start out by letting all employees know exactly what's expected of them and what they can expect from you. Set up rules and make sure *everyone* follows them.

But always remember to treat them as human beings. They are not machines. They have needs and desires that must be respected. They have families, and occasionally may need time off from work to attend to family matters.

Good performance should always be recognized and, on occasion, be rewarded in some way. However, don't make praise too cheap. People need to know that the boss sees their good work and appreciates it.

The boss also needs to let employees know when they've "messed up." Don't make this an embarrassing moment for them. Take them aside, away from the other employees, to speak to them about what went wrong. Ask them if they recognize what happened and how they can avoid making the same mistake again.

Rewards for good performance don't have to be a big expense. Often, simple recognition at a group meeting is enough. One idea for a simple award could be an "Attaboy" (or "Attagirl") Award presented to employees that come up with time- or money-saving ideas.

If you want, you might even include a small cash award along with a certificate as an extra incentive. Ideas for awards could be: "Best Site Crew of the Year,"

"Most Improved Employee of the Year" or "Rookie of the Year."

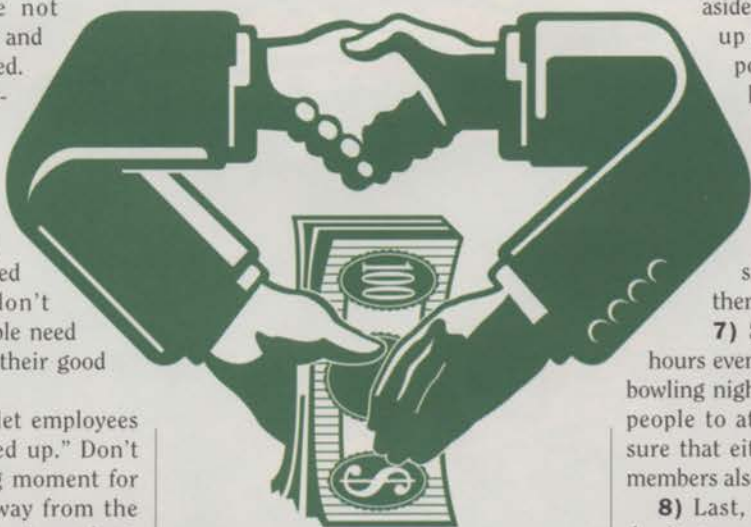
Individual dealings—When dealing with individual employees on a daily basis, keep some of the following ideas in mind:

1) Treat everyone as an individual with individual needs.

2) The "shop steward" idea for a small company does not work. Allow all employees to talk directly to the boss. Plan any sensitive meetings you may need to have during off-hours or away from the office. Any employee can be made to feel very low if asked to please leave the office so the "big bosses" can talk.

3) Listen to what all your employees have to say.

4) Ask them for their opinions and input on such things as daily work assignments.



5) Put up a suggestion box for the shy ones who find it difficult to talk to the boss face to face. You'd be surprised how many good ideas there are out there, but not talked about because of a person's fear of ridicule.

6) Share good news with your employees, such as the birth of a child or the discovery of a good fishing hole. Doing this may lead to your people opening up a little. They will become less afraid of talking about what might be on their minds.

7) Be personable, not personal.

8) When you're wrong, admit it!

Group dealings—When dealing with your employees as a group, some of the following suggestions might be helpful:

1) Set up regular meetings to discuss plans and set up daily work schedules. Keep them "on track."

2) Get them involved in some of the decision-making process, such as when purchasing a new piece of equipment. Because they're the ones that must use this equipment every day, they'll know what they need to make the job easier and faster.

3) Let them know how the company is doing. Tell them as much as you can. They need not know everything—just those things that concern them on their job. Talk about new contracts that might be coming up. Tell them where you see the company being in 5 to 10 years, and what role they might play in it.

4) Provide plenty of training, either on a group or individual basis. Get your more seasoned people involved in training newer ones.

5) Go out and work with the crews whenever your schedule allows.

6) If you have a building or room set aside for your employees' use, put up a bulletin board for safety posters, assignment sheets, a listing of "house rules," and other notices.

Make sure you—or someone on your staff—inspects its condition on a regular basis. Don't just stick things on it and forget them.

7) Set up some kind of after-hours events such as softball games or a bowling night. Try to get as many of your people to attend as possible, and make sure that either you or one of your staff members also attends.

8) Last, but not least, when things don't go exactly the way you expected them to, *keep your cool!* People need stability, even in the workplace.

You'll find that good employee relations are as important as good customer relations and should receive as much attention, if not more, in their development and maintenance. Good employee relations will, in the end, improve your customer relations because your employees will develop pride in *their* company and will want to see it flourish.

—The author owns Green Thumb Services in North Brunswick, N.J.

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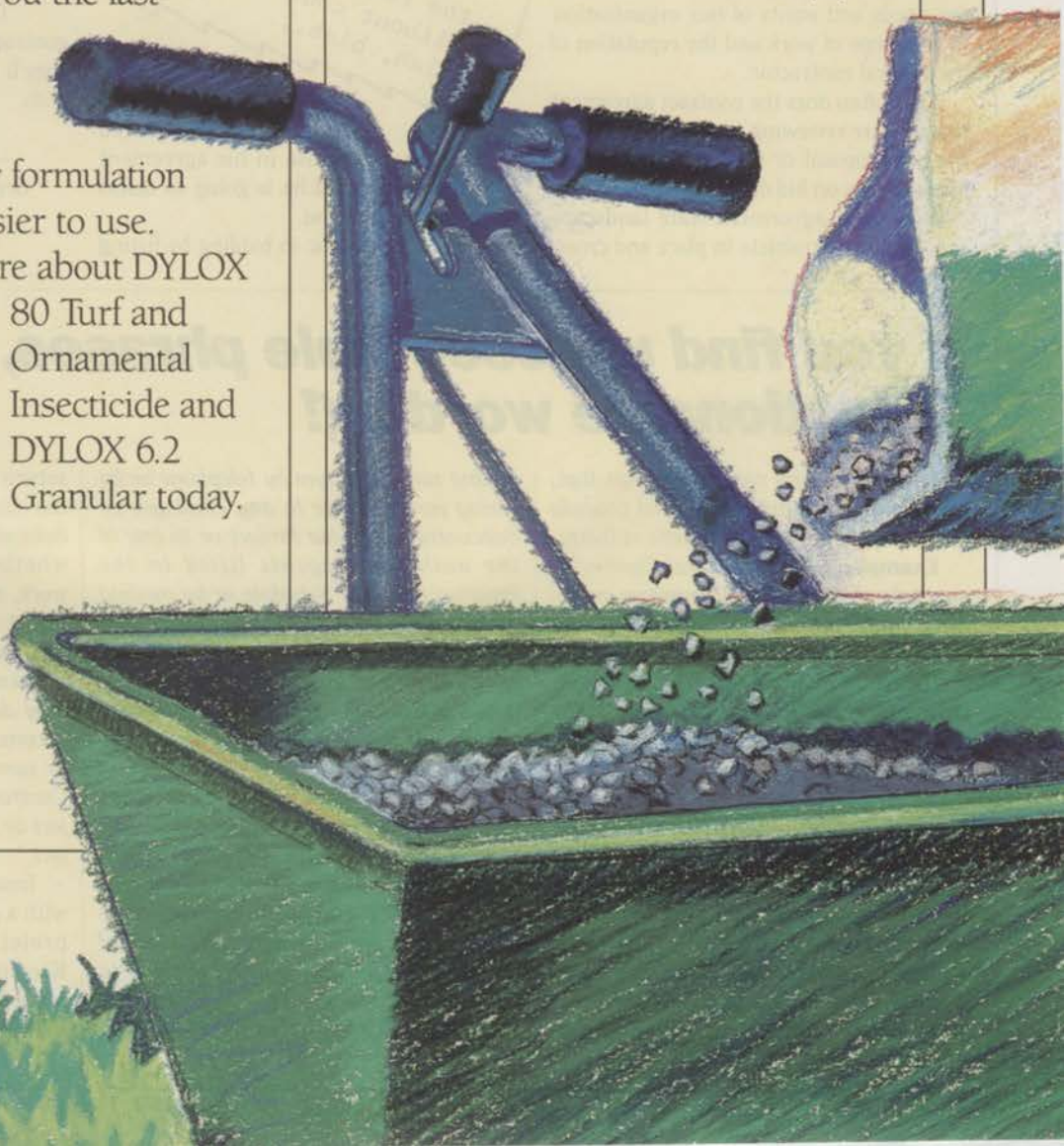
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MILES 

Contracts: read 'em before returning, says this veteran landscape contractor

It's not necessary to be an attorney to smell a rotten deal. Be wary.

by Kent Miller

■ Before you "sign it and send it back," read the fine print of your landscape construction contract.

It's not necessary to be an attorney to smell a rotten deal. You may not have ready access to an attorney, but you can still take some precautions on your own.

I sit down to read a contract agreement with a straight edge, black pen, the landscape plans and specifications, the bid proposal and scope letter. I weigh the needs and wants of our organization to the scope of work and the reputation of the general contractor.

How often does the contract agreement that you are reviewing neglect to reference the bid proposal or scope letter you submitted by fax on bid date?

Does your agreement state landscape and irrigation complete in place and cross-

reference the complete set of plans, specification and the contract between the owner and general contractor? If it does, you may have found yourself in a dispute over who is responsible for installing the rip-rap or transplants indicated on the civil and grading plans. That's also about the time

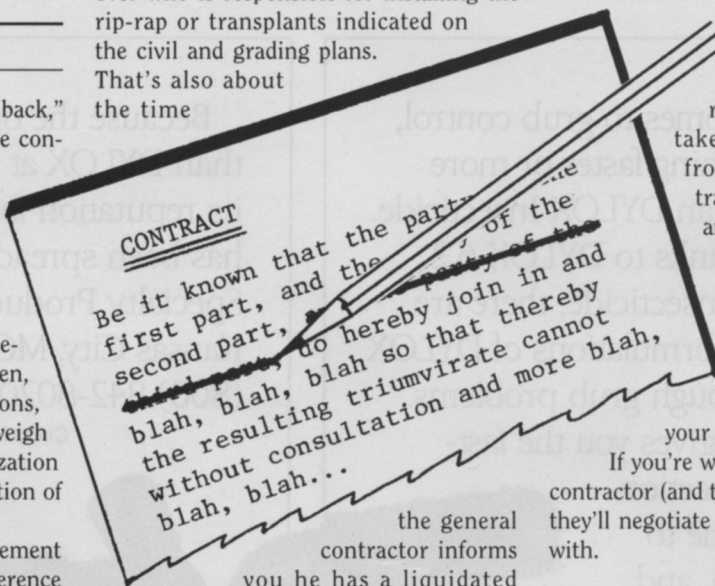
the sections of work and associated pages. When it's time to contract, I tie my bid to the contract documents as an exhibit.

The point is that I have yet to lose a job because of my straight-edge ruler and black pen. I have protected my organization's rights of fair play and taken the cattle prod away from the few general contractors who seek pleasure and profit in an easy mark.

Next time you get a contract in the mail requesting you to sign it and send it back, take the time to weigh the wants and needs of your organization.

If you're working with a fair general contractor (and there are plenty of them), they'll negotiate the clauses you can't live with.

—Kent Miller is vice president of The Groundskeeper in Tucson, Ariz. He is a frequent contributor to LM.



the general contractor informs you he has a liquidated damages clause in his agreement with the owner, and he is going to assess those damages on you.

I try to be specific in bidding by listing

If you find unacceptable phrases, get rid of objectionable wording!

■ Here are several contract clauses that, regardless of the situation, I'll not concede to. See if you find humor in some of them:

Example 1—"The General Contractor may take possession of all drawings, materials, tools, appliances, equipment and contracts pertaining to the work belonging to the Subcontractor at any location. Subcontractor hereby assigns to the General Contractor said drawings, materials, tools, appliances, equipment and contracts for the purpose of completing performance of Subcontractor's work by General Contractor or another."

I always delete the words "tools, appliances, equipment...at any location" in my contracts. The words "over my dead body" come to mind whenever I read that phrase.

Example 2—"The General Contractor may give notice to Subcontractor by con-

tacting such employee by telephone or by giving verbal notice to any employee or Subcontractor at the Project or to one of the authorized agents listed in the Progress Payment Schedule or by mailing or delivering notice at the address of the Subcontractor...however sent, in the event that more than one method of sending notice is used, the notice shall be deemed given as of the time of the receipt of the first notice."

My official notice is only by certified mail, and with a reasonable amount of time to react after receipt.

Example 3—"The General Contractor requires that the Subcontractor's jobsite foreman seek permission from the General Contractor's jobsite supervisor prior to leaving the site for the day."

I delete this, in its entirety. And—in

return for trying to limit my freedom of movement—I counter by adding: "This Subcontractor will not perform any work, whether warranty work, maintenance work, or any other type of work on delinquent accounts. The absence of maintenance will void all warranty."

Example 4—"The General Contractor may deduct from any amounts due or to become due to the Subcontractor any sum or sums owing by the Subcontractor the Contractor under this Agreement or or project or under any other Agreement or project."

Imagine having more than one contract with a general contractor, and one of those projects has some shades of trouble. Keeping the rotten apple away from the rest of the basket would be difficult with that clause.

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This definition from Florida: 'the working superintendent'

Caring for the course and repairing equipment is Joe Ondo's cup o' tea.

■ If you looked up the definition of "working superintendent" in the GCSAA dictionary, you'd see a photo of Joe Ondo of Winter Pines Golf Club in Winter Park, Fla.

"Different people have different definitions of 'working superintendent,'" says the 24-year veteran. "I like the physical part of it. I'm part of the crew, so there isn't anything I haven't done. If other people on the timecard see me doing a job, they don't complain when I ask them to do it. I like that hands-on type of feeling."

While some superintendents prefer to spend their time walking the course looking for glitches, or going on equipment-buying trips, or sitting behind the desk making out work schedules, Ondo is the opposite.

"I think it has a lot to do with the type of golf course it is," Ondo admits. "It works because of the size of crews and their job responsibilities. I have no set schedule; I'm very flexible. I'm in charge, but I don't have a specific job most times. I do have to take a lot of stuff home."

Ondo's duties are as varied as the weather in his native Pennsylvania. One day, he and Bob Keeth (the only people on-staff with applicator licenses) will be out spraying pesticides. The next, he will be in the repair shop using knowledge gleaned from those winters back up north that

were spent tearing down equipment.

Ondo picked up at least part of his philosophy from owner Ed McMillan, who was out helping lay concrete cart paths the day LANDSCAPE MANAGEMENT visited. During the last eight years, Winter Pines workers have laid more than one mile of concrete cart paths—themselves.

"It's a nice situation here," says Ondo. "There's not a lot of pressure. You can afford to make a few mistakes and not worry about your job. Other places I've been, you're wondering if you're doing the job right or fast enough. We just expect a good day's work out of everybody."

That philosophy has resulted in little employee turnover. Five full-timers plus a 30-hour-a-week landscape specialist are under Ondo's supervision. Each of the core maintenance people has been on the course at least 10 years. "It's kind of unusual to have so many people stay on so long," says Ondo, who has worked at Winter Pines for 13 years himself.

One reason for the crew's longevity is Ondo's empathy, gained through years on work crews. "Mowing in the summer is hard because it's so hot, so guys switch off jobs. Mowing eight hours every day can be tough on a person," he says, revealing a sort of "I've-been-there" attitude.

Because Winter Pines is a public course (which also offers memberships) host to about 90,000 rounds per year, and because it's family-owned, time and money are at a premium.

"We don't get to do topdressing and things as often as we would like," Ondo



Joe Ondo: takes the good for granted.

says. "We don't aerify or rip anything up until it's absolutely necessary, usually in June. With the wetting agents and other new products on the market, we're able to get by."

"We do more spiking than aerifying. When we pull a plug, we get more weeds back. By spiking, we save money on herbicides."

New products are pre-tested so there aren't any costly mistakes.

"We'll try a product on half a practice green," Ondo says. "We've never taken a new product and put it on the golf course without trying it out first."

Because of the heat and heavy daytime traffic on the course, the crew members use lighted tractors to begin mowing at 6 a.m. Everything is done in reverse order, beginning at the last hole, so golfers only see the maintenance crew once per 18 holes.

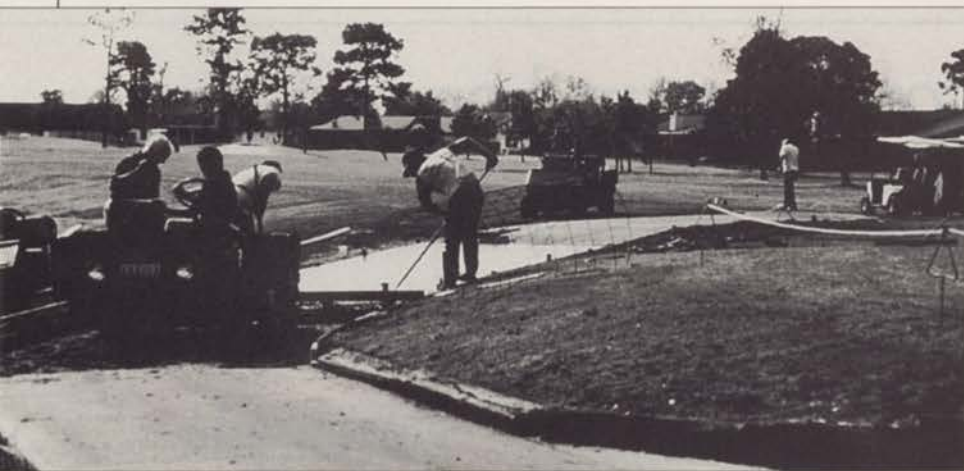
The course features Tifway 419 bermuda fairways. Its short par-3 fairways and all greens and tees are overseeded. "We try to do a little more overseeding every year," Ondo notes. The greens are modified USGA-style.

Tees are mowed three times per week; fairways three times per week in the summer, greens once a day. In addition, Winter Pines tries to rebuild one green a year, just to change its look.

The crews are involved in an extensive on-going tree planting program, adding an average of 10 to 20 pines and oaks every two months. Flowers around the clubhouse which provide its family-type atmosphere are replaced every three months. Ondo is trying to select more cold-hardy materials like pansies and petunias, in deference to Florida's recent milder winters.

Of all the lessons he's learned since he began working on golf courses at the tender age of 15, Ondo says he's got one key to success: "You take the good for granted and look at the bad things."

—Jerry Roche



Winter Pines owner Ed McMillan (extreme left) sets an example by helping a crew lay a concrete cart path.

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REEMAY

Managing busy athletic turf

Basic issues must be addressed to help heavily trafficked turf recover from injury.

by Gil Landry, Ph.D.,
University of Georgia

■ A sound, total turf management program is the best way to manage high-traffic, high-use sports turf fields.

Fertilization, mowing and irrigation must be addressed throughout the year.

Mow to maintain turf at the desired height for the level and type of activity. It may help to vary the mowing height, keeping grass longer when stresses are high. Mow frequently enough so that no more than one-third of the grass blade is removed in any one mowing.

Incorporate these specifics for intensive care of busy turf.

Irrigation—When irrigating, use a single, deep watering, applying one inch of water, rather than more frequent, shallow irrigation. With heavy soils, water to the point of runoff, allow the water to thoroughly infiltrate the soil, then repeat the cycle. On extremely heavy clay soils, it may be necessary to irrigate on successive nights to ensure one inch of water is applied.

Where no irrigation exists, flexible scheduling will maximize rainfall benefits. Make fertilizer applications before forecasted rains. Aerify following rain, when the soil is moist enough to allow for adequate penetration.

Maximize the time between irrigation and field use. Allow 24 to 48 hours as a minimum between watering and play. The greater the soil surface moisture during use, the greater the compaction.

Cultivation—Core-type aeration is the one practice that can be the most beneficial and the least disruptive, in terms of turf response.

When recovery time is adequate, use *core* aeration, dragging the cores back in. If the field use is so intense that you are concerned about surface appearance or disrupting play, use *hollow-tine* aeration followed by *solid-tine* or *slicing* blades.

On sites where naturally-occurring high bulk density runs deep into the soil profile, and/or compaction occurs below a four-

inch depth, *deep-tine* aerate.

Ideally, a combination of various cultivation will provide the best results.

Aerate prior to or during the maximum root growth period for the turf. (Normally, late winter or early spring cultivation on cool-season grasses, and later spring or early summer on warm-season grasses.) Then aerate again to relieve soil compaction after extensive use or following heavy rain or high irrigation levels. With warm-season grasses, a final aeration after the playing season will improve root growth the following spring.

Topdressing

Topdress during the playing season, but only as needed to adjust field levels. Topdressing can temporarily reduce the turf quality of most grasses, including vigorous grasses like bermuda.

Fertilization

It's important to properly time fertilizer applications. As a general rule, this means fall and spring applications on cool-season grasses; spring, summer and fall applications on warm-season grasses.

Provide adequate fertilization to encourage turf recovery. There is a tendency to use more nitrogen because fans are so in tune with field appearance. Too much nitrogen will sacrifice root growth for top growth.

Run soil tests once a year, at least until you have developed enough history on a specific field to know how it performs under your fertility program.

Money and people—Schedule downtime to perform more intensive practices. Flexibility and some adjustment of work schedules and resources can help take advantage of play rotations and optimum weather conditions.

Allocate personnel and resources to high-use, busy fields first. For example, fields with dense, healthy cover and lower levels of activity may need no in-season fertilization.

When multiple fields are involved, each with a heavy play schedule, it may be necessary to further narrow the allocation of resources. Concentrate on heavy-use areas—baseball infields, soccer goals, and between the hash marks on football fields.

To achieve the best results and keep within budget: maximize resources on high-use turf, minimize resources on low-use areas.

Herbicides—Use herbicides to minimize weeds. Fall is the most effective time for broadleaf weed control applications in both warm- and cool-season grasses.



The high-traffic area between the hash marks and around the bench area of this dormant bermudagrass football field have been invaded by annual bluegrass, which is wear-tolerant.

(Photo courtesy the author)

Summer annual grasses are easily controlled with pre-emergence herbicides.

Eliminating weed competition gives grass a better environment for recovery from heavy use. But be aware of the side effects of herbicide applications. Minimize the use of products with root pruning characteristics on thin turf areas.

Pre-emergence controls are beneficial, even when the turf is frequently aerated.

The best indicator of turf needs is your own eye. When reduction of growth or thin turf are revealed during mowing, take whatever action is suitable, in the earliest possible stages.

Remember to stick to the basics and do a good job with routine maintenance. Then be observant and adjust your program as needed.

—The author is an extension turfgrass specialist with the University of Georgia, and president of the National Sports Turf Managers Association.

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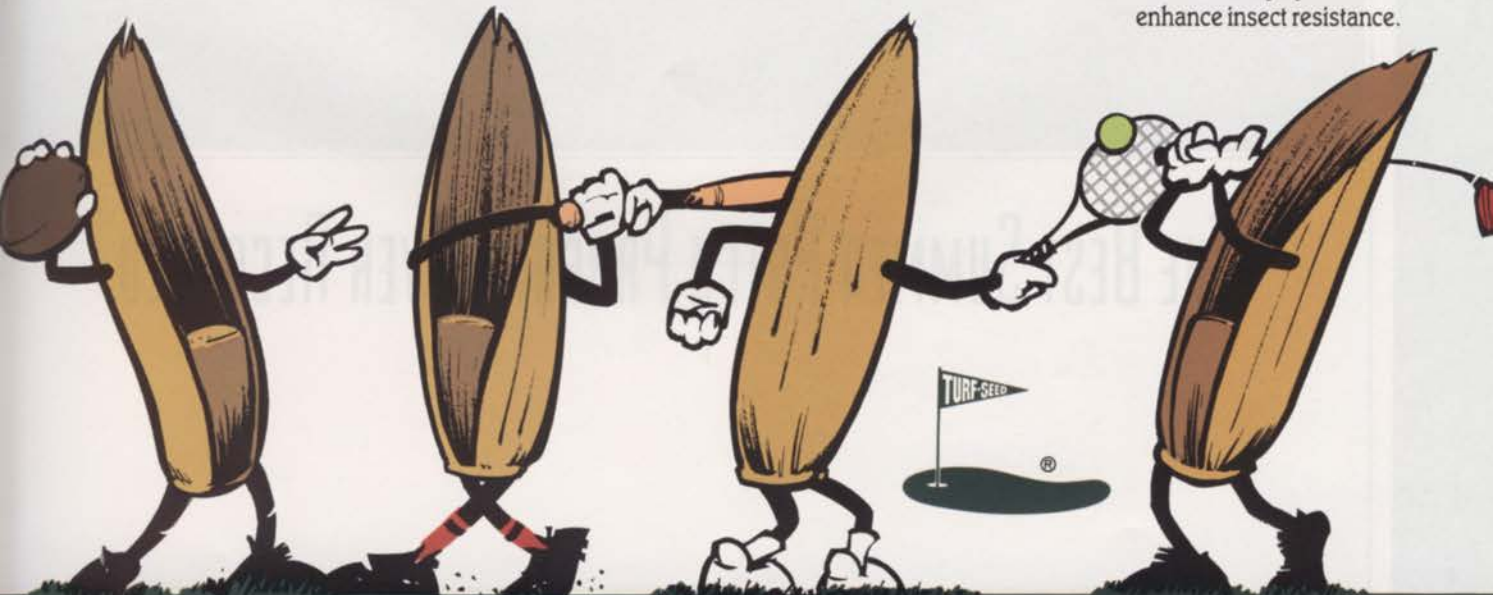
- The number 1 variety in the 1986 National perennial ryegrass trial.
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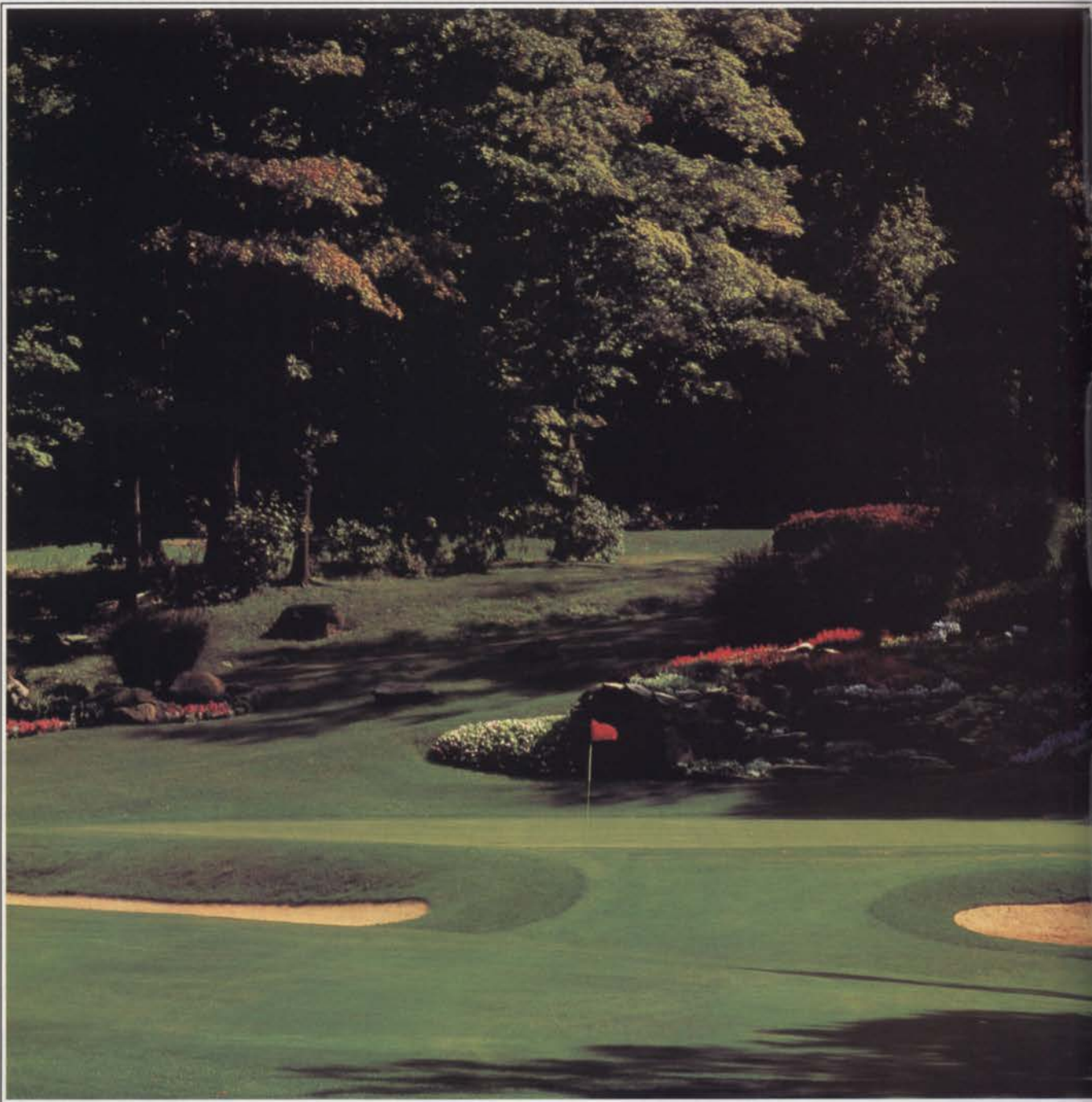
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Healthy turf linked to iron supplements

■ Researchers have studied for years the link between iron and healthy turfgrass. Iron has been popular for several years with other members of the green industry, especially nursery growers. Only recently, however, has it become a valuable resource with golf course superintendents.

Current research—One study that links chelated micro-nutrients, and more specifically iron, to enhanced appearance and growth of healthy turfgrass was conducted last summer at Iowa State University by Dr. Michael Agnew, extension turf specialist.

Results indicate that areas treated with chelated micro-nutrients generally retain their dark-green color longer than non-treated areas (see Table 1). In some cases, as much as twice as long. Plus, treated turf maintains steady, but not excessive growth.

According to Agnew, an iron supplement is particularly important in areas where soil is both high in pH and calcium. The naturally occurring iron gets trapped in the soil's calcium and becomes unavailable for use by the plant. As a result, turf turns yellow and wilts.

Another factor that contributes to iron-deficient soil is frequent mowing at shorter heights. Mowing removes leaves, where

iron is stored. As superintendents try to keep up with demands for faster greens, they may keep greens at 1/8th inch or less, which means frequent mowing and potential iron deficiencies.

Supers in favor—Iron supplements increase root growth, which gives the plant a deeper water reserve. For superintendents, that means less watering. Greater root growth also means reduced wind and soil erosion. Plus, deeper roots enhance transpiration efficiency and "cooling" of plants.

Agnew's research also indicates that areas treated with chelated iron had green speeds equivalent to non-treated areas (Table 2), which is important to both supers and players.

Iron supplements also may reduce nitrogen requirements by as much as 30 percent. This is beneficial because, unlike iron, nitrogen actually decreases root growth and increases top growth. And increased top growth means more watering and more mowing.

"Using an iron supplement is essential to maintain top-quality turf," says Eric Lover, assistant superintendent at Dove Canyon Country Club in California. "My turf has better recuperative powers and

maintains its green color between fertilizer applications since we started using iron."

Where to apply—Iron is most helpful in alkaline and calcareous soils, which are prevalent in California. But the East Coast and Midwest also benefit from iron supplements in many of the same ways as California turf. In these areas, iron can even increase greenness in turf where there is no iron deficiency.

Steve Davis, turfgrass specialist for Target Specialty Products, distributes Ciba-Geigy's Sprint micro-nutrient in southern California. Since 1990, he says product sales have quadrupled in his area as superintendents begin to recognize the value of iron on golf course greens.

"Economically, the many benefits of iron supplements far outweigh the cost," says Davis.

For example, during the spring and fall, when days are warm and the nights are chilly, light frosts can destroy a turf plant's chlorophyll and slow photosynthesis. Iron negates that effect by triggering enzymes that keep grass green and prevent wilting.

Iron supplements, which are most commonly sprayed directly onto the leaves, may be applied year-round to the plant.

continued on page 42

Table 1

Influence of micronutrients and nitrogen fertilizer on the visual quality of bentgrass greens.

IRON SOURCE WITH NITROGEN	MAY		JUNE			AUGUST		SEPTEMBER		
	28	5	11	15	13	21	28	13	20	25
Agri-Plex For-X	8.0	8.3	8.0	8.0	8.3	8.7	8.7	8.7	8.3	8.0
Agri-Plex Fe 8%	8.0	8.3	8.0	8.3	8.3	8.3	8.3	8.3	8.3	3.7
Sprint 138 Fe	8.7	9.0	9.0	9.0	8.7	8.7	8.7	9.0	8.7	8.0
Sprint 330 Fe	9.0	9.0	9.0	8.7	9.0	8.7	8.7	8.7	8.7	8.3
FeSO	7.0	7.7	7.7	8.0	8.3	8.0	7.3	8.7	8.7	8.3
MnSO	7.0	7.7	7.3	8.3	8.0	8.0	7.7	8.7	8.7	7.7

Visual quality is based on a rating of 1 to 9; 9=dark green turf; 1=dead turf; 6.0=minimum acceptable quality.

Source: Dr. Michael Agnew, Iowa State Univ.

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Table 2

**Influence of micronutrients and nitrogen fertilizer*
on creeping bentgrass cutting green stimpmeter ratings.**

IRON SOURCE	MAY		JUNE		AUGUST			SEPTEMBER		
	28	5	11	19	14	21	28	13	20	25
Agri-Plex For-X	70.2	71.0	75.7	80.7	74.9	84.5	81.1	69.3	78.2	70.8
Agri-Plex Fe 8%	69.0	67.1	74.4	79.4	69.3	79.5	77.2	61.5	72.5	66.3
Sprint 138 Fe	66.1	65.2	74.4	80.1	69.9	79.7	77.9	60.3	70.8	65.7
Sprint 330 Fe	64.9	67.1	70.8	76.5	66.5	76.5	75.4	59.9	71.9	64.3
FeSO	68.6	65.7	72.1	76.4	69.8	81.0	76.1	61.5	71.1	64.6
MnSO	69.5	69.5	76.2	81.1	72.5	84.3	80.1	65.7	76.6	68.9

The stimpmeter reading is the distance, in inches (vs. feet) a golf ball rolls on a green when using a USGA stimpmeter.

*There is no statistically significant difference among products.

Source: Dr. Michael Agnew, Iowa State Univ.

Iron from page 40

However, as a soil application, spring is the optimal time to apply iron supplements because spring rains will move the nutrient into the rootzone. In addition, spring applications ensure that iron will be available during the early flush of growth.

Why chelated iron?—Using a chelated iron supplement is particularly beneficial when applying iron into the soil. Experts describe chelated iron as similar to the protective shell of a nut.

As a chelate, iron is protected and stabilized, to make it available for use by the

turf for longer periods.

“Golf course superintendents, particularly those who have soil with high pH, should consider using a chelated iron source,” says Dr. Agnew.

“From the earliest stages of growth, the result is a healthier, hardier plant.”

Knowledge of lifecycle vital for control of white grubs

■ Skunks feasted on the grubs buried in the roots of the turfgrass surrounding the corporate office building in suburban Cleveland.

The damage, mostly in the low, moister areas of the property, reaffirmed the adage: to control a pest, first learn its lifecycle. This is particularly true of white grubs since they're below the soil surface. This also makes them harder to kill.

Typically, beetles that develop into white grubs—Japanese beetle, masked chafers, European chafer—lay their eggs in the soil in June or July. The eggs absorb moisture from the soil otherwise they won't grow and develop. The tiny first instar larvae needs sufficient moisture, too.

In fact, research into the lifecycles of white grubs in recent years stresses the importance of soil moisture. That's why poor control usually occurs when chemical controls are applied on drought-stressed turf in mid-summer. The white grubs have moved deeper into the soil, in effect, out of reach of the control.

Tasty summer meal—But by mid-summer 1991, the grubs at this showcase of a 10-acre corporate office site had grown large and juicy enough—and remained close enough to the soil surface—to attract skunks. The night-feeding skunks devastated about six patches of turfgrass, destroy-

ing a 10-by-30-yard oval patch of turfgrass in a depression adjoining a 3-acre marsh. This ribbon of turfgrass separates the natural, marshy area from a patio where company employees lunch if the weather is nice. Everyone in the building watched as the turfgrass damage, worsened by a mid-summer drought, grew.

The skunks also dug up turfgrass in a scattering of smaller areas, although they did no scavenging in the less intensively maintained, non-irrigated turfgrass fringing of the property.

The on-site turfgrass manager removed the dead grass and thatch, and treated the grub-infested areas of the property with diazinon. After the application, he watered the product into the soil. He said the treatment was successful. Skunk predation tapered off. He reseeded the devastated areas. After a mild winter and wet spring and early summer, the grounds are green and healthy.

They're back—However, he's pretty sure that white grubs began feeding on turfgrass roots earlier this spring than usual. Adequate rainfall in late spring and early summer is another reason why he began checking the roots of his turfgrass for evidence of white grubs earlier than he normally would.

He, like other turfgrass managers,

establishes a threshold to determine if he will apply an insecticide or not. Healthy turfgrass will sustain a certain population of white grubs before damage becomes visible.

However, if and when a manager determines that a control is needed, he or she must make a decision about control product, the method of application and the timing of application.

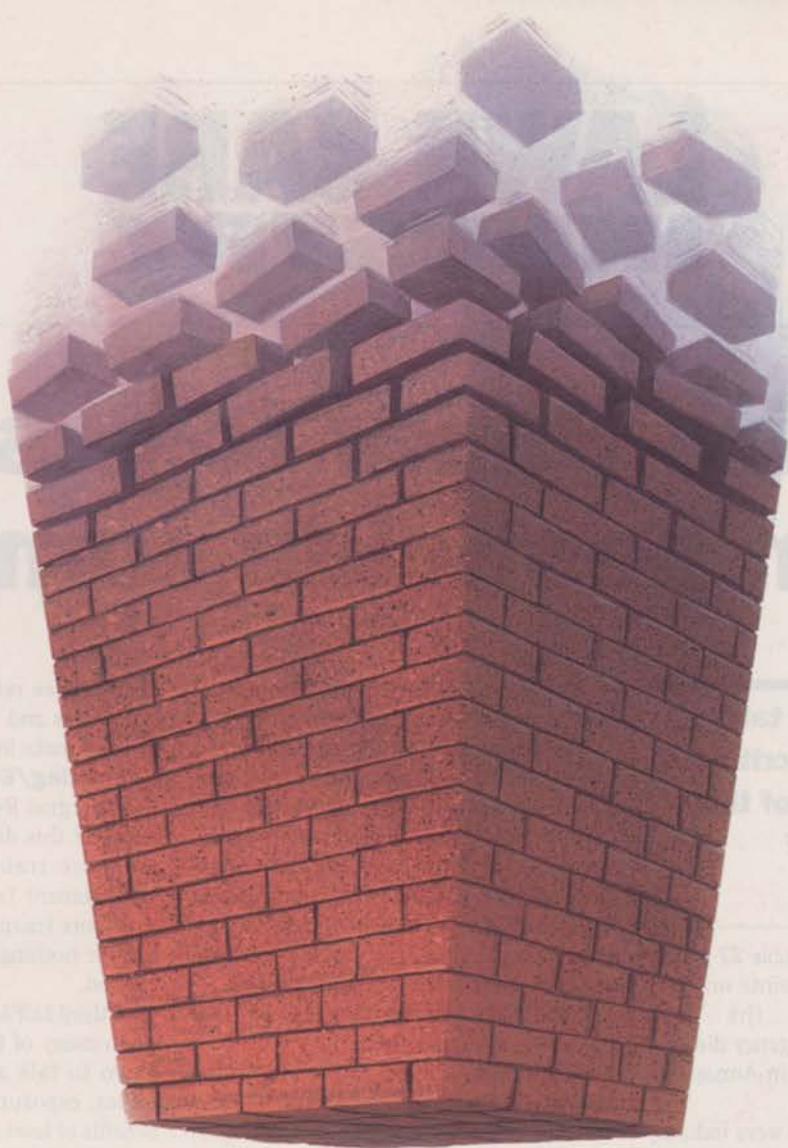
For typical weather (when is weather ever typical?), the best time to treat for white grubs is just after small larvae grubs emerge. This could be any time from mid-July through late summer. The tiny grubs are closest to the soil surface then. They're feeding.

As fall approaches the larvae molt. Falling soil temperatures cause the grubs to burrow deeper into the soil to spend the winter. When the temperature rises again in the spring, they work their way upward again and feed for several weeks, just a couple of inches below the soil surface.

In late spring or early summer, the grubs, in the pupal stage, quit feeding for several weeks. Then mid-June through July they change into adult beetles, emerge and burrow into the soil to lay eggs.

Check with your local extension agent for optimal grub control times.

—Ron Hall



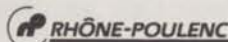
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LAWN CARE INDUSTRY

White Paper to result from pesticide summit

A day-and-a-half of talk finds industry and critics agreeing on some of the broader aspects of pesticide use.

■ It would be hard to assemble 27 people with more disparate viewpoints on lawn care chemicals. But the U.S. Environmental Protection Agency did in a two-day, mid-May talkfest in Annapolis, Md.

Represented in the group were industry (applicators, golf course and suppliers), trade organizations, government officials, anti-chemical activists and regulators.

It's called the Lawn Care Pesticide Advisory Committee (LCPAC), and the weight of its opinion is the heart of a "White Paper" which should be ready sometime this month. The paper will be distributed to LCPAC members. Then, apparently, it will be given to state regulators who, if they elect, can use it as a baseline of sorts for future lawn care regulation. The White Paper will also contain views of those who disagree with majority opinions.

This was the LCPAC's first chartered meeting. (It first met by invitation only this past February.)

The May meeting dealt with posting/notification, registries, lawn care advertising, and education and training.

Members agreed on some of the broader lawn care issues, disagreed on most others.

Posting and Notification—Some LCPAC members, including several pro-lawn, leaned toward a strong national standard, negating the need for local regulations. Others favored state primacy, while Jay Feldman, National Coalition Against the Misuse of Pesticides, argued vehemently against denying local jurisdictions the ability to make their own pesticide laws.

Most at the meeting seemed to feel that homeowners should post too.

Registries—Almost to the person the LCPAC felt that registries should be open and not require medical certification of those who claim to be chemically sensitive. But when the pre-application notification was discussed, the group fragmented on specifics.

Advertising—Pro-industry members of the LCPAC found themselves on the defensive through much of this discussion, particularly when one committee member read aloud a letter from a prominent lawn care company to a customer. The LCPAC member described the letter as an example of an industry member trying to mislead a customer on pesticide safety. This demonstration created some discussion, but little heat.

LCPAC then learned that the Professional Lawn Care Association of America (PLCAA) had prepared a new pub-

lication (see related story) outlining the statements and claims application companies can make in support of their services.

Training/Education—Shiela Daar, Bio-Integral Resource Center, directed much of this discussion toward the need for more training of Integrated Pest Management techniques. Others agreed that more training opportunities are needed, but nothing solid arose from the discussion.

A third LCPAC meeting is set for the fall when many of the same members will sit down to talk about pesticide labeling issues, exposure methodologies and the benefits of lawn care.

PREVAILING ATTITUDES OF THE LAWN CARE PESTICIDE ADVISORY COMMITTEE

	YES	NO	DIVIDED
Local regulation			✓
Homeowner posting			✓
Medical cert. for registries		✓	
Pre-notification			✓
Advertising legislation			✓
More training	✓		

EPA's Kim promised an industry grade card (a spectator's wry observation, not Kim's) at the fall meeting. Kim said he should have data from the unannounced inspections of lawn care companies being undertaken this summer—10 surprise inspections in each state.

—Ron Hall

ELSEWHERE

**The 'safest' words
to say to clients,
p. 46**

**Best materials
for composting,
p. 48**

**Ways to reduce
deer tick habitat
p. 48**

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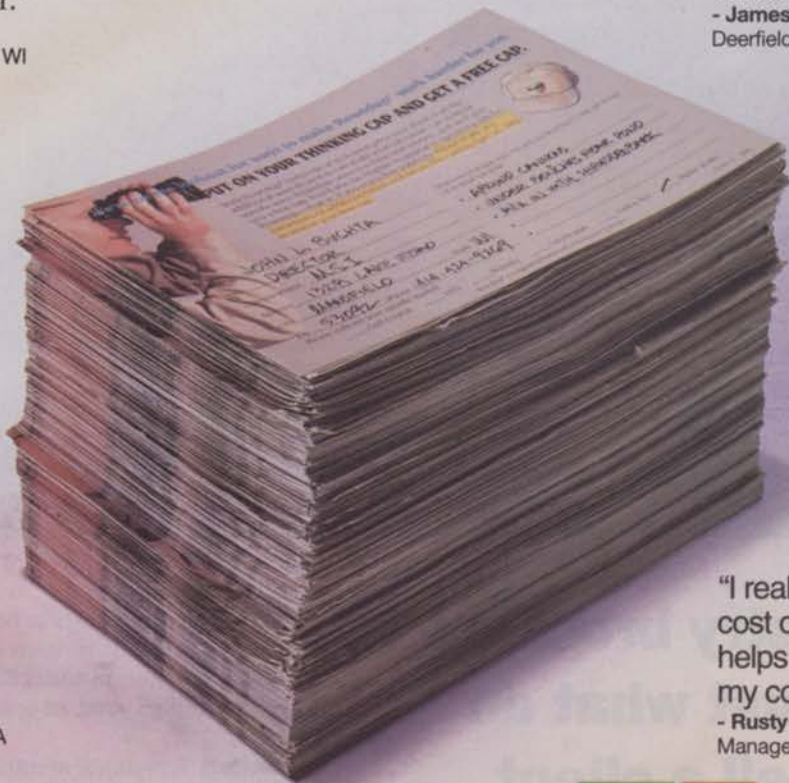
- **James Rhoden**, Superintendent,
Deerfield Country Club, Weston, WV

"It eliminates trimming totally. No more hand weeding. Thanks."

- **John A. Lucas**
President, Lakes Region
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"My lawn mowing crews carry Roundup pre-mixed in a spray bottle, so they can treat grass and weeds in crack-n-crevice."

- **Mark Davis**, Owner, AAA
Yard Care, Spokane, WA



"We just did a job for the airport and I didn't have to go back to see if it worked. Roundup always does."

- **Patricia Ann McCurry**
Owner, The Lawn Dr
Lawton, OK

"I really appreciate the lower cost of Roundup because it helps me hold the line on my contract jobs."

- **Rusty Holt**, Owner, Property
Management Services, Greensboro, NC

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- **Slade Strickland**, Director of Parks Recreation and
Landscape Development, Addison, TX



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Dormant Lieberman bill gets facelift; readied for 1993?

■ Summer 1992 on Capitol Hill is fading. Federal legislative action aimed at lawn/landscape chemicals appears unlikely in spite of late-spring revisions to S. 849, the lawn care notification bill introduced by Sen. Joe Lieberman (D-Conn.) in 1991.

Sarah Walzer, of Lieberman's office, tells LANDSCAPE MANAGEMENT that subcommittee members will try to have a mark-up of the bill this summer.

"They'll be marking up something that isn't going anywhere this summer anyway," a D.C. insider with close ties to the specialty chemical industry says. "For 1993, who knows?"

Revisions of S. 849:

- 1) **Applicators will notify** all abutting neighbors, in writing, of the first application each year at a particular site. Thereafter, the applicator would only be required to notify those who have placed themselves on the registry.
- 2) **Applicators will notify** occupants of the application site, neighbors on abutting property, and anyone on the chemically sensitive registry within 800 yards.
- 3) **No requirement** for advance notice of indoor applications, except to parents who have requested such notice in schools (notified by schools, not applicator). The bill covers only indoor applications to public buildings or multi-occupancy buildings.
- 4) **All applicators**, including homeowners, must post chemical lawn applications. The packaging of consumer chemicals will explain the sign posting duties and include the necessary signs. Or they'll be available in stores which sell the products.
- 5) **Gone is the requirement** to post a sign 72 hours prior to a chemical application.
- 6) **Applicators will mark** indoor applications with signs at each entrance to the building, and to mark outdoor applications with signs around the perimeter of the property, at each entrance to the property, and at each specific area of application on the property.
- 7) **Schools below college level** and daycare facilities must establish a registry of parents who want notice, offer parents the opportunity to register, and notify registered parents 72 hours prior to applications. Applicators would give schools information about the products they'll be using, then the schools can inform any parents requesting information.
- 8) **In large applications**—those requiring notice to 30 people or more—the applicator may notify people in any reasonable manner such as radio or newspaper advertisements, or sign posting in the area.



—R.H.

New industry brochure outlines just what an LCO can tell a client

■ In the brave new world of the 1990s, government seemingly will not only dictate what lawn application companies can do, but what they can say.

The process is well underway. For example, no longer can a lawn application company describe its service (either in writing or in conversation) as "safe", "non-toxic", "EPA-approved". These are dangerous words. These are just three of several phrases likely to get a lawn care company in trouble with regulatory officials.

The Professional Lawn Care Association of America (PLCAA) lays out the new *politically correct* language of the lawn application industry in its brochure *What You Should Know About Lawn Care Products and Services*. The publication, presented as a series

of questions and answers, serves as both guide for lawn care marketers, and as a handout to lawn care customers, says Tom Delaney, PLCAA government affairs liaison.

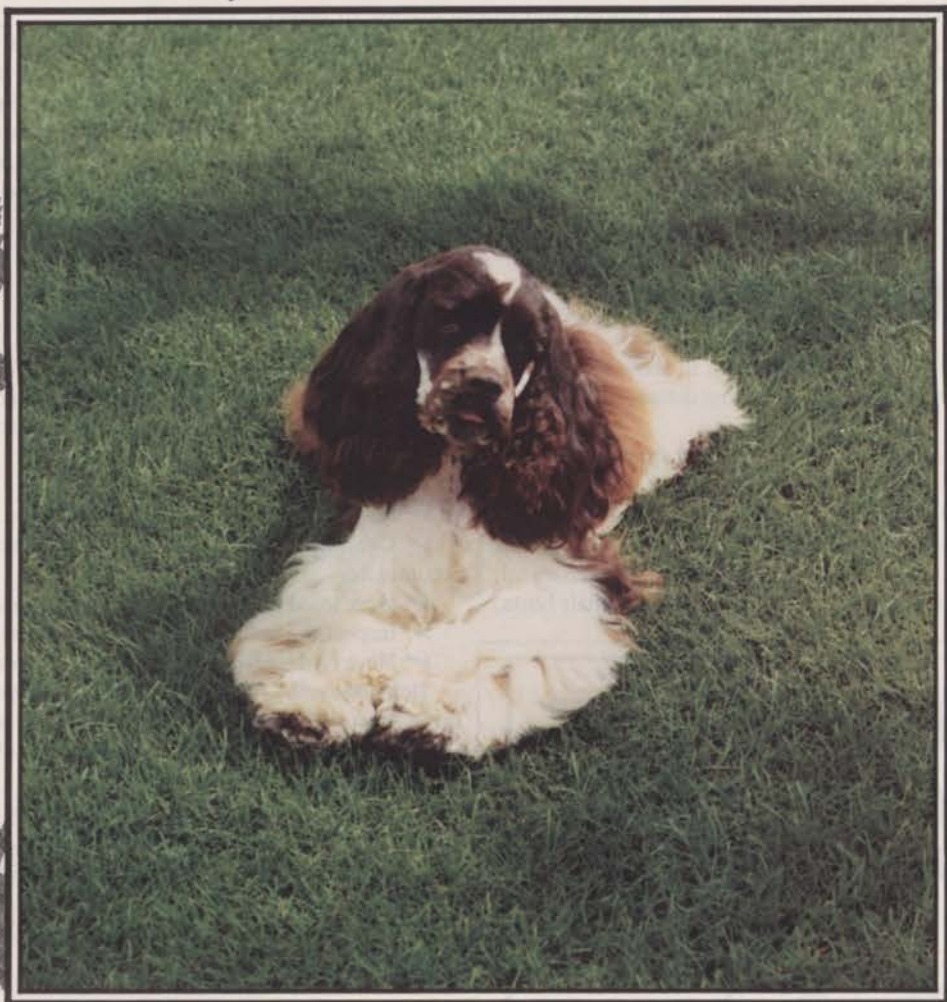
In effect, it outlines what an application company can tell a client.


The brochure represents months of collaboration between PLCAA and federal agencies, especially the Federal Trade Commission (FTC) and the Environmental Protection Agency (EPA). Both agencies have been critical the marketing of some lawn care companies, specifically relating to the safety of pesticides.


What You Should Know was written in behalf of PLCAA and the industry by Hal Zeve, Lawn Doctor, Matawan, NJ. Lawn Doctor supplied the brochure to their dealers earlier this spring. PLCAA's 1,000 members learned of the publication in the association's newsletter.

Any LCOs wanting a sample copy of the brochure should write to PLCAA, 1000 Johnson Ferry Road, NE, Suite C-135, Marietta, GA 30068-2112. Send a stamped, self-addressed envelope.

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Compost pile shouldn't be a garbage disposal

■ Not all natural material belongs in a compost pile.

Dave Williams, a horticulture specialist with the University of Illinois Cooperative Extension Service, advises against putting fatty food wastes such as meat or bones into a compost pile. They attract rodents, raccoons, flies and other pests.

Cat and dog manures aren't good com-

post material either. They contain pathogens which can survive the composting process and spread disease to plants where the compost is used, says Williams. Nor is it a good idea to try to compost diseased plant material or plants suffering severe insect infestation either.

Not For Compost Pile—butter, bone, pet manure, cheese, chicken, fish scraps,

lard, mayonnaise, meat, milk, oils, peanut butter, salad dressing, sour cream, vegetable oil.

Can Be Used In Compost Pile—aquatic weeds, bread, coffee grounds, egg shells, evergreen needles, fruit, fruit peels and rinds, garden wastes, grass clippings, leaves, paper, sawdust, straw, sod, tea leaves, vegetables, wood ash, wood chips.

Ways to reduce deer tick habitat

■ Lyme disease is a serious health problem in some areas of the country. It's also the most common tickborne disease in the United States.

Lyme disease is caused by a bacteria spread from one host to another by the deer tick.

Brian Bret, Ph. D., says the control of Lyme disease provides "an ideal opportunity" for an integrated pest management approach. He says control methods must include mechanical, physical and chemical methods aimed at deer ticks and their hosts.

Reduce the risk—Here, as printed in *Hole Notes*, a publication of the Minnesota Golf Course Superintendent's Association, are the steps Bret outlines, for making property less desirable tick habitat:

- ✓ Keep lawns mowed.
- ✓ Keep weeds cleared and shrubs trimmed.
- ✓ Clean up leaf piles and organic debris and do not allow it to accumulate.
- ✓ Move wood piles away from the house and play areas.
- ✓ Inspect the house for possible entry sites for rodents.
- ✓ Move bird feeders away from living or play areas.

Tick lifecycle—The deer tick has a two-year lifecycle. It goes through four life stages—egg, larvae, nymph, and adult.

In late spring, early summer the female adult deer ticks drop off their hosts and lay eggs on the ground.

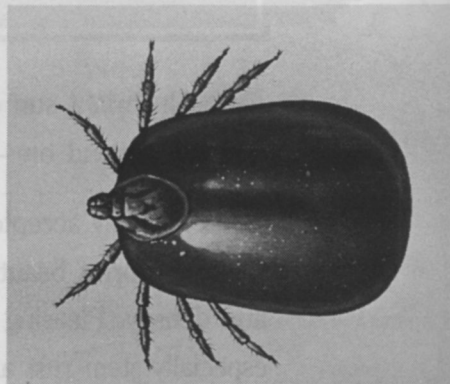
Soon after hatching, the six-legged larvae, mostly in leaf litter and in vegetation on the ground, find a host, often a white-footed mouse. The larvae pick up the Lyme disease spirochete from infected hosts, usually mice.

The larvae feed two or three days on the host, then drop off on the ground where it overwinters. The next spring, it molts into an eight-legged nymph.

By early or midsummer, the population of the nymphs peak. They climb grasses and weeds. This is when they're most likely to attach themselves to humans or pets. They feed on the host for a couple of days before dropping to the ground. By early fall, nymphs are molting into adults.

Adult ticks climb shrubs, weeds and tall grasses and attach themselves to humans, dogs, deer, etc. Again, they gorge themselves for a few days. And, again, they drop off and overwinter, only to start the cycle again in the spring by laying eggs.

The Lyme disease bacteria can be spread by either the deer tick nymph or adult.



The female tick engorges with blood to ensure the subsequent laying of eggs. Eggs are laid in the spring.

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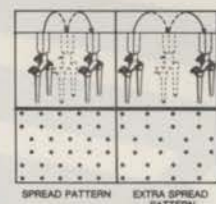
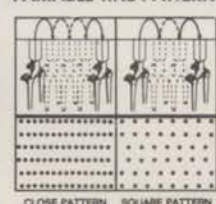
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PHONE COURTESY... "Landscape Telephone Techniques," a self-paced home study program, is available from the National Landscape Association. The kit offers more than 150 practical examples of what to say in various situations. Sections are aimed at the owner/manager, secretaries/receptionists and salespeople. Price is \$69 for NLA/AAN members, \$99 for non-members. To order, send check to: NLA Publications, 1250 I St. NW, Suite 500, Washington, DC 20005. Credit card (Visa or MasterCard) orders can be faxed to (202) 789-1893.

PERSONNEL MANAGEMENT... A sample handbook for setting policy, writing job descriptions, developing pay scales and handling other golf course personnel management issues is available from the GCSAA. It covers work schedules and pay, attendance, performance reviews and many other related subjects. To order, GCSAA members should send \$10, non-members \$15, to GCSAA Membership Dept., 1421 Research Park Dr., Lawrence, KS 66049-3859.

FRONT-LINE MANAGEMENT... "Getting it Right: What It Takes to Become a Good Front-line Supervisor," by Joseph Carbone, is a newly-published book that describes ways to meet and manages the challenges faced daily by front-line supervisors. Written in two parts, topics covered include: reducing ambiguity when giving job assignments, managing expectations, maintaining credibility, rule enforcement, keeping peace, etc. "Getting it Right" costs \$7.50 per copy (plus sales tax); orders of more than 10 cost \$6.75 per copy; for 100 or more, cost is \$6 per book. Contact: Front-Line Super-

visor, Publications Dept., P.O. Box 267, Lansing, NY 14882-0267.

SAFETY EDUCATION PROGRAM... The Toro Company and the St. Paul Fire and Marine Insurance Co. have developed a comprehensive operator safety education program for golf course superintendents. The program addresses 28 safety areas related to commercial cutting equipment, and covers safety procedures before and during operation. The program is composed of a video tape, audio tape, written manual and follow-up testing material. Contact the Toro Co., Commercial Marketing Services Dept., 8111 Lyndale Ave. South, Minneapolis, MN 55420-1196.

PESTICIDE DIRECTORY ...Thomson Publications has released its newly-revised "1992 Pesticide Directory," by Lori Thomson Harvey and W.T. Thomson. It contains listings of the basic control product manufacturers and formulators with their key personnel, regional and district offices, managers, and a list of products. Cost is \$49.95 plus tax. Contact Thomson Publications, P.O. Box 9335, Fresno, CA 93791; (209) 435-2163.

PLANTS AND PEOPLE ..."Plants for People—The Psychological and Physiological Effects of Plants" is available from the Associated Landscape Contractors of America (ALCA). The bibliography lists all of the research references currently on file that deal with how plants affect people psychologically. Free to ALCA, \$20 for non-members. Write to ALCA at 12200 Sunrise Valley Dr., Suite 150, Reston, VA 22091; or phone (703) 620-6363.

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HOT TOPICS

Green industry faces uphill battle in Washington, AAN official says

'The more Congress does, the more likely it'll be doing it to you.'

OXFORD, Ohio—Ben Bolusky of the American Association of Nurserymen (AAN) thinks that the green industry has its hands full in the coming months.

"We have a lot of positive momentum in Washington, but we may run out of time this election year," Bolusky told members of the Professional Grounds Management Society (PGMS) and the Midwest Association of Physical Plant Administrators (MAPP) here last month.

"The reality is, we may need to start all over in January with a whole new Congress," Bolusky pointed out that at least 71 members of Congress are retiring and—given the current unrest of American voters—many more incumbents could be voted out in November.

"The green industry will have a big re-education effort come January," he noted.

According to Bolusky, 110 cities and counties have already imposed their own pesticide application laws, following the *Wisconsin Public Intervenor v. Mortier* Supreme Court decision last summer.

"The potential for chaos is mind-boggling," Bolusky said. "Our pesticide regulatory system is in jeopardy if regulations are fueled by emotion. Few localities are qualified to regulate pesticides."

He said H.R. 3850 approved by the House Agricultural Subcommittee last

month would keep pesticide regulation at the federal and state levels: "The house bill has attracted 93 co-sponsors, and 23 senators have added their names to the Senate version (S. 2085) of the bill."

Another proposed pesticide bill, being readied by Sen. Joe Lieberman (D-Conn.) has been amended. The re-draft, if passed, would:

1) Force individual states to establish a registry of pesticide-sensitive individuals.

2) Force pesticide applicators to notify everyone on the list (within 800 yards), plus immediate neighbors, of the season's first pesticide application.

3) Force posted notices three days before, remaining three days after, pesticide applications.

4) Would apply to all pesticide applications, including those done by homeowners. Stores where pesticides are sold would also sell appropriate signage.

In addition, Bolusky noted, "The EPA's Lawn Care Advisory Committee is considering an *à la carte* menu of pesticide regulations."

Not all the news from Washington is bad, Bolusky admitted. Sen. Don Nickles (R-Okla.) has introduced S. 2319, which

will require an economic impact analysis on subsequent federal legislation. Such a bill could affect proposed pesticide regulations. "He's seeking some degree of accountability," Bolusky said.

Also, President George Bush has penciled \$31 million for urban tree plantings into his 1993 budget request. This is about 15 times what was spent in 1992, much of which will go to landscapers who are contracted to plant trees in urban areas.

The AAN executive made his remarks as part of a keynote at the Midwest Grounds

Management Conference sponsored by MAPP and PGMS at Miami University.

Bolusky concluded that he is sometimes frustrated by "the seemingly never-ending gridlock and grandstanding in Congress...but I happen to believe in the system."

"The green industry is perfectly poised to be the environment's white knight in shining armor in the '90s. Despite the troubles, I'm optimistic about the future of our industry."

—Jerry Roche



Bolusky: Lieberman bill is 'outlandish'

ELSEWHERE

Lawn Institute changes around, p. 61

Commercial focus at Expo, p. 61

More research on herbicides, p. 61



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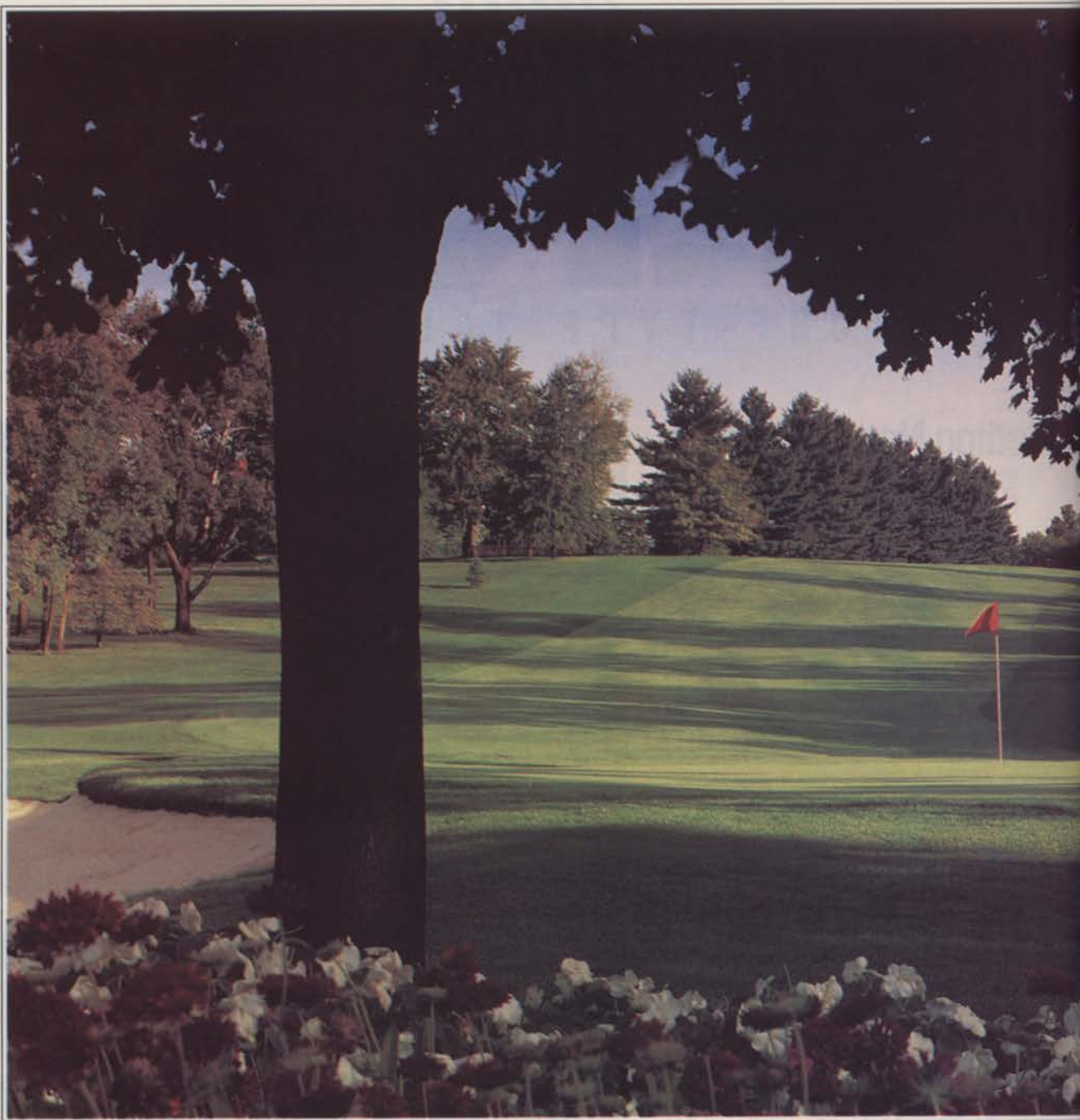


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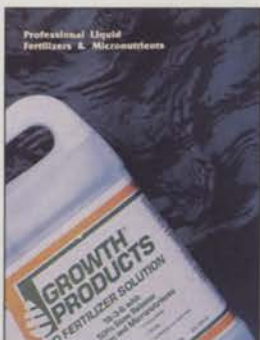
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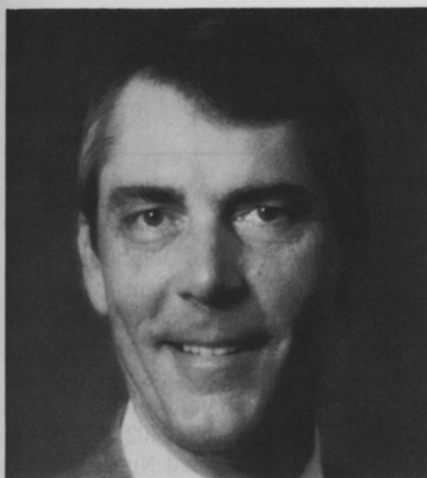
Lawn Institute changes address, executive dir.

MARIETTA, Ga.—New address for the administrative headquarters of the Lawn Institute is 1509 Johnson Ferry Rd., NE, Suite 190, Marietta, GA 30062. Phone number is (404) 977-5492 and fax is (404) 977-8205.

Taking over as executive director from Dr. Eliot Roberts, who recently retired, is James R. Brooks. Brooks, 52, was formerly executive vice-president of the Professional Lawn Care Association of America. He was also employed by LANDSCAPE

MANAGEMENT (then *Weeds Trees & Turf*) magazine and the Golf Course Superintendents Association of America.

The Lawn Institute was formed in 1955 as a non-profit corporation to assist in and encourage through research and public education the improvement of lawns and sports turf. Brooks was preceded by Dr. Roberts (1982-1992) and the late Dr. Robert Schery (1955-1982).



James R. Brooks, new at Lawn Institute

Equipment Expo revs its engines for industry pros

LOUISVILLE, KY.—Business seminars and equipment demos highlight the International Lawn, Garden and Power Equipment Expo, here July 26-28.

Nearly 550 manufacturers and suppliers are exhibiting at this year's Expo, along with an estimated 17,000 green industry professionals from the U.S. and 60 countries world-wide.

The Expo's outdoor demonstration area will again be in full swing. Prospective buyers can browse the expansive outdoor demonstration area and ride, weed-whip, chip, mow and aerate to their hearts' content, using the latest in landscape management and lawn care industry equipment.

Show organizers say the growth of the Expo has been rapid and substantial, with great gains in the number of commercial

end-users. In 1991, the percentage of dealers who carry commercial products increased 73 percent. The number of landscapers and cutters from across the U.S. increased 57 percent.

The North American Equipment Dealers Association will sponsor a 10,000-sq. ft. "Model Store," which will emphasize safety and "environmentally safe" products. There will also be what is described as a state-of-the-art, working service shop.

The seminar schedule features:

- green industry consultant Charles Vander Kooi, speaking on "Bidding with Confidence."

- Len Hays on "Expanding your Commercial Business."

Of special interest is the raffle of a Chevy S-10 Tahoe 4-door Blazer, sponsored by *Organic Gardening* magazine.

For more information, contact Andry Montgomery & Assoc., 6100 Dutchman's Lane, 6th floor, Louisville, KY, 40205, or call (800) 558-8767.

Institute examines herbicides

NEW YORK—What, use less herbicides and nitrogen on turfgrass? This may be possible if research at the Weizmann Institute of Israel pays off.

Institute scientists have developed an approach that could dramatically reduce the amount of herbicide needed to kill weeds.

When metal-binding chelators are applied simultaneously with a herbicide, the resulting synergy knocks out a weed's defenses against the herbicide. Greenhouse experiments indicate that this mixture could prevent weed growth with only 1/4 to 1/2 as much herbicide as usual. Moreover, the approach is likely to delay

the appearance of herbicide resistance by five to 15 years, the institute says.

Research projects also focus on genes that increase the efficiency of a plant's nitrogen uptake and plants that produce their own nitrogenous fertilizers. Some of these lines use 65 percent or more of the available nitrogen source, as compared to the usual 50 percent rate.

Other Weizmann research is focusing on fungi to kill weeds and eliminating cross-resistance to herbicides, making them more efficient.

For more information, contact Bernard P. Zwirn at Hill and Knowlton: (212) 697-5600.

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GREEN INDUSTRY EVENTS

JULY

14, 21: Penn State University Tree Identification program, Lancaster, Pa. Contact: H. Bruce Hellerick, Penn State Cooperative Extension, 1383 Arcadia Rd., Room 1, Lancaster, PA 17601; (717) 394-6851.

16: Landscape Contractors Association Summer Field Day & Trade Show, Shemin Nurseries, Burtonsville, Md. Contact: Landscape Contractors Association, 9053 Shady Grove Court, Gaithersburg, MD 20877; (301) 948-0810.

16-18: California Landscape Contractors Association Summer Tri-Board meeting, Red Lion Hotel, Rohnert Park. Contact: Micheyl Barnett, (916) 448-2522.

16-19: Florida Foliage Association's Annual Convention, Jupiter Beach Hilton, Jupiter, Fla. Contact: Ann King, (407) 886-1036.

19: Colorado Chapter of the American Society of Landscape Architects Summer

Garden Tour, Denver, Co. Contact the ASLA Denver office, 16601 17th St., Suite 400, Denver, CO 80202.

20: Mid-Atlantic Nurserymen's Summer Trade Show, Baltimore Convention Center. Contact: Mid-Atlantic Nurserymen, P.O. Box 314, Perry Hall, MD 21128.

23-25: American Sod Producers Association Summer Convention and Field Days, Chicago, Ill. Contact: American Sod Producers Association, 1855-A Hicks Rd., Rolling Meadows, IL 60008; (708) 705-9898.

23-26: American Association of Nurserymen Convention and Exposition, Columbus, Ohio. Contact: American Association of Nurserymen, 1250 I St., NW, Suite 500, Washington, DC 20005.

26-28: International Lawn, Garden and Power Equipment Expo, Louisville, Ky. Contact: Expo '92, 6100 Dutchmans Lane, Sixth Floor, Louisville, KY 40205; (800) 558-8767.

26-31: Perennial Plant Association Annual Symposium, Stouffer Tower City Plaza Hotel, Cleveland, Ohio. Contact: Dr. Steven Still, Perennial Plant Association, 3383 Schirtzinger Rd., Hilliard, OH 43026.

28: Nebraska Turfgrass Field Day, University of Nebraska Agricultural Research and Development Center. Contact: Roch Gaussoin, (402) 472-8619.

28-30: Penn Allied Nursery Trade Show, Valley Forge Exhibit & Convention Center, King of Prussia, Pa. Contact: Pennsylvania Nurserymen's Association 1924 North Second St., Harrisburg, PA 17102; (717) 238-1673.

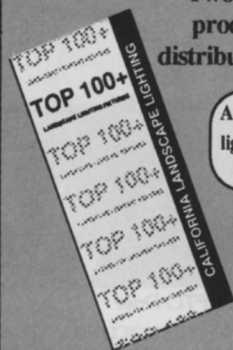
AUGUST

5: Chesapeake Chapter, Sports Turf Managers Association Field Day and Workshop, University of Maryland, College Park, Md. Contact: Ray Flood, (301) 405-3320.

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LANDSCAPE MANAGEMENT

BOOKS

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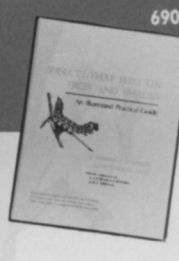
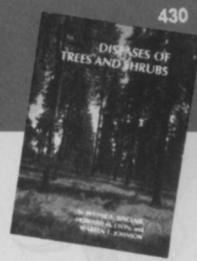
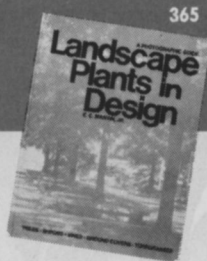
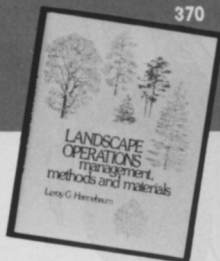
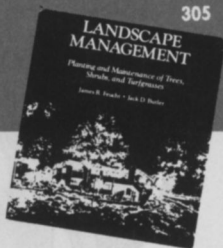
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LANDSCAPE

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Learn important principles of installed landscapes – tree, shrub and turfgrass soils and fertilizers, improved planting and pruning techniques, integrated pest and disease management, spray-equipment calibration and care.

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Combines technical training in landscape science with easy-to-understand accounting, business management, marketing and sales techniques – all in one handy volume! Covers lawn installation, landscape planting and maintenance.

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220 – CONTROLLING TURFGRASS PESTS

by Shurtleff, Fermanian, Randell

No professional can be without this new comprehensive guide which provides the most recent information available on the identification, biology, control and management of every type of turfgrass pest.

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An invaluable guide for playing field managers, golf course managers, lawn care practitioners. Written by turfgrass professionals, this handy reference covers all aspects of turfgrass management.

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Keep pace with the latest developments in turf and landscape irrigation. Rotary sprinkler and golf course design systems, and expanded engineering and reference material make this a great reference for engineers, architects, designers and contractors!

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615 – TURF MANAGEMENT FOR GOLF COURSES

by James Beard

Ideal reference and "how to" guide, this fully illustrated USGA sponsored text details all phases of golf course operations – design and construction, turf management, course administration, irrigation, equipment and disease and pest control.

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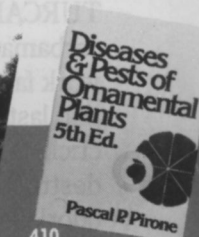
GENERAL

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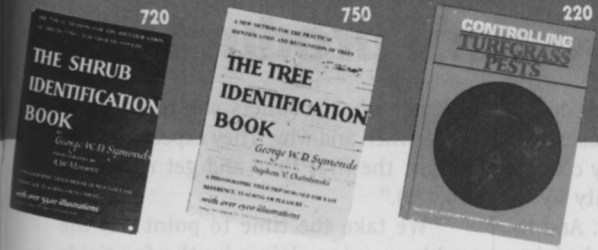
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GREEN INDUSTRY SHOWCASE

Quest for quality includes control products

Raleigh company faces a variety of turf diseases, likes this product's extended control.

■ Expectations are high when a homeowner in Raleigh, N.C., sees an All Green truck pull up in front of his or her home. And that's the way Jeff Oravec likes it.

Oravec, All Green's branch manager in Raleigh, has high expectations of his own. He simply wants the job done right the first time, every time. It's a corporate philosophy embodied in the acronym "QUEST," or "Quality Uncompromised Every Single Time."

Quest is talked about daily here," says Oravec. "We have Quest employees of the week and month, Quest attendance and Quest safe driving awards. It's the way we do business at All Green that encompasses every aspect of what we do, including who works here and what products they use."

Those standards apply equally to the company's choice of control products, where the quest for the best product goes beyond simply shopping for the lowest price.

"The economics is not of primary importance," insists Oravec. "If you don't provide the proper products that get the job done, then you won't be in business very long. We attack problems immediately and need products that work right the first time."

In Raleigh, like most areas in the transition zone where turf-type tall fescue has become the turf of choice, rhizoctonia brown patch remains the most significant turf disease.

It can show up in Raleigh lawns as early as late April and continues through July. Last summer Oravec tried Touche (pronounced 'Too-shay'), a new flowable contact fungicide with locally systemic activity from Lesco.

"With Touché, if a lawn is in real bad shape, we can still expect 85 percent to 90 percent recovery," says Oravec. "If we can catch the brown patch early, we consistently get 95 percent to complete recovery on lawns."

Touché's active ingredient, vinclozolin,

effectively controls brown patch, dollar spot and other major turf diseases. Its lower application rates and 28-day control help All Green boost profitability by as much as 15 percent, says Oravec. And its high concentration reduces technician exposure and makes package disposal less difficult.

"Our customers accept the notion that they can pay a little now...or a lot more later..."

—Jeff Oravec

"We get 21 to 23 days of preventive control at the recommended label rate," says Oravec, and he adds that the company's fungicide application has grown in the past four years to become an increasingly important segment of All Green's business.

"Our use of fungicides seems to grow as tall fescue gains in popularity," says Oravec. "We're seeing more tall fescue here, which is prone to brown patch in summer whether you fertilize or not."

Oravec describes All Green's Raleigh customers as highly educated and knowledgeable about lawn service. "They want

to know what products you're going to apply, when and why. They expect us to do it right the first time and get rid of the problem."

"We take the time to point out the problem and explain why the fungicide application is needed," he says. "Our customers accept the notion that they can pay a little now to take care of a potential problem or pay a lot more later, after the problem has forced us to come in and do a renovation on the property."

In addition to brown patch, one application of Touché provides up to 28 days protection from dollar spot, leafspot, melting out, red thread and pink patch.

Lesco reports it will also control both pink and gray snow mold.

"Touché's recovery rate is great," he adds. "Last year," when the application was followed by irrigation, we got the fastest recovery yet. The brown patch was stopped in two to three days and we could actually see regrowth within three to five days." All Green adds liquid iron to achieve a quick green-up of the infected area.

One gallon of Touché covers three acres at the 1 fl. oz./1000 square feet preventive rate, enough to treat all the greens and tees on the average, 18-hole golf course or 20 average size lawns.

Circle No. 197 on Reader Inquiry Card



All Green branch manager, Jeff Oravec, says Touche's high concentration makes it easier to fill, and the product holds well in suspension.

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- 0205 Sod growers
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- 30 GOVERNMENT OFFICIAL—Government commissioner, agent, other government official.
- 40 SPECIALIST—Forester, consultant, agronomist, pilot, instructor, researcher, horticulturalist, certified specialist.
- 50 OTHER TITLED AND NON-TITLED PERSONNEL (specify) _____

PRODUCT REVIEW

Post-emergents control goosegrass, crabgrass

Acclaim 1EC herbicide from Hoechst Roussel provides season-long control of crabgrass and goosegrass.

Apply Acclaim at regular intervals throughout the season as soon as crabgrass starts to emerge, either alone or tank-mixed with a fungicide.

Acclaim provides economical control and reduces the total amount of control products used.

Other benefits of Acclaim, according to Hoechst-Roussel, include: crabgrass control from one leaf to five tillers (just prior to seed head formation).

Acclaim can be used on established bentgrass tees and fairways as well as on ryegrass, fescue, bluegrass and Zoysiagrass.

The company says Acclaim can be easily implemented into reseeding and overseeding programs, and it won't damage desirable turf in and around crabgrass infestations.

Circle No. 191 on Reader Inquiry Card

Four-wheel drive mower has Ultimate Turning Radius

Excel Industries has a new full color brochure that features the Model 9400 UTR (Ultimate Turning Radius).

According to Excel, the Model 9400 is the first and only 4-wheel drive, 4-wheel steering machine that can turn a true zero radius turn.

According to Excel, the secret to this remarkable maneuverability is the Synchronized Steering system which allows the wheels to pivot a full 180 degrees.

The wheels are also coordinated so that the inside set of tires turn a tighter arc than do the outside tires, so there is no turf damage while turning, and the center-mounted deck will skip.

Other features include a self-leveling seat for greater comfort when mowing on slopes.

An 84-inch rear discharge rotary mowing deck that can be set to cut from 1-1/2 to eight inches, adjustable from the driver's seat

Circle No. 192 on Reader Inquiry Card

Bed cover provides secure storage place

Warn Industries has a newly-designed "Aerocover" pickup truck bed cover. The Cover provides a lockable storage area in

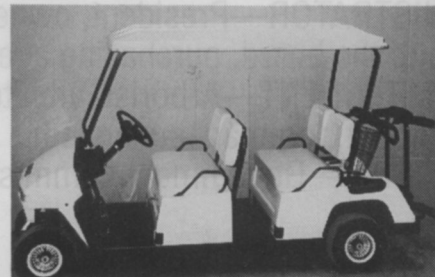


the bed of the truck. Ideal for tradesmen, says Warn, because the three separate entry covers can be removed quickly without tools. They offer the owner a completely open truck bed for large or unwieldy cargo, yet the bed can be covered in seconds, eliminating the fuel economy waste of an open pickup bed. Aerocover is made of strong fiber-reinforced composite panels. Interlocking hinge design assures a weather tight seal and fast access to the entire bed.

Circle No. 193 on Reader Inquiry Card

Newest golf car will carry four players

Columbia ParCar announces the introduction of the new ParCar Foursome, designed to carry up to four golfers playing



from the same car.

The Foursome has two bench seats that face forward, and features a four-bag rack

designed for the rear body of the golf car.

The Foursome is powered by the Columbia ParCar exclusive Gasoline or XP Electric Power System for maximum power and performance. Foursome has a 1000-pound load capacity and features an exclusive Clamshell body design, for easy cleaning and routine maintenance.

Circle No. 194 on Reader Inquiry Card

Grading, cleanup tool attaches to skid-steers

The Front Runner is a heavy-duty rake attachment for clearing debris, leveling, finish grading and other landscaping uses.

Flexible tines separate debris during site cleanup and scarify and loosen hard-packed materials when grading. Individually replaceable spring steel tines also provide protection by flexing over obstructions more easily than a blade.

Full floating design allows the unit to follow compound grades and to tip from side to side for crowning roads.

Circle No. 195 on Reader Inquiry Card

Fungicide packaged as water-dispersible granule

A new water-dispersible granule (WDG) formulation for Chipco Aliette brand fosetyl-Al fungicide means there is very little



dust from the product when the package is opened and poured.

The product is also available in quantities that are suitable for both nursery and turf applications.

Circle No. 196 on Reader Inquiry Card

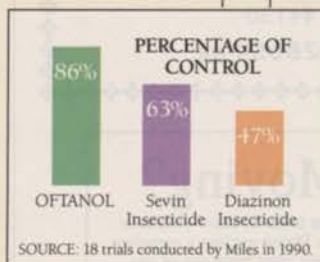
OFTANOL USERS KNOW THE BEST WAY TO OUTSMART GRUBS IS WITH A LITTLE EXTRA HOMEWORK.

Getting rid of grubs that attack your customers' lawns can be pretty tricky sometimes. Unfortunately, simply treating against these destructive pests doesn't always guarantee success.

But many lawn care operators have learned that all it takes to outsmart grubs is a little preparation—finding the right product and the right time of year to make the application. The product is OFTANOL Insecticide. Studies show that time after time, OFTANOL provides grub control. And delivers better control than other widely used products such as Sevin® and Diazinon Insecticides.

The right time to apply it? That will vary from region to region. But a good rule of thumb is

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to treat with OFTANOL when grubs are at or near the surface. An easy way to check is by just pulling back a bit of sod and looking for an infestation. Or call your local Extension office to determine peak periods of grub feeding in your area.

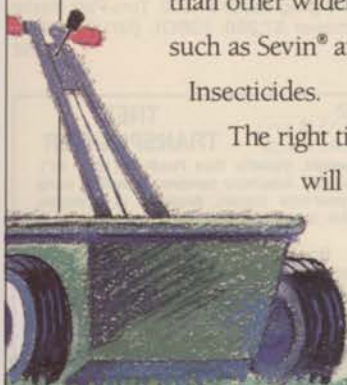
These are, of course, just the basics of effective grub control. If you'd like to learn more about OFTANOL and its proper usage, contact your local Miles representative. Or just give us a call at (800) 842-8020. One of our trained professionals

will be standing by to answer your questions. Miles Inc., Specialty Products, Box 4913, Kansas City, MO 64120.

So why let grubs continue to test your patience when the easy answer is OFTANOL.



Sevin is a Reg. TM of Rhone-Poulenc Ag Company



JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC

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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.

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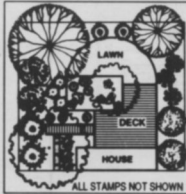
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The Ransomes 350D can. Because the engine is over the drive wheels, the 2-wheel drive Ransomes 350D is surefooted enough to tackle challenging terrain. For the ultimate in traction, there's the 4-wheel drive model that gives new meaning to the words rugged performer.
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16713 Industrial Parkway
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EHRlich GREEN TEAM
J.C. EHRlich CO. INC.
P.O. BOX 13848
READING, PA 19612-3848
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Start your future today by send you resume in complete confidence to:

ORKIN LAWN CARE
Pat Guy
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Atlanta, GA 30324

FOR SALE

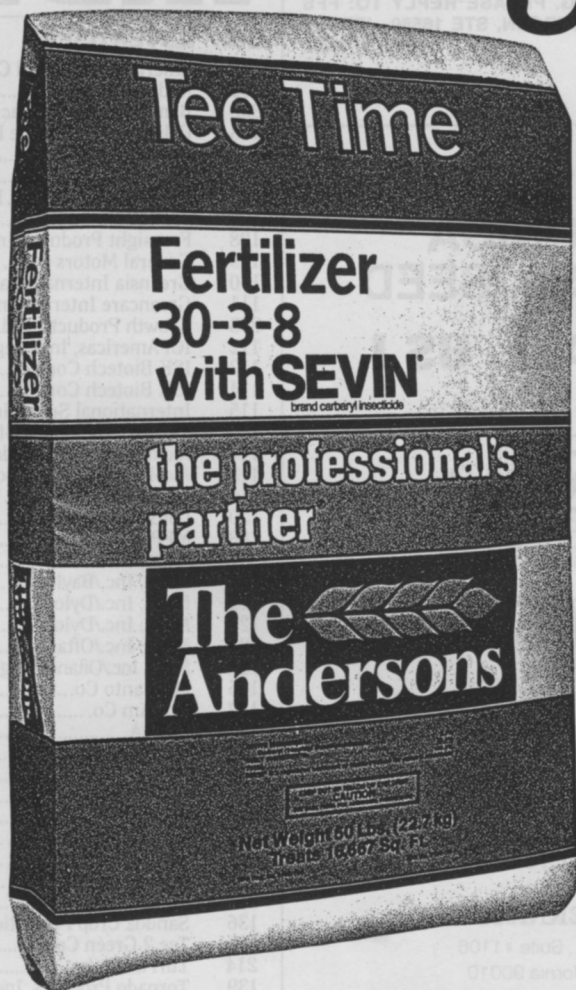
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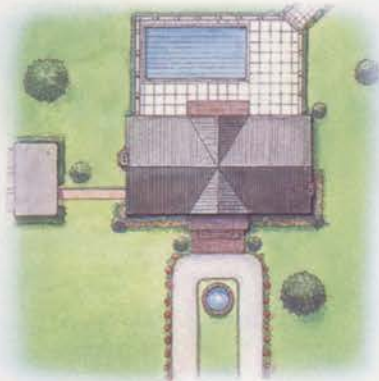
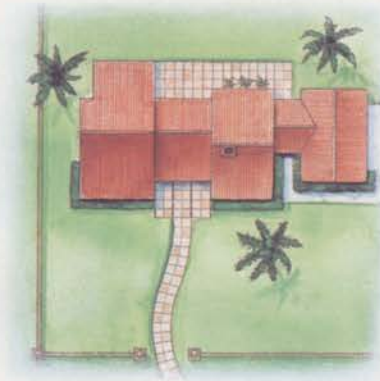
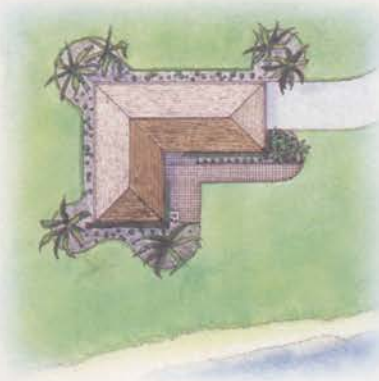
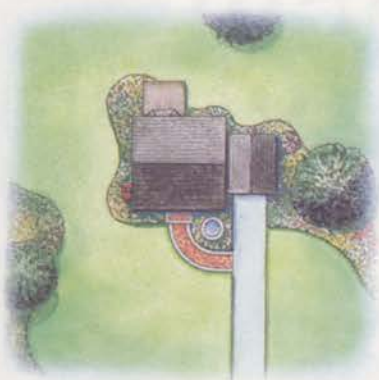
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Cultivar or Selection*	Powdery Mildew Rating 9 = most disease
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Glade	0.0
Nugget	0.0
Mystic	0.0
Touchdown	0.0
Sydsport	0.5
Plush	2.0
Baron	3.0
Cheri	3.5
Victa	3.5
Geronimo	4.0
Majestic	5.0
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Adelphi	6.5
Vantage	6.5
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Parade	7.0
Pennstar	7.0
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*Commercially available Kentucky bluegrass varieties.

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