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a multimillion dollar,
full-service conglomerate.
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In this issue:

**Overseeding
Tips**

**Lighting
Your Landscapes**

**Diagnosing
Diseases**

**Superior
Soils**

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USE READER SERVICE #74



Lawn & Landscape MAINTENANCE

VOLUME 15, NUMBER 5

MAY 1994

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Davey Tree Expert Co.
Kent, Ohio

24 Cover Story: Vision of Success

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Editor's Focus

THE ENTREPRENEURIAL spirit has been heralded as the driving force of small businesses across the United States. Who, after all, can be credited for some of the greatest achievements in U.S. history if not the self-made person?

All of us have heard stories about our great-grandparents trekking across snow-covered fields to attend school; that is after first waking before dawn to do household chores. For competitive or selfish reasons, it's these stories that have driven millions to achieve a higher level of success than their family and peers.

The lawn and landscape industry is comprised of an assortment of success stories from the corporate giants on down to the neighborhood mom and pop shops. Over the years, *Lawn & Landscape Maintenance* has profiled an extraordinary array of adept lawn and landscape contractors in an effort to raise the level of professionalism in this industry. After all, why reinvent the wheel when the answer is right in front of you?

From the cover profile to the business stories on the pages of *LLM*, we drive home this truth every month as we delve into business minds of the men and women behind the industry's success stories. While we've reported the business details behind these achievements, such as start-up capital, equipment selection, profit and loss statements and so on, we haven't necessarily explored the entrepreneurial mind vs. the mind of small-business owners — assuming there is a difference.

I choose to believe there is a distinction. While most anyone can be the owner of a small business, it's almost rare when a true entrepreneur walks onto the scene.

What does it take to label oneself an entrepreneur; someone who really takes the world by storm?

Compiled from a variety of business sources, here's a list of differences between the two entities: entrepreneurial minds are said to aim to build substantial companies, know that growth is the best antidote to failure, innovate and differentiate, focus on opportunity, have long-range vision, use change, take calculated risks, continually improve their skills and have an unusually high rate of success.

On the other hand, typical small-business owners want only to create jobs for themselves, cling to the status quo, imitate, provide basic services, focus on problem-solving and coping, fear change, have a survival mentality and have a high rate of failure.

Which category do you fit into?

Entrepreneurship means thinking big and envisioning the entire picture. The entrepreneur creates true independence by inventing businesses that work without their presence rather than creating jobs which they



must slave away at.

Depending on the size of your company, you may not be able to "get away" indefinitely, but you should have the resources in place so the business can function — even flourish — in your absence. Delegate, direct and spread the company mission. Then, and only then, can the entrepreneur recognize and seize real opportunity.

In recent months, leading business publications have dissected the importance of Generation E (a group as different as you can possibly get from the so-called Generation X — 20- to 35-year-old social castaways). The Generation E group looks for opportunities where fortunes were lost.

This stereotypical group is significant as the United States battles its way out of a stagnant economy. This generation will take the risks, make the hard choices and grow when every business indicator tells you it can't happen.

This is not the same as runaway growth. Entrepreneurialship is not primarily about company size and revenues. Results to a recent survey in *Success* magazine indicated that entrepreneurialship is defined by the mind-set of the business owner.

And what are the business priorities of these overachievers? Ensuring quality, recruiting and keeping a winning staff, improving profits, finding new markets, educating employees, keeping pace with technology and developing new products.

Sound familiar?

The lawn and landscape industry is flush with entrepreneurs — those willing to contribute to the growth and vision of the overall industry in addition to their personal success. This year should be one of respectable growth for the green industry. A time when vision can become reality. Don't let it pass you by. — *Cindy Code*

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Business Watch

LAWN AND LANDSCAPE maintenance professionals seeking new construction jobs will enjoy hearing that sales of new homes edged up in February (see graph at right), recovering from a record decline a month earlier and raising new hopes about the real estate market this spring. The 1.9 percent rebound followed a 26.1 percent decline in January, which was attributed to bad weather and unsustainably high December sales. The January report was the steepest single-month plunge since 1963.

Regionally, February home sales rose 28 percent in the West, but fell everywhere else: 10.6 percent in the Northeast, 10.2 percent in the Midwest and 5.8 percent in the South. Analysts are concerned about rising mortgage interest rates, which now average 7.8 percent, up from a 25-year low of 6.74 percent in October. Rising interest rates will eventually cause home sales to slow.

A bright spot for home sales, Seiders pointed out, is a tax change announced in March by the Internal Revenue Service. Home buyers may now deduct the mortgage fees, or "points," paid on their behalf by the seller. The rule change is retroactive to homes sales after Dec. 31, 1990.

UNEMPLOYMENT RATE

DEC.	JAN.	FEB.	MAR.
6.4	6.7	6.5	6.5

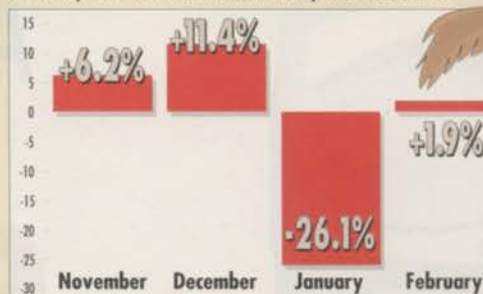
CONSUMER PRICE INDEX*

DEC.	JAN.	FEB.	MAR.
+0.0	+0.3	+0.3	+0.3

*Percent change from preceding month (seasonally adjusted).

BOUNCING BACK

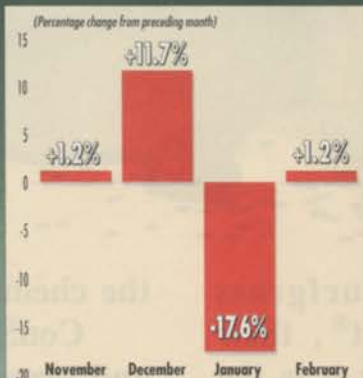
New homes sales moved back into the black in February after a record decline the previous month.



(Percentage change from preceding month)

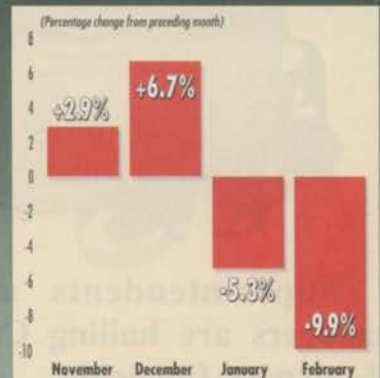
Source: Bureau of the Census

HOUSING STARTS



Source: Bureau of the Census

SALES OF EXISTING HOMES

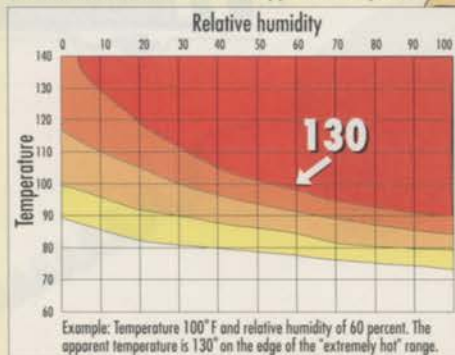


Source: National Association of Realtors

WEATHER WATCH

BEWARE OF HUMIDITY

The combination of heat and humidity gives the "apparent temperature," which is a measure of how dangerous the combination is. The curved line where the two meet is the apparent temperature.



The dangers in each range of apparent temperatures

- Extremely hot**
Heatstroke imminent.
- Very hot**
Heatstroke possible with prolonged exposure. Heat cramps and heat exhaustion likely.
- Hot**
Heat cramps and heat exhaustion possible with exposure.
- Very warm**
Physical activity could be more fatiguing than usual.

Source: American Meteorological Society

THE NATIONAL Weather Service's 60-day outlook for May and June calls for a 55 percent probability of below normal temperatures from northwestern Minnesota to central Ohio and West Virginia. Probabilities exceed 60 percent in the northern Great Lakes region and New England.

There is at least a 55 percent chance of above normal temperatures in the central high plains and western Texas.

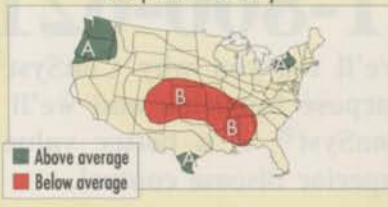
Greater than normal precipitation is expected from central Colorado eastward to Arkansas and Missouri and then southeastward to Mississippi.

60-DAY OUTLOOK FOR MAY AND JUNE

Temperature Probability



Precipitation Probability

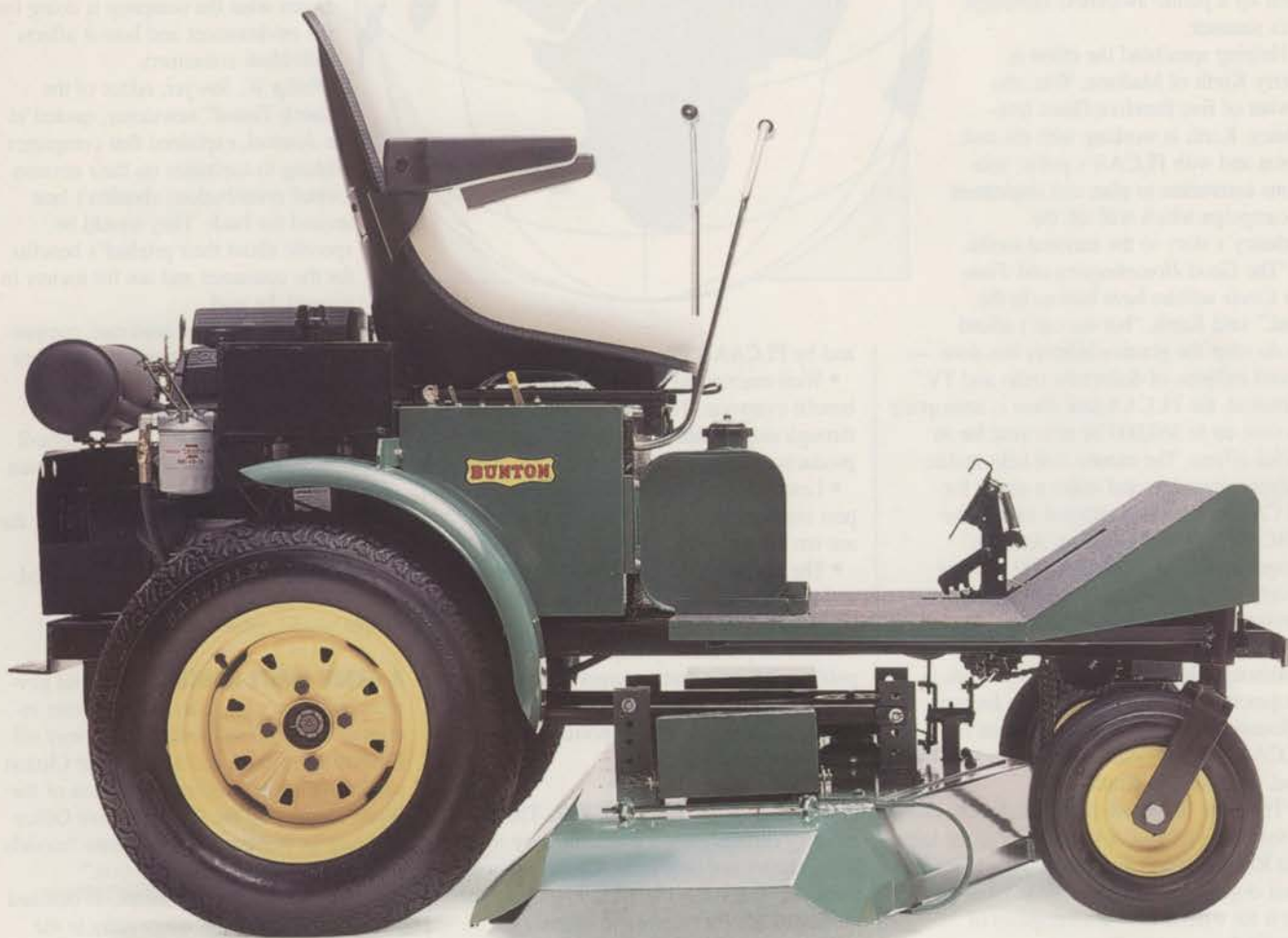




1991



1992



1993

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Environmental Forum

TELLING THE STORY. The lawn service industry doesn't have the big bucks to promote itself to the general public like some other industries do. But that doesn't mean its environmental message should not be heard.

In fact, a task force of the Professional Lawn Care Association of America is laying the groundwork to gear up a public-awareness campaign this summer.

Helping spearhead the effort is Terry Kurth of Madison, Wis., the owner of five Barefoot Grass franchises. Kurth is working with the task force and with PLCAA's public relations committee to plan and implement a campaign which will tell the industry's story to the national media.

"The *Good Housekeeping* and *Family Circle* articles have hurt us in the past," said Kurth, "but we can't afford to do what the plastics industry has done — spend millions of dollars on radio and TV."

Instead, the PLCAA task force is attempting to raise up to \$60,000 by next year for its initial efforts. The money will help update existing press kits and make it easier for PLCAA to approach national media like ABC-TV's "Good Morning America" program, he said. Up to \$40,000 is being sought from suppliers, said Kurth, and lawn service operators also will be asked to contribute.

Although the PLCAA effort will work in conjunction with the Responsible Industry for a Sound Environment, it's important for PLCAA and individual members to take the lead, according to Kurth.

"There are things we (individuals) can bring to the table and PLCAA can bring to the table that RISE cannot," Kurth said. "It's (RISE) a great organization and it's needed, but people see it for what it is — a consortium of chemical companies."

Individuals, on the other hand, can "soften" the message that well cared for turf benefits a broad spectrum of society and that occasionally it needs lawn medicine.

"We are the front-line troops, and we have children and concerns too," Kurth said. "We're all in agreement that the benefit (of sound turf) outweighs the risks, but now we have to be proactive, and not defensive, about saying that."

Once that message gets across at the national level, efforts will concentrate on telling the same story to editorial boards of local newspapers across the country, Kurth said. Then, the participation of local lawn maintenance professionals, who are known in their own communities, will be even more important, he said.

Key messages identified by the task force



and by PLCAA's PR committee are:

- Well-maintained turf and landscape areas benefit everyone. Those benefits are possible through responsible application of lawn care products and services.

- Lawn care practices following integrated pest management/turf health care concepts are environmentally sound.

- The lawn service industry — its members and the products they use — is already regulated.

It will be particularly important for the public relations effort to target columnists, editorial writers and commentators, said Kurth. "That is the type of positive notoriety that we can't afford to buy."

ENVIRONMENTAL ADVERTISING. The green industry certainly has a green message to tell: The industry not only cares for the environment, but enhances it as well, improving the quality of life for clients and others.

Yet that message may not be communicated effectively, especially in the advertising efforts of landscape contractors, lawn service companies and others in the business.

Contractors who use consumer advertising to attract customers would be well served to heed the findings of a recent study done by the market-research firm of Roper Starch Worldwide of Mamaroneck, N.Y.

Results of the study — comprising 22,516 readers who looked at more than 300 "green" ads published in 186 magazines since 1991 — were reported in *The Wall Street Journal*

According to the market research firm, companies that jump on the environmental bandwagon can't use a scattershot message if they hope their ads will yield results.

Too many "green" ads, the study found, made no connection between the company's

efforts to better the environment and how those efforts affected individual consumers, according to the report.

And too often, according to the survey, ads which didn't strike a responsive cord with members of the sample didn't stress the "what's in it for me" angle. Too many ads, said the study, failed to make the connection between what the company is doing for the environment and how it affects individual consumers.

Philip W. Sawyer, editor of the "Starch Tested" newsletter, quoted in the *Journal*, explained that companies wishing to capitalize on their environmental contributions shouldn't beat around the bush. They should be specific about their product's benefits for the consumer and not for society in general, he said.

In landscaping and lawn care, companies have natural areas to emphasize in their advertising. Effectively designed and installed landscaping, for example, helps control air and water pollution and control temperature. It can also help reduce erosion and reduce energy consumption.

Moreover, he recommended exploiting the visual power in environmentalism.

"Appeal to a person's ego," Sawyer said. "Don't aim ads to save the planet. Most people would rather save themselves."

A GREEN WHITE HOUSE? The federal government doesn't move as fast as private industry, and 2000 still seems a long way off. Nevertheless, that's the deadline the Clinton administration has set for conversion of the White House and the Old Executive Office Building in Washington, D.C., into "models for efficiency and waste reduction."

Among the project's elements, as outlined in *USA Today*, two are noteworthy to the green industry: Mulching mowers will replace the conventional mowers now used for cutting the buildings' spacious expanses of turf, and a "cascading" water plan will be implemented.

Under that plan, lawns will be watered with wastewater from drinking fountains. In addition, water will be conserved by the installation of water-saving devices on all faucets.

"We're going to show you don't have to sacrifice comfort to save energy," said Cathy Zoi of the White House Office of Environmental Policy. "We're going to demonstrate the options are limitless."

Other moves include greater use of recycling bins, more efficient light bulbs and the use of energy-efficient computers, copiers and fax machines. ■

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USE READER SERVICE #24

ZENECA
Professional Products

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

a lot less and still get excellent results. Here's 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.

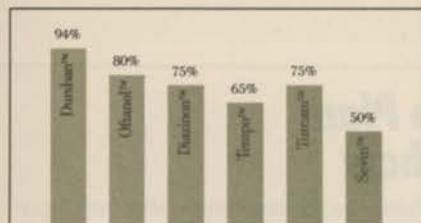
By adding insecticide, you'll also take care of tougher insects, like scales and worms. University studies suggest you may get better control than you get with insecticide alone.

Knowing exactly when to apply insecticide helps, too. One way to



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.

monitor mole crickets, chinch bugs, webworms and cutworms is by mixing 1½ oz. of dish soap in two gallons of water and sprinkling it on a four-square-foot area of turf. If eggs have hatched, this soapy mixture will flush insects to the surface, and

And Dursban also gives you plenty of application flexibility. It's available as a liquid, dry flowable, wettable powder in water soluble packets, granule, fertilizer or bait.

Now, we realize you probably have some questions. That's why

Give your hate for insects a better environment.

you can apply insecticide accordingly.

Your insecticide itself can also make a difference.

After all, different insecticides work at different rates. Which is why Dursban* insecticide could be your best choice.

we created The Turf Manager's Guide To Responsible Pest Management. It's 44 pages packed with comprehensive information on the latest techniques for controlling insects, weeds and turf diseases.

For a free copy return the coupon, or call our toll-free telephone number. Because when you apply a little knowledge, you don't need to apply as much insecticide.

Mole Crickets Getting Under Your Skin?

University studies show that Dursban and Pageant insecticides provide excellent mole cricket control. Apply two weeks after egg hatch and irrigate turf 24 hours before and after application. This moves mole crickets near the soil surface and washes Dursban and Pageant into the zone of insect activity.



Mole Cricket

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News in Brief

NEWS DIGEST

Maryland Defeats Pesticide Ban at Schools

The Maryland state legislature defeated two proposed bills that would have banned the use of certain pesticides at schools, and general use of some pesticide ingredients.

The proposed Maryland School Use Pesticide Reduction Act would have banned use of "high hazard" pesticides on school grounds. The bill ranked high hazard pesticides based on the probability of their being human carcinogens.

The second proposal would have prohibited the use of a particular organochlorine compound, an organophosphate compound or a combination of both in pesticides after certain dates and under certain conditions.

Putnam Resigns From the IA

Charles "Pepper" Putnam resigned his post as executive director of the Irrigation Association. No specific reason was given for Putnam's departure after his three-year tenure at the helm of the IA.

Laura Dorsey, formerly director of communications, is currently acting executive director for the association. The IA's executive committee is expected to name a permanent executive director in the near future.

PPEMA Issues 1994 Outlook

Shipment of hand-held gasoline-powered equipment increased 28 percent in 1993 and is expected to increase an additional 5 percent in this year, according to the Portable Power Equipment Manufacturers Association.

Shipment of trimmers and brushcutters jumped about 27 percent in 1993 and are predicted to increase another 6 percent this year. Hand-held blower shipments rose 20 percent in 1993 with an additional 9 percent increase expected in '94; backpack blower shipments increased 28 percent with another 9 percent increase expected; and hedge trimmer shipments rose 24 percent with an 8 percent additional jump anticipated.

Ruppert Opens New Facilities

The Ruppert Landscape Co. opened new facilities in Gainesville, Va., and Forestville, Md. The 4.8-acre Gainesville facility comprises offices, shop space and a nursery holding area. The Forestville 2-acre facility includes office and shop space for the Prince George landscape management branch which services parts of northern Virginia and Washington, D.C.

Family Businesses Fail to Plan For the Future, Studies Show

MOST FAMILY BUSINESS owners want to see family ownership continue after their departure from the business, but generally fail to prepare for such a move, according to a Massachusetts Mutual survey.

MassMutual surveyed 614 family business owners. The survey criteria called for families that own more than half of the business for private firms or more than 10 percent stock for public firms. In addition, the businesses had to meet one of the following requirements: other family members must be involved in day to day operations; the owner must plan to pass ownership on to one or more close relatives; or the owner must consider the firm a family business.

According to the survey, family businesses average 50 full-time employees and 15 part-time employees. Six in 10 have 20 or fewer full-time employees. Most of the businesses surveyed (84 percent) report 1992 gross revenues of under \$10 million.

Survey results show family business owners are very interested in directing who succeeds them but only 21 percent of respondents have a written succession plan and only 54 percent of those have chosen a successor. Six of seven family businesses that have chosen a successor named a family member.

About 24 percent said they do not want to pass ownership to a relative. The most typical reasons given were that the respondent is not ready to retire, their children are not interested in the business or it is difficult to keep the business profitable. About one in eight said they are ready to sell the business.

Regarding management, the survey indicated that families tend to take an informal approach to running a business. For example, 58 percent of the respondents said they do not have a written business plan and about as many don't hold regular board meetings.

Of seven management practices covered in the survey, family business owners most frequently use a formal employee review process. About 60 percent said they use set compensation plans and written employee manuals less frequently. Only 53 percent maintain written job descriptions and 51 percent schedule regular meetings with family members.

Large family businesses (more than 250 employees) make greater use of management tools but are less likely to have a written succession plan. Eighty-three percent of the owners of large family businesses intend to pass on their stake in the business, but only 10 percent of those firms have a written succession plan.

Interestingly, while 89 percent said increasing profitability is a top financial goal for their firms, only 37 percent rated growth a high priority. Close to two-thirds consider providing access to capital for the business and reducing the business' debt level very important goals. Least emphasis is placed on matters not directly related to family or the balance sheet, such as expansion and providing liquidity to shareholders.

Other survey results showed: 35 percent of the family businesses were started by a previous generation; 17 percent of all family businesses go back two or more generations; in 40 percent of family firms, the spouse is involved in day to day operations; a business owner's son is twice as likely as a daughter to be involved in operations (37 percent vs. 16 percent); and 30 percent have no trusted business adviser outside of the family.

FAMILY BUSINESS RESPONDENT PROFILE

AGE

Under 50 years	48%
50-64 years	38%
65+ years	13%

GENDER

Male	82%
Female	18%

EDUCATION

High school or less	29%
Some college	24%
College graduate	33%
Graduate school	13%

RACE/ETHNICITY

White	92%
Asian-American	2%
African-American	1%
Hispanics	3%

HOUSEHOLD INCOME

Under \$50,000	14%
\$50,000 - \$100,000	30%
\$100,000 - \$250,000	31%
Over \$250,000	17%
Don't know/refused	9%

Source: Massachusetts Mutual

(continued on page 15)

News in Brief

(continued from page 12)

Congress Delays WPS Changes Until '95

The U.S. Senate approved a bill delaying safety provisions of the federal Worker Protection Standards from April 15, 1994, to Jan. 1, 1995.

The U.S. Environmental Protection Agency two years ago revised the standards, which are intended to prevent or mitigate worker exposure to pesticides used in agriculture, nursery and greenhouse operations.

The revisions require those operations to, among other things, implement expanded worker training, provide decontamination sites and follow product-specific requirements such as mandating use of personal protective equipment and incorporating restricted-entry intervals following applications. The revisions also require manufacturers to add more safety provisions to some product labels by Oct. 23, 1995.

While the delay in implementing the revisions does not directly affect the turf industry, the Professional Lawn Care Association of America is concerned about the trickle effect EPA pesticide regulations tend to take.

"We're not included in the regulations, but

are included in the fall out of current WPS regulations," said Tom Delaney, director of government affairs for PLCAA. "The EPA has a habit of doing that — they figure if they do something in one program for one purpose, there's no reason not to drag it over to the other program."

For example, 2,4-D label change requirements are a direct result of WPS provisions, Delaney said. "The EPA said they had to protect workers, so they took the standards and applied them to 2,4-D about wearing the gloves, eye protection, keeping people off the lawn until it's dry, things like that."

PLCAA is also concerned that manufacturers may inadvertently word labels incorrectly so that they end up restricting all applications rather than just agriculture. "If manufacturers aren't careful in the wording with the Worker Protection Standard (changes), their products could end up applying to us," Delaney said.

The federal government intervened with the EPA's work on the Worker Protection Standards after the agency failed to develop and distribute training and outreach materials, and had because of interpretation problems between the EPA and state enforcement agencies.

The American Association of Nurserymen

considers the delay a victory for the nursery industry, saying it provides businesses more time to prepare systems and procedures for compliance with the new rules, and gives AAN more time to negotiate specific provisions for its members.

ISK Combines, Renames Agrochemical Business

Ishihara Sangyo Kaisha (ISK) unified its agrochemical businesses under the new name ISK Biosciences, effective April 1.

In November 1990, Ishihara acquired ISK Biotech Corp. of the U.S.A. "as a strategic step to increase its existing presence in the agrochemical industry," said Edward Sabala Jr., manager of corporate communications for ISK Biosciences. The two organizations plan to combine development, manufacturing, sales and distribution efforts.

Headquartered in Japan, the new corporation is comprised of three divisions: Asia-Pacific, Europe and Africa and the Americas.

Stihl Recalls Some Blowers, Sprayers

Stihl Inc. is recalling BR 320, BR 400, SR 320 and SR 400 backpack blowers and spray-

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USE READER SERVICE #59

ers manufactured after Oct. 21, 1991, with serial numbers above #224438666, due to potential fuel line leakage.

The leakage could cause fire under certain conditions, resulting in the serious injury or death of users or bystanders, according to company officials.

Stihl advises anyone owning one of the recalled tools to discontinue use immediately and return it to an authorized dealer for replacement of the fuel line and modification of the fuel tank at no cost.

Blowers and sprayers subject to the recall can be identified by the serial number visible through the small opening above the recoil starter housing.

Wisconsin Debates Home-Owner Posting

The Wisconsin legislature proposed allowing individual municipalities to adopt ordinances requiring home owners and renters to post signs when-ever they make pesticide applications, despite having enacted a state preemption law last year.

Milwaukee already has an ordinance that mandates home owner posting, and the state requires posting for professional pesticide applicators as well. The Responsible

Industry for a Sound Environment, which advocates state level pesticide regulation and condemns mandatory posting for home owners, anticipates a long fight with local groups on the home owner posting issue.

"We do know local groups up there don't want to take no for an answer. We still feel this jurisdiction belongs at state level, and that was the whole purpose of the preemption bill last year. So we're not done with this thing by any stretch of the imagination," said Allan Noe, RISE's director of state affairs.

Several states proposed legislation this year mandating home-owner posting, but "none have been successful to date," Noe said.

OPE Dealers Call For Greater Customer Value

The lawn maintenance industry needs to promote customer value even more, according to



Longhorn Supply raised more than \$5,000 for two charities at its annual open house. The charities — People That Care and Teen Challenge — benefited from funds raised from an auction of items donated by local vendors. Nearly 500 landscape contractors and exhibitors gathered at the customer appreciation day.

attendees of a panel discussion on the future of the industry at the Western Lawn Expo in Kansas City, Mo., a show for outdoor power equipment dealers and distributors.

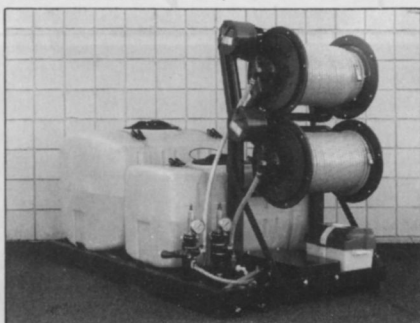
Panelists explored where the greatest business opportunities lie for the industry in the next five years, and how the industry can compete against mass merchandisers.

"The dealer needs to identify that both he and the mass merchandiser are retailers," said David Zerfoss, president of Husqvarna Forest

(continued on page 90)

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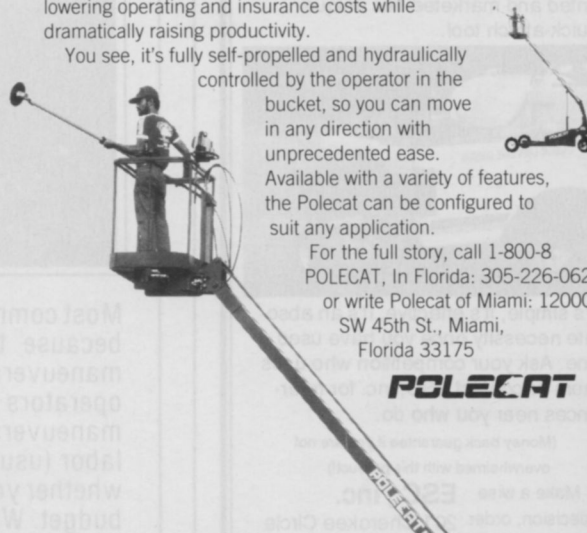
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Association News

MORE THAN 450 students from 29 universities nationwide participated in the **Associated Landscape Contractors of America's** 18th annual Student Career Days in Knoxville, Tenn.

The competition included more than 20 green industry events, ranging from irrigation assembly and patio construction to sales presentations and personnel management.

California Polytechnic State University-Pomona took first place overall. Second place went to North Metro Technical Institute, Acworth, Ga., and Colorado State University, Fort Collins, placed third.

About 40 lawn and landscape contractors sponsored the competitions and/or were present to help coordinate activity. The program's schedule allotted time for contractors to interview students for temporary or permanent employment.

"The benefit for the industry is recruiting employees that have training and a career commitment to the industry," said Brent Totman, general manager of Orkin Plantscaping, Knoxville. "For the students, it affirms their decision to enter the industry, allows them to network with industry leaders and other students."

For more information...



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Suite C-135
Marietta, GA 30068-2112
800/458-3466

CC

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ALHA

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NAA

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603/673-3311

University officials said they view Student Career Days as a means to promote their educational programs, cultivate ties with industry professionals, showcase their top horticulture students and exchange ideas and information on needed curriculum.

The 1995 ALCA Student Career Days are slated for March 24-26 at North Metro Technical College in Acworth, Ga.

The **American Landscape Horticulture Association** launched a national Certified Landscape Professional program for

supervisors, sales people, designers, managers, landscape architects, landscape contractors, nursery personnel, horticulturists, arborists, interiorscapers and lawn and pest control specialists.

Once participants pass the test, they are required to renew certification every two years, and to document up to 80 hours of ongoing education within that time period. Continued education sources can include seminars, classroom sessions and reading material including trade publications.

(continued on page 22)

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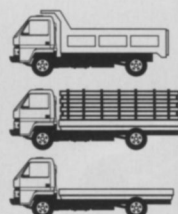
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Association News

(continued from page 18)

Accepted topics range from pest control and sprinkler system design to business administration and time management.

The **Professional Lawn Care Association of America** reported a successful circuit of winter workshops in nine cities nationwide, despite conflicts with some of the worst weather in the program's history.

PLCAA held one-day workshops on business survival and risk communications in Chicago; Detroit; Atlanta; Orlando; Dallas; Albany, N.Y.; Wooster, Mass.; Madison, Wis.; and King of Prussia, Pa.

While fewer than two dozen people attended each workshop except Wooster's (about 70 signed up for the Massachusetts workshop but more than half were deterred by a major winter storm), the results of a recent PLCAA survey show members are highly interested in attending regional business seminars.

Ann McClure, executive vice president of PLCAA, said the association plans to broaden the program's scope and market some regional workshops on a more national scale.

The **National Arborist Association** named Gary Mullane its 1994 president. Mullane is president of Low Country Tree Care, Hilton Head, S.C.

Mullane joined NAA in 1971 and has served on the association's board since 1988. He is also a member of the American Society of Consulting Arborists, the International Society of Arboriculture and the National Association of Sports Officials.

The new president said he expects 1994 to be a growth year for NAA in terms of membership and programs. "OSHA's (the Occupational Safety and Health Administration's) latest regulations require employers to train workers. NAA's existing programs and those being completed right now will provide member firms with all of the training programs employers need to field a well-trained, professional, safety-conscious work force," Mullane said.

Other officers elected include Susan Haupt as vice president and Spencer Rosenfeld as treasurer.

The **Composting Council** released its "Composting Rules & Regulations," the first of a series of updates on federal and state composting rules and regulations, and a "Directory of State Regulators."

The composting regulations update features aspects of the federal Clean Water Act, which in its current round of reauthorization contains some emphasis on non-point source pollution from farms, tree cutting and other development projects. The EPA recognizes composting as an alternative solution for reducing non-point source pollution, according to the Composting Council.

The directory lists regulators of agriculture, solid waste and sludge composting, including names, agencies, addresses, phone numbers and fax numbers.

NEWS IN BRIEF...The **Georgia Turfgrass Association** filled several posts on its board of directors. Those appointed include Paul Greenwell, superintendent of grounds for the Gwinnett County school system; Mike Waldron, executive director of the Georgia State Golf Association; Jeff Dobbs of Zeneca Professional Products; and William Shirley of Capital City Club...The **American Society of Agronomy**, the **Crop Science of America** and the **Soil Science Society of America** jointly published *Forage Quality, Evaluation and Utilization*, a hard-cover publication providing an historical foundation and review of developments in forage science. ■

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A Vision of Success

The Davey Tree Expert Co. evolved from a one-man tree care operation in 1880 into a \$222 million, full-service conglomerate today. Shrouded in century-old tradition, the company's focus remains on the future.

By Cathy Hoehn

DESPITE ITS NAME, The Davey Tree Expert Co. is far from your typical family-oriented business. Seated strongly in century-old tradition, the company's vision stands out as extraordinarily futuristic.

Company founder John Davey was himself a visionary. He began performing tree surgery for private and commercial properties in Kent, Ohio (where the company is now headquartered), in 1880, at a time when tree care consisted of tree removal rather than maintenance. In 1901 he wrote *The Tree Doctor*, a book which introduced his innovative concept of tree surgery to the world.

Davey expanded his practice as tree surgery gained popularity, incorporating the Davey Tree Expert Co. in 1909. The company developed its services to include utility line clearance in 1921.

From the outset Davey believed in providing comprehensive training for employees, as evidenced by the intense educational programs offered by his Davey School of Practical Forestry in the early 1900s. The school evolved into The Davey Institute, now located on the Kent headquarters' 54-acre campus.

By 1974, Davey Tree operations had grown to include a nursery, lawn maintenance and landscaping services, and had expanded throughout the United States and Canada. Amid the diversification, the company continued to pioneer innovative methods in holistic tree care service and training. That emphasis remains intact today.

"Foremost, we are a tree care company. We offer lawn care, mowing, grounds maintenance and other services. But where we really think we are best is the tree care market," said Douglas Cowan, president of Davey since 1985 and chief executive officer since 1988. "The time it takes to develop a good tree surgeon is so long, it's a major barrier for a lot of companies. It's highly dangerous work."

Anchored by a strong tree care service and an array of allied services, Davey Tree's leaders stand prepared to branch into untested territories, while continuing their role as environmental stewards.



Douglas Cowan, president and chief executive officer of Davey (left), and John Joy, chairman of the board, steer The Davey Tree Expert Co. with the visionary style set by John Davey in 1880.



ENDURING STYLE. In the face of modern changes, Cowan is fervent in his belief that Davey Tree retain its fundamental principles.

"Our business philosophies have changed with the way the marketplace has changed," he said. "But the legacy we're trying to carry forward is hiring the very best people we can possibly hire, maintaining that family feeling and maintaining a technical edge over the competi-

tion. Technical skills have always been the Davey trademark. We're really intent on keeping that part of the legacy."

But maintaining a family feeling does not a family make. Cowan's testament of the Davey Tree principle was tested long before he took the company helm.

In 1977, the Davey family, disenchanted with running the company, appointed John Joy, now

chairman of the board, as president, and immediately announced plans to sell the company. Joy became the company's first non-family president.

"I started with the company in 1946, and worked for the Davey family up to 1977, when they appointed me president," Joy said. "They announced they were going to make me president and sell the company almost in the same

breath...Family members had gotten older, and they wanted to settle potential estate factors. They had third and fourth generation Daveys coming along that weren't particularly interested in running the business."

Employees banded together to purchase the company, an effort which took 17 months of negotiations. They had to vie against two investor groups and three companies listed on the New York Stock Exchange.

THE DAVEY TREE EXPERT CO.

HEADQUARTERS: Kent, Ohio

BRANCHES: 120 throughout the United States and Canada

FOUNDED: 1880 by John Davey

OWNERS: Employee stock ownership. Nearly 50 percent of employees are shareholders. (About 2,600 employees and former employees own stock.)

PRIMARY SERVICES: Utility services; residential and commercial tree, shrub and lawn care; grounds maintenance; two nurseries; interior plant care; and arboriculture and horticulture consulting.

EMPLOYEES: About 5,200 full time; 6,000 in peak season

1993 SALES: \$222 million

EXECUTIVE SUMMARY

COMPANY PHILOSOPHY: "Do it right or not at all."

PROJECTIONS: \$325 million to \$350 million revenue in five years. A continued average of 7 percent to 10 percent annual growth.

AREAS OF ANTICIPATED GROWTH: Residential/commercial tree, shrub and lawn care, utility, training, internal and external consulting.

PRIMARY FOCUS: Drawing on the company's vast resources of technical data, research and training tools to provide a full range of top-quality services. Also, continuing to conduct research on products and concepts that promote holistic plant health care.

COMPANY EXECUTIVES

PRESIDENT AND CEO: Douglas Cowan.

Graduated from Kent State University with a degree in business administration. Joined Davey Tree Expert Co. in 1974 as corporate controller; became vice president of finance in 1979; president and chief operating officer in 1985; and chief executive officer in 1988.

BOARD CHAIRMAN: John Joy.

Attended the University of Nebraska and Cleveland College in Ohio. Joined Davey Tree in 1946. Became president in 1977; CEO in 1979; chairman of the board in 1982; and retired in 1988.

"We were competitive in terms of bidding on the company. Ultimately the employees came up with the top price," Joy said.

In 1979, a bi-level ownership program went into effect. On one level, 113 employees bought into a plan that called for an original investment of 20 percent, with the balance to be financed by the company over the next seven years. Nearly 65,000 shares with a total value of \$1.5 million were purchased.

Concurrently, 120,000 shares with a total market value of \$2.7 million were sold to the newly created Davey Employee Stock Ownership Plan. At that time, the total market value of the company's outstanding stock was \$7 million.

"In order for employees to buy the company, wives had to go back to work, families had to take out second mortgages," Joy said. "It was incentive for the fellow in Hicksville, Long Island, who now owned shares of stock and the feeling of ownership responsibility, to work harder. He now felt he had a stake in the company."

Under the new ownership, Da-



vey Tree doubled its volume and quadrupled earnings in five years. "It was certainly not a case of profiteering. We were achieving perfor-

mance that the company should have been achieving previously," Joy said. "Consequently we were able to pay down our personal, as

Tree care remains the staple of Davey's services. Photos: Davey Tree Expert Co.

well as our corporate, debt."

While employee ownership was key in boosting company performance, some general belt tightening took place as well. "We sold off non-productive assets like properties not being used. Then we shut down losing operations," Joy said.

Today, about 2,600 employees and former employees (retirees are allowed the option of retaining stock) are shareholders. Earnings have increased from \$1 million to more than \$6 million, and shareholders' equity has risen from \$7 million to more than \$44 million.

About 12 Davey family members still own company stock, a combined total of less than 1 percent. None of the family members remain as active employees.

DAVEY TODAY. In 1991, Davey Tree restructured to align management and operations around clients. Today, service functions are

(continued on page 28)

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USE READER SERVICE #10

Cover Story

(continued from page 26)

coordinated through corporate headquarters, with about 120 regional structures set up throughout the United States and Canada to represent each customer/market group.

The Davey Tree Expert Co. operates in the Eastern United States and three subsidiaries operate in other regions: the Davey Tree Surgery Co., formed in the early 1900s, which offers utility operations west of the Mississippi; The Davey Tree Expert Co. in Canada Ltd., organized in 1930, which serves eastern Canada including the provinces of Ontario and Quebec; and High Tree Services in western Canada, established in 1986, which primarily provides utility services and a small amount of residential and commercial tree and lawn care.

Also in 1986 Davey entered the interiorscaping market by acquiring Plantasia Inc., a Columbus, Ohio-based interior plant care firm which soon will be renamed Davey Interior Care. The company plans to expand its interiorscaping ser-

vices, which now total \$3.5 million in annual revenues.

Two nurseries located in Wooster, Ohio, and Jacksonville, Fla., and a research farm in Shalersville, Ohio, round out the company's operating groups.

Davey's district offices vary in size and range of services offered. The Columbus, Ohio, facility for example produces \$4.5 million in annual sales. The average residential/commercial territory probably generates more than \$1 million in sales each year.

Companywide services include public utility work; residential tree, shrub and lawn maintenance; commercial and municipal grounds maintenance; interior plant care; and arboriculture and horticulture consulting.

Residential and commercial services represent about 40 percent of Davey's total business. Future plans include possibly dividing commercial and residential into separate entities and growing each at its own pace.

Cowan's view of the company's big picture includes securing com-

mercial accounts — golf courses, for example, which are difficult to sell on the need for tree care — by emphasizing consulting services first and then selling specialized tree services.

"A different marketing approach is needed there. Golf courses traditionally, out of their total maintenance budget, reserve 90 to 95 percent for turf and 5 to 10 percent for trees. They take bids in the winter time when they know contractors are willing to give lower rates," Cowan said.

Cowan's ploy is to plug Davey Tree's research and technical training into this market segment.

"The problem is, commercial customers don't have a comprehensive program for tree care. There needs to be a five- or six-year plan to market golf course management," he said. "I don't think most of our customers know we have two nurseries. We have the ability to go to golf course superintendents and say 'We'll be your arborists and consultants. We'll take care of your entire property.'"

The company has thus far cho-

sen not to promote landscape installation as a primary service. "We're not a landscape construction business per se. Some Davey districts offer landscape installation and maintenance, if they can do it profitably," said David Adante, executive vice president and chief financial officer.

Overall, Davey Tree is growing at an average annual rate of 7 percent to 8 percent. Reported 1993 revenues were \$222 million. Adante estimates 1994 revenues will break \$225 million. Cowan foresees that figure jumping to between \$300 million and \$350 million in five years. He also anticipates adding on about 2,000 employees within that time frame.

"I see offering customers in commercial and residential and utility a larger array of services that are vegetation-related. And the consulting services will hopefully be a bigger part of the picture," Cowan said.

He targeted southeastern and southwestern U.S. regions as expansion areas. "We haven't expanded in those areas as quickly as in the

(continued on page 30)

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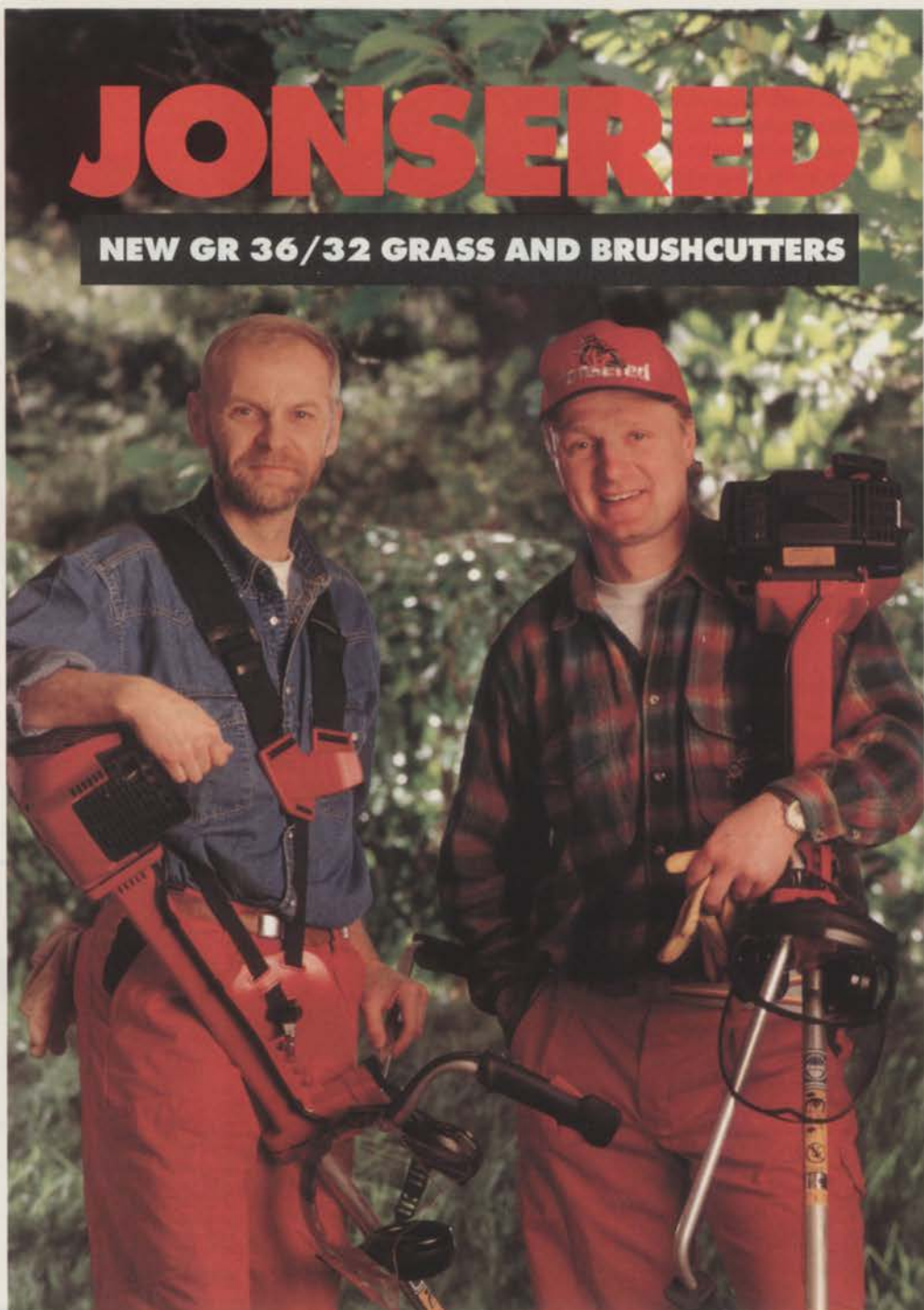
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USE READER SERVICE #90

Cover Story

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North. With the South's year-round climate, clients there aren't quite as particular about how the landscape looks as they are in Ohio where they only get to see it six months of the year. In the South and West, it's a different kind of service. We have to tailor to their needs."

The company plans to bolster services to existing clients in Canada where current sales equal about \$16 million annually. "We're almost in every province we can be in up there that has potential. We plan to penetrate those markets even more," Cowan said.

CUTTING EDGE. Davey Tree prides itself on keeping ahead of customer demand. Integral to that success is the company's extensive research, development and training staff and facilities.

"There are two lawn care companies that may have more extensive training programs. But of all the traditional tree care companies, I don't think anybody can match our tech-



nical resource group or educational training programs," Cowan said.

The focal point of Davey's research and training is The Davey Institute, an extensive facility which includes a large, expandable classroom, a plant diagnostic laboratory, a greenhouse and a soils laboratory.

Roger Funk, vice president of human and technical resources, heads the The Davey Institute, including the Davey Resource Group

which provides consulting and technical support to utility, municipal, commercial and residential customers. The group is comprised of more than 30 scientists/researchers, urban foresters, computer scientists and support staff.

The company's research and development team holds nearly two dozen patents, particularly on products that enhance the environment, such as Arbor Green, a low-burn

Davey promotes a holistic approach to maintaining trees and shrubs.

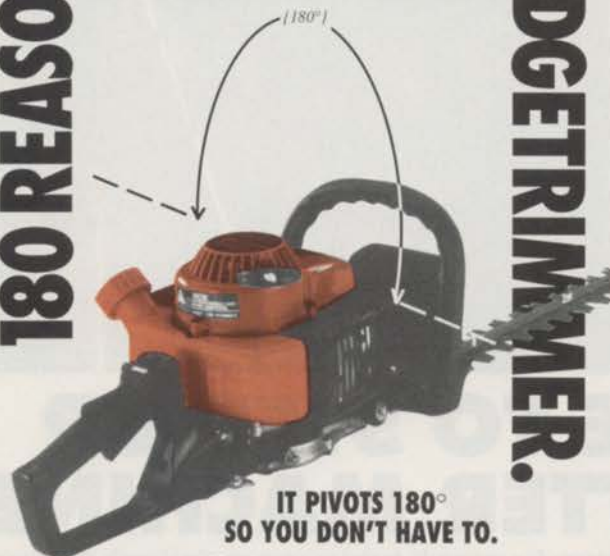
and non-leaching fertilizer; as well as concepts such as Plant Health Care, a holistic and preventive means for improving the health and vigor of plants, including reducing pesticide treatment methods.

On the training side, several intensive programs are held annually at the institute. The Davey Institute of Tree Sciences is a four-week intensive school in which employees receive training in tree identification, insect and disease identification, pruning, cabling and bracing, equipment handling, safety and management. Top employees are selected to take the class each year. Those students must be employed by Davey for at least two years and complete a series of extension lessons, or home study courses, in each service offered.

"The program is so good, if the employees need credits, they can receive six credit hours at Kent State University. I'm not aware of any

(continued on page 32)

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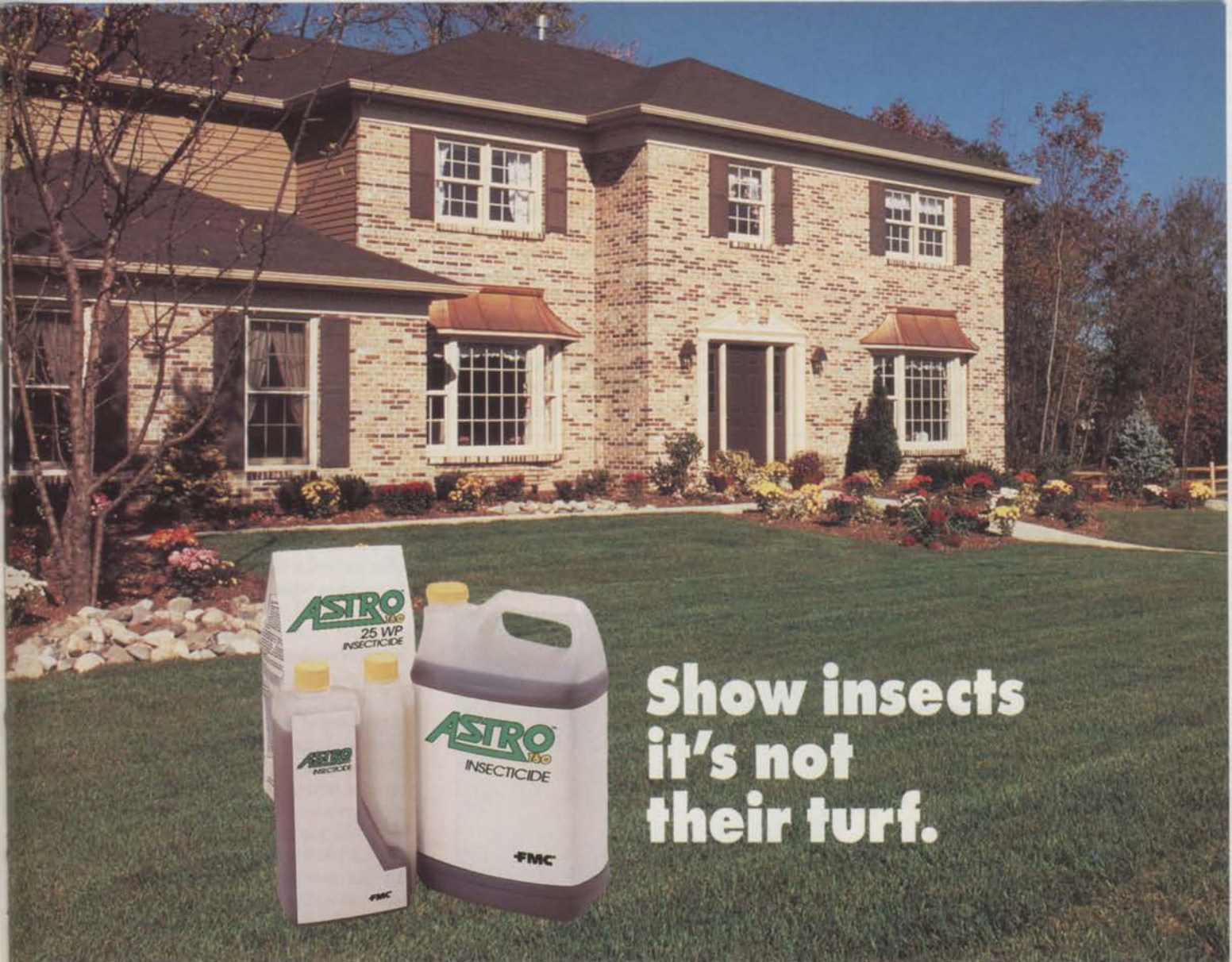
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Cover Story

(continued from page 30)

other green industry company that offers that," Cowan said.

Neither the extension lessons nor the tree science course are mandatory, but both are provided to single out and challenge the most motivated employees.

Davey's educational program also includes The Davey Institute of Horticultural Sciences, a one-week course that focuses on disease and pest management, as well as annual field training.

To maintain the leading edge on technical training, Davey Tree pours \$2 million annually

into research and development, including upgrading training tools and techniques. The Davey Institute has built an extensive library containing more than 100 training videos, all produced in-house.

"Kids coming out of school today are video-oriented," Cowan said. "You can have all the bound periodicals you want but there's a very good chance they aren't going to read them. You have to put it on video or CD ROM. Employees today are requiring more active education."

"We already produce videos in-house for our ownpeople," added Funk. "We could also begin to provide them for home owners, garden clubs — teach them how to take care of trees and lawns,

how to prune trees and shrubbery. We could help educate that person as a precursor for the other services we provide."

Cowan also anticipates Davey getting increasingly involved with helping high schools set up vocational programs, and working more closely with university programs. The company helped establish Kent State University's two-year horticulture program.

"As the job market gets more technical, kids that aren't college-bound are looking for career alternatives. I think our industry really fills that need," he said.

CURRENT TRENDS. If the 1980s ushered in the trend of focusing more on customer needs, the 1990s will see companies furthering those efforts by becoming even more service-oriented, according to Cowan. "You find fewer companies that are just tree care companies," he said. "The focus used to be 'let's perfect the service we offer and sell it to all the clients we can.' The focus is now where I think it should be — on the customer. Let's provide the services they want."

Clients' increased demand for better service is largely the result of all types of corporate downsizing, said Cowan. "Big corporations are going through radical changes in their buying habits — cutting the number of suppliers, expecting more from those they keep. That translates into a whole new philosophy of consumer buying. The expectations of buyers of service have changed, so providers have changed the way they sell."

"While you can still build strong loyalties, you can't do it at any price. It's more critical today that costs are under control; that you offer more service than customers expect. If you don't offer exceptional service you're not in the ballgame."

Competition has increased across the board for all services, he noted. "That just means we've had to put more emphasis on areas we can differentiate ourselves from the competition, such as our strong technical background."

Funk foresees other companies continuing to pick up Davey's concept of Plant Health Care, a systematic approach to developing plants through diagnostic checkups, prescription pest management, proper nutrition and cultural practices.

Davey has long considered itself a pioneer in the movement to reduce pesticide use and gain better control of plant health care. The company was the first to introduce "alternative use materials," such as biorationals, into lawn care.

"The idea is to spot and treat on an as-needed basis, at the proper time and with the proper material," said Bal Rao, manager of research and technical development for The Davey Institute. "We've moved from traditional products to biorationals or soft pesticides, such as horticultural oils and insecticide soaps (in tree care). Ideally, we'd like to go after a no-pesticide program. That may not be realistic, but through research we may achieve that."

In fact, Davey claims it has reached a 74 percent reduction in the use of traditional tree pesticides in certain districts, and a 50 percent reduc-

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USE READER SERVICE #92

Subsurface Injection

Gives Tree Roots a Boost

A number of tree fertilization methods are available, but tree care professionals point to liquid soil injection as the preferred choice, except in special circumstances.

By Cathy Hoehn

MANY TREE CARE professionals, when discussing tree and shrub fertilization, appear to agree on two main points: there is no single type of application that fits every job, and there are benefits and disadvantages to all of them.

Those concurrences aside, most say they generally opt for liquid soil injection for tree fertilization jobs, except in specific instances.

There are three types of fertilization applications commonly used: The drill-hole method and liquid soil injection — both known as deep-root or subsurface fertilization — and a microinjection system in which capsules are injected into the base of a tree trunk.

In the drill-hole method, which is the oldest technique, fertilizer is placed in the root zone by drilling holes in the ground and dividing the recommended amount of fertilizer equally among them.

In the old days, arborists drilled 18 inches deep and filled the holes to within 3 inches of the surface. But that process failed to provide fertilizer directly to the tree's feeder roots, which are within the top 6 to 12 inches of soil.

"If applicators still use premeasured dosages, they no longer go 18 inches deep," said Jim Sample, spokesman for J.J. Mauget, Los Angeles.

Holes are usually drilled

led in a grid pattern 12 inches deep and 18 to 24 inches apart using a 2-inch diameter drill bit or auger. The holes normally begin 2 to 3 feet beyond the drip line, and the fertilizer — most commonly granular — is placed at least 4 inches below the soil surface. The holes are often left open or filled with sand, pea gravel or perlite.

"We used to make two or three rings around the tree, and that's where we fertilized it. Now we start at a reasonable distance from the trunk and go beyond the drip line, treating it like a checkerboard," said Walt Money, president of Guard-

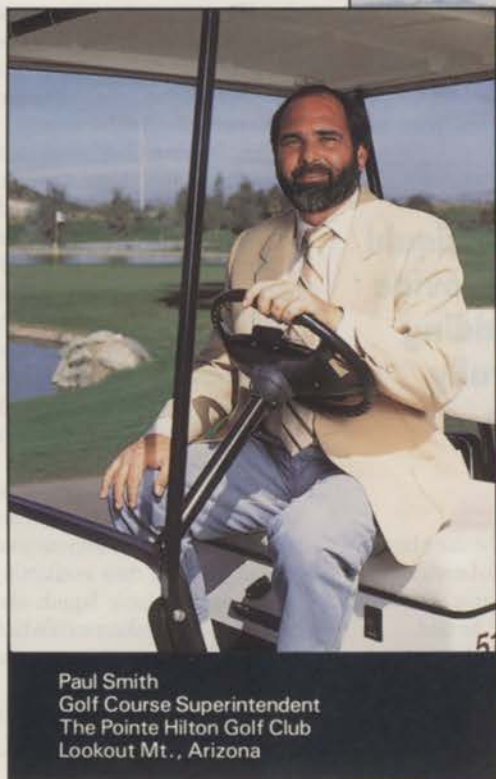
ian Tree Expert Co., Rockville, Md. "When it comes to trees, there are no hard and fast rules. If you start at a reasonable distance from the trunk and go a reasonable distance beyond the drip line, you will intersect somewhere with the bulk of that tree's feeder roots."

The soil injection method, developed at least two decades ago, was viewed as a vast improvement over drilling. "When arborists first started using liquid fertilizer, they thought it was a real godsend. They probably overfertilized," Sample said. "We've learned a lot in the last 15 years about how to fertilize trees. Arborists are now much more conservative in their use of fertilizer."

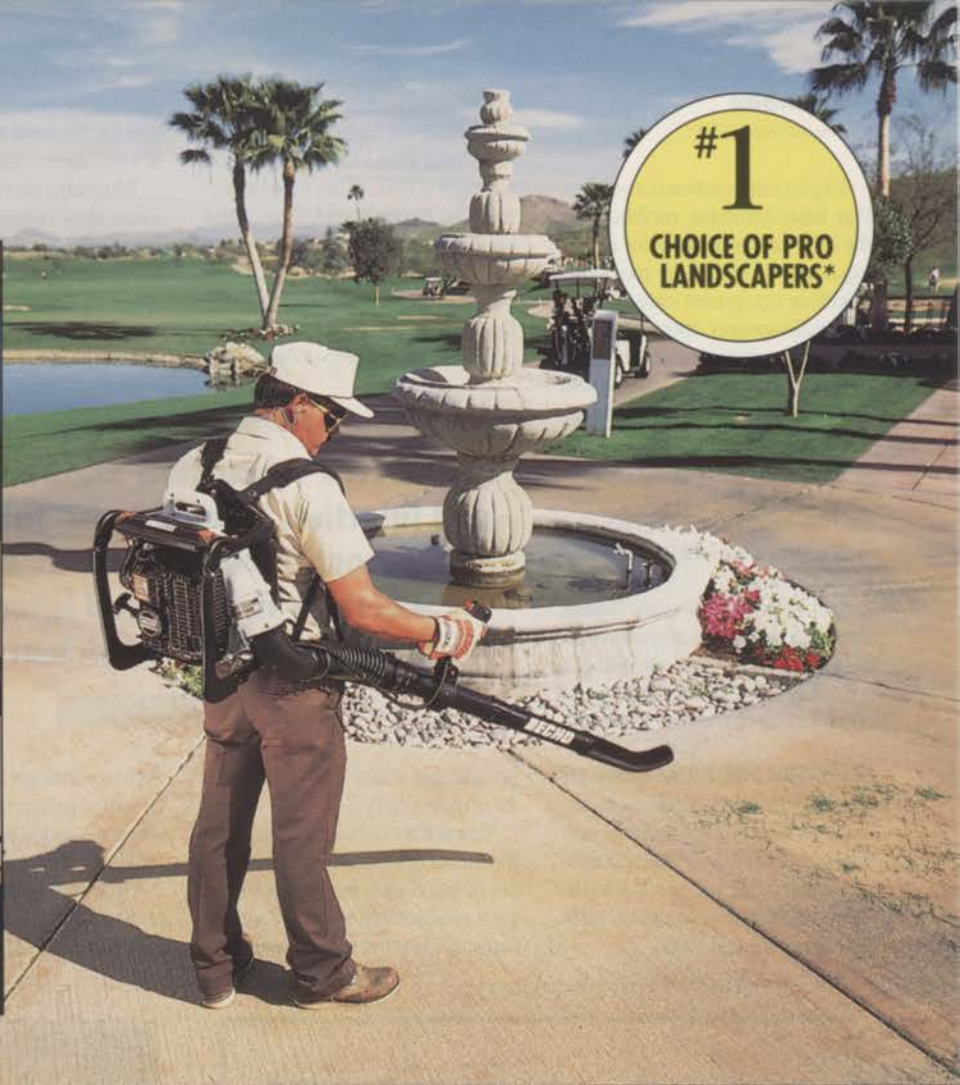
(continued on page 36)



Modern tree fertilization applications provide nutrients directly to the tree's feeder roots, usually located 6 to 12 inches below the surface. Photo: Davey Tree Expert Co.



Paul Smith
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USE READER SERVICE #85

Tree Nutrition

(continued from page 34)

Liquid soil injection is a quicker, less labor-intensive method than the drill-hole technique for applying nutrients within the root zone. Injection equipment consists of a hydraulic sprayer operated at 150 to 200 psi and an injector probe that inserts about 12 inches into the soil.

The injections are normally applied in a grid pattern about 3 feet apart within and slightly beyond the drip zone. Nutrients are distributed throughout the root zone, providing maximum root contact while aerating the soil.

Soil injection provides a more thorough nutrient distribution than the vertical hole technique. Either a soluble or suspension fertilizer, or a combination of the two, is needed.

INJECTION PROS AND CONS. Of the two subsurface methods, liquid soil injection is considered to provide the most benefits, such as adding water to the soil, placing fertilizer at the tree's roots and laterally dispersing the nutrients.

"The real preference throughout the industry is liquid root fertilization," said Tom Mugridge, general manager at Forest City Tree Protection Co., South Euclid, Ohio. "Not only to provide the basic elements the trees need, but also to aerate the soil. By injecting soil with a fertilizer, you're creating little vertical pathways which help open the soil

put it in the ground in the fall 1994, and for the most part, in fall 1995, it's still there," Mugridge said.

Mugridge intends to incorporate a new slow-release liquid fertilizer containing organic humic acid, due to hit the market this year, into its program. "We've been adding humus to the manufacturer's regular formulation for a few years now.

use a well-balanced, slow-release fertilizer," Money said. "We mix it with water in the spray rig of trucks. It's not literally a solution; it's more like a slurry. The water acts as a carrier. We pump it into the ground under pressure laterally, just below the surface of the ground. It then spreads throughout the root system of the tree."

Greg Doering, plant health manager, Pruett Inc., Lake Oswego, Ore., enjoys the variations in blending that liquid fertilizers provide. "There are a lot of ways to add different trace elements, and all kinds of different solutions, from straight liquids or soluble powders to slow-release nitrogen liquid fertilizers. We've done a lot of custom-blending with our prepackaged materials," he said.

In terms of fertilizer types, liquid fertilizers that are 100 percent water soluble can wash away with one good rainfall, limiting their availability to the plant. Soluble liquids also tend to have high salt contents which can, if used improperly, create the potential for burning tree roots.

(continued on page 38)

Of the two subsurface methods, liquid soil injection is considered to provide the most benefits, such as adding water to the soil and laterally dispersing the nutrients.

up and get water and oxygen in there more easily."

Forest City uses a liquid soil injection for most of its jobs. "A number of years ago, we were looking for a product that offered residual capacity. In other words, we could

As long as we get the same benefits (from the product to be released) as when we added humic acid, it will make life cleaner," he said.

Guardian Tree Experts also chooses to use liquid soil injection for most tree fertilization jobs. "We

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USE READER SERVICE #40

Tree Nutrition

(continued from page 36)

Leaching is also another concern of tree care professionals using soluble liquids, which, fertilizer manufacturers say, is why they offer insoluble fertilizers.

"There are ways to minimize leaching. Products today are highly refined, feed grade, totally non-hazardous," said Roger Mellick, manager of The Doggett Corp., Lebanon, N.J.

Insoluble liquid fertilizers, on the other hand, break down slowly, so that only a small portion becomes available to the plant at any given time. "It may be a month before its released," said Ed Irish of Charles F. Irish Co., Warren, Mich.

Liquid injection fertilizers in general require more expensive equipment, but take one-quarter the time to apply than the drill-hole method. One arborist also deemed them more appropriate for use by neophyte companies not well versed in tree fertilization. "Soil injection is probably a safer and easier method to use at first," said Tom Prosser,

president of Rainbow TreeCare, St. Louis, Minn., pointed to a number of mistakes commonly made by tree care professionals, particularly when they first enter the tree and shrub market.

"Applying fertilizer is like prescribing medicine. If you give a sick person vitamins and they're not healthy enough to metabolize them, those vitamins are useless to that person. It's the same with fertilizer. If you have a sick tree and use the wrong formulation of fertilizer, the fertilizer could actually feed the pathogens and hardly help the tree at all," he said.

Following are five mistakes Prosser believes inexperienced tree care professionals often make:

- Randomly use high amounts of nitrogen which nourish the plants, but used in excess can weaken them.
- Use high-solution and high-salt concentration of materials over and over again, causing the tree's roots to burn.
- Time fertilizers incorrectly.
- Overlook elements that aren't in the Big Three (nitrogen, phosphorous and potassium). There are 13 elements vital to plant growth. Plants may occasionally need supplements of sulfur, copper, magnesium or one of the others.
- Fail to properly test the soil or misread soil test results. "You need to understand all the elements trees need, why they need them, what the tree does with them and what they look like if they don't have any," Prosser said.

president of Rainbow TreeCare, St. Louis, Minn.

DRILLING PREFERENCES. Despite the noted popularity of soil injection, the drill-hole method has resurged in recent years, mostly due to environmental concerns (regarding nitrate release), as well as the technique's ability to aerate soil in

compacted, heavy traffic areas.

"A lot of people are finding that many problems they encounter are due to soil compaction," Mugridge said. "Drilling holes really opens up the soil, even without putting any fertilizer in them."

New equipment innovations have simplified the drilling process so that it's less time consuming and

labor intensive. Some newer tools are lighter weight and more compact so that only one person is needed for operation (rather than the standard two). They also deposit premeasured doses of fertilizer, can be operated more quickly and require fewer fertilizer holes per tree.

Irish, Prosser and a number of

(continued on page 40)

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Tree Nutrition

(continued from page 38)

others build a strong case for using drilling to apply organic material (a process also called vertical mulching), which appeases client concerns about harming the environment.

"For granular, you want to dig a hole no more than 4 to 6 inches deep. The problem then is that you're putting fertilizer just at that level. You're better off digging a 10-inch hole and filling it with natural organics rather than just straight elements. I believe using straight elements when drilling holes is more harmful than good," Irish said.

Another pitch for modern drill-hole application is that it regenerates the trees' roots; again, mostly where soil has become compacted. "In that regard, you fill the holes with a porous material with nutrients mixed in. The combination of rain and air helps stimulate root growth," Money said.

Interms of fertilizertype, the granulars are lauded as "far superior in breaking up the soil strata. Liquid does very little of that," said Irish.

WHAT'S IN A NAME?

MANY ARBORISTS believe the term "deep-root tree fertilization," once applied to the method of drilling holes 18 inches deep, is outdated. Fertilizer is no longer placed that far down, they say, since a tree's feeder roots are generally 6 to 12 inches deep.

"That term is passe. It should be subsurface root fertilization," said Walt Money, president of Guardian Tree Experts, Washington, D.C. "I've been in the industry 35 years. We've run the full gamut of when we punched holes 18 to 24 inches down in the ground and filled it with granular fertilization, up to where we are today. The difference between what we did then and what we do today is the difference between bloodletting and laser surgery."

Granulars still have their opponents, however. Doggett conducted a three-year study on applying dry granular fertilizers and determined they did not bode to the company's satisfaction, according to Mellick. "We recognize there is a place for that type of fertilizer, and we offer products for it, but we focus more on the slow-release liquid market."

He advises tree care professionals to be wary of granular studies conducted in nurseries, where no ground cover competes for nutrients. "Granular fertilizers always get good results in nurseries, but

you can't bring those results into the landscape. That's causing a lot of controversy right now," he said.

WHEN TO APPLY. Most applicators agreed that, regardless of the method used, fall is the best time to apply tree fertilizers, depending on the job.

"About 60 percent of the fertilizing we do is in fall and about 40 percent in spring. We determine that based on several factors — time of sale, what type of program was applied previously, etc. If it's a new client and they're not fully aware of

what had been done, we wait awhile to eliminate the possibility of burning," Doering said.

Many lawn care companies have delved into tree fertilization because it's an ideal way to keep making money at the end of a season, said Bob Williamson, division manager for Moyer Lawn Care, Souderton, Pa.

"It's a great off-season deal. You can do it in December. Any revenue in December in my mind is worth two times what you actually bill. If I can break even in December, I'm happy," he said.

A number of arborists set fall fertilization schedules based on studies conducted by Alex Shigo, a renowned tree expert, which indicate spring fertilization can be touchy. "The studies show you need to be cautious of early spring flushes with highly stressed trees. You should wait until after full leaf development before doing certain fertilizations," Doering said.

Application rates for drill-hole and soil-injection fertilization vary by job and, of course, on whether a quick-release or slow-release is

(continued on page 42)

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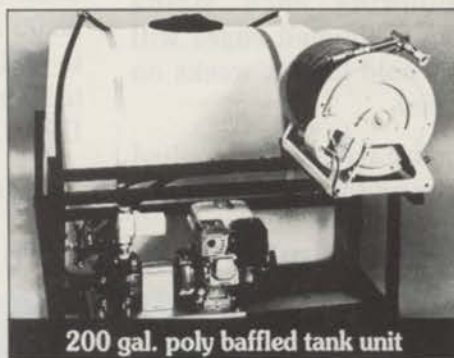
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USE READER SERVICE #14



Microinjection is an alternative method of fertilization. Capsules are injected into the tree trunk. Photo: J.J. Mauget.

Tree Nutrition

(continued from page 40)

used. "The majority of our accounts — about 90 percent — are one time a year. Some specialty jobs may take up to three times a year," Doering said.

Many contractors prefer treating unhealthy trees several times a year at a low rate rather than once a year, he added. "They feel they have better control of its effect on the environment."

Yet other contractors using slow release only fertilize trees once every two or three years. "It really depends on the site, the soil conditions, the particular trees and the arborist," Money said.

NICHE METHOD. There are situations that call for yet another type of tree fertilization, called microinjection. Many arborists opt to use microinjection in conjunction with subsurface root fertilization rather than as a replacement.

"I recommend it as having one more tool in the kit when we go out to a property and decide what is the best thing to do for a tree. We look at it as an augmentation or alternative," Money said.

A more recently developed method of fertilization compared to the deep-root types, microinjection is ideal for use in areas with limited ground space, such as trees set in the middle of parking lots, or median strips between a sidewalk and street.

"It's good anywhere the bulk of the root system is covered by a hard surface so that you

can't conventionally fertilize that tree," Money said. "Also if you have a tree with serious root in-jury. We were able to salvage a tree in a new construction site some years ago using microinjection. The whole fertilization root system from that tree had been severed so it couldn't take in nutrition."

Microinjection provides quick response but fails to provide long-term care for trees. "It may help the trees aesthetically but as far as correcting long-range problems, you need to get more material into the system than you can with microinjection," Doering said.

Application schedules using microinjection are fairly similar to deep-root fertilization programs, according to Sample, who represents J.J. Mauget, one of about three companies

offering microinjection products.

Guardian Tree Experts microinjects trees once every two to three years. Sample said a typical schedule entails using a deep-root system one year and then incorporating microinjection during the second or third year. "Or maybe you'd decide to take a tree which requires six capsules. You'd apply three the second year and three the third year. That would be a typical program in the Northeast and North-Central areas. In the South, because there is more rainfall, you may increase the fertilizations to every other year," he said.

PRICE COMPARISON. Tree care professionals interviewed contend that overall the three fertilization methods are price effective, but they could not definitively pinpoint the least expensive, given a variety of conditions.

"Soil injection is probably the least expensive of all commonly used methods. You can do a lot of trees in a shorter amount of time vs. the drill-hole method, where they'll physically drill holes to pull out dirt and put in any variety of materials," Mugridge said. "But the equipment you use is more expensive."

Money concurred. "All of them are cost effective. If you look at injection vs. subsurface root fertilization, you would find it very cost effective. It's just a matter of determining which one you want to use in a given situation."

Many said the drill-hole method is a little

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Tree Nutrition

(continued from page 42)

more costly because of the labor required. "It depends on how often you need to repeat drilling the holes. You can imagine drilling holes even 2 to 3 feet underneath a huge tree, you have a lot of holes to drill. That takes a long time," Mugridge said.

Pulling microinjection into the picture, Doering said, that method is more costly upfront in terms of labor and materials. "Per active amount of nitrogen getting in the tree, it costs more. But if you compare how much actually gets into the system, I guess in that respect it's actually more cost effective."

Lawn maintenance companies that retrofit their trucks and handle minimal tree fertilization for existing clients won't need as large of equipment as the arborist companies, and thus face lower costs, said David White, marketing director for CoRoN Corp., Souderton, Pa. "The standard lawn maintenance truck is adequate for what they need in terms of tree fertilization. They don't need big rigs and big trucks."

FERTILIZER FUTURE. There don't appear to be too many product innovations on the tree fertilizer horizon. The two major concerns, both of which apply to the liquid fertilizers, are salt content and leaching.

"Right now the industry is desperately looking for ways to deep-root-inject with lower salt content. There are some low-salt liquid products on the market right now," Sample said. He pointed out that microinjection capsules have no salt content.

Prosser said his company actively seeks low-salt fertilizers. "We use very low-salt fertilizers that break down in the soil. They're 75 percent water soluble. That way it's gradual," he said.

Greg Wall, a spokesman for O.M. Scott & Sons, Marysville, Ohio, explained that product innovations usually apply to woody ornamentals in container nurseries. "We have some new technologies in fertilization development, but the tree market is not really where they're being marketed. New technologies first hit the production end and then spill over into tree maintenance," he said. He declined to comment on any projects O.M. Scott has under way.

Mellick pointed to a recent discovery which he believes could eventually change the future of tree fertilization. A little-known family of fungi, found on the roots of almost all plants, enters a "symbiotic partnership" called mycorrhizae. The fungi send thread-like hairs out into the soil, increasing the host plant's ability to gather nutrients by 10 times or more.

"The function of mycorrhizae in soil/root symbiosis has become very clear and important. Trees and shrubs living in soils with good mycorrhizae populations thrive," Mellick said.

Doggett plans to initiate trials this year inoculating urban trees and shrubs with mycorrhizae spores, he added.

The author is Senior Editor of Lawn & Landscape Maintenance magazine.

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USE READER SERVICE #83

OVERSEEDING MEANS different things to different people.

Talk to people in science, and chances are they would define overseeding as throwing cool-season grass seed over dormant warm-season grass (usually bermuda) to keep Florida and other hot-climate lawns green in winter. This is a common orientation among academics and turf researchers.

But overseeding encompasses other applications as well. A broad definition of overseeding is the process of placing grass seed over an existing stand of turf. Sometimes it's done to boost a sagging turf; other times to "transition" from one grass type to another in order to derive benefits of hardy new varieties (for instance many contractors in the North are overseeding new tall fescue seed over bluegrass).

Seed itself is continually being improved to make this process more effective. "We're constantly enhancing performance characteristics," said Bill Dunn, national sales manager for Zajac Performance Seed Co., North Haledon, N.J. "By improving color, density and the compact-growth nature of plants, we allow operators to cut the grass closer which improves seed sales in the Florida market. In the Northeast we work on things like disease resistance and genetic color, which helps reduce fertilizer requirements."

The industry generally acknowledges recent improvement in seed varieties as a good enough reason to overseed. An old turf can be one that is genetically challenged and tired, unable to stand up to nitrogen doses and wear and tear.

Use of proper equipment to prepare the turf is crucial, according to Ward Svoboda, who helped engineer Ryan's Mataway verticutter, one of many \$1,000-or-under tools commonly used by small- to medium-size lawn maintenance operations. This type of equipment—or something grander—is a necessary first step in overseeding.

"In order for the seed to germinate," Svoboda said, "it has to be covered. If you've got the seed below the ground, it has more of a chance to establish."



Large overseeders cut through thatch and apply seed within the open slit. Photo: Ransomes.

COOL-SEASON TURFS. Whether contractors run a \$7,000 overseeder or just break up thatch with a rake, they have to properly prime the target area to receive the seed.

"In the Midwest, the best two months to do it are March and September," said Rich Gaffney, owner of Gaffney Landscaping in Cleveland, Ohio. "We commonly need

to overseed to correct for patchy grass, drought and damage from insects and fungi. First you have to cut the grass down low. All grass seed has to be thrown in before June 10—and that's probably late—to have a chance to establish before weed seas-on. We either dethatch (using what we call a power rake) or seed-slice it, before seeding."

This "slicing" entails using a knife edge to cut a groove in the soil every half inch.

In Ohio's climate, as in other Northern latitudes, September is the more crucial overseeding period. "Unlike spring, if you grow grass in September it has two growing seasons before summer," Gaffney said.

He does not overseed every lawn,

Turf Prep: The Key To Successful Overseeding

Improvements in seed development and turf preparation enable contractors to overseed tired lawns — both warm- and cool-season — with a range of hardier, denser turf types.

By Bob Gitlin

only those under visible stress. Insect damage and stinging, compacted, clay-based turfs (a result of droughts in recent years) are two good reasons to overseed, he said. A topdressing such as peat moss finishes off the process.

"Most turfs that we overseed are fescues," said Sean Willard, landscape manager with Orkin Plantscaping in Knoxville, Tenn. "We usually start overseeding our cool-season turf in the first week of September. To go along with that we core aerate. If we have areas that need heavy doses, we may slit-seed also, to open up weak areas."

Red clay, a problem in his region, is one reason overseeding becomes necessary. The waiting period provided by fall overseeding is particularly important with fescues, which are heat-sensitive. "Sometimes if you put seed down in the spring, it's just getting established when it gets really hot. In areas that aren't well irrigated, the grass probably won't make it through the summer."

Jeff Rieger, manager of landscape maintenance at Dennis' 7

Dees Landscaping Inc., Portland, Ore., has had to overseed lawns devastated by the crane fly, a big insect that looks like a mosquito.

"It lays eggs in wet areas, including our irrigated lawns, which can stay pretty moist. In winter the eggs start to hatch. New insects start to feed in spring, as soon as it warms up. Crane flies kill out entire patches of lawn."

As well as kill the pests, Rieger treats the stricken fescue/rye lawns by overseeding with the same blends.

Rusty Stout, vice president and general manager at Complete Lawn Service Inc., Vienna, Va., deals primarily with improved tall fescues. He's working mostly on cool-season grasses; warm-season grasses (mostly zoysias) comprise only 10 percent to 20 percent of lawns in his area. He does about 90 percent of his overseeding in September and early October.

"I don't recommend to anybody to seed past that time around here," Stout said, "though other people do it. It starts to get cool, soil temperatures drop and you're not getting

germination like you need."

He refrains from taking on more overseeding jobs than agronomics and climate dictate. "I make a commitment to do a certain number of overseeding jobs in about a six-week time frame. After that, weather plays an ever-increasing role."

Tall fescue, enjoying more use due to excellent new varieties coming into the market, has a drawback: It does not spread as well as bluegrass.

"You've got to periodically feed it," Stout said. "Overseeding means more than coming in every fall with a spreader. My company strongly believes in soil prep. We slit-seed using what we call a 'power seeder,' and we have three aereoseeders. They verticut grooves about 2 or 3 inches apart, and the seed falls in."

He eschews core aeration, however, claiming it's a good practice to relieve soil compaction but futile for prepping turf for overseeding. "The holes are 6 inches apart and fescue doesn't spread, so this process never does the job. If your lawn is in decent shape it'll work

OK, but really it needs a little something more. That's why we slice it."

He recommends that fescue-lawn owners overseed their properties every three or four years.

Bob Brophy, director of development at Turfco, a Minneapolis-based manufacturer of lawn maintenance equipment — whose line includes aerators, a topdresser that also serves as an overseeder and other renovating equipment — slightly disagreed with Stout's comment about aeration.

The best way to prepare to overseed is to aerate and slit-seed, Brophy said, agreeing that, alone, aeration's utility would be limited.

"When I give seminars on aeration, I have a beautiful slide that shows where a guy aerated and then broadcast fescue, which, of course, is a clump grass. The seed fell into the holes and germinated into good growth. In summer, the bluegrass browned out, and the fescue came on and became very green."

Brophy tells lawn maintenance professionals they can't aerate and overseed behind it and get a good crop of grass.

"Aeration is just one step of the seeding program," Brophy said. "You won't get the majority of seed down to the soil unless you first use verticutting equipment to loosen up that thatch layer."

A number of manufacturers offer overseeders. These have rotating or slicing blades that cut through the organic or thatch layer and down through the soil surface; then they apply the seed within this slit. This can be a one- or two-pass procedure, depending on the seed being put down, Brophy said.

"The best thing you can do, before you do any overseeding job, is to walk across the yard and see what caused the yard to go bad. There may be an underlying prob-

lem you don't see, maybe something under the soil. There may be a soil-type or drainage problem, or a disease problem. Take your soil sampler. See what the thatch layer looks like. This guy might have thatch 2 inches thick, in which case you're never going to get anything to grow."

When aerating, holes should be placed in the turf at a rate of between nine and 30 per square foot, he added.

The next step is to use a full-blown overseeder; or, for lower budgets, verticutting equipment—anything with small steel blades to slice through thatch.

Finally, Brophy recommended, after the broadcasting of the seed, coming by again with the verticutter to stir it up.

"Most of the overseeding done in the lawn maintenance business uses a little verticut machine and a seed spreader," he said. "They'll go out and aerate, verticut and spread the seed. Most lawn maintenance firms can afford a \$1,000 machine, but they can't afford a \$4,000 to \$7,000 machine."



How do you know when the lawn needs to be killed out completely?

"Whenever you want to get rid of the existing growth, for whatever reason — if, say, a guy has a bluegrass lawn and he wants to go to a fescue lawn, for all the benefits that the new fescues give him — then he'll go out and use Roundup on the bluegrass," Brophy said.

"The rule of thumb for weed-damage assessment I always use is

60 percent. If 60 percent of the growth out there is growth you don't want, kill it and start over. Don't fight it. You can spend years trying to overpower it, when you can go out with one dose of Roundup, spend another \$100 in seed, and be done with it."

"The overseeding that takes place from Virginia north is permanent turf overseeding," said Zajac's Dunn. "Most of it's done in the fall. A common application is golf

Overseeding is also used to renovate a sagging or worn existing turf. Photo: Jacklin Seed.

course, putting down new cultivars after summer damage to restore fairways to a lush stand. Home lawns, worked by lawn maintenance companies, benefit more from overseeding in fall than any other time."

This year will be tough in the Northeast and Middle Atlantic seaboard, which received intense snow and ice damage.

"That will necessitate a lot of spring overseeding," Dunn said. "They use good cultivars, good grasses; the success in terms of getting the material up and established is just about guaranteed. The problem we're going to have is this: Our stress periods here start as early as mid-May, with the heat and drought."

Again, the spring overseeding, attempting to get the grass pretty and lush for the new season's traffic, doesn't have the luxury of two growing periods, which you get with fall application. "They'll get

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Turf Overseeding

(continued from page 48)

the material down and irrigate it properly. It's a question of how mature it becomes before the first onslaught of summer stress."

WARM-SEASON TURFS. Eric Richardson, manager of horticultural services at Greenscape of Destin, in Santa Rosa Beach, Fla., encounters three kinds of year-round turfgrass: St. Augustine, centipede and bermuda.

"We overseed in October generally," he said. "I personally prefer a mix of 70 percent perennial, 30 percent annual. The annual, we get some quick germination off of; it gives the client that fast greenup so they can have a green lawn all year. The perennial is a little slower-growing so it's not such a mess to mow."

He throws ryegrass down over his warm-season turfs. This type of plant (rye) can cause unwanted growth eruptions. He also has his people go easy on fertilizer when following up on rye.

Overseeding in his area corrects

for things like traffic (particularly on centipede grass) and infestation of sod webworms in St. Augustine grass or centipede grass. Of the latter, Richardson said, "If you don't catch it in time, it will devastate a lawn to the point where, at least in places, it'll have to be renovated or resodded."

Bermudagrass and St. Augustinegrass are the turfs fretted over by the professionals at TechScape Inc., Richardson, Texas. "We overseed with fescue or rye," said Vicki Mynhier, sales and marketing director. "This helps the customers have green lawns year-round. The warm-season grasses go dormant about November or December."

Because of the growth stimulated by the germination of the cool-season grass seeds, TechScape crews have to go out in the winter months with fertilizer and mowers to control the new green stand, which is purely aesthetic, and not affordable by all clients. That's part of the package being sold in the deep South: not only the overseeding, but the subsequent maintenance.

"We verticut before we put the seed down," said Mynhier, "then water it twice or three times a day for about five days."

Overseeding over bermudagrass in Southern climates is the easiest of this type of overseeding. Other warm-season varieties cause problems, particularly St. Augustinegrass, whose delicate root hold in its first year almost precludes introducing competition with hardy ryes or other cool-season varieties. And, as years progress, there can be a point of diminishing returns, even a threat to the underlying St. Augustinegrass, if overseeding persists. Customers sometimes have to be so informed, Mynhier added.

"In the Southeast," said Dunn, "on golf courses and on corporate lawns and athletic fields, they take turf-type perennial ryegrasses and, a lot of times, use three-way formulations or blends of varieties. They'll overseed those at very high rates. Once the bermuda is up and green again, the rye has gotten out. So they're using a perennial almost like an annual."

"We are seeing a trend toward

more cool-season grasses, like perennial ryegrasses, over-seeded on warm-season turfs, in most cases bermuda," said O'Donnell. "When the lawn maintenance industry was less mature, operators competed for customers. Now that there are so many companies out there and the customer base and ability to get new customers is reduced, the industry is more oriented toward getting revenue out of the customers they have. One of the ways they've been doing this recently is offering overseeding as an option."

Good seed to soil contact is the key to all overseeding. And the Florida scenario is no different.

"One reason you see more overseeding of bermuda than some of the other warm-season grasses is not so much the damage or the threat that the ryegrass or centipede grass present but the fact that it's physically easier to open up the bermudas without damaging them," O'Donnell said.

The author is a Contributing Editor to Lawn & Landscape Maintenance magazine.



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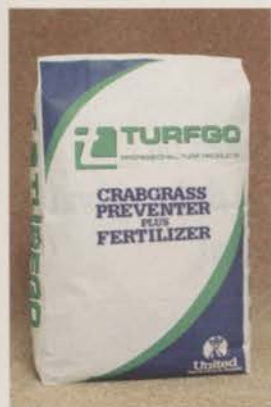
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Water Purveyors: Friends or Foes?

Water suppliers often restrict the use of landscape irrigation systems based on misconceptions about system viability. Contractors need to educate purveyors in their region on how modern irrigation systems can actually reduce water usage when properly installed and maintained.

By Brian Vinchesi

TURF AND LANDSCAPE irrigation systems consume a large portion of the domestic water supply in the United States. Although estimates vary, outdoor water use can account for as much as 50 percent of household water use. In some areas, such as Southern California, Florida and Arizona, the percentage jumps higher.

Consequently, both the public and water authorities sometimes perceive irrigation systems as water wasteful. The common notion is that the systems increase water use, thus draining available water sources.

Irrigation systems are designed to apply a uniform application of water over a given area. Usually, the better the design, installation and continued operation of the system the more efficient the water use.

Other factors such as wind and time of operation also come into play. For instance, if you compare the identical landscapes of two adjacent homes — one with an irrigation system and one without — what are the differences in water use?

To compare water use, you first have to ensure that the same number of people live in each house. If the home without the irrigation sys-

tem never waters its lawn, then the irrigated home will always have a higher water use no matter how efficiently the system operates.

Without comparing apples to apples, some people automatically — albeit wrongly — view this irrigation system as a water waster.

owners and contractors in scheduling the irrigation system to promote proper water use.

(continued on page 54)



Proper head selection, placement and pressure settings all play a role in the effective use of water resources.

But what if the home without the irrigation system was manually watered by the owner as much as the house with the irrigation system, i.e., the same amount of water was applied to each lawn? What would the water use look like then?

On average, the house with an irrigation system will use about 40 percent to 60 percent less water than a manual watering system. This illustrates how an automatic irrigation system saves water.

But how does the water supplier look at these two situations?

Water purveyors — typically water districts or quasi-governmental agencies — send mixed signals on this topic. Some strongly support landscape irrigation by promoting water conservation practices, i.e., allowing exclusion meters (which help reduce costs for irrigation) and aiding home

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USE READER SERVICE #86

Water Conservation

(continued from page 52)

Other water suppliers try to prevent irrigation system installations at every turn by prohibiting exclusion meters, establishing expensive backflow regulations, barring permits for tap water supplies and banning automatic irrigation systems.

WATER REGULATIONS. Water bans imposed by local or regional water authorities can deter irrigation contracting businesses. Many times the bans are imposed based on bias or misconceptions about irrigation systems.

Water bans are constructed in many different ways. Some prevent outdoor watering altogether; others just prohibit watering during certain hours. Yet others allow for odd and even day watering — residents with even-numbered street addresses water on even days of the month and odd-numbered street addresses water on the odd days. Other bans control irrigation by prohibiting taps from running to the potable water system, by allow-



ing only alternative water systems such as wells or by outlawing automatic irrigation systems.

Some watering bans can benefit the irrigation industry. A watering ban that only allows outdoor water-

ing from 10 p.m. to 5 a.m., for instance, actually promotes the purchase of an automatic irrigation system, which can easily be programmed to water during set hours.

Bans discriminating against automatic irrigation systems hurt the irrigation industry the most. Irrigation contractors, however, generally understand and won't dispute a ban imposed for defensible reasons such as a town having low water supplies or poor water distribution systems.

Water purveyors impose bans for various reasons. Watching irrigation systems run in the rain may be one reason. Excessive water use may be another.

Some purveyors allow exclusion meters, which benefits the contractor, resident and the community. An exclusion meter monitors irrigation water use separately from the main water meter, often at a

(continued on page 56)

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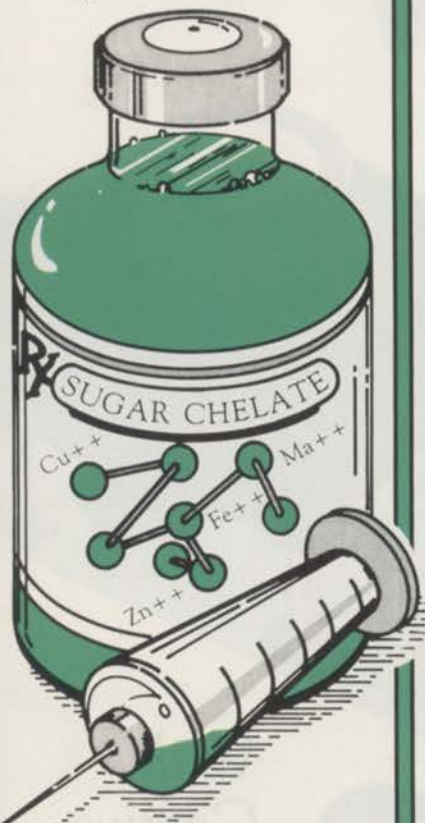
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USE READER SERVICE #20



Water Conservation

(continued from page 54)

lower pay rate. Water districts which don't allow exclusion meters are missing out on the cost and water savings.

Sewerage charges tied to the water use are not usually billed on the water statement. Depending on the location of the proposed irrigation system, there can be significant savings in water and fees. In some municipalities, the sewerage charge is more than 75 percent of the water bill.

Backflow prevention requirements, which usually come under the local water purveyor's authority, are almost standard throughout the United States on a state by state basis. Unfortunately, they vary drastically from one municipality or water district to another. Costs of backflow prevention devices vary by type. Requiring expensive reduced-pressure devices for residential installations significantly increase the cost of the irrigation installation.

Additionally, friction losses associated with the reduced pressure device on some may require the installation of a booster pump, which again raises costs. Less expensive devices, such as pressure vacuum breakers, are more suitable under proper conditions.

Water purveyors also can affect the irrigation industry by charging for the installation of new water taps or for water tap permits. These charges vary with the size of the meter, but can run as high

as \$25,000 for a 2-inch tap. Installation of the meter, backflow, etc., is an additional charge.

When used properly, automatic systems save money. When they're not, water is wasted and the industry looks bad.

Although only one-time charges, these astronomical fees are prohibitive to the irrigation industry, especially on large commercial projects. The high prices promote poor irrigation design, lengthening run times by suggesting the designer use a smaller meter to save cost.

Lastly, irrigation systems can be particularly impeded by high water costs. Even some areas with abundant water supplies charge prohibitive rates.

JOINT EFFORTS. How can irrigation contractors and water suppliers work together? In many regions, especially the Southwest where water is scarcest and irrigation most prevalent,

the irrigation industry and water suppliers work hand in hand.

Many water authorities in Southern California, Nevada and Arizona have installed education programs to teach end users and irrigation contractors proper scheduling of irrigation systems which ultimately reduces water use and operation costs for the consumer. They also promote good turf management practices.

National efforts such as the Irrigation Association's Certified Landscape Irrigation Auditor program and California's AB235 law also help promote water conservation by ensuring proper irrigation scheduling techniques are practiced.

Educating water authorities on the benefits of irrigation systems is important for the long-term viability of the irrigation industry. Most water authority personnel know a lot about water meters, pumps and distribution systems but are naive about how an irrigation system is designed, installed and operated.

Many times a little education on system design goes a long way. For example, many water authority personnel think that when a residential irrigation system is in operation, all the sprinklers come on at the same time. They are not aware that an irrigation system runs in zones, thus reducing the amount of water required per minute.

Because of their ignorance, these municipalities may require that a separate water line be brought in from the street, and that it be sized to run the system all at once without interfering

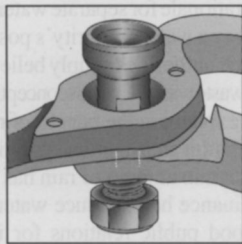
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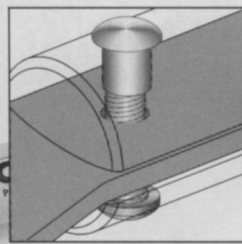


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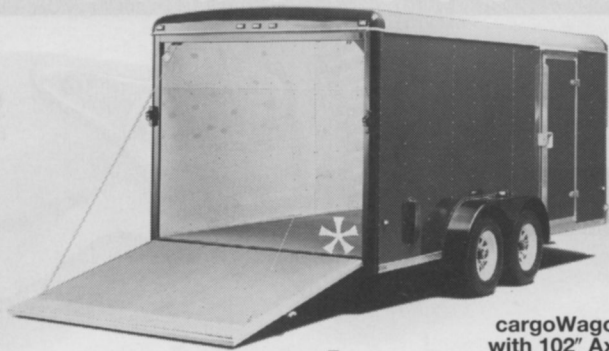
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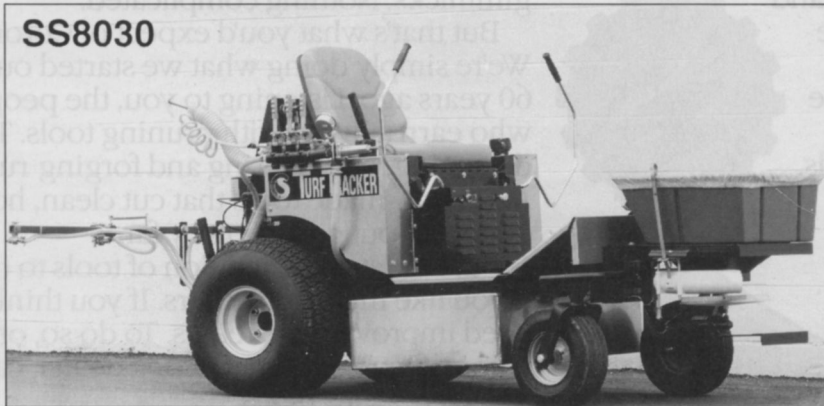
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USE READER SERVICE #12

Water Conservation

(continued from page 56)

with household water use. These requirements significantly add to the cost of the irrigation system, discouraging many buyers.

Another example is a town that requires an irrigation system installation pre-approved by the board of health to ensure sprinklers are not installed over the drain field of the septic tank. The reasoning is that a sprinkler could break and flood the drain field, causing an unpleasant odor or potential health hazard. This argument can easily be countered with an explanation of how a master valve can correct these problems.

UNREASONABLE REGULATIONS. Water authorities impose many requirements that can be successfully refuted with education. To justify separate water supplies, for example, a water authority must first understand how the zone size of an irrigation system is determined.

For educational purposes, irrigation professionals can provide adequate information on the three rules for safely sizing irrigation system zones operating from municipal water supplies. In addition, standards exist on how pressure losses are calculated into the system. Once explained, the rationale for separate water supplies may help sway a water authority's position.

Some water authorities simply believe irrigation systems waste water. This misconception can be reversed by explaining the benefit of rain shut-offs, which inhibit an irrigation system's operation once a certain amount of rain has fallen. A shut-off ordinance helps reduce water use and promotes good public relations for irrigation systems. It also opens a dialogue of cooperation and communication between irrigation contrac-

(continued on page 60)



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USE READER SERVICE #58

Water Conservation

(continued from page 58)

tors and the water authority.

Gray water is fast becoming a potential source of water for irrigation systems. Currently regulated at the state level, this future technology needs to be discussed with local water purveyors to prepare them for its use.

Water suppliers and irrigation professionals at times have diverging goals. However, with proper education and cooperation, an understanding of each group's problems and solutions can be obtained. Maybe then, the question of whether water purveyors are a friend or foe will be not open to debate.

The author is a consultant for Irrigation Consulting & Engineering, Pepperell, Mass.



Ongoing education is needed to promote the benefits of automatic irrigation systems beginning with the initial installation.

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Landscape Lighting: If Looks Could Sell

Technological advances and aesthetic enhancements in low-voltage lighting have boosted contractors' ability to sell and maintain outdoor lighting systems.

By David Clancy

MANY LAWN CARE and landscape professionals are missing out on a largely untapped market when it comes to selling and maintaining landscape lighting. According to a recent *Lawn & Landscape Maintenance* survey, only 26 percent of landscape professionals work with lighting. But of that percentage, a large number report that lighting has become an integral part of their businesses.

Adding lighting is not a difficult task, industry sources say. Residential customers are discovering the aesthetics of lighting and that it fits hand-in-hand with functional and safety considerations. And commercial accounts have long used landscape lighting to enhance the appearance of their facilities.

Why the increase in lighting opportunities? Several reasons. First of all, technological advances in low-voltage lighting (12 volt) have allowed manufacturers to offer products equal in quality, if not better, than many high-voltage lights of just 10 years ago. This improvement has been the driving force behind contractors' increased ability to sell and maintain lighting.

Rick Doesburg, landscape architect for Thornton Gardens, Maineville, Ohio, believes low-voltage lighting systems have come a long way in the last decade. "First of all, there are a lot of different types out there. The increased competition has forced manufacturers to go to newer and better fixtures to get their cut of the market."

"There is no question that low voltage is light years ahead of where it was 10 years ago," concurred Drew St. John II of Reinhold & St. John Inc., Memphis. "The major improvement was in the development of the halogen bulb. In the past you just couldn't get enough light. But with the halogen bulbs and better transformers and wiring diagrams, we are getting a lot better products for about the same amount of money. The cost hasn't gone up proportionally to the technology," he said.

LOW-VOLTAGE BENEFITS. Low-voltage systems have several advantages over 110-volt systems. First of all, they don't have to be wired by a master electrician, as required by many states for 110-volt lighting. In addition, conduit doesn't

need to be added to the lines, which enables landscape contractors to move the lights when bushes, trees and shrubs grow larger.

Safety is another consideration. Because the voltage level is so low, contractors can use low-voltage lighting in areas near water, such as swimming pools and ponds, with little cause for concern.

Eric Keesen of Denver-based Allen Keesen Landscape estimates his lighting business has increased about 50 percent in the past 10 years. "We used to use 110-volt lighting, and we sold some. But with the advances in 12-volt, sales have taken off," he said.

"We just see it as another item that not only can be integrated into the design from a landscape architecture standpoint, but can be installed more easily. We don't need to get an electrician involved except for the initial source hookup," he said. "With direct-line, 110-volt lighting, an electrician must do the wiring, and that is expensive."

Low costs are also helping contractors sell landscape lighting installations as an additional service. As with many products, technological advancements in lighting often mean higher quality without compromising price. Coupling that with higher disposable income, home owners' wishes to "keep up with the Joneses" and dual wage earning at one household, contractors can reap the benefits of selling lighting.

With both partners of a household working, landscape lighting becomes more sellable to those clients, said Stewart Hanson, vice president of design/build for Artega Natural Green, Eden Prairie, Minn. "A lot of the people putting lighting in today are pulling the outside in,

so to speak. They want to enjoy their landscape when they get home from work, as if it were still daylight out."

However, the landscape appears different in the evening, and low-voltage lighting can maximize that, said Doesburg.

"If lit correctly, the landscape won't look exactly the same at night. Proper lighting should create shadows and silhouettes on the buildings, trees and shrubs. It should highlight and illuminate trees in a very exciting way."

"Most people believe that dusk is the most beautiful part of the day," added Rick Baird, western regional sales manager for Nightscaping, Redlands, Calif. "Unfortunately, dusk only lasts about 20 minutes. So with landscape lighting, we try to extend that period for our customers."

The key, he said, is to accentuate the landscape rather than illuminate it.

"Look at where the sun is at dusk. Look at the shadows. Simulate that, not high noon, with the lighting. Pick focal points and accentuate those," Baird said. "Some people want Disneyland, but that is not the best use of lighting."

KNOWING THE PRODUCT. Unfortunately, many landscape contractors appear as uncertain about lighting as their clients are. This can be corrected simply by working with the product, said Alan Ruud, president Ruud Lighting, Racine, Wis. "That is one thing about land-





scape lighting. It is not an absolute science," he said. "What is 'proper' landscape lighting? Many times it is simply how somebody wants to showcase the plants that are going in," he said.

However, many contractors don't understand that, and are unwilling to take the risk that their client will not like the end result. "They don't have the training or the experience in lighting," Ruud said.

A key, then, becomes getting the customer actively involved in the decision-making process, he explained. "If contractors can involve customers in the decision-making by showing them some examples of what can be done, they will eliminate their risk."

Ruud advised contractors to take lights to job sites, and hook them up with extension cords to see some of the effects. "If at all possible, do this while designing the installation because lighting can make a difference as to where some plants should be located," he said.

"I don't think there is a book they can read or a class they can go to that will give them the right answers," Ruud said. "Yes, there are some basics that can be taught, but experience is the best teacher."

Seeing the effects of the light is not only good for the contractor, but the client as well. Thornton Gardens has a lighting center where customers can see the effects of different wattage in various locations. "We have an old storage room, which we painted black. We put a couple fences and fixtures in the room, and bring our customers there," Doesburg said.

Customers learn the importance of selecting the proper fixtures, bulbs and plants to create the desired effect. The result? More than 12 percent of Thornton Garden's design/build business in 1993 was lighting.

For Keesen, including a simple lighting plan in every residential proposal has generated better sales than other methods. "Whether the



Above, landscape lighting accentuates and prolongs the soft light of dusk. Photo: Thornton Gardens. Left, modern technology allows easy installation of low-voltage landscape lights. Photo: Toro.

client requests it or not, we show him what can be done," he said. "And I'd say about 80 percent of the time lighting is installed in the initial construction of the landscape."

Keesen added that many others come back later and request the lighting addition. "That is one reason I like low voltage, in addition to being able to offer it as an option later on. If the contract is getting a

little pricey for swimming pools and patios and landscaping, lighting can be added at a later date without a major process."

CUSTOMER AWARENESS. According to Andy Prasky of Shadow Illuminations, Minneapolis, improving customer awareness is the best means for increasing lighting sales. "Just by letting people know about the product, and what they can achieve with it, can help a contractor improve sales," he said.

Unfortunately, many contractors hold the belief that people can't afford lighting. "They believe the customers are only concerned with getting the trees and shrubs in, but the customers don't even realize there are choices in lighting products out there," he said.

To help educate clients, Prasky recommends bringing brochures or a portfolio to sales presentations, to show customers what they can achieve with lighting. He also advised carrying a battery pack to provide an on-the-spot demonstration. "Then they get to see in person what is going to happen," he said.

WATCH YOUR MATERIALS

ACCORDING TO John Baldasti, marketing manager, Lumiere, Westlake Village, Calif., landscape lighting systems are very susceptible to corrosion, weather and landscaper abuse. "Mowers, salt and sunlight are a lot of abuse for anything to withstand," he said.

Coastal and desert regions are subject to high amounts of ultraviolet sunlight. "UV rays will damage plastic fixtures like you wouldn't believe," Baldasti said. "That is why many fixtures don't last out here in California. You put them in one summer. You go through the winter. The next summer they are all cracking and breaking because they have endured a year of sunlight."

Contractors in other regions must consider at other elements when selecting their fixtures. Road salt can damage fixtures in areas with severe winters, for example. Likewise, salt spray from the surf is a problem in coastal re-gions. On the East and West coasts, brass is a popular material for light fixtures because it resists salt better than aluminum.

And what about careless landscapers and customers? Several companies have introduced "hiding" light fixtures which recede into the ground when not in use. Louis Toth, president of Pop Light Inc., Fairfield, Conn., said his product is resistant to damage because it sits flush with the ground during the day.

Likewise, "this is important from both the aesthetic and maintenance sides," said George Panagotacos of Corona Plastics, Norco, Calif., manufacturer of the Pop-Up Light. "I have heard it from both. Some guys say 'The maintenance just kills me. I am constantly fixing lights.'"

Use of mowers and string trimmers isn't a problem around lights that recede into the ground, said Panagotacos, because there is nothing to trim around. But practicality isn't what clients are interested in. "Guys say 'My customer wants it because of the aesthetics.' The clients don't want to see the lights during the day."

Such a technique can increase the project's revenue several times, contended Prasky. "Many times people who would have spent \$500 will decide to spend \$1,500 or \$2,000."

But be forewarned: Going the extra mile requires more than a nine-to-five commitment. "Obviously lights must be taken out at night. Our dealers work very hard to

achieve satisfaction with their customers. If that means they have to go in after-hours, they'll do it. Especially if that's the only way they

(continued on page 66)

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USE READER SERVICE #41

Landscape Lighting

(continued from page 64)

can legitimately show the aesthetics of the lights."

Another way to educate clients is on the safety of low-voltage lights. Customers often ask specifically for security lighting, said John Baldasti, marketing manager for Lumiere, Westlake Village, Calif. But that doesn't mean the lights can't be aesthetically pleasing as well as secure.

"You don't have to have one big, bright floodlight for the whole area for it to be functional. It can be done in a very nice, decorative way, and still provide the functional light that you need. It will look 10 times better, and that is where the changes are coming," he said.

PRACTICAL OR PRETTY? Still, not everyone understands that functionality and aesthetics can go hand in hand. "Homeowners often will go to Sears, K mart or Wal-mart and buy the little box of Malibu lights to light their yards," Doesburg said. "Unfortunately, they create a runway light pattern along their driveways.

"The problem with most of those fixtures is that you see the light source. The light glares, so that

Contractors can install and wire low-voltage lights themselves, whereas the wiring for 110-volt lights must be done by an electrician. Photo: Toro.

when you look at them at night, the pupils of your eye dilates to that brightness, and then you can't see anything else.

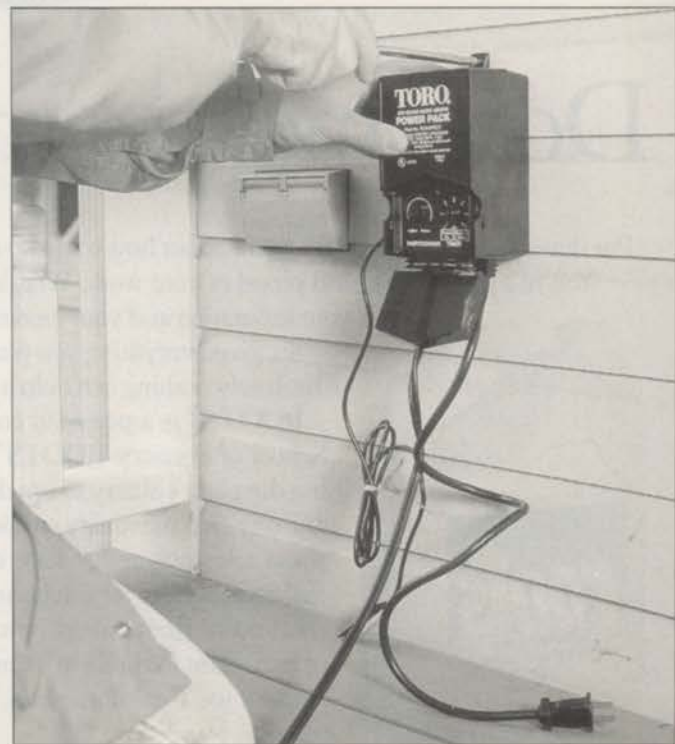
"When you pull into those driveways, it is hard to see anything because your eyes have opened to that brightness. Everything else is muted. With good landscape lighting you will not see the source of the light, only what the light is doing. It is a softer feeling, and then you can see what is being lit," he said.

Many people looking for security lights think they need big, bright lights, but that's not so. However, keep in mind that shadows just outside low-voltage light will be proportionally darker. The contrast offers more mystique but less security.

"The low-voltage lighting systems create a real mystique. The dark places on a home, when you are lighting a house, are almost as important as the light. Because it creates the contrast," Doesburg said. "It is Mr. and Mrs. Jones or the builder that sticks those two floodlights in the front yard that wash the whole place. There is not a lot of aesthetic value to that."

Contractors and lighting suppliers agree: aesthetics sell. And the lighting-savvy contractor can show clients how certain systems can combine aesthetics with security features to provide a safe, attractive landscape and increase sales. ■

The author is a free-lance writer in Cleveland, Ohio.



PESTICIDES IN THE URBAN ENVIRONMENT

PART 6

Superior Soils

Quality soils are the foundation for any sound turfgrass program. Consequently, landscape professionals must take the necessary steps to identify and deal with adverse soil conditions.

By Charles Darrah III

Ed Note: This is the sixth in an ongoing series on effectively using specialty pesticides in the urban environment.

SOIL IS SOIL—Not. To assume that soils in the landscape are suitable for growth of turf and ornamentals is to take an awful chance on your success.

Unfortunately, lawn and landscape managers rarely have a chance to ensure



PESTICIDES IN THE URBAN ENVIRONMENT

suitable soil is present for long-term success. Also, mistakes are often made in modifying or selecting soils for particular sites.

"Poor soil" was the most frequently mentioned problem by lawn service operators and landscape managers in a Pennsylvania industry survey. Physical problems in the soil, such as compaction and poor drainage, take a toll on quality lawns and landscapes. In addition, soil acidity and deficient nutrient levels, which often go undetected, can re-

Landscape managers often cite "poor soil" as the most common deterrent to healthy turf.



duce your chances for success.

Turf and ornamentals planted into debris laden subsoils are typically the rule, not the exception, for the lawn and landscape manager. Natural soil formation results in layers referred to as topsoil, subsoil or substrata and parent material. Topsoil and subsoil depths may range from a few inches to several feet.

Parent material is the unweathered minerals and rocks from which the substrata and topsoil form. Unlike agricultural soils these natural layers are rarely present in the landscape. Unfortunately, topsoils are often stripped away and removed from the site or buried under subsoils as a result of site excavations.

Knowing more about soils and how to deal

with specific adverse soil conditions is important for the successful landscape manager. Equally important is knowing what tests are needed to evaluate soils and soil amendments before a modification project begins.

CREATING TOPSOIL.

Although nature may take decades to create topsoil, landscape managers can help accelerate this process by various methods. It's important to know several characteristics of existing soil in order to best select methods of improvement.

Strategies for clayey soils may differ significantly from those used with sandy soils. Therefore a soil texture analysis (percent sand, silt and clay) will help in selecting the appropriate strategies.

Increasing the content of organic matter in the soil is one of the

most beneficial steps in creating a healthy soil. Natural mineral topsoils usually contain from 3 percent to 8 percent organic matter, while subsoils often have 2 percent or less. This difference in organic content is one of the most important characteristics that distinguishes topsoils from subsoils in the landscape.

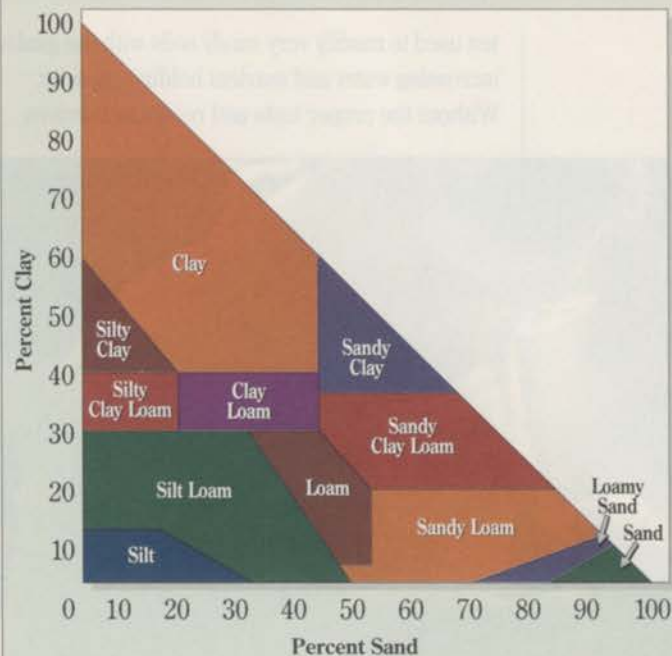
Additions of organic matter are becoming increasingly popular as the composting of landscape debris and other organic materials is becoming more widely practiced. There are many ways to build up the organic content of soils. The most obvious, but often the least practical for the landscape manager, is direct incorporation of suitable organic materials.

Incorporating organic matter is relatively easy during establishment of turf and ornamentals. However, what is not often recognized is the quantity of organic matter needed to significantly influence the chemical and physical characteristics of the soil (Table 1). The quality of the organic material is also important. Properly composted organic materials often result in more rapid improvement in the physical and chemical properties of soil.

Another method of increasing the organic content of soils is simply to produce a healthy turf, although this often requires more intensive management for the first few years. Plants grown in subsoils perform best with slowly available nitrogen fertilizers, and they often need up to one and one-half times more N per season, because of the lack of an organic nitrogen pool in the soil.

Additionally, subsoils are often deficient in phosphorus and/or potassium and may be highly alkaline or acidic compared to the native topsoil. Therefore, soil testing is imperative to identify and correct these deficiencies.

Soil Texture



Textural triangle for soil textural analysis using the USDA classification scheme. Source: American Society of Agronomy Monograph #9.

The root systems of turfgrass can contribute enormous amounts of organic matter over time. Certain types of organic mulches can also contribute significantly to the organic content of soils around established ornamentals. However, anything that can be done to accelerate the buildup of organic matter in low organic subsoils will pay dividends for the lawn and landscape manager.

CHANGING SOIL TEXTURE. Many lawn and landscape managers often want to change the texture (percent sand, silt and clay) of the soil. This is difficult to do and when done incorrectly, often produces less than desirable results at a high cost.

An engineer would not think of modifying an on-site soil before construction without adequate testing. Likewise the landscape manager should get the appropriate tests performed on the existing soil and seek expert advice on options for modifications.

Clayey soils are often modified with sands in the hope of increasing internal drainage and aeration. If the correct quantity and type of sand are not used, however, little or no improvement will be achieved.

Conversely, soils higher in silt and clay are of

Table 1. Approximate amount of organic amendment required to increase the organic content of 5,000 sq. ft. to a depth of 6" for four different soil types.

Soil Type	Amount of Organic Matter* Needed to Raise the Soil Organic Content by Two Percent	
	Cu. Yds.	Tons
Clay Loam	9.5	4.0
Loam	11.0	4.5
Sandy Loam	12.5	5.0
Sand	14.5	6.0

*Assuming the organic amendment is 60% organic matter with an approx. bulk density of 800 lbs./cu. yd. at 30% moisture.

PESTICIDES IN THE URBAN ENVIRONMENT

ten used to modify very sandy soils with the goal of increasing water and nutrient holding capacity. Without the proper tests and recommendations



for blending the two soils, landscape managers often fail to achieve the desired results. As a result, any plant materials installed in this soil base will encounter difficulties.

Successful soil modification requires thorough mixing of the amendments. Topsoil suppliers typically have the equipment needed to ensure adequate blending. Good on-site blending is difficult to achieve, especially when blending sands and other soils.

Blending ratios, as specified in a blending analysis, must be strictly adhered to if the desired results are to be achieved. Blended soils are often pulverized to ensure better mixing of the components. Care must be taken in firming, but not over-compacting, these soils for seeding or planting.

Because they have been pulverized their structure will be poor. However, if properly modified, placed and maintained, these soils will gain struc-

Evaluating soil plugs before developing a maintenance plan is key to a landscaper's success. Enlist the help of local extension or university personnel for assistance.

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ture in a few years and exhibit the desired characteristics for healthy plant growth.

Although soil modification is frequently practiced by lawn and landscape managers, it is often done incorrectly. Modifications are typically attempted in an effort to improve the physical, moisture-holding and/or chemical characteristics of an existing soil.

Landscape specifications often call for soil characteristics that cannot be met by the on-site soils. Choosing the wrong amendment or using too much or too little or no improvement in the soil. And in some cases it may even worsen, rather than improve, the situation.

Laboratory testing of the existing soil and the amendments provide the information needed to make the correct decisions. A blending recommendation can then be developed to meet the desired organic matter level or percent sand, silt and clay in the final soil.

These specialized tests and recommendations will help the lawn and landscape manager achieve the best results at the lowest cost possible when

the decision is made to improve landscape soils with amendments. ■

The author is a consulting agronomist and general manager of CLC Labs, Columbus, Ohio.

Table 2. Recommended tests for amending landscape soils.

Goal	Recommended Tests
Increase Organic Matter	<ul style="list-style-type: none"> • Soil organic matter • Organic matter quality • Soil texture • Blending analysis
Increase Sand Content	<ul style="list-style-type: none"> • Texture (soil & sand) • Sand size analysis • Blending analysis • Soil moisture & aeration
Increase Silt/Clay Content	<ul style="list-style-type: none"> • Texture (both soils) • Sand size analysis • Blending analysis • Soil moisture & aeration

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Diagnosing Diseases

When used properly, fungicides can be effective tools for the turfgrass manager as part of an overall turf management program.

By Joe Rimelspach

TURFGRASS DISEASE management is a key component of any professional turfgrass development and maintenance program.

To successfully fight disease and ensure a quality lawn, factors beyond a basic knowledge of fungicides must be understood including:

- Knowing how turf grows,
- How to identify turf species,

- What "normal" plants look like under various weather conditions as well as during seasonal changes,

- Appreciating the various cultural procedures in caring for and growing turf,

- Being a skilled diagnostician,
- Knowing when and where to get help with problems, and

- A comprehensive knowledge

of the common diseases on the various turfgrasses managed.

Fungicide applications are not a routine component of most lawn service programs. There are reasons for this. When used properly, however, fungicides can be an effective tool for the turfgrass manager in caring for healthy turf. Aspects of fungicide use will be covered in more detail in this article as it relates to general disease management and specific diseases.

Turfgrass is a complex and intensely managed crop. Likewise, the interaction of a disease pathogen in a stand of turf is a complex series of events influenced by many factors. Classic features needed for a disease to develop include a susceptible host (turf species/variety), the pathogen (a fungus, in most cases) and last but not least, the right environment.

In the typical home or commercial lawn setting, environmental factors are often to blame for full-blown disease problem. Environmental factors include site features, the soil, weather and maintenance procedures. The temperature and moisture conditions are considered the two main weather factors which can tip the balance toward disease development.

Time is often referred to as the fourth element in disease progression. If conditions last long enough

the pathogen will develop, grow, reproduce and spread over large areas of grass causing extensive damage. If conditions last only a short time or for short intervals, the turf can generally recover and the disease progression is kept at bay.

Know the diseases in your area. More specifically, know when to anticipate disease problems, what weather generally favors pathogen growth, how to positively identify diseases, the impact of maintenance procedures and how and when to treat for diseases.

FUNGICIDE CHALLENGES. Some companies never use a fungicide while others include fungicides as an integral part of the services offered. The majority are somewhere in between. Why are fungicides not used more in maintaining home and commercial lawns?

There are some good reasons. First, the occurrence of diseases on turf caused by a pathogen is the exception rather than the norm. All



Spring conditions of cool, wet, cloudy weather favor leaf spot development, as shown here on bluegrass.



The environment is often the crucial element for outbreaks of disease. The right temperature and moisture conditions often tip the balance.

lawns require mowing and most lawns benefit from applications of fertilizers (due to poor quality soil). Likewise, if the site is compacted, aeration is a standard cultivation procedure. But severe disease problems are often inconsistent making it difficult to program applications. When diseases do occur, however, a great deal of time and expense are needed to remedy the situation.

Proper diagnosis, also known as brown spot analysis, is key. It's too tempting to explain away unusual brown areas as being caused by

(continued on page 74)

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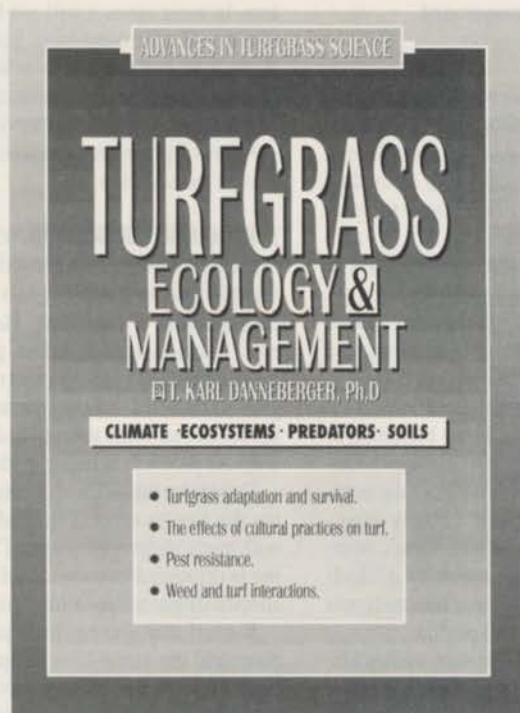
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Disease Management

(continued from page 72)

some mysterious, microscopic fungal disease. Good turf diagnosticians realize it takes an observant, well-trained and caring individual to do this job. There is no shortcut for experience.

There are many approaches to diagnosing turfgrass problems.

• Know what is normal. Considerable knowledge of turfgrass and basic plant growth is needed.

• Thorough observations must be made. What is the big picture? How well is the turf in the community growing? What does the overall lawn look like? Closely examine the affected site. Don't overlook anything especially difficult to examine features like turfgrass roots and the soil profile.

• Gather information such as history and progression of the problem, maintenance records and any other incidences that may have occurred. Since turf can't talk, information must be gathered from as many sources as possible.

• Identify the cause of the prob-

lem. In most cases it will not be a disease. If you need help, get it. Work with turf specialists at local and state universities, private consultants and/or diagnostic services.

• Develop a plan to address or correct the situation.

TIMING AND FUNGICIDES. When a disease problem is diagnosed it's often too late to completely fix the damage with a fungicide. However, a treatment will reduce progression of the disease, protect new growth or at least demonstrate to the client that some attempt to deal with the problem is being made.

Preventive fungicide applications are the key to success in dealing with many turfgrass diseases. Timing is discussed in more detail for specific diseases later in this article.

If a turf manager has the equipment and the know-how to apply liquids, there is a definite advantage for the use of liquid fungicides. Often, liquid applications can achieve better and quicker results in managing diseases. Also, some products are not available as granulars. Pay close attention to

label recommendations specifying the volume of material to apply (i.e., gallons per 1,000 sq. ft.)

Results are difficult to guarantee. Changes in weather can easily cause disease activity to increase or decrease. The appearance of the lawn may improve or deteriorate regardless of whether a fungicide application was made. Customers expect results, but guarantees from a treatment program are tricky.

One approach is to use a fungicide program of several applications. However, these special treatments can be expensive if a turf management program isn't already in place.

When there is a history of a disease problem a strategy can be planned. This includes application timing and material selection based on weather conditions and monitoring for disease activity.

Maintenance and management practices can be used to encourage healthy turfgrass in conjunction with fungicide applications. Together, these factors can formulate a total disease management approach for your client.

RED THREAD. This is not a life-threatening disease, but can be a nuisance and aggravation for both the owner and manager. While it occurs on most turfgrasses, fine fescues and perennial ryegrasses are most susceptible.

Red thread can be aggressive for long periods of time. It can be active in winter under mild conditions when turf is green and turf growth is slow. (This year it was observed on some lawns as the snow was melting.) Long, cool, moist spring weather is ideal for disease activity. Once it gets a foothold in a lawn, it can be difficult to eliminate especially if weather conditions stay cool and moist throughout the year.

A key symptom of red thread is the pinkish or reddish growth of the fungus from the ends of leaves. Overall symptoms may appear as pinkish or tan patches of affected grass in the lawn, and leaves may be matted together. When the disease is active, there will be more of a red or pink color and abundant fungus. With less disease activity, the leaves are more of a tan color and the fungus more difficult to find. Look

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USE READER SERVICE #42

CONDITIONS THAT FAVOR DISEASE DEVELOPMENT

DISEASE	TEMPERATURE	WATER		SHADE	NITROGEN
		LEAVES	SOIL		
Brown Patch	Hot	Wet	Wet	Yes	High
Dollar Spot	Warm/cool	Wet	Dry	—	Low
Leaf Spot	Cool	Wet	—	—	High
Melting Out	Warm	Dry	Dry	—	High
Necrotic Ring Spot	Cool/warm	Wet	Wet	—	High
Powdery Mildew	Cool/warm	Wet	Wet	Yes	High
Pythium Blight	Very hot	Wet	Wet	Yes	High
Red Thread	Cold/warm	Wet	Wet	—	Low
Rust	Cool	Wet	—	—	Low
Summer Patch	Warm/hot	Wet	Wet	—	High

Table 1.

closely at dead leaves to see any remains of the strands of fungus at the tips of leaves.

Pink Patch has overall symptoms like red thread, however the patches

are less distinct and contain more green leaves mixed with damaged leaves. The key identification difference is that there are no strands of fungus growing out of the ends

of the leaf blades. There may be some fungus on the leaf surface and some matting together of leaves, but no fungal growth from the ends of leaves.

The first line of defense is a sound fertility program. Get and keep the grass growing. This is a greater problem on slow-growing turfgrasses. It should be pointed out that many rye-grasses are inefficient users of fertilizers requiring more frequent applications as well as adjusted rates. On fine fescues, which require low fertilization, be cautious not to over fertilize and contribute to other problems.

This is a disease where an ongoing fungicide program should be considered. If needed, review and adjust the fertilizer program and apply a preventive fungicide. For a high degree of success, make applications before the disease is extensively active and visible in the lawn. Early spring is the best time before turf starts to grow. Repeat applications may be needed.

If there is an active case of red thread, adjust fertilization, if needed, and follow with a fungicide at curative rates and recommended frequency of applications. Reduction of the disease to an acceptable level may be difficult, especially if cool, wet weather persist.

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USE READER SERVICE #23

As with all disease problems, review and modify the general maintenance procedures to encourage growth and healthy turf.

LEAF SPOTS & MELTING OUT. There are many fungi that cause spots on leaves. In the past these were generally referred to as the *Helminthosporiums*. Today these are usually placed into either the *Drechslera* or *bipolaris* groups of fungi. This is not so important to turfgrass managers since the diseases are the same, but it's helpful when reading fungicide labels and making decisions on managing diseases.

This group of diseases was of more concern

before improved Kentucky bluegrasses came on the scene offering enhanced resistance to the leaf spot diseases.

The disease is most active in the spring, however, it can also be active in the fall or under mild winter conditions. If active in both the fall and winter the stage could be set for a devastating spring. This disease often has a second phase, called melting out, which occurs after the leaf-spotting stage.

Melting out, or the death of entire leaves and plants, develops in warm, dry weather. If extensive leaf spots appear on the turf the disease may progress downward and infect the stems and

crowns. As the weather becomes dry and hot, the turf stand often dies and melts away.

Leaf spot (also referred to as net blight) can be a serious problem on perennial ryegrasses and fescues. The disease starts in cool, wet weather. The spots on leaves are smaller than on bluegrass, less distinct and may appear as a netlike pattern on the leaves causing them to turn yellow and then brown. The leaf spot disease may progress into the crown and roots and cause a melting-out stage.

Most turfgrass will have some spots on the leaves, especially in the spring. It's important to remember the degree of leaf spotting to be able to predict development. Does the lawn have a history of the disease or are there highly susceptible turf types in the lawn? Couple this with trends in the weather to predict the disease.

Leaf spot is another instance where preventive fungicides can be successful. But realize the disease will only be managed, not eliminated.

Two maintenance items must be carefully monitored. First is the mowing. Mow high and

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Know the diseases in your area. Know what weather favors pathogen growth, how to identify diseases and how and when to treat the annoying outbreak.

as frequently as possible. When weather is wet and conducive for disease development; it is often not conducive for good mowing practices. If turf is cut short or allowed to get tall and then hacked down, the turf is stressed and leaf spot/melting out runs rampant.

Secondly, excessive fertilization must be avoided. Since turf naturally grows fast in the spring, don't accelerate it more with high rates of quickly available nitrogen fertilizer. If there is a mixed stand of turfgrass with ryegrass and bluegrass, both red thread and leaf spot are potential disease problems.

Fungicide applications should be made shortly after grass starts to grow in the spring and before serious spotting of leaves develops. Repeat applications are usually needed as long as there are cool, wet conditions.

RUST. Rust has similarities to red thread. Both are most damaging to lawns maintained under low fertility or poor soils and both are commonly found on certain perennial ryegrasses. Other grasses prone to rust are some Kentucky bluegrasses and zoysiagrasses. Additionally, an increase in turf renovations in recent years has resulted in the presence of more ryegrass in lawns making them more susceptible to this disease.

Rust develops most commonly during late summer and fall. Disease development is more common in cool weather following extended hot, dry periods and when leaves remain wet.

As the disease develops, light yellow spots (flecking) appear on the leaves. As it continues to progress, the leaves may appear yellow. This should not be confused with the insect pest, Greenbug Aphid, since both occur at about the same time with similar overall symptoms.

Progressing further, the surface of the leaf will break and pustules will appear. The turf appears orange to a red-brown color with millions of tiny fungal spores present on the leaf. These spores rub off on shoes, clothing, pets, lawn mowers, etc., and are a nuisance.

To manage the disease, use resistant varieties. Most improved Kentucky bluegrasses are not seriously damaged. If the lawn is established and susceptible to rust, improve growth. Maintain turf with adequate fertility and water in dry periods to keep the lawn growing.

Fungicides can be effective. Treatments must be made in late summer or early fall just as early symptoms are seen.

BROWN PATCH. All turfgrasses may be injured by brown patch, however, damage to tall fescue and perennial ryegrass should be treated with more concern. Symptoms of this disease will vary considerably depending on the weather and the type of grass.

On tall fescue and ryegrass, affected areas are usually irregularly shaped or may be somewhat circular. On tall fescue, look for lesions on leaves of irregular shape or that run along the edge of the leaves. They are a tan color with dark edges. On ryegrass, they appear as smaller lesions that are less distinct. Tip dieback is common. When severe, the disease can thin leaves and cause serious decline of the turf.

Hot and humid weather favors development. Days in the 80 degrees F and nights about 65 degrees F, with high relative humidity is ideal. With these conditions, blighting can happen in six to eight hours. If the weather changes to cooler and dryer conditions, the turf can grow and recover. So duration of favorable weather is important.

Due to the dramatic influence of the environment, timing of fungicide applications may be difficult. A history of disease at the site is vital information. Look for early symptoms and time applications with weather patterns.

Summer applications of quickly available nitrogen can increase disease. When the disease is active avoid nitrogen applications. Irrigate the turf to maintain adequate soil moisture but avoid long periods of wet foliage or frequent watering since this greatly increases disease activity. Automatic irrigation systems that run when they are not needed, are frequently associated with disease problems.

DIFFICULT TO MANAGE DISEASES. There are several other diseases that are particularly challenging to manage with or without fungicides. The patch diseases that kill roots, are among

these. If dealing with situations of necrotic ring spot, summer patch or yellow patch, work with your state extension service for recommendations. In the past, many of these diseases were diagnosed as Fusarium Blight. Today, many university researchers indicate that several different diseases are causing patch symptoms. More research is needed to answer common questions about patch diseases such as how and why they occur and how they can be managed.

INGREDIENTS FOR SUCCESS. Depending on the situation, several factors are going to determine the success of disease management:

- ability to identify different turfgrasses
- accurate diagnosis of turfgrass problems
- history of past disease problems
- development of a management plan, including:
 - a) the use of resistant varieties
 - b) maintenance practices (mowing, fertilization, water, etc.)
 - c) a fungicide program

If these can be incorporated into the business to meet the needs of the customer, success will be yours. ■

The author is an extension plant pathologist at The Ohio State University, Columbus.



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USE READER SERVICE #27

People

HAYBUSTER MFG. appointed **Roger Goff** vice president of marketing and sales and **Bruce Leiseth** industrial division sales manager, and promoted **Paul Johnson** to agricultural division sales manager. Goff is chiefly responsible for focusing on new markets; Leiseth is in charge of expanding the industrial products division; and Johnson works to further develop the agricultural products division.

DowElanco promoted **Dave Morris** to marketing manager for turf and ornamental products and technical products. Formerly human resources manager, Morris replaces **John Madia** who recently became global business development manager for the company's global products division.

Bunton appointed **Mark Lamb** manager of golf and turf maintenance engineering. In the newly created position, Lamb oversees development of golf and turf maintenance products. Bunton also hired **Rob Parks** into the new position of associate marketing manager. Parks worked for Bunton from 1983 to 1987 as regional sales manager.

David Shoup joined Buckner Inc. as Eastern regional sales manager. Shoup's responsibilities include market development



Lamb



Shoup

and sales supervision in the eastern United States and Canada.

The Scotts Co. promoted **David Oberle** to national accounts manager for its golf course management companies. Oberle joined Scotts in 1987 as technical representative. He later became senior technical representative and then executive technical representative.

Garden Way named **Hugh Sansom** brand marketing manager; **John Demers** manager for dealer communications; **Ed McGrath** eastern regional sales manager; **Peter Hincks** Northwest territory manager; and **Herm Hill** manager of retail service and store operations. Sansom is in charge of Troy-Bilt outdoor power equipment products. He joined Garden Way after five

years as brand manager with Procter & Gamble. Demers serves as marketing liaison for the dealer sales group between Garden Way and its in-house advertising/marketing agency, Precision Marketing Associates. McGrath oversees 13 sales representatives in territories east of the Mississippi River. Hincks handles sales in Oregon, Washington and Idaho. Hill joined Garden Way seven years ago as research director and now oversees retail operations.

John Helderop was promoted to the new position of national sales manager of Kawasaki's engine division. Helderop was formerly operations manager.

Husqvarna Forest & Garden Co. named **Charles Smith** director of marketing communications. Smith was recruited to develop advertising and public relations campaigns, distributor and dealer programs and related literature. Smith formerly served as president of ADResources Inc.

Dave Hyatt joined Century Rain Aid as manager of its new sales warehouse in Sterling, Va. Hyatt formerly worked for a distributor for 11 years and handled sales for an irrigation contracting company for three years.

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USE READER SERVICE #50

Products

THE W/C-9HD DISC chipper from **Wood/Chuck Chipper Corp.** is available with a 9-inch diameter chipping capacity. The W/C-9HD yields lower fuel consumption and lighter towing load.

The W/C-9HD's standard features include a 6-foot steel channel frame; epoxy priming; a 15-gallon fuel tank mounted within the frame; electric brakes with breakaway switch; a torsion-type, rubber shocked axle; complete lighting package that conforms to government specifications; a 30-inch by 2-inch steel disc; two full knife pockets; 1/4-inch steel plate chipper housing hood; and a 360-degree rotating discharge chute with a



hand-adjustable deflector. The W/C-9HD is available with several engine options and other optional equipment.

Circle 126 on reader service card

Encore's new hydro mower features two hydrostatic piston pumps, each hydraulically connected to Ross Torqmotors. The Torqmotors handle high wheel loads with roller bearings rather than bushing supporting the main wheel drive shaft. They also withstand high temperatures, with high



temp seals on the commutator.

Steel lines running from the hydrostatic pumps to the torqmotors dissipate heat from the main drive circuit. The 2-gallon oil reservoir has high-capacity oil filtration.

A wide wheel base is standard on the 60-inch model and optional on the 48-inch model.

Circle 127 on reader service card

Applewood Seed Co. expanded its 1994 catalog of wildflower seeds to list 13 new species, including nine United States natives. The catalog lists more than 100 wildflower species and 18 regional and special-use mixtures. Non-aggressive, perennial grasses are offered for use with wildflowers.

The 24-page catalog also includes planting and cultural information.

Circle 128 on reader service card

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PRODUCT SPOTLIGHT

MERIT INSECTICIDE from Miles Inc. Specialty Products received approval for registration by the U.S. Environmental Protection Agency. The broad-spectrum, systemic chemical compound, ideally suited for soil application, is used on turf and ornamentals.

Merit contains a new active ingredient, imidacloprid, and belongs to the new choricotinyl family of chemistry. It controls insects by ingestion and contact.

This year, Merit is available as a 75 WSP in one-quarter-acre dose PVA packets sealed in foil pouches. A granular formulation will be available in 1995.

Merit can be applied from early April to mid-August on home lawns, business and office complexes, shopping complexes, multi-family residential complexes, golf courses, airports, cemeteries, parks, playgrounds and athletic fields.

In turf, Merit controls white grub larvae, billbugs and annual bluegrass weevils.

Applied in spring, it also controls billbugs and annual bluegrass weevils.

With ornamentals, Merit can be applied in residential and commercial landscapes and interior plantscapes, used as a foliar spray, soil drench, soil injection or broadcast application.

Circle 125 on reader service card



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USE READER SERVICE #72

WHO'S WHO AT LLM



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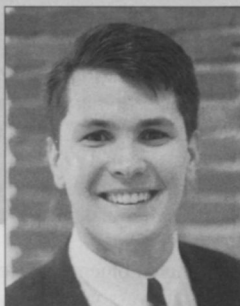
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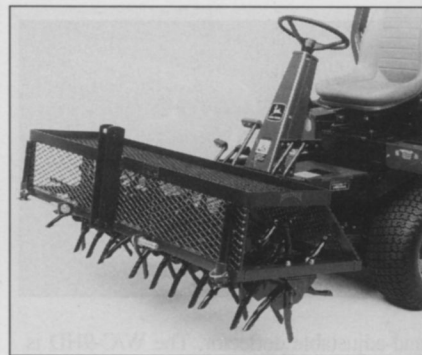
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one book and govern up to 50 books. It also can retain notes for each plant, as well as list tasks for each month of the year.

HortMan allows the user to view and/or edit plant information on-screen, maintain an up-to-date log on all plants, organize plants by categories and zones, create, edit and print a work list for every month, easily export plant information to diskette and choose one of three ways to print or transfer plants.

Circle 129 on reader service card

Millcreek Mfg.'s core aerator mounts on the front of Ford, John Deere, Kubota and Excel Hustler commercial mowers, and feature independently mounted spoon



wheels, allowing tighter turns without damaging turf.

The aerator includes a weight rack for easy adjustment. The aerator penetrates 4 inches into the turf, depending on soil conditions.

Circle 130 on reader service card

The **Exmark** Viking five-speed and Hydro walk behinds provide positive reverse and are said to eliminate downhill runaway due to their drive systems.

The Viking is billed to provide positive traction even in wet conditions, while the Hydro claims zero-turn maneuverability, instant forward to reverse and a high degree of speed control.

The Viking offers mulch, bag or discharge with an Exmark Micro-Mulch accessory.

Circle 131 on reader service card

Aquarium Pharmaceuticals offers landscape maintenance contractors several pond water filtration products, including Pond Care® Super Activated Filter Carbon,

(continued on page 84)





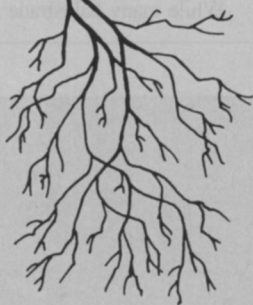
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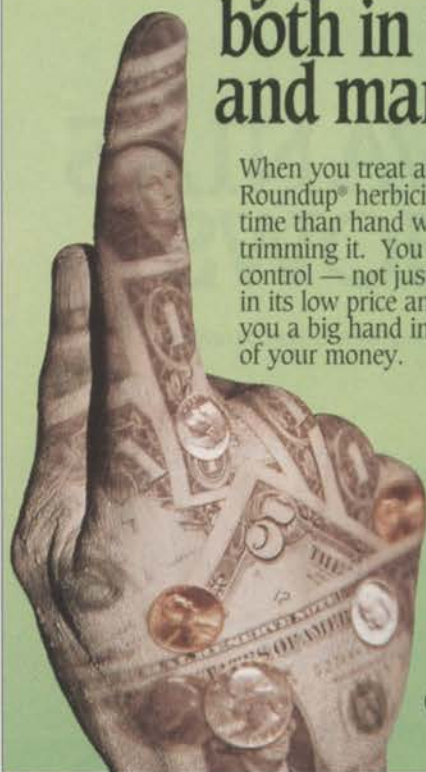
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Circle 134 on reader service card

L.R. Nelson Corp. added the Pro7000 and 7500 series to its gear-driven sprinkler lines. The series are rugged, vandal-resistant gear drives with a watering radius range of 45 to 75 feet, making them ideal for municipal, commercial and sport field applications.

The 7000 series' five interchangeable Acu-Cover nozzles and the 7500's six interchangeable Acu-Cover nozzles allow for flexibility in sprinkler layout and design while discharging 7 to 28 gallons of water per minute.

Circle 135 on reader service card



Dura Art Stone updated its line of "ready-to-install" balustrades for commercial, institutional and residential use.

The line features six balustrade designs in round and square configurations with eight styles of cap and base rails and three styles of piers. Components may be specified in any combination to meet design requirements.

While many balustrade products must be cut, mitered and

Products

(continued from page 82)

Ammonia Remover and Phosphate Remover for pond filters.

The filter carbon is a special filtration material that removes dissolved organic waste found in pond water. The ammonia remover, when added to the pond filtration system, removes ammonia released by pond fish. The phosphate remover rids of algae-promoting phosphate and silicate.

Circle 132 on reader service card

Luma low-voltage landscape lights from Roud Lighting use 18W lamps to create circles of illumination along walkways, in flower beds and around patios. The lights are available in black and verde DeltaGuard finish.

No splicing of the 10/3 is necessary to use the landscape lights, so there are no voltage-drop problems. All components are die-cast aluminum or cast brass.

Circle 133 on reader service card

The Ariens YT tractor line offers a variety of attachment and accessory options for winter and summer, including optional bagging systems for grass clippings, snow



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renovate worn turf for reseeding and grade, fill and level the landscape.

The machine includes reverse roller rotation to backfill, ditch, shape or mound, distribute and level topsoil and clear brush and vines.



The LF-6000 landscape finisher is available in 6- and 8-foot width models.

Circle 138 on reader service card

The Eagle 40 from **AmeriQuip** is a trailer-mounted, articulated aerial lift with a 40-foot working height. It features positive bucket leveling, 360-degree continuous rotation and portability.

The Eagle 40 is 63 inches wide and offers proportional hydraulic controls with neutral position interlock to allow simultaneous, two-function operation and feathering capability.

Quick adjust outriggers are an integral part of the lift.

Circle 139 on reader service card



finished in the field, "ready-to-install" systems offer quality control and simplified field assembly. Dura Art Stone provides multiple attachment methods for final balustrade installation.

Available in 18 standard colors, Dura Art Stone balustrades are constructed of cast stone in a choice of smooth, acid etch or light sandblast finish.

Circle 136 on reader service card



FMC Corp.'s Astro Insecticide is labeled for use on residential lawns and ornamentals. Astro is a synthetic pyrethroid, which controls insects through contact and ingestion. It is billed to control 48 insects, including chinch bugs, cutworms, sod webworms, grubs and whiteflies.

Astro can be used with spray equipment and be tank mixed with other insecticides, fungicides, herbicides and liquid fertilizers. It is available in gallon jugs or self-measured quart containers.

Circle 137 on reader service card

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Calendar

JUN. 4 Modern Arboriculture — A Systems Approach to Practical Tree Care workshop, Arbor Day Farm/Lied Conference Center, Nebraska City, Neb. Contact: Kathy Austin, National Arbor Day Foundation, 100 Arbor Ave., Nebraska City, NE 68410; 402/474-5655.

JUN. 5-7 Tree City USA National Conference, Nebraska City, Neb. Contact: Kathy Austin, National Arbor Day Foundation, 100 Arbor Ave., Nebraska City, NE 68410; 402/474-5655.

JUN. 8 California Certified Nursery Professional & Advanced Exam, King's River College, Reedley, Calif. Other dates and locations proceed throughout the month. Contact: California Association of Nurserymen, 4620 Northgate Blvd., Suite 155, Sacramento, CA 95834; 916/567-0200.

JUN. 17-19 New York State Conference of Landscape Architects, Storm King School, Cornwall-on-Hudson. Contact: Craig Coronato, Ward Associates, P.C., 1500 Lakeland Ave., Bohemia, NY 11716; 516/563-4800.

JUN. 20 '94 Ornamental Research Conference, San Jose Red Lion Inn, San Jose, Calif.

Contact: California Association of Nurserymen, 4620 Northgate Blvd., Suite 155, Sacramento, CA 95834; 916/567-0200.

JUN. 20-24 American Seed Trade Association Annual Convention, Hilton Hotel, Minneapolis. Contact: Bob Falasca, ASTA, 202/638-3128.

JUN. 23-24 Annual North Central Region Turfgrass Research Meeting, Southern Illinois University at Carbondale. Contact: SIUC, Plant & Soil Science Dept., 618/453-2496.

JUN. 23-26 Outdoor Power Equipment Institute Annual Meeting, La Costa Hotel, Carlsbad, Calif. Contact: Lori Baker, OPEI, 341 S. Patrick St., Old Town Alexandria, VA 22314; 703/549-7600.

JUN. 27-30 Missouri Association of Nurserymen and Illinois Association of Nurserymen meeting, Hyatt at Union Station, St. Louis, Mo. Contact: MAN, 816/369-2005.

JUL. 10 ALCA Certified Landscape Professional Exam, Cincinnati, Ohio. Contact: ALCA, 12200 Sunrise Valley Drive, Suite 150, Reston, VA 22091; 703/620-6363.

JUL. 13-16 American Association of Nurserymen Conference and AAN Convention/MANTS Trade Show (July 14-16), Baltimore, Md. Contact: AAN, 1250 I St. NW, Suite 500, Washington DC 20005; 202/789-2900; or Mid-Atlantic Nurserymen's Trade Show, P.O. Box 314, Perry Hall, MD 21128; 410/882-5300.

JUL. 14-16 Mailorder Association of Nurseries Summer Convention, ANA Hotel, San Francisco. Contact: Camille Chioini, 8683 Doves Fly Way, Laurel, MD 20723-1211; 301/490-9143.

JUL. 19 Annual Southern Illinois Turfgrass Field Day, Southern Illinois University at Carbondale. Contact: SIUC, Plant & Soil Science Dept., 618/453-2496.

JUL. 19-21 3rd Annual Midwest Grounds Management Conference, Illinois State University, Normal, Ill. Co-sponsored by the Midwest Association of Physical Plant Administrators and the Professional Grounds Management Society. Contact: Chuck Scott, 309/438-2032 or fax, 309/438-7955.

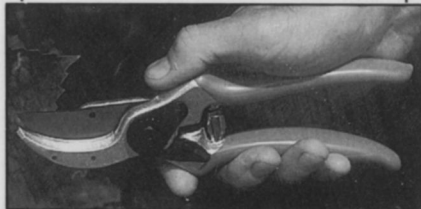
JUL. 24-26 International Lawn, Garden & Power Equipment Expo, Kentucky Exposition

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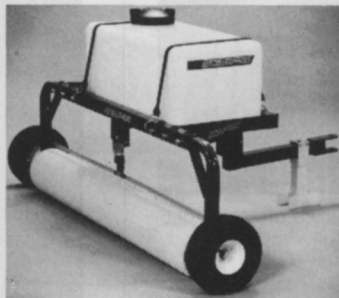
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Center, Louisville. Contact: Sellers Expositions, 6100 Dutchmans Lane, Sixth Floor, Louisville, KY 40205; 800/558-8767.

JUL. 26-28 Penn Allied Nursery Trade Show, King of Prussia, Pa. Contact: Pennsylvania Nurserymen's Association, 1924 N. Second St., Harrisburg, PA 17102; 717/238-1673.

JUL. 27-29 ASPA Summer Convention, Newport, R.I. Contact: American Sod Producers Association, 708/705-9898.

JUL. 28-29 LCA Summer Conference, Holiday Inn Crowne Plaza, Rockville, Md. Contact: Landscape Contractors Association MD-DC-VA, 9053 Shady Grove Court, Gaithersburg, MD 20877; 301/948-0810.

JUL. 30-Aug. 1 Southern Nurserymen Trade Show, Georgia World Congress Center, Atlanta. Contact: Southern Nurserymen's Association, 404/973-9026.

AUG. 14-17 International Society of Arboriculture Conference and Trade Show, Halifax, Nova Scotia. Contact: Jerri Moorman, 217/355-9411.

AUG. 16 Wisconsin Turfgrass Field Day, O.J. Noer Turfgrass Research and Education Facility, Madison. Sponsored by the University of Wisconsin-Extension and the Wisconsin Turfgrass Association. Contact: Dr. Frank Rossi, 608/262-1490.

AUG. 16-30 European Holiday and Garden Tour, hosted by members of the Michigan Nursery and Landscape Association. Contact: Aart and Margaretha de Wit, 616/453-2351.

Aug. 19-21 TAN trade show, George R. Brown Convention Center, Houston. Contact: Texas Association of Nurserymen, 7730 IH-35, Austin, TX 78745-6621; 512/280-5182.

AUG. 26-28 Farwest Show, Oregon Convention Center, Portland, Ore. Contact: Farwest Show, 2780 S.E. Harrison, Suite 102, Milwaukie, OR 97222; 800/342-6401.

SEPT. 8-9 Southwest Horticultural Trade Show, Phoenix Civic Plaza, Phoenix. Contact: Cheryl Goar, Arizona Nursery Association, 602/966-1610.

SEPT. 18-21 ALCA Interior Plantscape Division Conference & Trade Show, Mirage Hotel, Las Vegas. ALCA's Certified Landscape Professional Exam takes place Sep. 21. Contact: Associated Landscape Contractors of America, 12200 Sunrise Valley Drive, Suite 150, Reston, VA 22091; 703/620-6363.

SEPT. 19-21 Florida Turfgrass Assoc. 42nd Annual Conference & Show, Fort Lauderdale. Contact: FTGA, 302 S. Graham Ave., Orlando, FL 32803; 800/882-6721 or 407/898-6721.

OCT. 5-6 Southern California Turfgrass Expo, Orange County Fairgrounds, Costa Mesa.

Contact: Southern California Turfgrass Council, 619/723-0947.

OCT. 10-13 Northwest Turf Conference, Seaside, Ore. Contact: Northwest Turfgrass Association, 206/754-0825.

OCT. 12-13 1994 Pac Hort Expo, San Diego Convention Center. Contact: California Association of Nurserymen, 800/748-6214.

OCT. 12-14 Southwest Annual Turf Conference, Ruidoso, N.M. Contact: Dr. Lynn Ellen Doxon, 505/275-2576.

OCT. 29-30 1994 Southwest Outdoor Power Equipment Show, Arlington Convention Center, Arlington, Texas. Contact: The Service Dealers Association, 512/443-7999.

NOV. 6-9 International Irrigation Exposition, Atlanta. Contact: Irrigation Association, 703/524-1200.

NOV. 8-11 Turf and Grounds Exposition, Rochester Riverside Convention Center, Rochester, N.Y. Contact: New York State Turfgrass Association, 800/873-TURF or 518/783-1229. ■

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Cover Story

(continued from page 32)

tion in traditional lawn care pesticides. The goal is to achieve a 95 percent reduction in traditional pesticide use by 1995.

DAVEY TOMORROW. The scene for tomorrow's Davey Tree is steady growth, a stable environment and a never-ending focus on research and training opportunities.

The amount of energy poured into reviewing consulting and training options remains a sight to behold. "I'm very excited about training in the future. Computerization—the information highway—offers the opportunity for training that two years ago we could not have even dreamed of," Funk said.

Both Cowan and Funk envision teaching home study courses via computer networking. "The educational tools that will be available in the next few years will be mind boggling. With personal computers, we envision Davey offering home study courses that might even apply toward a college degree," Cowan said.

Future plans also call for instituting a two-year technical college at corporate headquarters—called The Davey University. "I hope to at least get a framework decided upon and plans put in place in five years," Cowan said. Funk foresees the college eventually opening up to all horticulture students.

Cowan would like to triple Davey's research staff, revenue permitting. "There's a tremendous opportunity out there for regional tree consulting. Our consulting would cross all of the mar-

kets, not so much residential, but certainly utility, commercial, municipal and golf course."

Cowan and Funk began eying Mexico as a viable market for technical consulting even before the North American Free Trade Agreement took effect.

"It's not because of NAFTA that U.S. companies are looking to do business in Mexico. It's because Mexico is becoming very environmentally oriented. Much more than they have in the past. They really haven't had great tree care in a long time. They're now starting to develop that. I think we have the opportunity down there to consult and help them do that," Cowan said.

Cowan doesn't foresee Davey targeting Mexico for opening a branch in the near future. "I don't know how big the Mexican market will be for our kind of services. But I would like to have a presence down there," he said.

Davey's R&D team continues to focus its efforts on reducing pesticide use, particularly drift, pollution and volume, and increasing the range of organic lawn fertilizers available. "We're trying to come up with better guidelines to avoid excessive drift and to make it easy for people to control volume and pay attention to output and pressure," Funk said.

One area of research right now is battery-operated sprayers. "I believe the EPA will legislate against use of non-vehicular gasoline engines. So we're field testing that right now. Our job is to look ahead and see what we think we need to do for our clients," Funk said. ■

The author is Senior Editor of Lawn & Landscape Maintenance magazine.

News in Brief

(continued from page 16)

& Garden. "Therefore, the dealer must do something different—something like supplying a greater number of products, promoting after-market service or their intimate knowledge of the industry and its products."

The task of educating the public lies with the dealers, according to Tom Glaub, outdoor power equipment division manager for the North American Equipment Dealers Association. "It's our responsibility to show consumers how to use the equipment, schedule maintenance checks and other things that will increase operator safety," he said.

Davey Tree Strikers Fail to Avoid Pay Cuts

The Davey Tree Expert Co. utility tree trimmers that went on strike to protest reductions in wages and benefits, returned to work with pay cuts ranging between 3.7 percent and about 7.5 percent.

Members of the Utility Workers Union of America Local 126 picketed three Davey Tree locations in Northeast Ohio after the company effected a contract proposal to cut wages and benefits by as much as 13.4 percent.

The 100 strikers, faced with the decision to settle negotiations and return to work after one week or lose their jobs, chose the former.

The workers' union ratified a three-year agreement that failed to provide the requested wage increases. Instead it called for pay cuts based on a worker's classification and tenure with the company. "Reductions in the total economic package came out to something in the range of 6 percent and perhaps as high as 12 percent," said Karl Warnke, executive vice president for Davey.

Warnke contended that the union members who struck received one of the top wages and benefits package in Ohio for their line of work. "(Their wages were) just simply getting to the point that we would be non-competitive as a company. The other concern we have, is these fellows could very easily lose their jobs to a union or a non-union company and take as much as a 25 percent reduction in their total economic package. You always run into the problem that they don't understand that. They haven't done the benchmarking."

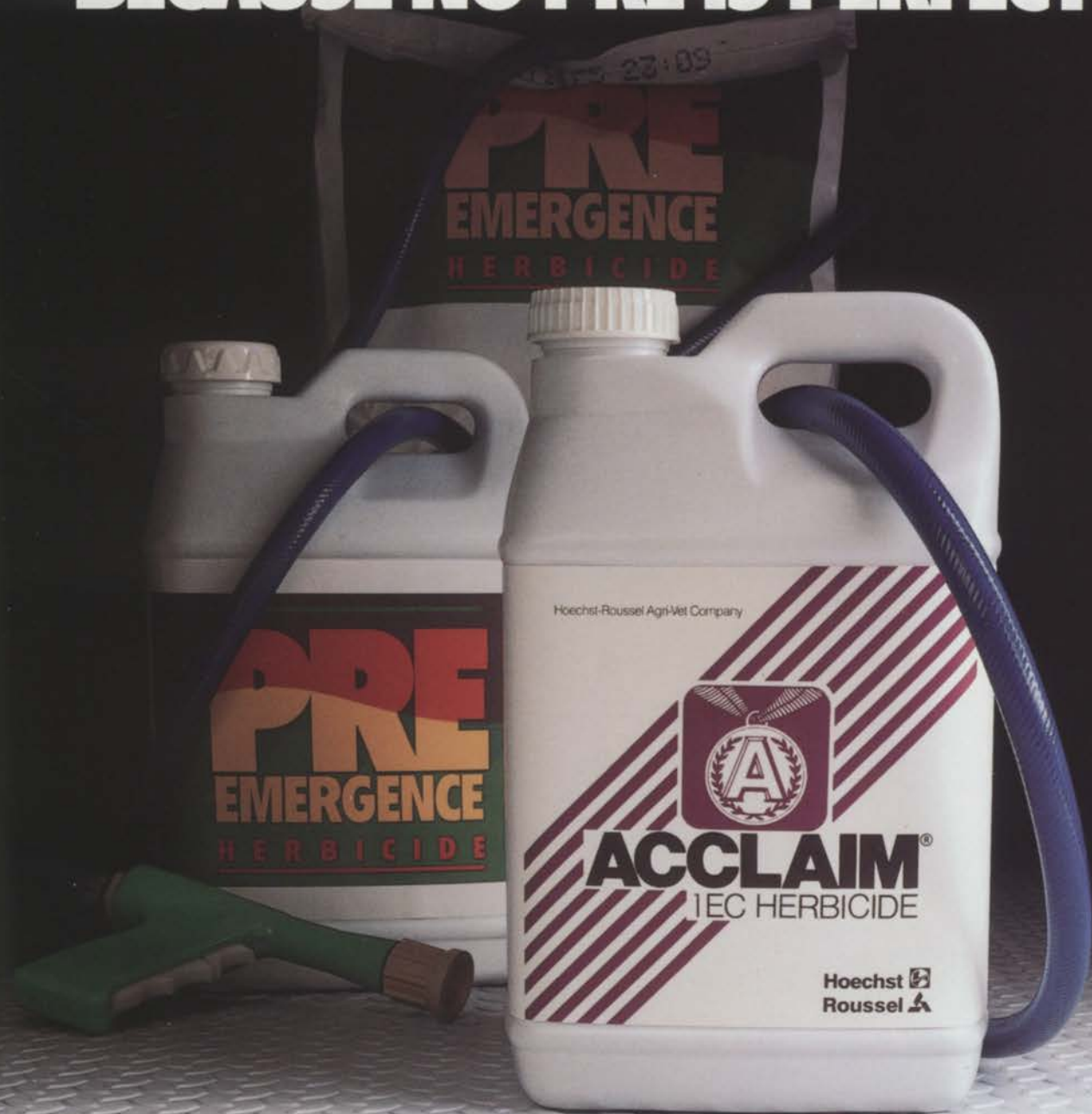
Davey made some concessions in the new contract, such as reducing the amount workers pay for medical benefits, and retaining 10 hours of standby time per week when weather prevents workers from doing their job, according to *The Beacon Journal*, a local newspaper. ■

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Crabgrass escapes are almost impossible to avoid, even when using the best *preemergence* herbicide. But unsightly crabgrass and costly callbacks can be avoided by using the best *postemergence* crabgrass herbicide available, Acclaim® 1EC Herbicide. Crabgrass treated with Acclaim just melts away, leaving no ugly brown patches that the older arsenicals commonly leave in lawns.

Acclaim controls from the 1-leaf stage to just before seed head formation, and can be used safely on tall and fine fescue, bluegrass, ryegrass and zoysiagrass. It also lets you reseed fescue and ryegrass immediately after the spray dries.* Best of all, you can treat 1,000 sq.ft. with Acclaim for just small change.

This year, be ready for crabgrass escapes. Be ready with Acclaim... because no PRE is perfect. *Wait 3 weeks for bluegrass, zoysiagrass, bentgrass

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USE READER SERVICE #11

The Perfect Relationship. One Makes A Mess. The Other Cleans Up.



This is one serious couple. Introducing the Gravelly Pro Chip Series and the Gravelly Pro Vac 1050. The Pro Chip Series now offers three new models all built to deliver with the greatest of operator ease. And we've designed the Pro Vac 1050 so that it's versatile enough to work on both turf and pavement. The fact is, when 96% of Gravelly owners

told us they love the way our Gravellys perform, we knew the relationship was built to last.



Fall In Love With A Gravelly

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