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In this issue:
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Cleveland, Ohio

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Editor's Focus

THE U.S. ENVIRONMENTAL Protection Agency said gas-powered, outdoor power equipment represents 5 percent of total emissions. But that's expected to change.

Following years of speculation and discussion of the California Air Resources Board standards, the EPA held a press conference to announce its own regulations which apply to a broader range of outdoor power equipment.

Although the mandate was not unexpected, the announcement was made in a somewhat blundering fashion. The EPA issued a written statement indicating that total emissions from commercial turf products were approximately 10 percent, twice the figure reported at the news conference.

Actually, the 10 percent emissions figure takes into account all non-road emissions for 10 industry product groups, including industrial and construction equipment.

The EPA also compared using a blower, mower, trimmer and chain saw to driving a car when EPA's own data indicates that volatile organic compound emissions (one of three regulated pollutants, in addition to carbon monoxide and nitrogen oxides) from one year of passenger cars compares to 439 years of VOC emissions from professional logging chain saws.

The EPA's proposed federal emission standards, if approved, require manufacturers to meet exhaust emission standards, ensure all new engines become certified and incorporate new engine labeling and warranty requirements. The EPA estimates that these changes will reduce hydrocarbon emissions by 32 percent, and carbon monoxide by 14 percent by 2003.

CARB's mandate is expected to take effect Jan. 1, 1995, in an effort to reduce various pollutant emissions by 55 percent. The federal regulations are scheduled to take effect in August 1996. However, the Outdoor Power Equipment Institute and the Engine Manufacturers Association are lobbying to postpone the federal standards by at least a year contending the regulations are too stringent, particularly since an EPA study shows lawn and garden power equipment emits only 2.6 percent to 4.9 percent of man-made air pollutants.

To date, both commercial contractors and power equipment manufacturers seem poised to handle the inevitable changes. Engine manufacturers already have spent millions of dollars devising creative technological solutions to reduce pollution while delivering a usable and affordable product. A number are already in compliance with Phase I.

While the burden is currently on the manufacturer, the contractor is not without responsibility in the use of power equipment. The lawn and landscape professional will have to



work closely with the engine manufacturers to develop the right working relationship between the engine and the product it powers.

Additionally, landscapers will have to make the decision whether to pass the increased cost of the products on to their customers or absorb increases themselves. The EPA estimates the cost of products will increase \$5 each, but industry associations put price hikes at levels seven times higher.

Then there's the subject of ozone alert days. Cities across the country are prohibiting the use of power equipment on days when an "ozone alert" is in effect. Though hard, if not impossible, to patrol such onerous legislation will lead to work stoppages difficult to overcome.

Like the burgeoning noise pollution controversy, it is incumbent upon lawn and landscape professionals to educate their crews on the proper use of all power equipment as well as the etiquette surrounding the general use of the products.

Running a blower at 7 a.m., for instance, is not going to win you a lot of friends.

Similarly with the emissions issue, contractors must carefully maintain products. Changing the oil, keeping blades conditioned and generally ensuring that gas-powered products are performing in peak condition are all important to the efficiency of the equipment.

Preventing gas spills, a major contributor to the formation of ground-level ozone pollution, is another way that contractors can contribute to a healthier environment.

Onerous as federal and state regulations are, the professional lawn and landscape contractor can prevent further blemishes on the industry by doing everything possible to educate and promote the professional use of products available today, as well as the industry's future product innovations. —

Cindy Code

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USE READER SERVICE #31

Letters

Keeping Perspective

I read your article, "Trouble in the Twin Cities" with great interest.

Knowing all the parties in the story and hearing them relate the problems in my area was like the pot calling the kettle black. I was around long before they came into this business, and I will be around long after they're gone.

I don't even try to compete with the large boys (as we call them), preferring to stay in my own little niche. I am in the business to provide my customers with the service and quality that I demand, which far exceeds their expectations.

The start-up costs of a fully equipped crew are now approaching \$50,000. New companies spring up all the time, and if you are selling price you will be in a heap of trouble. I have seen bids based on a man-hour figure as low as \$10 per hour. I learned years ago there are jobs to walk away from.

When I started, hard work and dedication were needed to survive. Now that won't get you through the first season. Our industry has changed; I think for the better. A well-educated customer base looks at more than

price and wants more than what the neighbor kid down the street can provide. I can't and don't compete with the neighbor's son who cuts grass for \$5.

I agree with those who say we must police our own industry. But I also know that this business is one in which it's very easy to lose sight of the reality of hard work and knowledge that goes into a good job.

*Name withheld by request
Minnesota*

Perpetual Training

The article concerning Conoco World Headquarters and John Bevil was troubling in several ways.

His quote, "I knew all the tricks of the trade, all of the ins and outs, how contractors cut corners and what they thought was important" makes one burn. "How contractors cut corners" insinuates that contractors are crooks. I admit that some might be, but they are in the minority and don't last long in this business.

I believe the very best maintenance contractors never think they know it all and, in fact, spend much of their precious time learning

new and better ways of doing their jobs.

Mr. Bevil said the hardest and most difficult thing to do is keep lawn equipment operational. What he is saying is that a lawn mower with less than 50 moving parts is more difficult to keep running than keeping an employee who can think motivated. I thought equipment was totally controllable through good operation and maintenance practices, but that human beings are seldom controllable.

His unique partnership rents people and mowers by the hour. Where is the motivation for the contractor to figure out faster and better ways of doing things when he is rewarded only for the number of hours he works?

*Richard Randall
Randall & Blake
Littleton, Colo.*

Setting It Straight

Thank you for featuring our book, "Energy-Efficient and Environmental Landscaping: Cut Your Utility Bills By Up to 30 Percent and Create a Natural, Healthy Yard" in your magazine. I would like to offer one point of clarification. The main source for the book

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USE READER SERVICE #77

Controlling Erosion with Compost

I enjoyed your article on erosion control. Erosion is certainly a major problem when you suffer a loss of vegetation from some catastrophic event like a forest fire.

While many landscapers are becoming aware of the benefits of conventional uses of compost, these uses are just the tip of the iceberg. Compost is now being used for erosion control as well to successfully restore wetlands, reclaim barren minelands, remediate hazardous wastes and filter stormwater runoff.

Large-scale field trials performed in the Portland, Ore., and Chicago areas have demonstrated the amazing ability of compost to halt erosion on slopes as steep as 1.5:1. As a bonus, airborne seeds love to germinate in compost so the surface quickly revegetates without additional seeding.

With compost supplies growing larger all over the country, local sources are readily available. An application of only 400

cubic yards of compost per acre treated can stabilize most slopes, even during heavy rainfall.

Compost is generally applied in bulk using standard construction equipment such as a backhoe or skidsteer loader. For erosion control projects where soil quality is a problem, compost has clear advantages over other products due to its restorative properties.

Compost is not just for the garden anymore, and erosion control is just one of many exciting new applications being developed every day.



Charles Pick
Solum Remediation Services
Lake Bluff, Ill.

was research done by Marc Schiler, a professor of architecture at the University of Southern California and Green Living, an environmental journal which covers gardening issues. It also includes chapters written by experts in their fields.

To order the book contact: Appropriate Solutions Press, Dover Road Box 39, South

Newfane, VT 05351; 802/348-7441. The cost is \$19.95 plus \$2 postage. If you mention this letter, you will receive an article on how energy-efficient and environmental landscaping can be used as an effective marketing tool for landscapers and businesses offering landscaping products.

Marshall Glickman
Appropriate Solutions Press
South Newfane, Vt.

Letters to the Editor are encouraged.
Send them to: Cindy Code, Editor, *Lawn & Landscape Maintenance* magazine,
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USE READER SERVICE #75

Business Watch

THE ECONOMY CONTINUED to improve throughout the late spring and early summer despite the Federal Reserve's controversial decision to boost short-term interest rates to head off the threat of inflation.

While higher short-term interest rates are a drag on the economy, most experts agree they shouldn't have a dramatic impact on the nation's business climate — at least for now. "There is about a two-year lag between changes in the direction of short-term rates and an impact on the economy," Raymond Worsack, chief economist at A.G. Edwards & Sons, told *USA Today*.

Higher interest rates not only make it more costly for landscape professionals to borrow money, they also adversely impact both new and existing home sales, a lucrative segment of the landscape industry's overall market.

On a more positive note, unemployed Americans continued to go back to work in increasing numbers throughout the first half of 1994. The unemployment rate dropped to 6.4 percent in April, its lowest level in four months. The decline could make it tougher for industry contractors to attract seasonal employees, however, as the pool of existing workers continues to shrink.

SALES OF EXISTING HOMES*

JAN.	FEB.	MAR.	APR.
-5.3	-9.6	+6.0	+1.2

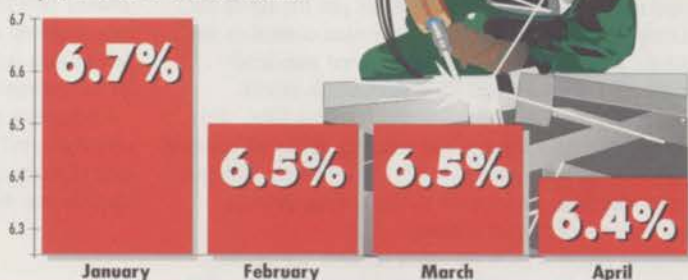
NEW HOME SALES*

JAN.	FEB.	MAR.	APR.
-21.4	+7.3	+6.3	-6.8

*Percent change from preceding month (seasonally adjusted).

MORE AMERICANS WORKING

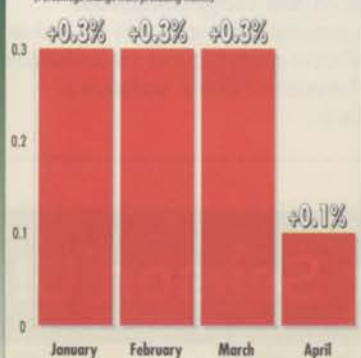
The U.S. unemployment rate dipped to 6.4% in April, its lowest level in four months.



Source: Bureau of Labor Statistics

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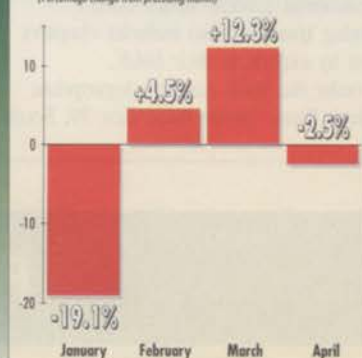
(Percentage change from preceding month)



Source: Bureau of Labor Statistics

HOUSING STARTS

(Percentage change from preceding month)



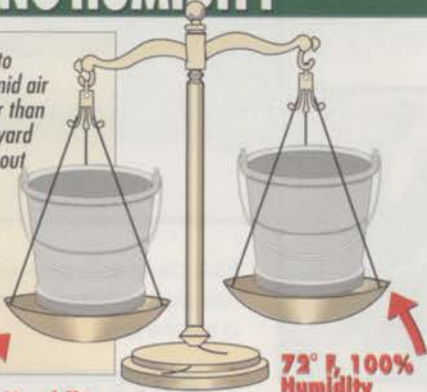
Source: Bureau of the Census

WEATHER WATCH

WEIGHING HUMIDITY

It may be hard to believe, but humid air is slightly lighter than dry air. A cubic yard of air weighs about 0.6 of a pound near sea level. Here's the difference humidity makes in that cubic yard of air:

72° F, 50% Humidity
Air weighs 0.6691 lbs.



72° F, 100% Humidity
Air weighs 0.6656 lbs.

Source: American Meteorological Society

The National Weather Service's 60-day outlook calls for below normal temperatures over the upper Mississippi Valley including parts of North Dakota, South Dakota and Nebraska.

However, above normal temperatures are forecast for the far West and Southwest, from Washington and Oregon through portions of California and along the Mexican border.

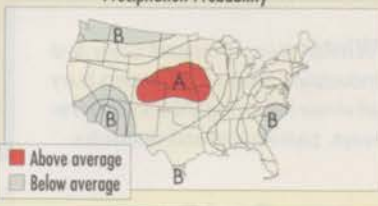
At least a 55 percent probability of greater than median precipitation exists for much of the central Great Plains. Less than average rainfall is forecast over most of the Carolinas and eastern Georgia.

60-DAY OUTLOOK FOR JULY AND AUGUST

Temperature Probability



Precipitation Probability





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Environmental Forum

BUILDING COALITIONS. The green industry, and lawn services in particular, should hitch its wagon to the property rights movement now gaining steam in Congress if it is to have a fighting chance against increasingly onerous rules and regulations.

That's the position of Andy Hines, president of Shrub & Turf, Athens, Ga. Hines has monitored the progress the property rights movement has been making on Capitol Hill and the recognition it has been receiving, and believes that for lawn care, lawn maintenance and landscape firms, the movement holds at least part of the key to getting out from under federal, state and local mandates.

"The lawn care industry is not going to win any legislative battles by trying to eliminate weeds and protect grass," said Hines. "People don't care about us. We do not have enough voices in the media. They will not listen to the lawn care guy."

Instead, he said, the media — and legislators — are paying attention to people like Rep. W.J. (Billy) Tauzin, a Louisiana Democrat who feels environmental activists have gone too far, making it difficult for entrepreneurs and large corporations alike to do business.

Tauzin leads "a political backlash against the environmental movement," according to *The Congressional Quarterly*. "The backlash manifests itself in efforts to scale back existing laws and to delay or block new environmental legislation," the publication further reported.

Additionally, according to the report, Tauzin and his followers have "thrown environmentalists off balance, forcing them to beat a hasty retreat across a broad front."

"There is a tremendous push for the property rights movement," Hines said. "There is a tremendous swell against government-mandated, big regulations, which generally are unfunded."

According to the *Washington Times*, the property rights movement already has been a stumbling block in the path of five major pieces of environmental legislation before the 103rd Congress, including renewal of the Clean Water Act, which has major implications for pesticide users.

Congressional opponents of the narrow environmental agenda also are pushing the federal government to review costs of new regulations and take those costs into account when issuing rules. Moreover, according to the *Washington Times*, pressure is mounting to eliminate federal mandates that don't come with money for enforcement.



Increasing regulations, Hines said, are "absolute, total threats" to green industry businesses. On the other hand, he added, the efforts to stem the regulatory tide "is a burr under the saddle" of environmental activists.

"They're winning on it," Hines said of efforts like the property rights movement. "It's important for lawn and landscape contractors to support this movement. We don't have the cohesion, the sophistication or the media exposure that they do."

"In our industry, people are concerned with selling new customers, eliminating weeds and planting grass," he said, "but there's a snake in the grass that's going to kill them. If they don't build a coalition, they will not have a business."

ELECTRIC VS. GAS? The Environmental Protection Agency insists it's "fuel neutral" when it comes to electricity vs. other sources, but its intentions were suspect at a recent news conference...and lawn mowers became part of the issue.

Electric mowers were touted at the conference as an environmentally sound alternative to gas-powered mowers. Along with mowers, the Edison Electric Institute — an association of investor-owned utilities — promoted electric barbecue grills over traditional charcoal grills.

According to *The New York Times*, it appeared for a time that the electric faction had enlisted the EPA to its cause, since Karl Hausker, EPA deputy assistant administrator for policy, appeared at the news conference.

According to Hausker's prepared remarks, the EPA was looking forward "to working with industry for a greener environment," the *Times* reported.

However, a spokesman later backed off

from specific support for electric mowers and grills over products powered by other fuels, stressing that EPA is "fuel neutral," according to the report.

SMARTER TRADE-OFFS. The altruistic goal of strict environmental compliance, sound business operations and profitability coexisting may not be viable in the 1990s, according to two business consultants.

Writing in the *Harvard Business Review*, Noah Walley and Bradley Whitehead — consultants in the New York and Cleveland offices, respectively, of McKinsey & Co. — said the expectation of an ultimate reconciliation of environmental and business concerns, in the end, is unrealistic.

"To achieve truly sustainable environmental solutions," they said,

"managers must concentrate on finding smarter and finer trade-offs between business and environmental concerns, acknowledging that, in most cases, it is impossible to get something for nothing."

The total quality movement, which has been gaining in acceptance throughout the green industry and has specifically been promoted by the Associated Landscape Contractors of America, may be one vehicle through which environmental issues can be integrated into business as a whole, according to Walley and Whitehead.

Managers, they wrote, "must pick their shots carefully. In a world where you cannot do everything, only a value-based approach allows informed trade-offs between costs and benefits."

SAFE SURROUNDINGS. DowElanco commissioned Mar-Quest Research to find out how people across the country felt about their lawns and landscapes. The results were nearly unanimous, according to a report in *Activeinfo*. Folks love their lawns because they provide:

- A place to appreciate and enjoy nature;
- A means of increasing property values;
- A safe place for children to play;
- Self-satisfaction and a sense of accomplishment, especially when the grass is healthy and pest-free; and
- A sense of control over their immediate surroundings, as well as space and privacy.

In addition, most believe the best way to keep their lawns lush is by using pesticides. Further, most people surveyed feel if a pesticide has been approved for sale, and is used according to label directions, it does not represent an unusual hazard to the environment. ■

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NEWS DIGEST

Massey Ferguson, Simplicity Form Supply Agreement

Simplicity Manufacturing, Port Washington, Wis., and Massey Ferguson, Duluth, Ga., entered a supply and distribution agreement covering lawn and garden tractors and related products for North America.

According to the agreement, Massey Ferguson will market a new line of riding mowers and lawn and garden tractors built by Simplicity in the United States and Canada. The garden tractor line will range from 18- to 20-h.p., and include a full line of attachments.

New England EPA Hosts IPM Conference

The New England regional office of the Environmental Protection Agency is sponsoring an urban integrated pest management conference Oct. 13, at the Royal Plaza Motel, Marlborough, Mass.

The conference, designed for companies and governmental and private agencies, will include presentations by national experts on turf, golf courses, ornamentals and structural IPM. Additionally, the conference will offer panel discussions by pesticide applicators who use IPM methods, and discussion sessions designed to answer questions about using IPM in various green industry applications.

DowElanco Supports 'Responsibility First'

DowElanco offers the "Responsibility Comes First" product stewardship program. By purchasing DowElanco products, businesses can receive safety items or make donations to trade associations. Businesses can redeem DowElanco purchase points for spill response kits, personal safety kits, decontamination kits, right-to-know books and "When a Crisis Strikes" video.

More information can be obtained by contacting a local DowElanco sales representative or distributor, or calling 800/352-6776.

Pursell Expands Production Facilities

Pursell Industries is building a new plant to increase production of its patented polymer-coated fertilizers, which are marketed under the POLYON® trademark.

Increased demands for Pursell's POLYON technology in all market segments prompted construction of the new facility, said Jim Pursell, chairman and CEO.

The new plant is expected to quadruple Pursell's production capacity and expand the company's ability to generate specialized polymer-coated fertilizers.

Promoting Year-Round Color Ranks as a Top Add-On Landscape Service

IT CAN BE SAID that the most eye-catching landscapes are those with year-round color, providing a vivid display continuing throughout each season.

And surveys show that seasonal color is quickly becoming one of the fastest growing add-on services.

The secret to a landscape bursting with color year-round is in timing the bloom periods of the various plants in the landscape, according to Richard Powers, maintenance supervisor for Coronis Landscaping, Nashua, N.H. Annuals which provide rich color all summer long will fade and eventually die out with the first frost. The continuation of color in the landscape doesn't have to end there, however.

Fall is considered a good time for planting hardy mums. Mums, which by definition are really a perennial, are used extensively as an annual by New England landscapers, Powers said. In fact, their popularity as a fall color has led to the plant being requested as a yearly installation.

By using annuals that are tolerant to frost, such as Dusty Miller, mums can be incorporated into the same planting beds. Powers suggested planting bulbs for early spring bloom before the cold winter months set in. "Just imagine the beauty and fragrance you can add to your landscape with a blanket of glorious daffodils and tulips all spring long," he said.

There are many colors and varieties of daffodils and tulips to choose from. For the best effect, plant bulbs in large groupings, as opposed to using rows, Powers said. Daffodils, narcissus and crocus are the first to bloom in spring. There are varieties of tulips that will also bloom as early as March or April.

With the proper selection of bulbs, annuals and mums, a landscape will have bursts of color all season long.



Colorful garden mums and other seasonal changeouts add innovative accents to residential and commercial properties.

EPA Meeting Breaks in New Era

It only took an hour and 20 minutes, but the recent meeting of representatives from the lawn care, nursery, florist, arborist and pest control industries and officials of the U.S. Environmental Protection Agency appears to have broken the animosity separating the urban pesticide community and the federal agency for most of the last two decades.

The breakthrough meeting was the result of a concerted effort by urban pesticide industry trade associations to open the channels of communication with the EPA on vital pesticide issues such as notification and posting, urban integrated pest management programs and the impact of regulatory decisions on small business.

Key EPA objectives include improving lines of communication between end-users and the agency, and creating a broad-based advisory group to discuss industry issues. In particular,

the EPA wants input from lawn and landscape contractors on the product registration process, which in the past has been labeled as slow and unresponsive to industry needs.

EPA officials at the meeting, including Dan Barolo, director of pesticide programs, complimented the lawn and landscape industry for its efforts in implementing urban IPM programs into their service routines, and expressed its hope for continued progress in this area. They indicated their desire to have industry members contribute ideas on how to improve and expand these programs as well.

The urban pesticide groups in attendance want to establish themselves as a resource for the EPA when it comes to technical and industry specific information. Industry representatives also hope to have EPA appoint a special liaison to work with the urban pesticide user groups to further the exchange of information and ideas.

In a related matter, EPA officials also revealed

(continued on page 16)



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News in Brief

(continued from page 14)

they plan to work with Sen. Joseph Lieberman, D-Conn., on a pesticide notification and posting bill this summer. The bill is expected to focus primarily on lawn care applications. EPA officials indicated the agency will seek industry input on this legislation to ensure a balanced bill is presented to Congress.

USDA Agronomist Murray Dead at 53

James "Jack" Murray, former U.S. Department of Agriculture research agronomist recently died after a long battle with cancer. He was 53.

Murray was recognized nationally and internationally as an expert in turfgrass breeding and management. Most recently, Murray retired to Bradenton, Fla., working on turfgrass breeding, development and evaluation through his own company, Turfgrass Germplasm Services.

He was employed at the USDA Agricultural Research Service at University Park, Pa., from 1969-70, and at Beltsville, Md., from 1970-88. He was the only full-time turfgrass scientist within USDA until his retirement for

health reasons in 1988.

Murray developed and released several grasses including "Belturf" Kentucky bluegrass and "Belair" zoysia-grass. Belturf has been used as a parent in producing several improved Kentucky bluegrass cultivars including the commercial varieties Adelphi, America, Eclipse and Majestic.

He was also one of the initiators and the first director — from 1980-88 — of the National Turfgrass Evaluation Program.

Study: Mulching Leads To Healthier Turf

A four-year grass recycling project concluded that grass is healthier and has fewer weeds when cut with a mulching mower that returns "invisible" clippings to the soil.

"Trends over the four years have started to become more apparent and dramatically show the value of returning grass clippings



James "Jack" Murray

to the soil," said Terry Schettini, associate director of research horticulture at the Rodale Institute in Kutztown, Pa. "Grass clippings are high in nutrients and are a valuable resource as fertilizer for the soil and lawn. This project emphasizes that the health of a lawn begins with the soil, and by feeding the soil, the soil will feed the grass."

Returning grass clippings to the soil provides nutrition and reduces the need to collect and dispose clippings.

The demonstration project was launched in 1989 by the Rodale Institute Research Center and Garden Way Inc. at the research center's 330-acre facility.

Each of three separate test plots was mowed (with a mulching mower, a side discharge mower without bagging and a side discharge mower with bagging) and evaluated an average of 26 times a year. The plots were cut two to three times in April and October, and four to five times each month from May through September.

Based on weekly visual observations, the mulching plots started the season with the longest, darkest growth and contained the fewest weeds in April. From August through November, the mulching plots appeared richer in color and fuller in growth.

(continued on page 18)

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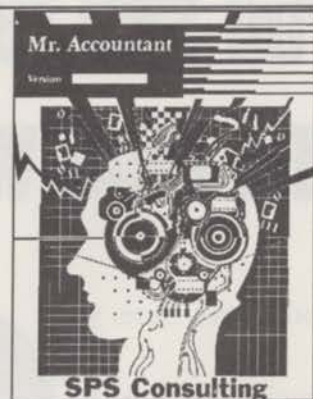


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
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News in Brief

(continued from page 16)

The mulching plots also tended to have the highest percentages of grass vs. weeds and dead grass, and showed no additional thatch buildup. The grass also was higher in the mulching plots than in the other plots.

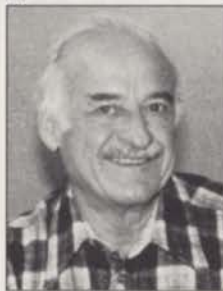
Snapper Snags Dane Scag as Strategist

Dane Scag, founder of the Scag Power Equipment Co., was appointed director of commercial strategic planning for Snapper Power Equipment, McDonough, Ga.

Scag, in the newly created position, is expected to build stronger dealer relations based on reciprocal trust and motivation,

according to Jerry Schweiner, president and CEO of Snapper.

"Dane Scag is significant to Snapper because his qualifications and reputation in the



Dane Scag

industry are extremely well-known," said Mark Hazeltine, vice president of sales and marketing. "Dealers are very receptive of this and view it as a welcome change."

After forming Scag Power Equipment and developing it into a multimillion dollar company, Scag sold the company and retired. But not for long.

Minors Prohibited; Did You Know?

Federal labor laws prohibit minors under the age of 18 from operating power-driven, weed-cutting machines with certain attachments, according to the Wage and Hour Division of the U.S. Department of Labor.

For example, minors under 15 are prohibited from operating motorized weed trimmers.

USDL reviewed a number of weed trimmers that primarily use monofilament and/or copolymer strings to cut weeds, according to the American Association of Nurserymen. Some types use steel-blade attachments, however, which are considered more dangerous.

"The USDL just notified us that these regulations existed, and asked that we pass the advisory along to the appropriate people," said Ben Bolusky, director of government affairs for AAN.

Ditch Witch Dedicates New Training Center

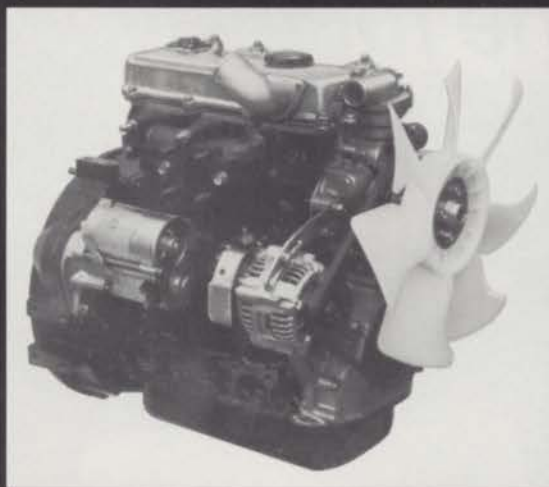
Ditch Witch established a center devoted exclusively to training its customers, dealer personnel and employees of The Charles Machine Works, its parent company. The center is adjacent to Ditch Witch's main plant and offices. It includes classrooms dedicated to specific training and a large exhibition area.

Code Promoted To Group Publisher

G.I.E. Publishing President and CEO Richard Foster recently promoted Cindy Code to Group Publisher of *Lawn & Landscape Maintenance* magazine. Her publisher responsibilities also include *Recycling Today* and *Fibre Market News*, two recycling publications published in Cleveland, Ohio, by GIE.

In her new position, Code has overall business management responsibilities including long-term strategic planning of editorial, circulation, market research and book publishing. She will continue in her role as *LLM* editor, a position she has held for nearly seven years.

Maureen Mertz will continue her long-standing position as *LLM* publisher responsible for national advertising sales management. ■



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Association News

Gerry Faust, president of Faust Management Corp., will keynote the **Associated Landscape Contractors Association's** Interior Plantscape Conference and Trade Show Sept. 18-21 in Las Vegas.

Faust's speech, "Making Management Happen: A Leader's Guide to Understanding People and Organizations," will cover four critical roles managers should develop and balance to ensure their businesses' steady progression.

"Gerry Faust's wit, lively and entertaining style and solid research and scholarly base combine to make his presentations models of superb executive teaching," said UCLA's Dr. Victor Tabbush.

Faust Management Corp., San Diego, specializes in providing services to businesses worldwide. Faust has consulted to a broad range of business, government and professional organizations. He specializes in creating methods, approaches, tools and systems that help create insights and environments which allow businesses to succeed.

Three high-powered keynote speakers are slated to highlight the **American Society of Landscape Architects'** 1994 Annual

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Meeting and EXPO Oct. 8-11 in San Antonio, Texas.

Henry Cisneros, Housing and Urban Development secretary, was invited to discuss the impact of design on urban renewal; Stewart Brand, the electronic wizard who originated the "Whole Earth Catalog," will present the world of virtual reality, CD-ROM, cyberspace and other high-tech innovations; and John Lyle, a member of the Florida chapter of ASLA, as well as an educator and author, will outline

steps needed to regenerate the world's watersheds.

The theme for this year's conference is water use and conservation. More than 60 educational sessions will cover a range of water-related issues including riverfront design, wetland restoration, groundwater management, irrigation and alternative water sources.

ASLA invited professionals from the Irrigation Association, the Ecotourism Society, Society of Wetland Scientists and

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The Perfect Touch Many operators are finding the mid-size Walker Mower is the perfect size for their jobs – a compact, maneuverable tractor for small areas, combined with open space productivity of a rider, saves time.

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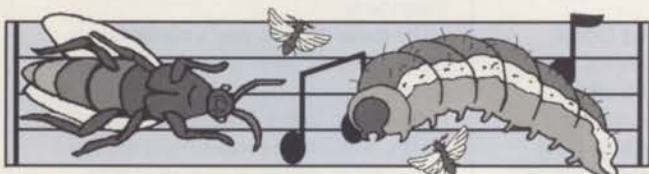
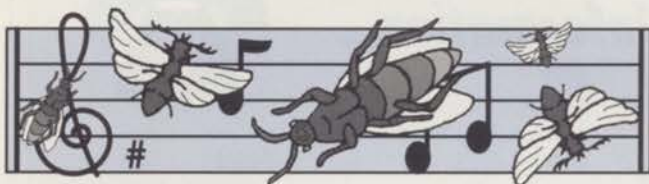
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the Mayors Institute on City Design to the conference in an attempt to forge new partnerships.

The **Georgia Turfgrass Foundation Trust** plans to install an electronic weather station at its research green in Duluth. Funding for the \$7,000 project will come from contributions by individuals, suppliers and golf clubs.

The station will measure air temperature, relative humidity, rainfall, solar radiation, wind speed, wind direction and soil temperature at several intervals. A microprocessor will store the readings and download the data each day via modem to a central processing station in Griffin.

"By placing an electronic weather monitoring station at the GTFT research green in Duluth, we'll have area-specific information available to us on a daily basis," said Mark Esoda, vice president of GTFT.

In particular, the foundation hopes to develop management strategies for handling high heat, high humidity and low air circulation during summer, Esoda said.

Education and professionalism top the **Professional Lawn Care Association of America's** agenda for the 1990s.

"Professionalism in our industry is the key to future growth for everyone, and we can get there by strong education and training," said Lou Wierichs Jr., PLCAA president.

Highlights of the associations efforts this year include promoting a partnership with The University of Georgia to offer a turfgrass certification course, releasing a "Guide to the Transportation of Pesticides" manual and offering regional workshops on business and risk communication.

In other news, PLCAA released a Canadian version of its question and answer brochure, "What You Should Know About Lawn Care Products and Services." The association also revised its resource catalog listing all of its educational products, including brochures, training manuals and videos.

The **Professional Grounds Management Society** offers its 1994 "Who's Who in Grounds Management" membership directory.

The 80-page directory lists all PGMS members alphabetically and by state, and includes their affiliations and contact information. The directory also includes a membership/geographical map of the United States, and lists members who are certified grounds managers, officers and board members, as well as association branches, past presidents, sustaining members, Gold Medal recipients and the association's bylaws.

The directory is free to members and \$38 for non-members.

IN BRIEF...The **Rocky Mountain Turfgrass Research Foundation** awarded \$25,400 to Colorado State University to help fund turfgrass research projects. The foundation has granted more than \$125,000 to CSU in the past five years. Some CSU research projects include studying the arid, high-altitude conditions of the Rocky Mountain region...The **Texas Association of Nurserymen** updated its "Pest Management Alternatives for Commercial Ornamental Plants" manual by Dr. Bastiaan Drees. The original book is available for \$19.95; the update is available for \$3 shipping and handling. More information can be obtained by calling TAN, 512/280-5182...The **Pennsylvania Turfgrass Council** and Pennsylvania State University are seeking vintage turfgrass equipment for the Mascaro/Steiniger Turfgrass Museum slated Aug. 10 during the Penn State Turfgrass Field Days. To donate items or acquire a list of equipment already received, contact George Hamilton, Landscape Management Research Center, Orchard Road, University Park, PA 16802; 814/865-3007, or Christine King at PTC, P.O. Box 417, Bellefonte, PA 16823-0417; 814/355-8010.



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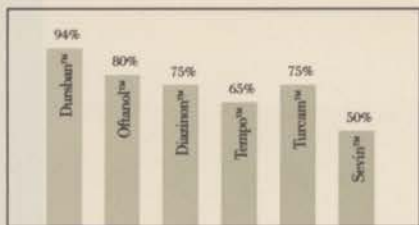
By adding insecticide, you'll also take care of tougher insects, like scales and worms. University studies suggest you may get better control than you get with insecticide alone.

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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.

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Putting The Brakes On Power Equipment

With round one of the CARB and federal emission standards under way and the threat of stricter measures pending, engine manufacturers face increased R&D and administrative costs. End users of outdoor power equipment may see reduced product availability and, eventually, raised prices.

By Cathy Hoehn

FIRST CAME THE call for pesticide reductions. Then water conservation measures. Now emission standards.

One faction or another of the green movement in the United States — some more brazen than others — has penetrated just about every segment of the lawn and landscape maintenance industry.

The U.S. Environmental Protection Agency's proposed federal emission standards — the latest round of green industry environmental posturing to effect a nationwide campaign — has some outdoor power equipment trade associations at wits' end. But, to date, commercial end-users and power equipment manufacturers seem poised to handle the inevitable changes — reduced product availability and higher prices in the long-term.

"The lawn and landscape industry would be hard-pressed to refute standards that promote a healthier environment,"

said Rod Bailey, president and owner of Evergreen Services Corp., Bellevue, Wash. "If it is genuinely something that contributes to air pollution, it's pretty hard for our industry to fight it. We're supposed to be the good, green guys out there."

California, always a bellwether state for environmental initiative, set Jan. 1, 1995, as the deadline for manufacturers of small, spark-ignition utility and lawn and garden equipment engines to reduce various pollutant emissions by a total of 55 percent. Lawn maintenance products affected by the regulations include walk-behind mowers, hedge trimmers, string trimmers, leafblowers and chain saws.

Following suit, the U.S. EPA announced in May that its proposed air quality standards, largely based on the California Air Resources Board measures, will take effect in August 1996. While EPA's Phase I standards await approval (public comment was being accepted until July 15), both CARB and EPA are already negotiating Phase II of their emission reduction programs for 1999 or after.

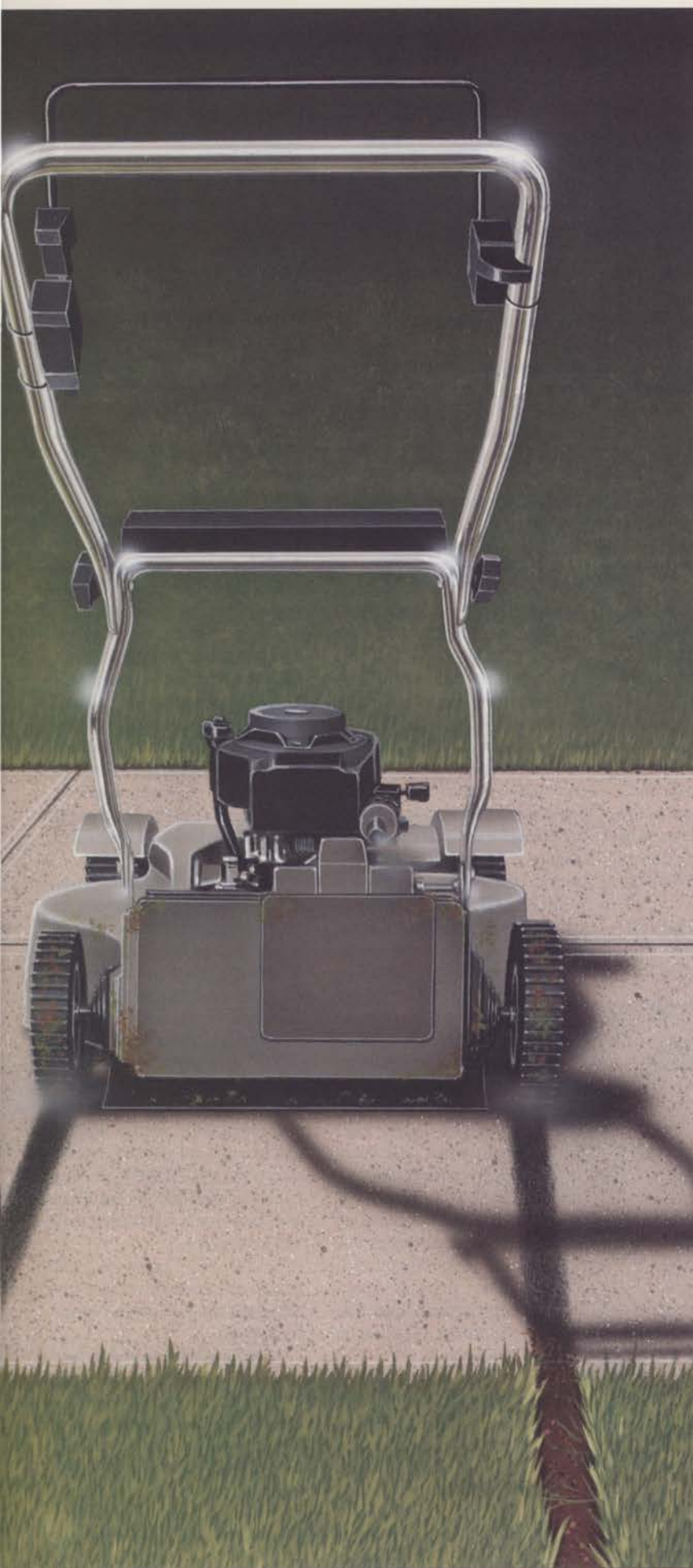
The EPA's Phase I rules, if approved, would require manufacturers to meet exhaust emission standards, ensure all new, small, spark-ignition utility and lawn and garden engines become certified and incorporate new engine labeling and warranty requirements.

EPA estimates that the changes will reduce hydrocarbon emissions by 32 percent, and carbon monoxide by 14 percent by 2003.

Equipment affected by the EPA rule includes trimmers/edgers/brush cutters, leaf blowers/vacuums, rear-engine riding mowers, front mowers, chain saws, shredders, tillers, lawn and garden tractors, snow blowers, chippers/stump grinders, hydroseeder mulchers, thatchers/aerators and walk-behind, multi-spindle mowers.

The Phase I regulations do not require retrofitting existing equipment inventory nor place any compliance burdens on the end user.

One California landscape contractor said that, despite the CARB standards, the only industry rumbles he's heard related to power equipment are due to laws restricting use of blowers. "The one thing we're up against is blower restrictions because of the noise. It affects our hours and schedules. The impact is on the clients — it increases our costs so it increases clients' costs," said Steve Glover, president of



The CARB and U.S. EPA emission standards raise concern about product availability and higher costs, especially when Phase II sets in. Illustration: Bob Novak.

L&L Landscape Services, Santa Clara, Calif.

Head to head, the federal regulations are actually more liberal than the CARB standards "with respect to their scope of application for two-stroke," said Don Purcell, president of the Portable Power Equipment Manufacturers Association. "But they impose a lot more difficult testing and reporting requirements and certification requirements than the California measures."

DEFINING THE PROBLEM. Every common source of power accelerates, to some degree, the air pollution problem through a group of emissions collectively called Volatile Organic Compound emissions.

According to EPA data, power plants, paint and solvents, waste disposal and others contribute 57 percent of man-made VOCs; highway (cars and trucks), 33 percent; and non-road (lawn and garden, recreational, construction and agricultural), 10 percent.

Non-road emissions are the last category to be regulated by EPA. Since lawn and garden equipment produce 5 percent of VOCs (50 percent of the non-road emissions category), EPA opted to target that segment first.

The immediate burden posed by the federal and CARB regulations falls on the manufacturers of 2- and 4-cycle engines. While manufacturers concede lower emissions benefit air quality, certain groups—namely PPEMA which represents manufacturers of 2-cycle engines—contend the regulations are too stringent, particularly since an EPA study shows lawn and garden power equipment emits only 2.6 percent to 4.9 percent of man-made air pollutants.

The Outdoor Power Equipment Institute, which represents 4-cycle and larger engine manufacturers, and the Engine Manufacturers Association are lobbying to postpone the federal standards by at least a year, fearing the tight deadlines will force manufacturers to sacrifice their products' power and performance while trying to attain the required lower emissions.

"Meeting the 1996 standards could be very expensive. My understanding is that the 4-cycle companies are having a very tough time meeting (them). They will not be ready," Purcell said.

"There are some larger powered engines that are having difficulty meeting the carbon monoxide limit," concurred Bob Burkholder, vice president of engineering for Homelite, a division of Textron Inc., Charlotte, N.C. "The reason that (technology) is not known as well is because most of those engines are precluded from requiring certification in California. The degree of difficulty with carbon monoxide varies from manufacturer to manufacturer."

While the trade associations forecast dour results in trying to meet the standards, several manufacturers said their companies will be in compliance.

"It has caused us to make some changes in our products in order to meet those standards. I can say we have a complete

AVOIDING SPILLS AND OVERFILLS

line of engine products that are able to, or will be by the time January '95 comes around, meet the requirements of the California emissions standard resources board," said David O'Connell, vice president of marketing for Tecumseh Products, Grafton, Wis., a manufacturer of 4-cycle engines.

Jim Wallace, marketing manager for The Toro Co., Minneapolis, said CARB certified engines thus far have retained their quality and performance.

"We haven't seen a loss of quality in the big engines and we're just getting to the smaller engines. The big engines already on the market need less done to them to qualify them for CARB. Where we get concerned is the smaller, single engines. There we have not completed full qualification."

Dick Tegtmeier, president and chief executive officer of Encore Mfg., Beatrice, Neb., said he doesn't expect to see much of a price hike next year. "I already have pricing from some of the larger manufacturers of engines, and we have virtually no price increase."

Bob Walker, president of Walker Mfg., Ft. Collins, Colo., concurred, saying that significant price increases are more likely to result from Phase II standards.

Fewer commercial products are affected than consumer, Purcell

Emission standards will reduce product availability in California, but have less impact nationally.

THE U.S. ENVIRONMENTAL Protection Agency estimates 17 million gallons of fuel are spilled each year during refueling, most of which evaporate into the air where they contribute to the formation of ground-level ozone.

Following are some tips the EPA provides for avoiding gasoline spills:

- Use a gasoline container that can be easily handled and hold it securely so you can pour slowly and smoothly.
- Use a spout or funnel to pour gasoline from the container to the equipment.
- Avoid overfilling the power equipment gasoline tank or allowing fuel to run over. Special nozzles are available with an automatic stop device.
- Close the cap or spout and vent hole on the gasoline container tightly after filling the gasoline tank and after filling the container at the gas pump.
- Transport and store the gasoline container and power equipment out of direct sunlight and in a cool place, if possible.
- Use caution when putting gasoline into a gas can at the pump.

said. "Phase I is primarily a consumer-product rule for two-cycle people. About 15 percent of our products are excluded because they are used by the professional agricultural and construction industries."

PHASE II. Some manufacturers say the first round of standards are a walk in the park compared to the outcome expected from Phase II of CARB and EPA standards. Others claim it's too early to tell what the final results will be.

"We won't even propose standards for Phase II until 1996. They probably won't be effective until

the latter part of the 1990s," said Martha Casey, spokeswoman for the U.S. EPA.

Key concerns center on costs — not only to the manufacturer, but to the end user — product availability and performance.

The targeted emission reductions will require manufacturers to add components to the engines, possibly calling for a complete redesign, which could increase prices significantly in the long-term.

"In Phase II, Briggs & Stratton, and presumably the rest of companies affected, will pursue regulations that are attainable, reasonable, cost effective and safety conscious," said George Thompson III, spokesman for Briggs & Stratton Corp., Wauwatosa, Wis.

Interestingly, the EPA rules give safety, noise and energy efficiency higher priority than air quality, Purcell said. "If there's any direct conflict (between air quality and the other conditions), safety, noise or energy must be maintained. The statutes are very clear on that point."

The EPA recommended incorporating some of the same technology used in the automotive industry — such as catalytic converters, multiple circuit carburetors, fuel injection systems and four-stroke

overhead valves, as well as alternative fuels — as possible means for meeting Phase II rules.

Manufacturers say that current technology cannot feasibly be applied to smaller engines at a price the end user can afford. They hold mixed views on whether that goal can be achieved by 1999.

Ken Railey, fleet manager and safety director for Ruppert Landscape Co., Ashton, Md., believes automotive technology can easily transfer to outdoor power equipment. "They should have the technology now to incorporate carburetors with multiple circuits like we had on cars five years ago," he said. "There are ways to allow the equipment to run more efficiently, and better fuels available."

Others say the transition won't be so easy. "Meeting the 1999 standards for 2-cycle engines is going to be a fairly major problem. Two-cycle engines are quite a bit more polluting. It is the nature of the design, because the oil and fuel are mixed together, for one thing," said Kenneth Seitz, president of Environmental Engines Corp., Escondido, Calif. "Thus, the criteria is more severe for 2-cycle engines than 4-cycle. Reductions will be quite severe — about 89 percent to 90 percent reductions will be called for in 1999."

Catalytic converters show promise for chain saws but cannot be used on other two-cycle equipment where it could burn the operator. "Catalytic technology can't be used on most small engine equipment because it violates federal fire and safety codes," Purcell said.

EEC, a research and development company whose primary objective is producing low-emitting, two-stroke utility, lawn and garden engines, is mainly focusing on four aspects of engine technology: electronic fuel injection; ignition; speed and power control; and lubrication and scavenging.

Seitz said EEC's approach could help manufacturers save money by allowing them to retain their equipment design.

Many manufacturers predict accepted technology alternatives will center on engine and fuel systems technology. Replacing two-stroke engines with four-stroke, electric or battery power aren't viable options for commercial users, at least not currently, according to Dan Ericsson, research and development

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Cover Story

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engineer for Husqvarna Forest & Garden, Charlotte, N.C.

"With electric equipment, you must have a power source nearby...and there is always the safety concern whenever electric cables are involved," he said. "Batteries have portability but are heavy and can only operate for a limited time."

Ericsson added that four-stroke engines generally produce less power than two-stroke, are larger and heavier. "Besides, four-stroke engines are more complicated, which influences cost," he said.

Thompson claims that, although there is a small niche for battery-powered mowers, end users have indicated they prefer gasoline-powered products. "Consumer surveys consistently show 71 percent would pay for a more environmentally sound product. Our market surveys indicate that mower owners prefer mowers with low emissions and that have a gasoline engine, over a rechargeable battery, because they want power and performance out

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- thatchers/aerators
- walk-behind multi-spindle mowers
- augers
- sickle bar mowers
- pruning towers
- turf cutters

of their machines," he said.

Regardless how much manufacturers write under the regulatory pressures, chances of EPA loosening its hold are slim. The agency is bent on helping state and local governments meet their deadlines for reducing emissions by 15 percent from 1990 levels and negating emissions expected through growth by November 1996.

At least four states are at various stages of proposing and/or implementing emission regulations, according to Purcell. "Texas, California, Maryland, Virginia and Wash-

ington, D.C., to some extent are all looking at lawn and garden emissions, because all states have been told to reduce their total air quality emissions. Every state in the country is looking at its own specific formula of what to do. I expect several states to show some interest in lawn and garden," he said.

The Metropolitan Washington (D.C.) Council of Government last year proposed banning commercial and residential use of gasoline-powered lawn and garden equipment within its jurisdiction on ozone alert days. The proposal, which

MCOG later dropped, was part of an overall plan to get MCOG's regions online with the federal requirement to reduce ozone contaminants by 15 percent.

AT WHAT PRICE? Most manufacturers say it's too early to tally the costs for meeting the standards, but the price hikes eventually will trickle from the engine manufacturers to the equipment producers to the end users, who may then decide to pass them on to clients.

According to a PPEMA survey, 11 of its member companies estimated they initially spent \$45 million (total) to meet the CARB standards. Additionally, survey respondents forecast a 40 percent to 70 percent decline in product shipment and a 50 percent decline in product models. "That was from our perspective in 1992," Purcell said.

"Without a doubt, engine people will pass the cost on through and so will we. But I don't think it will have a big impact," Tegmeier said. "I think it will do away with the older engine models that are not

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Cover Story

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overhead valves."

Most manufacturers agree that the commercial market won't witness as much of a price increase percentage-wise, since that market generally buys higher-quality, higher-priced equipment than consumers. And with 4-cycle engine equipment, a lot of those machines have already attained higher standards by incorporating overhead valve and liquid-cooled engines which emit fewer air pollutants.

Most manufacturers also dispute EPA's estimate that equipment with new two-cycle engines will cost only about \$5 more per unit. No one in the industry — equipment or engine manufacturers — agrees with that figure.

"It's not anywhere close. I don't think that figure bears any relationship to reality," Purcell said.

The cost for a \$200 piece of equipment "would not increase to just \$205 after Phase II," said John Nelson, vice president of engineering for Snapper Power Equipment,

McDonough, Ga. The price hike for equipment needing engines with new components and/or complete redesign probably would be \$100 to \$200, he said.

A California study conducted in fall 1990 estimated that the manufacturing cost increase for 2-cycle engines would be \$40 per hand-held unit and \$20 to \$35 for lawn mowers. Moreover, a PPEMA study, conducted by an outside firm, showed a figure of \$66 per unit. "That may be a little high. I think the reality of where the cost will finally come will be California's estimates," Purcell said.

Casey at EPA defended the agency's methods for estimating cost. "That figure came about as a result of our developing the regulation, getting out there and taking a look at what kind of technology is available and what could be done," she said.

Evergreen's Bailey said his company would willingly pay the increased cost for reduced emissions.

"As long as the equipment works and we avoid the kind of thing that was proposed in Washington, D.C.,

where you can only operate certain equipment on alternate days, the impact on our business probably won't be that great," he said. "If we can phase in the equipment with new engines over a period of time rather than replace everything at

around Washington D.C., where they're trying to regulate so that you can't run equipment on certain days. But we would rather see them say you have to have an extra set of emission-certified equipment in your fleet or you can't work on that day," he said.

Ruppert purchased its first round of emission-certified equipment and saw no increased cost, Railey said. "Equipment seems to stay the same in price year after year, except some 2-cycles. Those have gone up in price significantly this year, probably because of noise-reduction features."

Bailey sees a call for less regulation governing the industry rather than more. "I'm one of those people that think we have to look at cost and benefits, particularly for environmental regulations. Is what we're doing not only worth the cost but have real, beneficial end results? Does the end justify the means?" he said.

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

'We have to look at the costs and benefits. Is what we're doing not only worth the cost, but will it have beneficial results?'

once, it won't kill us."

Railey believes the government should require lawn and landscape companies to phase lower-emission equipment into their fleets. "We're doing it voluntarily, being



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Weather Extremes Create Mowing Challenges

Contractors find there's no such thing as routine when mowing in weather extremes — from interminable droughts to torrential rain.

By Steve and Suz Trusty



CLEAR SKIES, moderate temperatures, adequate rainfall — some years these weather conditions are dreams rather than reality.

The summer of 1993 was a season of weather nightmares across most of the United States. While the Midwest was drowning in never-ending rain, portions of the East and Northeast baked in an extended drought. Maintaining mowing productivity during these weather extremes put contractors to the test.

There's no single "right" way to handle tough conditions. Owners, managers and crew leaders must adjust schedules to get the most done with available personnel and equipment. Strategies adopted must be flexible. In other words, expect the unexpected and be prepared to handle it.

Here's how some commercial operations in different parts of the country cope with their particular situations.

DROUGHT IN THE EAST. Gary Courchesne, co-owner of G&H Landscape, Holyoke, Mass., said there's no such thing as a typical year.

Working around changeable conditions means juggling crew schedules and priorities. "Our routine has to be based on what the weather hands us," Courchesne said. "When the grass is growing, we have to figure out a way to mow. It won't wait for us."

But when grass doesn't grow, mowing needs dwindle. Because lawns without water were dormant during the drought of last July and August, Courchesne's crews went from spring mowing schedules of 60 to 65 hours a week to 40 hours or less some weeks. His mowing labor needs were reduced by 35 percent to 50 percent.

The customers' desire to see something green during the long dry spell provided Courchesne's mowing crews with some work. "A lot of clients had irrigation or were watering, but that could only be done in accordance with water-use restrictions. People were interested in keeping their grass looking presentable, especially those on a regular fertility program and those with newly established lawns."

Weather extremes create extensive schedule changes for mowing crew personnel. When employees stay with a professional lawn maintenance company long enough to see that the highs and lows of mowing demands balance out, it becomes easier for them to cope with the changes in the regular routine.

For instance, to keep labor hours at a decent level crews were charged with controlling heavy weed growth in flower and shrub beds.

"Mowing crews must be flexible," Courchesne said. "When the grass is really growing, we mow as early as allowed, as late as daylight lasts and on weekends as





Weather can take on all forms and present numerous challenges. Whether Mother Nature delivers excessive rain (far left) or drought (left), mowing crews must be prepared to deal with current conditions.

required. The average tenure of our mowing crew employees is five years, so they understand how the business works and know we'll work with them as much as we can."

Flexibility is a must on the lawns, too. Mowing techniques must be adapted to meet the needs of altered growth patterns. "We made mowing adjustments. For example, we raised the cutting height as much as possible for drought relief and disease reduction," Courchesne said.

Whatever the weather, machines must be ready to go when crews can mow. During drought situations, tighter service intervals may be needed to reduce dust and dirt infiltration, but general maintenance programs can be followed with few major alterations.

"Equipment maintenance is the key to keeping productivity high. We do daily maintenance and additional maintenance throughout the

day when equipment use requires," he said. "You've got to take the time from the production schedule for prevention maintenance. A squirt of grease, a wash-down and inspection, a tightening of nuts and bolts can save major breakdowns.

"We pay attention to details — like keeping the mower blades sharp. Dull blades not only tear up the grass, they put undo stress on the engine. If you don't do preventive maintenance, sooner or later you'll get caught, and your schedule will be destroyed because of an unexpected breakdown."

WET AND DRY. In parts of the Midwest, last year's record-breaking rains have been followed by one of the driest springs ever.

Les Wilshusen, manager of Mike's Lawn Service, Storm Lake, Iowa, recalled, "The rains wouldn't stop in the spring and summer of

1993. But this year it was already so dry by mid-May that the grass was going dormant. I'm sure the shallow root systems encouraged by last year's rain made the grass more susceptible to stress this season. "We aerated both fall and spring, where we could, to get some air into the soil and encourage deeper rooting."

When rainfall is excessive fast, turf growth demands steady mowing to keep lawns under control.

"We operate two, three-person mowing crews and use three riders with 52-inch decks and six to eight 21-inch walk-behinds," Wilshusen said. "Last year these crews and equipment were going five and six long days a week. Every time there was a let-up in the rain, we were out on the lawns. We ended up doing some mowing in light rain — something we wouldn't even consider in normal years — but there were so many days of rain in a row, we had

no other choice."

Wet conditions not only require more frequent mowing, they add work and expense in other ways.

"Last year we had to pick up all the grass clippings. Rain made the intervals between mowing too long, and the grass itself was lush and heavy," he said. "There were times we used two riders on a lawn — one cutting the grass and the second one following behind to pick up the grass clippings."

Wilshusen said his firm used walk-behinds more frequently than most years because at many sites, the soil was too saturated to support riders. Crew leaders made the judgment calls — whether it was OK to mow at all, and if it was, whether to walk or ride.

Additionally, his crews tried tight-turn mowers on hard surfaces when possible to prevent tearing up the grass.

Running constantly in heavy grass adds strain on mowers. "We ended up getting another rider and another self-propelled walk-behind to keep mowers up and running. We figure our walk-behinds got more use in two to three days than a homeowner unit gets in a year.

"We pulled applicators off the job to assist with preventive maintenance. The maintenance staff came in early in the morning before the crews arrived to try to keep ahead. We had to increase our regular preventive maintenance schedule to compensate for the extra wear on the mowers from the thick, heavy turf," he said.

Mowing procedures must change abruptly

when heat and lack of moisture slow growth. "With this year's dry weather we raised the mowing height to 3 inches in mid-May," said Wilshusen. "Normally, we cut at 2 1/2 inches from the first cut to mid-June; then go to 3 inches through August and back to 2 1/2 inches in September. With the slower-growing grass, we expand our normal seven-day mowing cycle to 10 to 14 days."

Procedure and schedule changes in one area generally results in a reversal of established routines in another, Wilshusen said, "Normally we allow 30 minutes every morning to check filters, grease, tighten bolts and clean off the

engine. Blades are usually sharpened twice a week. On Friday afternoons, we blow off the machines with a hose so they're all cleaned to start on Monday."

In hot, dry weather, however, his crews start mowing earlier, right at 7 a.m., then come back into the shop and do routine maintenance later in the afternoon.

Though adapting to such back-to-back weather extremes hasn't been easy for Wilshusen, he believes flexibility and cooperation throughout the company make a difficult situation manageable. "Weather extremes sharpen your skills. We already do a good job of mowing and maintenance, but in tough weather, we have to do an even better job, just to cope."

In the rush to keep up with ever-changing turf maintenance requirements, maintaining open communication is essential. Employees need to know what will be expected of them — and why. Customers need to know that you understand and share their concerns.

"Employees make the business," Wilshusen said. "They have to understand what we're trying to accomplish and be committed to it. Mowing crews have to be flexible. Serving the customer must come first."

To maintain consistency, mowing crews return to the same properties week after week. This strategy enables the crews to get a handle on the quirks of the property and the expectations of the property manager.

RAIN AND MORE RAIN. Sometimes weather conditions are so extreme, it's nearly impossible to keep up with mowing demands, according to Shawn Edwards, owner of Lawn of Leisure, Ankeny, Iowa (near Des Moines).

"During 'normal' years we try to give our crews 'normal' 8 a.m. to 5 p.m. hours. During last year's rain, we mowed when we could. Sometimes it was from 9 a.m. to 9 p.m. during the week and weekends. If the grass was dry enough to cut, we were out there," Edwards said.

Lawn of Leisure employs 40 to 50 people using nine to 10 crews. The firm serves a customer base that's 90 percent commercial and 10 percent residential. Walk-behind mowers with 36-, 48- and 60-inch decks are used most often.

"Flexibility was the most essential part of coping with the extremely wet weather. Our techniques were already fine. If they hadn't been, we wouldn't have been able to handle it," he said. "Our normal mowing rotation for commercial properties is five to seven days. We had to go to a seven- to 10-day rotation or even longer last year because we rained out so often."

Equipment needs and crew sizes are based on company estimates of what it will take to handle a normal workload. Wet weather increases the time and effort required to handle every step of the lawn maintenance process.

All properties took longer to mow. For instance, grass was tall, lush and so succulent that even when the outer surface of the blade was dry, the cut grass was extremely wet, he said. Lawns that previously were cut in less than four hours

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NEW HOLLAND

The winning team

Mowing Challenges

(continued from page 36)

suddenly took eight to 10 hours to mow.

"We had a couple of weeks where we couldn't get to some of our clients' properties because all the surrounding roads were under water or closed off to all but essential personnel because of the flooding. Mowing crews weren't considered essential," Edwards said. "That turf was like jungle when we were allowed to get to it. But we — and our customers — were very lucky; none of our lawns were actually under water."

Edwards found the extended operating hours

and extremely lush turf put added stress on equipment. Because machines were running harder, more belts, filters and engines were needed. Additionally, breakdowns occurred more frequently, about 35 percent to 40 percent more than a normal season.

Employees had to run harder, too. "Crews had to be flexible," he said. "Because we have good employees who understand what has to be done, we got through it. Water was shut off here for two weeks. Our people were out there mowing even when they had to scramble to find a place to take a shower and wash their uniforms."

Though mowing contractors love to see the

grass grow, Edwards agreed that there can be too much of a good thing. "The public perception was that we were making a killing because the grass was growing so fast. Yet, the grass was so much harder to handle, the stress on machines was so much greater, and scheduling was so much more difficult, it cost us far more than usual just to operate."

IT'S NOT EASY. As wet weather conditions stressed machines, in-house service technicians reached out to their equipment dealers' service departments for help.

Ron Ehlers, owner of Ehlers Lawn and Recreation, Elburn, Ill., is one of those dealers. "The extreme wet weather of 1993 brought more breakdowns. Generally, John Deere figures a commercial operator will put three to four times more wear on a mower than a homeowner does. "We threw that formula out last year. Commercial mowers were running constantly and the grass was so thick they packed 400 hours of wear into 200 hours of running," Ehlers said.

Clippings couldn't remain on the lawn because the grass was too wet. "We normally suggest removing no more than one-third of the grass blade in any one mowing. Grass grew more than that in a day. Baggers and vacuums were essential."

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USE READER SERVICE #11

'Our routine (is) based on what the weather hands us. When the grass is growing, we have to figure out a way to mow. It won't wait for us.'

The need for flexibility spread as equipment dealers made their own adjustments to meet the needs of their commercial clients, Ehlers said.

"We extended service department hours. Our service technicians rotated hours and put in lots of overtime to handle the load," he said. Our commercial customers are real professional; they know what they're doing and keep their equipment in top shape with regular preventive maintenance programs. They were shortening maintenance intervals and replacing blades and belts much faster than usual."

The consensus for mowing in weather extremes is to stick with the basics. Keep machines in top shape with regular preventive maintenance. Get and keep good employees, and above all, be flexible. As Ehlers said, "The efficient lawn maintenance companies and equipment dealers made it through — marginal operators didn't."

The authors are partners in Trusty & Associates, Council Bluffs, Iowa, and are consultants to the horticulture trade.

Contractors Clean Up With Combination Products

Two trends developing in the vacuum, blower and sweeper markets are offering equipment that serves a multitude of purposes and, in the blower market especially, reducing noise and pollution emissions.

THE CALL FROM the lawn and landscape market is for more versatile machines that can accomplish a variety of tasks, according to manufacturers. That appears especially true for combination blowers/vacuums and sweepers that serve other purposes as well.

Commercial contractors like some rotary brooms, for instance, that also can be used for dethatching, said Tom King, sales manager for York Rakes, a division of York Modern Corp., Unadillo, N.Y.

Mark Olarte, marketing coordinator for Tanaka, Bothell, Wash., finds combination vacuums/blowers/shredders are becoming increasingly popular. Mark Grumelspacher, president of EasyRake, Lebanon, Ind., concurred.

Grumelspacher said power equipment today is loaded with more gizmos, which are popular with commercial users. He cited new components such as a remote loader attachment which blows leaves into piles and sucks them into the truck which reduces bulk.

He added that such equipment options become increasingly popular as contractors add on tree care services. "There's a definite trend for commercial cutters to get into tree handling, especially leaf pickup in the fall, because it's an additional profit center for them. After the typical Midwest cutting season is over, for example, it gives them an extra two months of work, depending on the weather."

Grumelspacher also noted a trend toward use of walk-behind blowers. "They have a 4-cycle engine, whereas the backpack blower is 2-cycle," which some claim is a noise and pollution contributor, he said.

Blower manufacturers have begun incorporating baffled mufflers to combat noise. Unfortunately, that feature also reduces the power of the machines, Olarte said.

The biggest challenge facing blower manufacturers is finding the most effective means to reduce pollutant emissions to meet pending federal and California regulations.



Sweepster's model CFM, mechanical-drive sweeper mounts to commercial riding mowers to clean away debris without damaging turf roots. The brush's angle changes 30 degrees left or right.

"That will be a major adjustment for our company," Olarte said.

Following are some of the latest vacuums, blowers and sweepers offering a variety of features:

BILLY GOAT VACUUM/CHIPPER

Billy Goat Industries offers a turf



vacuum and organic debris chipper in one machine. The Termite™ combines KD Series lawn and litter vacuum with a chipping blade and chute to reduce limbs into common bedding mulch.

The Termite's 26-inch snout cleans a wide path across turf and hard surfaces, while its one-step control

allows easy height adjustment.

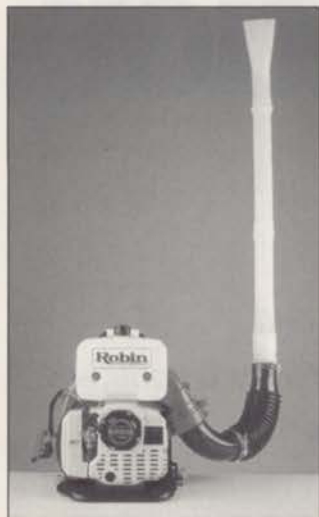
The Termite's chipping blade and chute handles limbs up to 2 inches in diameter.

For easier removal, the turf bag features a lift-off discharge chute with a built-in deflector.

Circle 150 on reader service card

CARSWELL BLOWER

The Robin FL231 backpack blower from Carswell Import & Market-



ing is compact and weighs 7.8 pounds. It features 117-mph air volume capacity to allow users to clean debris from large lots or sidewalks and driveways.

Carswell Import's Robin FL411 backpack blower has 40.2 cc (2 h.p.) and a 3-quart fuel capacity. Maximum air volume is 186 mph, making it ideal for large jobs.

Circle 151 on reader service card

EASYRAKE LAWN VACUUM

The EasyVac™ Model 544 Lawn Vacuum attaches to front-mount commercial riders with zero-turning radius. The attachable system allows operators to mow, collect and dispose of clippings in one step. Grass clippings, leaves and other debris move from the mower deck into the 44-gallon container for easy disposal.

The machine is available with either a Briggs Industrial Plus or Kohler Command engine.

The Model 544 also features a side-mount system for most front-mount commercial riders.

Circle 152 on reader service card



ECHO POWER BLOWER

Echo's PB-4600 backpack power blower has been certified by the California Air Resources Board.

The 22-pound blower incorporates a tube-mounted throttle control offering directional control of the blower pipes with one-hand operation. A 2-quart fuel tank provides extended operation time, and a purge-equipped, all-position adjustable diaphragm carburetor allows for fast, easy starts.

Circle 153 on reader service card

ENCORE'S HEAVY-DUTY BLOWER

The updated PRO-Line Blower from Encore is constructed for heavy commercial use. Features include an 8-h.p. or 11-h.p. engine

I/C, adjustable chute for front or side discharge, heavy-duty front caster, heavy-duty pneumatic rear wheels with regreasable roller bearings and a wide air-intake vent.

Circle 154 on reader service card

GRAVELY PRO VAC

Gravelly added the Pro Vac 1050 to its line of commercial grounds maintenance equipment.

The Pro Vac 1050 vacuums wet



or dry turf or pavement and picks up leaves, grass clippings, sand, paper and plastic debris, broken glass, metal cans and other types of litter.

The machine also helps reduce the possibility of thatch buildup. All debris is picked up by air, which lifts grass clippings and crushed

(continued on page 42)

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“Our mechanics like Echo tools, too, because their engines



aren’t real touchy and are easy to service. Most important, parts are always available so we never have any downtime.

“We pride ourselves on clean, quality work and the Echo PE-2400 Perfect Edge and SRM-2501 Trimmer give us outstanding work every time.

“I wouldn’t risk our reputation by using any tools other than Echo — they’re the best.”

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* Survey results available on request.

USE READER SERVICE #67

Product Roundup

(continued from page 40)

leaves out of the grass.

The Pro Vac 1050 is constructed of 14-gauge steel and is powered by an 18-h.p. Kohler engine.

Circle 155 on reader service card

LITTLE WONDER BLOWERS

Little Wonder offers 10 models of blowers featuring 12-gauge steel housing. All of the seams are welded



for maximum air discharge.

Combined with a computer-balanced steel fan, the blowers generate air volume up to 2,000 cubic feet per minute at 160 mph.

The blowers also serve as vacuums. Pre-blown piles of leaves and debris can be vacuumed into disposal containers and loaded directly into a truck for hauling.

Circle 156 on reader service card

MACKISSIC ALL-IN-ONE

MacKissic's vacuum-chipper-bagger combination, the VCB258, features an 8-h.p. Tecumseh, cast-iron



sleeve engine, 25-inch vacuum snout, 4-bushel bag and large rear wheels. The combination machine is ideal for cleaning up fallen leaves and lawn debris, as well as chipping, brushing and pruning limbs up to 3 inches thick.

MacKissic also offers the Mighty Mac leaf blower which quickly moves piles of dry or wet leaves into neat collecting rows.

Circle 157 on reader service card

PECO LAWN VACUUM



PeCo Lawn Vacuums offer fully mounted, trailer-type or three-point hitch-type hook-up for most commercial mowers.

Capacity ranges from 16 to 50 cubic feet, with 8-h.p. gas or 6-h.p. diesel electric start I/C engines. Special features include rust-proof,

aluminum tapered containers, steel frames, self-latching doors and controls easily accessible from the operator's seat.

PeCo Window Blowers offer a 90-degree sweep action nozzle to eliminate unnecessary maneuvering. The blowers are available with 5-h.p. or 8-h.p. engines, turf saver tires and a folding handle for easy storage and transporting.

Circle 158 on reader service card

SELBRO BLOWER

Selbro added a series of walk-behind blowers, as well as a horizontal blower, to its ProBlow debris blower line.

The walk-behind blower addition features a fully adjustable and reversible handle. The horizontal blower can blow from the left or right side without compromising air velocity. Its design gives the operator more flexibility while reducing vibration.

Circle 159 on reader service card

WALK-BEHIND SWEEPSTER

The Sweepster model C36 self-pro-

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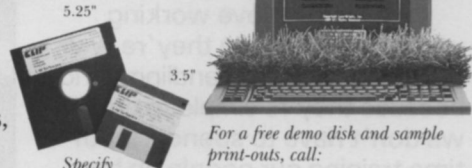
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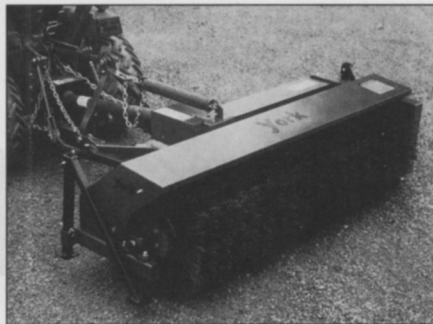
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The YB24 requires a PTO running at 540 rpm, and is equipped with a reversible gearbox that allows sweeping in either direction.



The broom may be angled to a maximum of 30 degrees left or right. It is available in 4-, 5- and 6-inch widths.

Circle 163 on reader service card

WATCH FOR...

...these products and others at the International Lawn, Garden & Power Equipment Expo being held July 24-26 in Louisville. Also stop by and see us at the *Lawn & Landscape Maintenance* booth #387, East Wing.

pelled walk-behind sweeper is geared for four-season debris clean-up. The standard 3-foot wide by 24-inch diameter sectional brush is powered by a 5-h.p. Briggs & Stratton engine. Standard features include a brush angle of 30 degrees to the right and two casters.

Optional equipment includes a 2-cubic-foot steel hopper with easy dump and a brush made of half polypropylene and half wire.

Circle 160 on reader service card

TANAKA BLOWER/VAC

Tanaka's THB-2100 hand-held blower-vacuum is ideal for commercial contractors who require a light, multi-purpose tool for quick clean-up jobs. The blower delivers air velocity up to 140 mph and air volume up to 400 cfm. It converts easily into a portable vacuum.

The combination product incorporates a 21-cc engine constructed of chromed cylinder, forged-steel crankshaft supported by two ball bearings, electronic ignition, diaphragm carburetor and spark-arrestor muffler.

Circle 161 on reader service card

TORO SWEEPERS

Toro's three-wheel, self-propelled sweepers clean a 4- or 5-foot swath of grass clippings, leaves, thatch, small rocks and other debris in all turf conditions. The 5 1/2-foot, hydraulic dump eliminates double handling by depositing debris in a container or truck.

Features on the 5400HL, 4800 and 4800NL sweepers include hydraulic drive for variable speeds, two counter-rotating reels with "Sure Grip" rubber fingers and height adjustment for various turf conditions.

Circle 162 on reader service card

YORK ROTARY BROOM

York Rakes released a three-point, hitch-mounted rotary broom for compact utility tractors.

A smaller version of the model YB32, the York broom model YB24 uses 24-inch diameter brushes, and mounts to a standard, category 1 three-point hitch compact utility tractor.

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Wetting Agents, Polymers

Find Management Niche

BURT BRACE, SALES manager for Aqua-Aid Inc., White Marsh, Md., is in the business of explaining how making water smaller will solve lawn and landscaping problems like dry slopes.

To date, the landscape market lags far behind golf courses in the use of wetting agents and polymers, but more landscape professionals are becoming educated in their use, Brace said.

"Wetting agents reduce water surface tension," he said. "Every pesticide you put down can be applied with a surfactant or wetting agent. One particular fertilizer impregnates our wetting agent onto IBDU."

Wetting agents reduce the size of water molecules, enabling them to penetrate thatch or clay-based soils or slopes. In addition, industry research has found that mixing wetting agents with humic acid improves foliar uptake, Brace said.

On a landscape job plagued by a hill or mound that always dries out, a wetting agent will buy two or three more weeks without water. "That one area that's been hit with the wetting agent will stay greener," he said. "When the water hits it, instead of rolling down the slope the water gets into the roots. Wetting agents and surfactants have been used in agriculture since the 1800s."

Compared to wetting agents, polymers are a somewhat newer

Often used as soil amendments or with fertilizers in droughty areas, polymers and wetting agents reduce the need for irrigation while helping nurture turf and plant growth.

By Bob Gutlin

development. Engineered in the 1960s, they now serve a myriad of uses by retaining and conserving water in tree plantings, flower beds and even turf.

Polymers absorb moisture from



Some trees, after treatment, should hold up to 7 gallons of water in their planting holes. Photo: Industrial Services.

the soil and then release it back slowly, over a long period of time. Contractors are using them more frequently in flower bed maintenance because, instead of having to water every day, they can apply polymers during installation — either by working it into the back-fill mix or by dipping the bulb in a gelatinous liquified mixture or granular form — and thereafter only have to water twice a week.

COMMON USES. Applications abound for polymers and wetting agents, Brace said. His own company sells wetting agents that serve a specific market need, such as stimulating roots.

Wetting agents are added to peat mulch, a common soil amendment. "Peat mulch is very difficult to wet," Brace explained. "People use wetting agents to wet it, because otherwise you could sit there and put water on peat for an hour before it'll start to soak in."

Brace said 6 percent or fewer of his company's wetting agent sales were attributable to the lawn and landscape maintenance industry. The products appear more popular for use on large corporation properties than small commercial and residential sites.

While lawn and landscape maintenance professionals have generally shied away from using wetting agents, golf course superintendents are the most frequent users of this technology, according to representatives from every segment of the green industry.

Brace said wetting agents are



available in liquid, granular and pellet formations, with liquid being the most popular. Liquid application enables the user to apply only one, rather than two, bags of product — saving money and time. His liquid product is applied at roughly \$4 an acre.

Other agents, which range from the "premium" to the "economy" application, can get more costly. "You can run up to \$16 an acre, or even \$20," Brace said.

One common use for wetting agents is to improve water retention when transplanting bulbs in burlap. Spraying the sackcloth before planting increases permeability, said



Getting more out of limited water supplies is one reason contractors are turning to wetting agents and polymers. Photo: Aquatrols

Hal Dickey, a marketing executive with PBI Gordon, Kansas City.

Dickey said his company's wetting agents cost around \$33.90 in a 2 1/2 gallon container, and \$35 in a 1 gallon jug.

"It's the operator who is looking for an edge, and usually that means servicing people individually who use wetting agents," said Gary Custis, manager of technical support at PBI Gordon and a 15-year ChemLawn veteran. "On the other hand, I'm seeing polymers used more in nursery operations for new plantings — working beds up and planting trees — than on lawns."

Water conservation issues tend

to improve wetting agent sales. Manufacturers would have had little if any luck trying to sell them to rain-drenched Midwest landscape contractors last season, for instance. But in places that tend to be dry, like the West, wetting agents offer verifiable economies and ecological strategies.

"In Kansas City they've gotten to the point where they're starting to dock you for water usage over the summertime," Custis said. "They take December and January and average those two water bills. Anything above that, you get a 25 percent price increase on the cost of your water. If somebody was wa-

tering, it would pay to have that put down on the properties."

LANDSCAPE USES. Manufacturers claim they see little use of polymers and wetting agents in lawns and landscapes. The amount of use seems to vary by region.

Andy Moore, vice president of sales and marketing for Aquatrols, reported very little use of polymers — which are essentially granules that look like rock salt — in lawn and landscape maintenance. Polymers are targeted more toward nurseries and plant installers, although there is some opportunity to improve moisture retention in trees

and shrubs through direct application or by coating the underside of sod before laying it down.

"Polymers are insurance products," Moore said. "Not as many plants die and have to be replaced."

Wetting agents have a broader application than polymers, he said, because they can be used on existing plantings.

"Your lawn maintenance person might use them if there's a problem of poor water penetration into the soil, where he's getting dry spots in some areas, wet spots or puddling in others. Sometimes you get a slope or raised mound, and water runs off instead of penetrating. You come back in with a good soil wetting agent and get water to penetrate uniformly into the soil."

The use of wetting agents and polymers is based on need, rather than the result of flashy sales approaches by manufacturers, according to Paul Drummond, director of business development in landscape operations for Smallwood Design Group, Naples, Fla. This is particularly true in southwest Florida where high temperatures peak at 80 degrees F between the months of November and June.

"Down here we use the polymers as a backfill amendment to our few types of deciduous trees — mahoganies and oaks. The only water they get is from irrigation systems, which are typically set for two or three times a week. Polymers get the water and retain it, and then it's sort of a slow release."

And it's not overly expensive, Drummond said.

"A polymer's going to cost you \$500 extra that you don't know if your competition has in their bid, but by the same token, you're planting 100 mahoganies and you lose two of them at \$500 a piece — that's the decision that you make: the balance between replacement costs and upfront cost for doing the job right," he added.

Some companies in his area used

polymers beneath the sod. "We don't do any seeding down here, it's all sodding." Getting the polymer down under the turf keeps those roots in contact with available water supplies.

"We use it mostly for trees," Drummond said. "It's an additional cost, but so is fertilizer in the backfill. It's just something associated with doing the job right."

"The landscape people buy polymers when they're putting sod out," said Jim Quinn, chief executive officer of Industrial Services International/Terra-Sorb, based in Bradenton, Fla. "The maintenance people use it when they're setting sod. It's also used often in flower beds, where a superabsorbent polymer will last four to five years in the ground, causing aeration and promoting drainage."

Application depths for polymers varies by job, according to Quinn. He recommends 1 to 3 mm for flower beds and 1 to 1.5 mm for turf. A 1-pound coffee can of this product could absorb a 55-gallon drum of water, he added.

If a 3-inch caliper tree receives a



recommended treatment, at a cost of \$150, it should be sufficient to absorb and hold 5 to 7 gallons of water in the planting hole, extending periods between irrigation cycles, and "lasting years in the ground." Typically this is 1 percent

to 2 percent of the tree cost.

On flower beds, the polymer "lasts years" in the soil as well, holding a quart of water per square foot in the root zone. The superabsorbent also holds and manages the fertilizer.

Polymers can be used as backfill amendment for certain types of trees. Polymers retain water and then slowly release it.

For turf, treating 1,000 square feet using a specially tailored superabsorbent costs no more than 2 cents per square foot, as well as holding 100 gallons of water in the top 2 inches of soil. Thus, rooting is faster and watering is reduced.

"A superabsorbent polymer is used to manage water in a root zone," Quinn said, "especially when the plant material is newly installed, or if you're dealing with fibrous roots such as you would have in a flower bed. The polymer will preclude the use of a wetting agent, because the ground won't dry out to the point where it repels water."

Everything used in bed preparation, outside of superabsorbents, degrades over time and ends up in air-pore space of soil amendments, he said.

During visits to the Midwest, Quinn said, he noticed that in early spring even grocery stores have mountains of peat moss to sell.



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USE READER SERVICE #16

People are buying peat moss and putting it in their plant beds, he said. "Now at the end of the year, or certainly within the year, the peat moss disappears. You can't find it. It degrades, and when it degrades it fills up your air-pore space and sets you up for fungus.

"The reason your plant won't take on water is it's dried down, and particles of sand develop a little organic film on them. That's what causes the water to be repelled. If you keep it moist, that little organic film doesn't form. Polymer costs with turf are only 2 cents a square foot. And the cost of the flower bed treatment is about a nickel a square foot. So it costs you \$50 to treat a 1,000-foot bed."

That's peanuts, Quinn said.

USES FOR BOTH. Chuck Whealton, as maintenance division area manager for Ruppert Landscape Co., Ashton, Md., has seen plenty of uses, in fact, for both wetting agents and polymers.

"Very often we use wetting agents in landscape plantings, particularly in areas where we know it may be some time before someone, or ourselves, will be back to water it, or where watering it is difficult. You may apply a wetting agent to the ball and in the soil. A wetting agent may help you go farther with a broadleaf herbicide also, so you could conjoin those types of applications."

Container stock is dipped in solution, either a 5-gallon bucket or 55-gallon drum, then put in the ground, so any water that comes into contact with the outside of the root ball would have an easier time traveling into the zone where the

One common use for wetting agents is to improve water retention when transplanting bulbs in burlap. Spraying the sackcloth before planting increases permeability.

roots are, Whealton said. "We use wetting agents a lot of times when we're using chemicals, to get a better spread. Instead of big droplets running off, you have little ones that spread easier on the surface."

Ruppert Landscape crews also use a super-absorbent polymer in much the same way. "We put it under sod. And we dip shrubbery in it. Polymers work a little differently."

Whealton added that, for tasks where either polymers or wetting agents can be applied, he prefers the polymers. "The polymer absorbs water, it holds that water for a reserve, and believe me, one jug of that stuff, or one 2-pound can, will turn a whole swimming pool into Jell-O™. It doesn't take very much. You put a

tablespoon in a 5-gallon bucket and it makes sort of a slurry mixture."

What you don't want, he said, is to have the plant die and require the lawn and landscape contractor to replace it.

"Most companies now carry some warranty guarantee period, and if that wetting agent — although it can be costly — can be applied in some of these crucial situations, it can actually save you money, by saving plant material."

It's the electrical charge of wetting agents that makes them work (thus the descriptor "non-ionic"), he said. They're useful in getting through hard layers of mulch that have been

dried, and which, otherwise, don't retain water.

"The polymers are a little different," Whealton said, "because of the way they perform as a little holding tank for water. We use both wetting agents and polymers under sod, for instance. I'd say the polymer is more likely to solve the problem."

The bottom line is that both wetting agents and polymers are effective water management tools. Find out where, and use them — for separate purposes.

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

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USE READER SERVICE #17

Monitoring Landscape Moisture

To avoid over- or under-watering a landscape, rain shutoff devices and soil moisture sensors can help monitor individual sites and keep watering in check.

By Brian E. Vinchesi



Rain shutoff devices and soil moisture sensors can help prevent over- or under-watering of turf, which can save clients money.

MOISTURE SENSORS and rain shutoff devices are common components of today's landscape irrigation systems. Both are used to reduce water use and, hopefully, to save money for property owners.

Because it's perceived that the two products have similar qualities, contractors often ask "When should you use a moisture sensor?" or "When should you use a rain shutoff?" Typically, a contractor will then query, "Should they both be used on the same irrigation system?" or "Is it a choice of one or the other?"

Rain shutoffs are generally installed on an irrigation system to inhibit its operation once a predetermined amount of rainfall occurs. The point of shutoff can be adjusted on most systems from 1/8 of an inch to 1/2 inch of rain.

There are two kinds of rain shutoffs available at reasonable prices on today's market. One kind uses a catch-type mechanism to collect the water. Shutoffs of this type are made by Rain Bird, Water Conservation Systems and Weathermatic to name a few.

Other kinds use a cork-type disk that absorbs water by a wicking action. These shutoffs are marketed by Glen-Hilton Products and Toro, for example.

Rain shutoffs inhibit irrigation by breaking the connection on the common side of the valve wiring. Although the connection has been disrupted, the clock continues to operate. In fact, when using a basic irrigation system, it does not even know the system has shutoff because the signal is still being sent from the controller, but it never completes the circuit to the valve.

Moisture sensors, which track soil moisture, are more technical devices and come in different types ranging from tensiometers to gypsum blocks. The sensors can be programmed to shut down an irrigation system once soil moisture reaches a certain level, or they can

(continued on page 50)

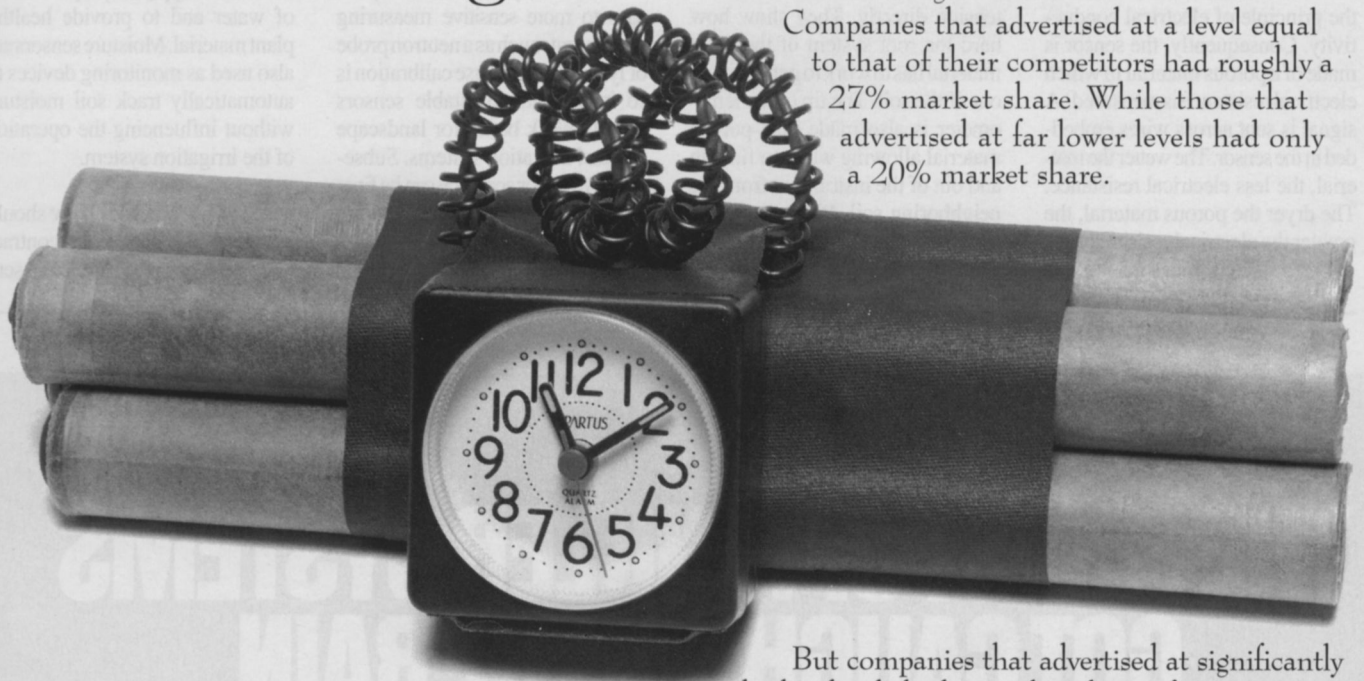
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A recent study by Cahners Publishing and the Strategic Planning Institute analyzing more than 2,000 companies showed a direct correlation between advertising levels and share of market.

Companies that advertised at a level equal to that of their competitors had roughly a 27% market share. While those that advertised at far lower levels had only a 20% market share.



But companies that advertised at significantly higher levels had a market share of 43%.

Indicating that when you stop advertising, you lose market share. And recapturing it almost always costs far more than maintaining normal ad levels.

Desperate times call for desperate measures. But a financial strategy that leaves out advertising will eventually blow up in your face. For more information on how advertising works for you even in tough times, write the American Association of Advertising Agencies, Dept. Z, 666 Third Ave., New York, NY 10017-4056.

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This advertisement prepared by Sawyer Riley Compton, Atlanta.

Landscape Moisture

(continued from page 48)

be set to turn on an irrigation system when soil moisture reaches a specific dryness.

MOISTURE DETECTION. Over the past several years the irrigation industry has seen many types of moisture sensors come and go with each sensing moisture a little differently.

Basic moisture sensors inhibit the performance of the zone valve within the irrigation system when a predetermined soil moisture level is attained. Some sensors are adjustable; an attractive option when customizing moisture sensors for a specific project site.

Most moisture sensors work on the principle of electrical conductivity. Consequently, the sensor is made of a porous material in which electrical resistance is measured. A signal is sent across wires embedded in the sensor. The wetter the material, the less electrical resistance. The dryer the porous material, the greater the electrical resistance.

Tensiometers measure the soil



tension directly. They show how hard the root system of the plant material has to work to get moisture out of the soil. The tip of the tensiometer is also made of a porous material allowing water to flow in and out of the instrument from the neighboring soil. In this way, the tensiometer acts much like the plant root zone.

Moisture meters are an important component to today's landscape irrigation systems.

The installation and performance of individual moisture sensors will vary with each individual irrigation installation. As such, moisture sensors need to be specifically calibrated for each project. Failure to do so will result in inaccurate readings.

Calibration can be achieved through oven dry tests or comparisons to more sensitive measuring instruments such as a neutron probe or lysimeter. Because calibration is so important, adjustable sensors usually work better for landscape and turf irrigation systems. Subsequently, sensor accuracy can be fine-tuned for each installation, making calibration less critical.

Moisture sensors can be installed

on individual control zones or in primary groups of control valves. The more variables an individual system has determines the number of sensors needed. For instance, sensors need to be installed based on different levels of sun exposure, types of topography, varying irrigation methods, landscape materials and soil types.

Sensors also need to be installed over the entire root zone of plant materials. For example, to adequately measure the soil moisture of a large deciduous tree, moisture sensors or tensiometers may need to be installed at depths of 12, 18 and 24 inches.

Moisture sensors are used in irrigation systems as a water management tool to apply the proper amount of water and to provide healthy plant material. Moisture sensors are also used as monitoring devices to automatically track soil moisture without influencing the operation of the irrigation system.

MAKING A CHOICE. How should a professional landscape contractor choose between a moisture sen-

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Other rain sensors rely on collection

cups to measure rainfall. But cups fill up with leaves, twigs, dirt and insects, as well as rain water. They're also affected by wind and damaged by heat and cold.

All of which means your customers waste

sor and a rain shutoff?

A moisture sensor is generally more expensive to install, requiring a greater degree of knowledge among both the system installer and manager. Sensors need to be installed properly, adjustments may be required and wire connections should be maintained. Additionally, the type and location of the sensor will determine if it has to be removed for the winter and installed and calibrated again in the spring.

High-end systems often call for moisture sensors because expensive plant material is specified and replacement is expensive. Moisture sensors may also be used in areas where water is either scarce, expensive or both.

Moisture sensors can typically keep soil moisture at optimum levels—not too much nor too little—or can be adjusted to maintain slightly less than desired levels to minimize water use. Additionally, moisture sensors are good for drip or subsurface irrigation systems for which visual confirmation of water application is not possible, yet proper soil moisture content re-

mains extremely imperative.

In short, a soil moisture sensor can be used in any instance where the soil moisture needs to be monitored to prevent over- or under-watering of the landscape material.

Properly adjusted, the moisture sensor can also reduce the need for reprogramming of the irrigation controller. Because soil moisture levels are kept at a desired level, the controller can indefinitely operate on the same program resulting in significant labor savings, especially on larger systems.

Rain shutoffs are not too expensive—although some on the market are—and are relatively easy to install. Often, the hardest part of the installation is deciding where the sensor should be located, and whether the building architect will allow it on site.

The sensor needs to be installed in direct contact with rainfall, but in a spot where it's not influenced by irrigation water. Rain shutoffs can be installed on any irrigation system, once a suitable location is found.

The rain shutoff has nothing to do with soil moisture. It simply

prevents the valve from opening once a predetermined amount of rain has fallen. The rain sensor will not allow irrigation to continue until the collected moisture evaporates from the system. Therefore, it is important that the sensor also receive

**It's not a choice
between rain
shutoffs or moisture
sensors. Both
can be used on the
same system.**

sunlight in proportion as the landscape it is serving.

Rain shutoffs can be installed for each clock or, with a little forethought, one per irrigation system even if multiple clocks are present. Another option is to designate a rain shutoff instrument to shut down several different irrigation systems

through central control. This is not usually a good idea, however, because it may not have rained at all the sites under central control.

Sensors are wired into the valve common wire system, sometimes requiring installation in conduit on the outside of the structure and/or the use of a ladder. Because rain sensors are installed above grade, they may be prone to vandalism. Proper precautions must be taken to prevent damage.

COMBINATION EFFORT? Can a moisture sensor and a rain shutoff be used on the same system? Of course they can, but should they?

Consider this example. An irrigation system is installed with a rain shutoff wired into the controllers to stop the irrigation cycle when 1/8 of an inch has fallen. In addition, the system has several sets of moisture sensors installed to control moisture. If the system is set to come on and the soil moisture is low, the sensor will let the system begin operating.

Suppose it begins to rain after the system has operated for 43 min-



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utes. The system is operating on zone two and the rain shutoff inhibits operation of the system. Initially, the system was to apply 1/4 of an inch of water in one application and the system is not scheduled to come on for two days. As a result, the system has only applied about half the intended water and it will not come on again for quite some time.

Because the rain shutoff does not know the soil moisture, it can prematurely shut down the system even if it needs water. Unfortunately, the lack of water will stress the landscape material.

The quick solution is to get rid of the rain shutoff and just use the moisture sensors. That way, the soil moisture will be kept at appropriate levels and the landscape material will never be stressed—the perfect and easy solution.

However, let's change the scenario to one in which the irrigation system is in a city park, in an area of the country where water is expensive. During a rainstorm a city official drives by the park and sees that the irrigation system is running. When he arrives at the office, he immediately calls the parks director and lets him know he doesn't like wasting water, as well as the taxpayers' money.

Or in another situation, suppose a city water official drives in the rain through a new subdivision and observes a number of irrigation systems running. At his next board meeting he motions that automatic irrigation systems be banned for wasting water and the board unanimously passes it.

The rain shutoff is an important device to make sure that the system doesn't operate when it's raining. But what about the original problem of not stressing the plant material? It's simple.

When installing soil moisture sensors, controllers should be programmed to provide frequent short waterings. This allows the moisture sensors to control the application. If multiple start times are used, the rain shutoff will inhibit the system if it has enough water. If the moisture sensor indicates that it needs water, then the irrigation system will operate.

When using rain shutoffs and moisture sensors in combination be aware of irrigation systems that also use a controller to automatically start a pump. The pump shouldn't be running when the system is not operating. In this situation, there are two different devices asking the system to remain off. Subsequently, the wiring to the pump needs to be studied carefully.

If this situation isn't handled properly, the moisture sensors may turn the irrigation and pump off. Then when it rains, a signal from the rain sensor turns the pump back on by sending another message. Qualified personnel need to be consulted when setting up a sophisticated on/off system for this type of installation.

In reality it is not a question of whether to use a rain shutoff or a moisture sensor. Both can and probably should be used on the same irrigation system. A good understanding of how each device operates and how each needs to be installed is required for proper operation.

The author is president of Irrigation Consulting & Engineering Inc., Pepperill, Mass.

PESTICIDES IN THE URBAN ENVIRONMENT

PART 8

Customer Retention

Many lawn and landscape professionals believe they have mastered product selection and application techniques, yet lawn service companies still lose customers — often to their competitors.

By Barbara G. Howell

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

LAWN MAINTENANCE companies will never be able to retain all their customers. People die, move away or lose their jobs. Cancellations of this type are a reality in any business.



PESTICIDES IN THE URBAN ENVIRONMENT

About 40 percent of customer loss in lawn care can be chalked up to "customer relocation." But what about clients that leave one company for another, or start doing their own lawns?

In a survey conducted several years ago, several lawn maintenance professionals reported that, next to relocation, the main reason they lost customers was poor weed control. Today, applicators believe they have mastered product selection and application techniques, but concede communication to customers suffers.

The survey, taken by a specialty pesticide company, showed that while other factors came into play — such as unrealistic client expectations and the draw of a lower price — clients often dropped a company's service because they felt their programs were handled poorly or their complaints and questions weren't being acknowledged.

An informal survey of lawn applicators today shows cancellations are declining. Some companies say cancellations, which were 40 percent or more a few years ago, have dwindled to about 20 percent to 25 percent of last year's customer base. The rate varies substantially according to economic conditions in specific regions.

LACK OF UNDERSTANDING. "Other than customer relocation, you can sum up the reason for a majority of cancellations to inadequate communication," said Bill Hoopes, director of training and development for Barefoot Grass Lawn Service, headquartered near Columbus, Ohio. "You almost never have a customer who says 'I had 17 dandelions in my yard and you couldn't get rid of them, so I'm going to cancel the service.' It's usually that the customer

More time should be spent training technicians because they have first-person contact with clients. Photo: DowElanco.

misunderstands how long it's going to take to get rid of those dandelions.

"Historically, we haven't done a very good job of communicating. Half of the 25 percent in that survey who said they canceled because of poor weed control, actually canceled because of a lack of understanding of weed control. We haven't been telling customers that it may take three to four weeks to control the weeds and that some types of weeds are going to require a second application for control."

Unrealistic customer expectations are, too often, created by a lawn maintenance firm or by the technician on a particular route.

Some lawn maintenance professionals struggle to retain customers who have been over-promised by a competitor. One Florida applicator said he didn't want to share information on how he successfully retains customers because "we're working hard now to retain customers who are being solicited improperly. The competing salesmen who call on the homeowners are either lying to get customers or just don't know any better. It's a problem because then we have to go out and fight the fires and give correct information and prove ourselves again to our customers."

The pitch from competitors is an even stronger threat in regions with poor economies. Frank Reynolds, owner of Reynolds Lawn Care, Branford, Conn., said vendor loyalty is down in the East



Make Customer Retention A Priority

TO KEEP customers and reduce cancellations, make retention a priority. That's the strategy that's worked for many lawn service companies. Here's two examples:

At A-1 Lawn Care in Ann Arbor, Mich., and Green Valley Co. in Merriam, Kan., owners and employees met and established goals and procedures to keep customers. Both strategies are making a sizable dent in cancellations.

According to Sandie Bjokovic, a customer relations representative with A-1, cancellations have been reduced 20 percent because of a new cancellation policy. If a customer takes the full program — five applications — and is not satisfied with the results, A-1 initiates its guarantee plan.

First, a no-charge service call is made to assess the problem. If the customer has unrealistic expectations about, for example, weed control, he is given information about what to expect and when. After three or four weeks, if the treatment is still not effective, a second application is made, free-of-charge.

If the customer is still not satisfied with the results, a refund is given for the full year's service.

Technicians at A-1 receive ongoing training in proper product use and application as well as customer communication.

At Green Valley, management met with technicians

last winter to establish a program for customer retention. According to owner Dave Murphy, the result was a program which has cut customer cancellations by \$20,000 so far this year and made a better working environment for technicians.

"When we talked to our technicians this winter, we found there was a difference between what they were doing and what they wanted to do. They wanted to spend more time with the customers, but felt too much pressure to pump out the work.

"We told them it was OK to spend time talking to customers, explaining what we were doing and answering questions," Murphy continued.

"We found that it really doesn't take them a lot more time. They are still getting as much work done. The technicians are now making the service calls and there are no bonuses given for callbacks. The technicians are doing it right the first time and the customers are more knowledgeable and more satisfied. The technicians like their jobs a lot more and we keep a compliment file on every one of them," Murphy said.

"No lawn is better, no customer is more satisfied than that one person out there on the lawn. We must improve that person and make him proud of what he's doing."

where U.S. Defense Department contracts have been cut and plants are closing.

"In a poor economy that has large companies with extremely aggressive marketing schemes, the outcome is predictable. The 'Mom and Pops' are suffering. Our customers who would not have entertained a pitch before must do so now because they need to save that money even if it means they'll have to accept less," Reynolds conceded.

THE VILLAIN WITHIN. And, sometimes, the threat to a lawn maintenance firm's communication and customer retention comes from within.

"We set ourselves up," said Bob Andrews, owner of The Greenskeeper, Indianapolis, Ind., and past president of the Professional Lawn Care Association of America. "We tell the customer 'We're going to take this mess your lawn is in now and turn it into *Better Homes and Gardens*.' We have to temper our advertising and our promises so that the homeowner will not have abnormal expectations and call and cancel after the second or third application."

Sometimes communication breakdown occurs because of inadequate technician training. In tracking customer complaints, Dave Murphy of

Green Valley Co. in Merriam, Kan., discovered that a technician who sought to keep customers happy was over-boosting client expectations.

"On one route we were getting a lot of callbacks and complaints about weed control. Customers said the weeds weren't dying as they were promised. The technician was telling them the weeds would die in seven to 10 days when it was the time of the year that it was going to take three to four weeks."

Lawn maintenance professionals agreed more time should be spent training technicians to communicate since they have first-person contact with clients. They regret overzealous technicians who eagerly promise clients things that are virtually impossible. This ill-advised communication costs companies time and money in callbacks, and, worse yet, in cancellations.

CALLBACK BLESSINGS. Few professionals saw any direct relation between callbacks and cancellations. In fact, most agreed that callbacks were a blessing because they provided companies an opportunity to pinpoint problems and correct them. Many firms track callbacks and cancellations to determine patterns of time, technicians and appli-

PESTICIDES IN THE URBAN ENVIRONMENT

cation. When a pattern emerges, they quickly initiate a remedy.

At TruGreen/ChemLawn, Susan Jones, a national customer service representative — it's her toll-free number that's on the side of all those trucks — stresses the importance of resolving customer complaints.

"Statistics show that 95 percent of the complaining customers will stay with you if you can resolve the complaint on the spot. Seventy percent will stay with a company if they perceive that the complaint is, at some time, decided in their favor."

Murphy and Andrews concurred that response to complaints and questions is integral to effective communication.

"We have to be as responsive as we possibly can," Andrews explained. "Take what the customer is saying seriously, even if you think it's a ridiculous question. If you can answer a complaint or a ques-

tion in a timely manner, in a way that shows you care, you'll have a loyal customer when the problem is over."

"Customers don't want to be experts," Murphy said. "They want to have your service, to ask questions, to be told what they're doing right and to be told what they need to do. The customer wants to know where he stands and wants to know that you know what you're doing so he doesn't have to."

Again, technician training is key. Murphy's company has made the technician responsible for not just treating the lawn, but treating customers, too. Customers are happier (as shown by a \$20,000 reduction in callbacks in the first three months this year), and the technicians are happier because they know it's OK to take a break from spraying and spreading to talk to customers.

LEAVE BEHINDS. Ninety percent of the time, the customer is not home during the lawn service treatment. Several companies surveyed report they use handwritten messages on invoices or leave-behinds to build that personal communication between customer and technician.

(continued on page 58)

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PESTICIDES IN THE URBAN ENVIRONMENT

(continued from page 56)

Informational and educational leave-behinds about the day's application, suggestions on mowing or watering and pieces warning customers

about seasonal problems are considered vital, too. These all help build realistic customer expectations and let customers know what they need to do to keep their lawns healthy. This communication helps convince the customer he is getting his money's worth — a reason often cited for cancellations — and that lawn service is a "building process."

Service technicians agreed newsletters serve as valuable communication tools. They provide education and let the customers know a company is

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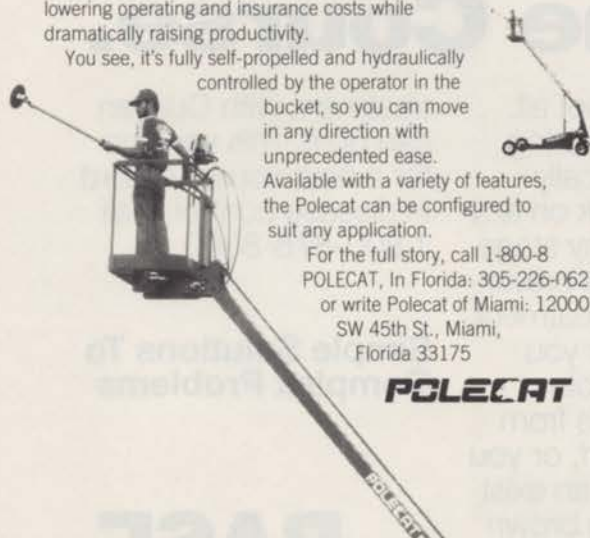
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USE READER SERVICE #43

knowledgeable and concerned about their overall landscape.

When there are concerns about safety of chemicals, technicians and lawn care operators must be prepared to handle the queries in an honest, responsible, positive manner. To assist in this process, Dow-Elanco offers a risk communication management seminar through local associations and representatives to prepare staff to communicate effectively.

As a form of communication, contracts rank low on reliability. Some companies refuse to use them, labeling the contract as a document "which requires you to re-sell even the satisfied customer every year."

Daryle Johnson, All American Turf Beauty Inc., has always used contracts and believes they have a place in determining customer expectations.

"Our contracts list everything in black and white," Johnson said. "The square feet, the program, the directions to the house, the cost per year, as well as our policies. The contract makes it clear that if the customer skips a treatment or two a year, the service is not guaranteed."

Instead of contracts, when they are not required by state law, most companies send renewal letters out to customers each year telling them how much the service will cost and when it will begin again if the customer does not call to stop the service.

CUSTOMER CONCERNS. Many companies use surveys to determine ways to improve service. Jones said that TruGreen/ChemLawn is in the process of putting together a customer survey form for which she asked customers what they felt should be included. Following are the eight points customers said concern them:

1. Realistic and reasonable expectations at the time of sale;
2. How well service and sales representatives explain the condition of the lawn and nature of treatments;
3. Results;
4. Responsiveness to customer questions and concerns;
5. Responsiveness to upcoming problems;
6. Phone calls being returned on a timely basis;

7. Appointments kept as promised; and
8. Personnel acting in a courteous and responsible fashion.

In addition to improved customer communication, lawn maintenance professionals stress using high-quality products and proper application techniques to promote customer satisfaction and avoid unprofitable callbacks. One report shows that happy customers will tell four other people about their great lawn care service; unhappy customers will share their

stories with eight to 10 friends and/or acquaintances.

While relocation and weed control continue to be problems for all lawn maintenance companies, the answers to customer retention and company growth problems could be as close as a note, a visit or a phone call away. ■

The author is an industry consultant with Key Solutions, a division of Iris Sales & Solutions Inc., Rocky River, Ohio.

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Compost Digest

Turf Compost Trials Yield Promising Results

RESULTS FROM A Franklin County, N.C. Solid Waste Composting Project show use of compost and organics in a designed program could save long-term input and application costs.

The North Carolina Cooperative Extension Service, in conjunction with Wastek (Green Glen Ltd.), Pittsboro, N.C., conducted field trials and laboratory tests involving container media, ornamental plant production, forestry practices and greenhouse mixes.

The project included 13 formulas of compost with varying ratios of wood waste, mixed paper and several forms of organic nitrogen, according to Tom Glendenning, president of Wastek. Additionally, cow, hog, chicken manures, tobacco dust, biopharmaceutical waste (liquid), food waste, sludge and ammonium nitrate were used to provide additional formulas.

The fescue and wheat seeding trials yielded interesting results for turf installation. Height, change in dry weight, coverage (of turf), change in soil fertility

and change in the weight-to-volume ratio were measured on plots with different rates of application and management methods.

Several trends developed in the trials: Height increased in direct proportion to the rate of application of compost; the difference in change of percentage dry weight increased with the use of compost; soil fertility was increased dramatically with increases in rates of application; the 40-ton per acre rate of compost mimicked the conventional turf in increased dry weight change, implying that salt-induced water transfer into the plant occurred at that level; and weight-to-volume ratios were inversely proportional to rates of application of compost.

The test results

indicate several benefits for the turf industry:

- Use of compost and organics in a designed program will save input and application costs in the long run;
- Several hundred thousand tons of compost will be available in the near future. Understanding how to buy quality material

(continued on page 62)



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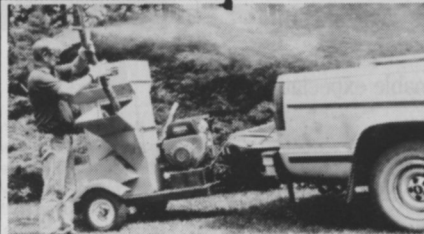


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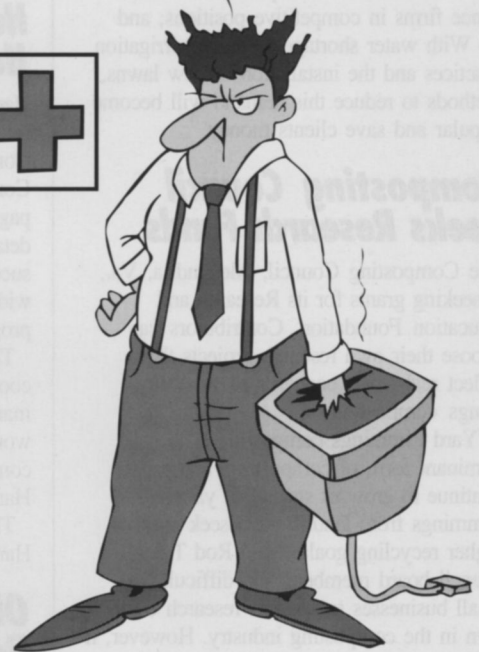
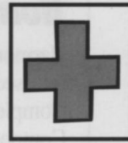
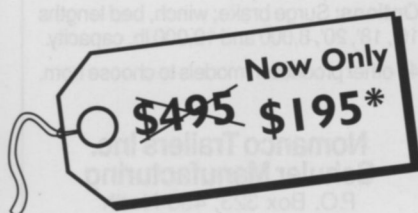
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Compost Digest

(continued from page 60)

and how to use it could place turf maintenance firms in competitive positions; and

- With water shortages effecting irrigation practices and the installation of new lawns, methods to reduce this demand will become popular and save clients money.

Composting Council Seeks Research Funds

The Composting Council, Alexandria, Va., is seeking grants for its Research and Education Foundation. Contributors can choose their own research projects that reflect real-world concerns of yard trimmings composting.

"Yard trimmings composting is the dominant form of composting, and will continue to grow as states ban yard trimmings from landfills and seek ever-higher recycling goals," said Rod Tyler, a council board member. "It's difficult for small businesses to sponsor research on their own in the composting industry. However, if small businesses pool their research buying power together, substantial research can be done which will represent our interests

collectively."

More information can be obtained by calling 800/223-7645.

Harmonious Releases Home Compost Manual

Harmonious Technologies, Ojai, Calif., released "Keep It Off the Curb: Your Complete Step-By-Step Manual for Home Compost Program Management." The 218-page manual includes 30 case studies detailing ideas and technology used in successful composting programs nationwide. A chapter on designing a composting program is also included.

Though geared mainly toward recycling coordinators and extension agents, the manual is a "one-stop solution for real-world answers to questions about home composting," said John Roulac, president of Harmonious Technologies.

The manual can be purchased through Harmonious Technologies, 805/646-8030.

Old Tires, Compost Renovate Soil

Several companies have found a new use for scrap tires — mixing its byproduct with

compost to produce a soil amendment.

The city of Eau Claire, Wis., used a scrap tire crumb product to renovate its Carson Park Football Stadium. "The stadium had been plagued by a series of problems, such as those caused by soil compaction, poor drainage and an uneven playing surface," said Ken Van Es, director of parks and recreation, Eau Claire.

The city used Rebound,™ a soil amendment comprised of crumb rubber and compost, from Jaitire Industries, Denver.

The project cost \$60,000. It was partly funded by state money collected from a \$2 per tire fee placed on all new road vehicles purchased in Wisconsin.

EPA Encourages Federal Agencies to Compost

The U.S. Environmental Protection Agency plans to release guidelines for federal agencies looking to purchase yard-waste derived compost. The guidelines appear to be general, according to The Composting Council, Alexandria, Va.

The EPA also encouraged federal agencies to purchase yard-waste compost for landscaping, and to establish on-site composting where space permits.

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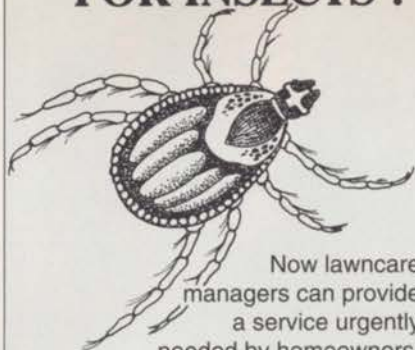
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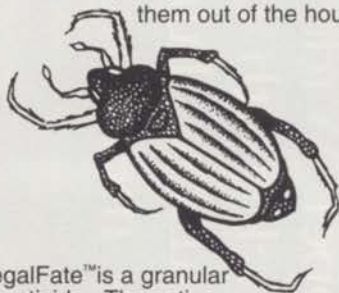
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USE READER SERVICE #40

Seed News

SEED RESEARCH: ENDOPHYTE EFFECTIVENESS GROWS

AS EARLY AS 15 years ago, researchers pointed to endophytic fungi as natural deterrents to insect and disease pests. Yet only in the last couple of years has the full extent of the endophyte's effectiveness been realized.

Initially, endophytes were only believed to be responsible for insect resistance. Any corresponding disease and climatic tolerance were attributed to the overall health of the plant. Subsequently, issues such as drought tolerance and disease resistance were often viewed as tertiary benefits of the endophyte's presence.

Recent work at the University of Tennessee, Rutgers University and elsewhere indicates that endophytic fungi is indeed responsible for added plant protection. Although definitive evidence remains elusive, research shows that different endophytes, producing different alkaloids, contribute varying protection and degrees of effectiveness.

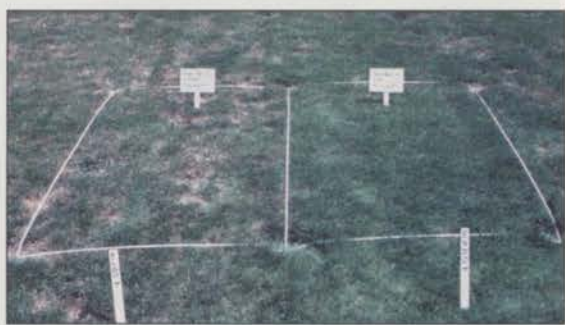
ENDOPHYTE HISTORY. The importance of the endophyte in insect resistance was first reported in New Zealand. The Kiwis (New Zealanders) were the first to remove the endophyte from their forage perennial ryegrass because it was the cause of the neuromuscular disorder called "ryegrass staggers."

This particular disease stems from the alkaloid lolitrem B produced by *Acremonium lolii*, a common endophyte of perennial ryegrass. Researchers noted that the same endophyte was responsible for perennial ryegrass resistance to a specific insect known as the Argentine stem weevil.

Continued research established that the endophyte's presence in a turf variety occurs only in plant species where the fungi occurs naturally. To date, only perennial ryegrasses, fine fescues and tall fescues contain endophytic fungi. Plant breeders around the world are still searching for ways to infect creeping bentgrasses and Kentucky bluegrasses, as these species don't contain a naturally occurring, beneficial endophyte.

Endophyte levels and associations with turf varieties aren't equal. This is true both for the benefits and the detrimental effects of endophytes.

Endophytes and endophyte-enhanced grass associations can produce an array of chemicals, primarily alkaloids, that variously affect insects, nematodes, animals and the grasses themselves. But not every



Turf plots containing hard fescue without endophyte (left), and hard fescue with endophyte (right).

endophyte produces alkaloid, and the concentration of alkaloids produced depends on the genetic background of the host grass.

In addition, environmental factors including temperature, light intensity and duration, nitrogen fertilization, phosphorus fertilization and drought stress all influence the concentration of the alkaloid. These variables probably account for some conflicting reports on the influence — detrimental or beneficial — of the endophyte.

KEY FACTORS. Studying the levels of ergovaline in grasses can help researchers understand and possibly regulate the alkaloid concentration.

Ergovaline is the ergopeptide alkaloid found in the highest concentration in endophyte-infected tall fescue. Ergovaline also has been associated with insect toxicity and is a deterrent for adult, feeding Argentine stem weevil and possibly other insects.

In some cases, these levels may be important for insect resistance, especially Japanese beetle and fall armyworm. But not all tall fescues, perennial ryegrasses and fine fescues infected with an endophyte produce ergovaline, and the levels can vary in those that do produce this alkaloid.

Environmental factors can also increase or decrease the levels of ergovaline found in a plant. Nitrogen and phosphate fertilization, water deficits and increases in the leaf area all tend to increase ergovaline levels. On the other hand, very high or low temperatures can depress ergovaline concentrations, particularly in seed storage.

By moving endophytes into different grass hosts and using progeny evaluations, researchers have concluded that the plant regulates production levels. This occurs even though ergovaline is produced by the endophyte. The internal regulation is most likely possible by controlling the amount of sugar the plant makes available to the endophyte.

(continued on page 66)

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USE READER SERVICE #47

Seed News

(continued from page 64)

While ergovaline levels are present in all plant parts, concentrations are always lowest in the blades and roots. Under low fertility conditions, even high producers may not produce enough to affect root feeding organisms. Low ergovaline producing plant/endophyte associations are not correlated with reduced crown diameters, levels of other alkaloids or other physiologically important traits.

The other alkaloids involved in insect and animal interactions are peramine, lolitrem B and paxilline. Peramine appears to be the primary insect feeding deterrent, both for adults and larvae. Again, concentration varies with each plant/endophyte association.

Peramine is mobilized from the seed into the developing seedling to provide protection until the endophyte moves into the seedling and starts producing chemicals. Peramine seems to be evenly distributed in sheaths and blades, but young leaves have higher concentrations.

Lolitrem B is responsible for ryegrass staggers and is also toxic to some insect species. For instance, it is associated with reduced larval survival, although concentra-

tions have not been found to be related to water deficits.

Acremonium endophytes can also enhance disease resistance. Substantial reductions in damage from dollar spot have been observed in trials of strong creeping red fescues, chewing fescues and hard fescues containing certain strains of endophytes. However, some tall fescues with certain endophytes have shown increased susceptibility to *Pythium blight*, perhaps because of its denser, more vigorous growth.

In greenhouse studies, high endophyte levels in tall fescue seed lots decreased seedling mortality to *Rhizoctonia zeae* and *Pythium aphanidermatum*. High endophyte levels also reduced seedling loss or *R. solani* (brown patch) only in certain types of environments.

The endophyte infection may influence diseases by the production of sugar alcohols or alkaloids, modification of defense responses or the increase in chitinase reported. These same responses may influence nematodes and be involved in the resistance.

Tall fescue plants that are genetically the same with and without the endophyte were compared. In spaced plant nurseries in New Jersey and Texas, the E+ plants consistently

appear lighter green than the E- plants. This may be a result of a maintenance of active growth or an influence of the chemicals produced by the endophyte.

Studies of drought resistance mechanisms suggest drought avoidance may be responsible for their appearance, in addition to lower levels of bill bugs, sod webworms and white grubs present in the E+ plots. Other growth regulating compounds such as auxins produced by endophytes may alter the physiology and growth of these plants.

Indole alkaloids and auxin precursors produced by endophyte-infected plants may increase cell expansion. Auxins contribute to greater extensibility, necessary for cell growth. They may alter the phytohormones, such as indole derivatives, that directly enhance cell wall extensibility and rapidity of cell expansion so they can produce a larger, more competitive plant. Changes in tissue elasticity have been observed before and after stress.

As more is learned about endophytes and endophyte-grass interactions researchers must strive to derive their greatest benefits. To date, no one has determined the minimum endophyte level needed to realize their benefits, although in a turf situation,

(continued on page 68)

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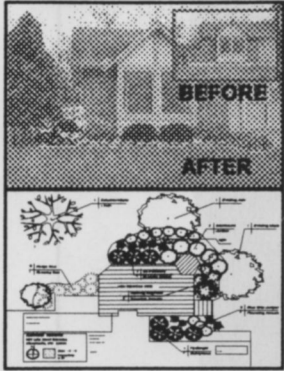
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USE READER SERVICE #50

Seed News

(continued from page 66)

about 50 percent viable infection is needed to maintain optimal density.

Currently, quick and easy tests for determining viable endophyte are not available. In the absence of an industrywide testing protocol, it's best to use fresh seed lots from varieties with high levels (85 percent or greater). Due to uncertainties in transport and storage, the higher the initial level of infection, the higher the level at the time of planting.

Currently, the seed industry and seed control officials are trying to devise a fair, equitable way to ensure that the customer obtains high endophyte seed if a container is so labeled.

In the near future, it may no longer be enough to say that a certain plant variety is endophyte-enhanced. In academic circles, precise language is being defined to better study the effects of specific endophytes in the plant/endophyte relationship. The identification of the specific endophyte present, as well as the exact alkaloids produced, and the certifiable level of endophyte infection need to be identified to predict a variety's effectiveness in the turf environment.

The authors are Dr. Leah Brilman, research director, and Skip Lynch, national technical representative, for Seed Research of Oregon, Corvallis.

COMING NEXT MONTH

In the August issue of *Lawn & Landscape Maintenance* magazine we'll bring you a contemporary discussion of plant nutrition with expert advice from leading industry contractors, researchers and suppliers.

We'll also explore the uses of landscape fabrics in the landscape arena, trends in hydro-seeding, the latest in wildflowers and a look at pond management and the use of pond aerators by landscape contractors.

The August issue will also revisit the groundwater debate with the latest industry research about groundwater facts and myths.

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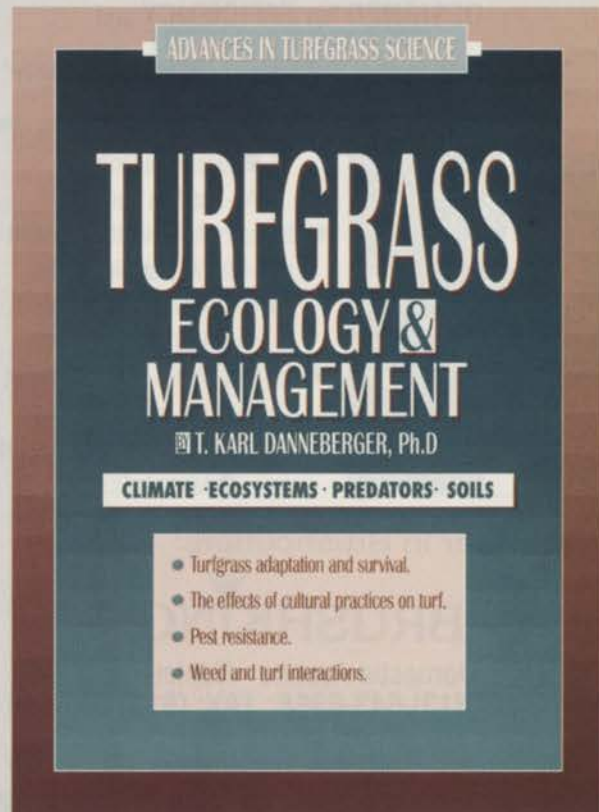
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People

SANDOZ AGRO named **Gene Hintze** marketing services manager of its Specialty Products Business Unit. Hintze manages advertising, public relations, promotions, market research and trade shows.

DowElanco named **Mark Urbanowski** product communications manager for the turf and ornamental and technical products divisions. Urbanowski, formerly sales representative on the East Coast, replaces **Keith Kohlmann** who was promoted to product marketing manager.

Steven Cockreham joined SePRO Corp. as director of research and regulatory affairs. He previously served as coastal and Western regional development manager for weed development at DowElanco.

Ciba hired **Dr. Michael Agnew** and **Dr. Joseph DiPaola** as senior technical support specialists. Agnew, who formerly served as extension turfgrass specialist for Iowa State University, is responsible for research in the Northeast. DiPaola, who served as professor of crop sciences at North Carolina State University, covers the east-central part of the United States. DiPaola's responsibilities include addressing issues about Primo, a turf growth management tool.

Weather-matic named **Michael Mason Sr.** vice president and chief operating officer; **Donald Cooper** director of marketing and systems; and **Saralynn Busch** as marketing analyst. Mason previously served as president and chief executive officer of Prime Associates. Cooper has served in a variety of positions during his 22 years at Weather-matic, including product engineer, customer service manager and technical service, product manager and systems coordinator. Busch graduated from Southern Methodist University with a master's degree in business.

Rick Doran was named chief engineer at Taylor-Dunn Manufacturing. Doran designed the Doran Motor Car, the Green Car and the EcoScoot electric motorscooter.

Actava named **John Phillips** president and chief executive officer. Phillips succeeds **Charles Scott** who was president and CEO since 1991. Phillips previously served as president and CEO of the former Resurgens Communications Group.

Husqvarna appointed **Roger Simons** director of technical services and sales support, responsible for developing training



Hintze



Agnew

programs for internal service staff, sales representatives, distributors and dealers; serving as liaison between the parent company and U.S. branches; and developing a variety of technical support services for dealers.

Charles Lemieux was appointed director of sales development for Husqvarna, responsible for developing programs to help distributors grow their businesses, and for handling direct and governmental accounts.

Daniel Miller was named operations manager for Woods Equipment Co.'s Sioux Falls, S.D. loader manufacturing and distribution facility, where he oversees about 200 employees. Miller was formerly production manager at Woods' headquarters manufacturing facility.

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commonly happens with poisons.

If fire ants are a problem on your turf, just broadcast Award.

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Products

Hunter Industries released PSC, a new irrigation controller for residential and light commercial use. The PSC is available with six or nine stations.

The LCD display shows the entire program in operation, including current operation station, cycles per day, cycle time remaining and the next watering day.

"One-touch programming" allows the user to set start and run times, and to make changes depending on the weather.



The PSC offers individual station programming, allowing users to set independent irrigation schedules for each station, with up to 28 daily cycles per station.

The Hunter controller, which measures 10 by 7 by 4 1/2 inches, offers a large, easy-access wiring compartment containing a terminal strip.

Circle 126 on reader service card

(continued on page 76)

PRODUCT SPOTLIGHT

Ford New Holland offers four new yard tractors powered by overhead valve, air-cooled Kohler engines. The new models are the 12.5-h.p. LS 25, 14-h.p. LS 35, 16-h.p. LS 45 and 18-h.p. LS 55.

Foot controlled hydrostatic drive transmissions — optional on the LS 45 and standard on the LS 35 and LS 55 — provide fully variable speed without clutching or shifting. Cruise control is available for the hydrostatic drive 14- and 16-h.p. tractors and standard on the 18-h.p. unit.

The tractors are constructed with cast iron front axles and welded steel frames. Turf tires are standard on all models but ag tires are available for tilling or snow removal. Quick-attach mower decks are easy to access for inspection or service without tools.

Tractor attachments include 38-, 42- and 48-inch side discharge mower decks, a 38-inch mulching mower, dump cart, two-bag grass catchers, snow blower, front blade, lawn sweeper, pull-type and mounted sprayers, a roller, aerator, drop or broadcast spreaders and a rotary tiller.

Circle 125 on reader service card



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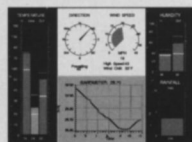
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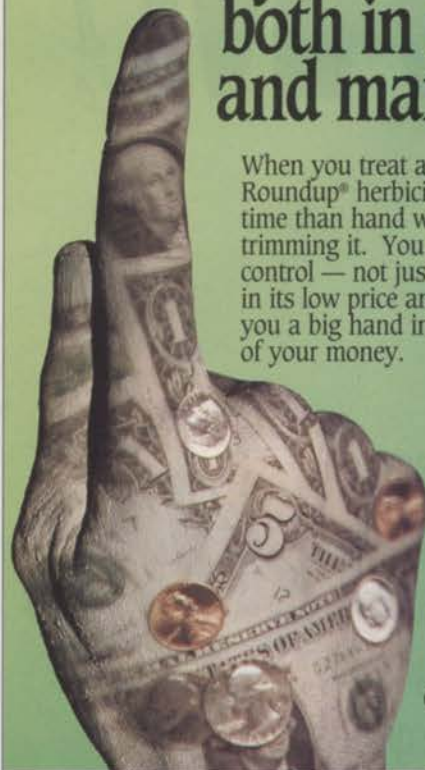
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Herbicide by Monsanto

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ENR-47080 2/94

The Unique landscape rake from **Unique Specialties Co.** can be used for all types of bed preparations. The tractor mounted tool doesn't require PTO drives or rollers. All soil-engaging



parts are replaceable and reversible for longer wear.

A row of double spring teeth are spaced every 6 inches for easy penetration. The tool also has a heavy-duty blade for leveling. A row

of finishing teeth, attached to four heavy, 1-inch shanks, ensures an even seed bed.

Circle 129 on reader service card

AMSOIL Synthetic 2-Cycle Oils provide protection and performance in two-cycle gasoline engines.

The synthetic oils reportedly resist thermal breakdown for longer periods than petroleum two-cycle oils; promote clean, complete burning to prevent formation of sludge, varnish, carbon and gum; dissolve deposits formed by petroleum oils; and eliminate spark plug fouling. AMSOIL's synthetic 2-cycle oils remain fluid in low



Products

(continued from page 74)

Injecto-matic's pesticide application, handling and transportation system is billed to reduce applicator exposure.

The system incorporates a quick-disconnect dip tube assembly which enters the pesticide concentrate container and connects to the bottom of the injection piston or the electric shut off. The twin-injection system allows users to apply two chemicals simultaneously or intermittently. The on/off flexibility is controlled from the cab of the tractor and includes a warning system and chemical adjustment.

All units are equipped with a variable injection rate. Different percentages are available covering most pesticides that are manufactured today.

Rate charts are mounted to each cabinet for quick reference.

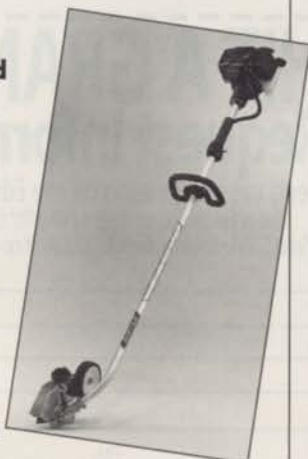
Circle 127 on reader service card

Hoffco's SE301 edger features solid state ignition with a positive on/off switch for safety and convenience.

The 25.66 cc, two-cycle edger weighs 15 pounds. Special features include an 8-inch cutting blade that allows adjustable cutting depth, and an anti-vibration "tear-drop" handle engineered for operator comfort and control.

An optional strap is available.

Circle 128 on reader service card



Roundup® points the way to environmental stewardship.

The benefits of Roundup® herbicide extend beyond traditional trim and edge work. It's also being used to restore wildlife habitats. So when it comes to treating sensitive sites, Roundup gives you a big hand.



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ENR-47081 2/94

Roundup® points the way to application ease.



Learning how to properly use Roundup® herbicide is a snap. For even more convenience, try new Roundup Dry Pak. Either way, Roundup gives you a big hand in simplifying worker training.



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IND-47082 2/94

aeration tool designed with independent, dual-wheel coring heads which follow the ground's contour. With its 5-foot aerating width, the Gandy CA-60 is ideal for use on golf courses, athletic fields and parks, as well as large industrial and institutional lawns.

Depth of penetration for both three-point hitch and trailer units is increased by adding weight to an integral weight tray.

Circle 132 on reader service card

The Power Wagon™ from **Garlock Equipment** converts from a 6-cubic foot hopper to a 53-inch by 35-inch flat-bed trailer. Both configurations use a manual-dumping system for up to 800-pound loads.



temperatures to provide easy mixing with fuel.

Circle 130 on reader service card

The **JCB 504B Loadall** telescopic handler is specifically designed to work effectively where access and headroom are usually limited.

Low overall height and narrow width make the Loadall ideal for getting in and out of enclosed areas or small buildings with restricted access.

The 504B has a telescopic boom that extends 18 feet, providing access to areas previously inaccessible. Extended to its full height, the machine has a lift capacity of 4,408 pounds; at full reach, 1,543 pounds.

The 504B combines four equally sized wheels with four-wheel drive for good ground clearance, traction over all terrains and increased flotation.

The Loadall handler has a top speed of 20 mph and offers a 76-h.p. engine.

Circle 131 on reader service card

The **Gandy Core Aerator-34**, with a coring width of 34-inches, attaches to small or medium-size tractors or utility vehicles. For transport, the CA-34's wheels lift into place by hand-operated levers.

The Gandy Core Aerator-60 is a professional Category I, three-point hitch



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Travel speed is regulated by hydrostatic drive and can be adjusted in forward or reverse.

Features include a 5-h.p. Briggs and Stratton I/C engine and high-traction, solid-rubber tires. Turf tires are optional.

For larger loads, an 8-cubic foot debris hopper is also available.

Circle 133 on reader service card

Using high-tech "seek and destroy" beneficial nematodes (microscopic organisms), **Biosys'** biological product controls a number of ornamental insects.

Marketed to professional nurseries and greenhouses as Exhibit™ by **Ciba**, the product offers an effective alternative to man-made pesticides. Packaged in an easy-to-use, water-dispersible granule formulation, the pesticide control can be applied with any standard surface application equipment. Exhibit can also be applied through irrigation systems.

The nematodes in Exhibit control a variety of ornamental insect larvae including fungus gnats, cutworms, armyworms, billbugs, bluegrass weevils (Hyperodes),

black vine weevils and stem borers such as peachtree borers and dogwood borers.

Circle 134 on reader service card

K-Rain's K2 gear-driven sprinkler incorporates a 5-inch pop-up and can be retrofitted to most irrigation systems.

The K2's spray is adjusted using an arc set and nozzle removal key.

The sprinkler includes six interchangeable nozzles. A stainless steel riser, rubber cover and check valve are optional.

Circle 135 on reader service card

Mulch more, faster



The new Steiner MX460 Mulching Deck does much more than the average mower. Six blades cut grass so finely, it decomposes quickly to nourish your turf. Smooth-rolling front caster wheels and a full-length rear roller precisely follow the lay of

the land. Steiner's single-lever system makes it easy to adjust cutting height.

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The 957C sprinkler from **Melnor** features a flow-through design that allows multiple hose connections so the pulsators can be set up and used in series.

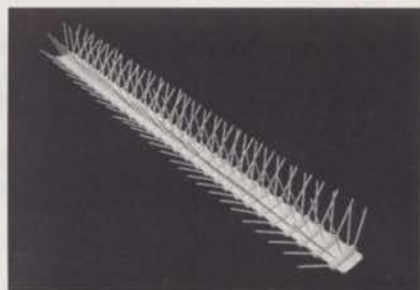
Other highlights include a brass coupling that swivels for easy hose hook-up and a wire-mesh

screen inside the coupling nut that prevents clogging and keeps the sprinkler clean.

Circle 136 on reader service card

The **Bird-B-Gone** bird deterrent system, made of durable, recycled plastic with UV inhibitors, can be installed on any flat or curved surface made of wood, metal, masonry, brick, canvas or other materials.

The system is easily installed on any outdoor surface, including ledges, beams, parapets, sills, pipes, roof peaks, chimneys,



posts, pilings, patio covers and trees.

Bird-B-Gone deters birds from landscapes without harming either the fowl or the landscape setting.

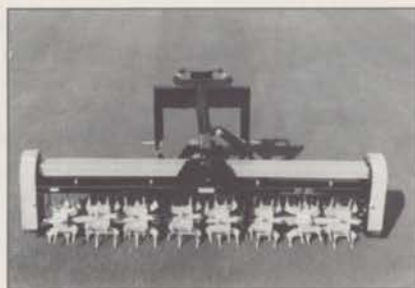
Circle 137 on reader service card

The **Hamblen Self-Sharpening Lawn Mower Blade Co.** offers a lawn mower blade billed to never need sharpening. The blade has double-cutting edges and sharpens itself while it revolves.

Circle 138 on reader service card

USE READER SERVICE #32

The 995-pound AE-80 Aera-vator from **First Products** can be three-point hitch mounted on 35-h.p. or larger tractors. PTO



power vibrates the tines to penetrate and fracture hard compacted soil in an 80-inch swath.

A vertical pivot joint on the three-point hitch unlocks when the unit is lowered, allowing for sharp turns during operation. The unit centers on the tractor and locks when lifted. A horizontal pivot point centered on the unit keeps the rotors in contact with the soil on rough terrain.

Full-width seed box, three-section rollers and rake attachments are also available with the Aera-vator.

Circle 139 on reader service card

Environmental Technologies offers the



Wind Warrior FM60 drift-control sprayer that attaches to outfront mowers. The drift-control feature ensures spray only reaches targeted areas.

Features on the Wind Warrior include a 35-gallon tank, 12-volt pump, nozzle-flow monitor and digital speedometer.

Circle 140 on reader service card

The Environmental Protection Agency recently approved registration for **Uniroyal Chemical's** Terraclor® 400 ornamental fungicide as a 4-pound flowable formulation. The fungicide is packaged in handy jugs for easy handling, storing, mixing and measuring.

Terraclor 400 fungicide is recommended for control of soilborne diseases including root and stem rot, storage rot, neck dry rot, bulb dry rot, needle blight, petal blight, bulb and stem rot, flower blight, crown rot and black rot.

The fungicide is effective on foliage plants, bedding and flowering plants and woody ornamentals, including ficus, palms, carnations, chrysanthemums, geraniums, impatiens, lilies, petunias, azaleas, junipers and rhododendron.

Circle 141 on reader service card

A full line of snow shovels, pushers, scoops and other winter accessories, along with two, lightweight shovel designs, are featured in the 1994 **Ames Winter Tools Catalog**.

The 24-page, full-color catalog introduces two new lines of Ames snow shovels and snow pushers — the ErgoConcept™ and the Featherlite, with lightweight tubular aluminum handles, poly blades and foam grips. The ErgoConcept handle is contoured to reduce bending and stooping, while the Featherlite shovel's handle is straight.

The catalog also features Ames' new nylon wear strips, available on a variety of pushers and shovels, that prevent the tools from scratching patios and decks.

Circle 142 on reader service card ■

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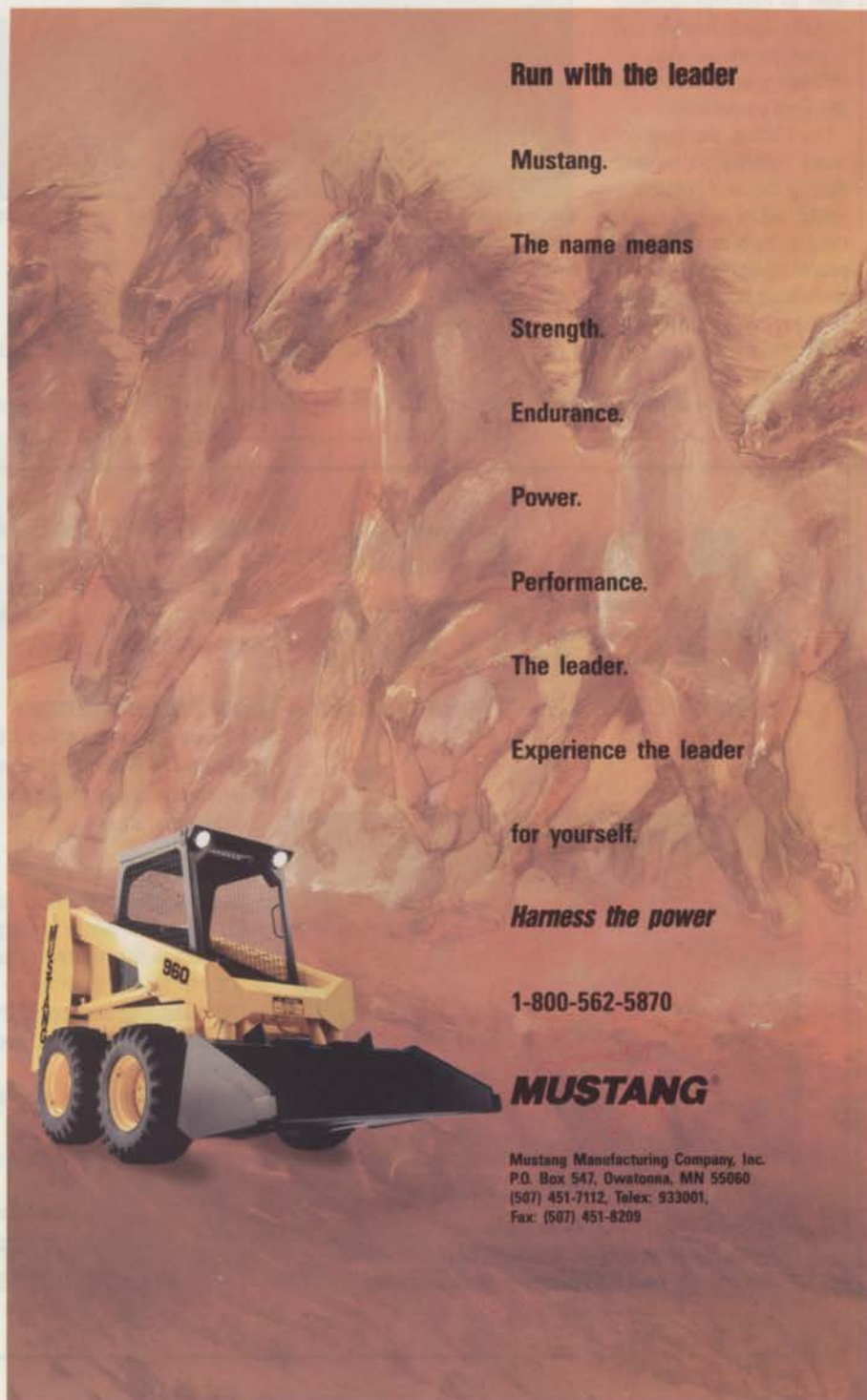
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Product Profile

HIGH-TECH TRACKING SYSTEM HELPS MAINTAIN GROWTH

DESPITE A CROWDED Southern California lawn care market, Carl Clifton, Lawnscape Services' president, built his Ontario-based company to 22 employees and well over \$1 million in billing since finishing college 14 years ago.

He credits the solid results to customer-oriented service, specialization and a push for measurable efficiency in all aspects of the firm's operation.

For Clifton, the buzzword "efficiency" means getting the best possible return out of labor or input capital. Two examples of success with this are a

technician tracking system that has increased productivity by 14 percent and use of Round-up® herbicide to save countless dollars in labor costs.

Residential accounts are the primary focus



Lawnscape's trucks are equipped with a high-tech tracking system which helps route service trucks more efficiently.

of Lawnscape Services. "We believe that having 1,000 small customers gives us more stability than 20 large accounts," Clifton said.

The firm specializes in the lawn care market which has helped the company ensure

steady cash flow as well as separated it from local competition for lawn care dollars. "We provided one of the first lawn care services in the area, and even today, only a few of us are actually lawn care operators."

Clifton's company provides services such as fertilization, preemergent weed control, post-emergent weed control, insect and disease control, lawn dethatching, turf renovation, core aeration, overseeding, exterior pest control, sprinkler analysis, turf colorant and preventive rust control.

BOOSTING BILLINGS. A high-tech example of the efficiency that has helped Lawnscape achieve success is its modern, telecommunications-based Technician Tracking System, initiated about two years ago. Tied in with

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USE READER SERVICE #63

the Pacific Telephone cellular and paging network, the system helps route service trucks more efficiently and improve communications with employees.

"This can tell us within 150 feet where a service truck is at any given moment," Clifton said. "We know the street they're driving on, their direction and speed. We can analyze a technician's business day, and show him exactly how he ran his route. We are then able to show him how to work more efficiently the next time through improved planning.

In fact, the company's technicians like the system soon after seeing it in action. "It helps them do a better, faster job. They can do a few more stops than normal. That's good for our company and for them, because the pay system rewards extra effort."

Lawnscape initially recorded a 20 percent increase in productivity after instituting its tracking system. Productivity has since leveled to a respectable 12 percent to 14 percent increase.

The tracking system, according to Clifton, also enhances good customer communications. "If we have a customer on the phone who is wondering what time we'll be on the property, we can immediately pinpoint our truck's location and provide a specific and

accurate answer. That's far better than relying on a truck radio alone, because operators are usually out of their truck."

Clifton said the system also brings savings in insurance costs. His company receives additional credits off their premium because if a Lawnscape vehicle is stolen, his tracking system would quickly locate its whereabouts.

"We showed a significant return on our investment in this system within a year. I could easily pencil this out and show how it



After a complete analysis Lawnscape Services customizes services to meet the needs of the individual property.

benefits the bottom line very quickly."

Clifton is quick to point out that good service is also essential in building the bottom line, as well as customer lawns. Lawnscape's general manager Richard Willis is responsible for ensuring that the firm's customers get the best service available.

AVOIDING GENERIC LAWN CARE. "Our service concept starts with a complete analysis," Willis said. We determine if a customer's lawn falls into cool- or warm-season categories. We look at soil, thatch, compaction, types of grass, weeds, insects, diseases and micronutrients."

Depending on the required program, customers get a different pallet of inputs: pre-emergent weed control, broadleaf control, fertilizer, fungicide, etc.

"It's not a 'chocolate or vanilla' program, because we often run into mixed lawn situations — cool-season grass in the front yard, warm-season in the backyard," Willis added. "For example, we commonly see bermudagrass encroach into bluegrass. Climatewise we're in a transition zone, so the area can support warm- or cool-season grasses."

Because various treatments are called for throughout the course of a technician's day,

(continued on page 86)

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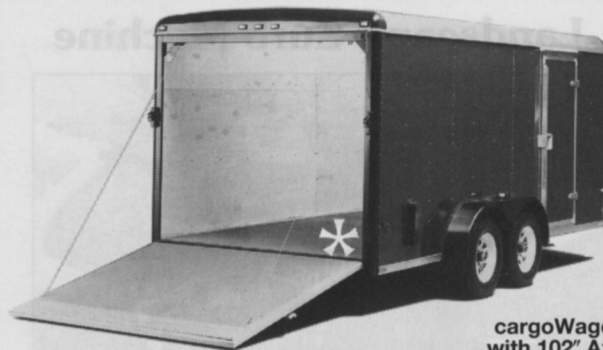
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Calendar

AUG. 3 Summer Field Day, Wilson Nurseries, Hampshire, Ill. Contact: Illinois Landscape Contractors Association, 2200 S. Main St., Suite 304, Lombard, IL 60148; 708/932-8443.

AUG. 5-7 Southern Nurserymen Trade Show, Georgia World Congress Center, Atlanta. Contact: Southern Nurserymen's Association, 404/973-9026.

AUG. 6-7 1994 Colorado Certified Landscape Technician Test, Front Range Community College, Fort Collins. Contact: John Gibson, Associated Landscape Contractors of Colorado, 303/337-6200.

AUG. 9 Associated Green Industries Field Day, Lake County Nursery, Ohio. Contact: AGI of Northeastern Ohio, 614/263-9311.

AUG. 10 Texas A&M Turfgrass Field Day, Texas A&M University Research and Extension Center, Dallas. Contact: Texas Agricultural Experiment Station, 214/231-5362.

AUG. 16 Wisconsin Turfgrass Field Day, O.J. Noer Turfgrass Research and Education Facility, Madison, Wis. Sponsored by the Univer-

sity of Wisconsin-Extension and the Wisconsin Turfgrass Association. Contact: Dr. Frank Rossi, 608/262-1490.

AUG. 17 Management Clinic-West, ExpoMart, West Wing, Monroeville, Pa. Contact: Pennsylvania Nurserymen's Association, 1924 N. Second St., Harrisburg, PA 17102; 717/238-1673.

AUG. 18 Western Pennsylvania Pesticide Institute, ExpoMart, West Wing, Monroeville, Pa. Contact: Pennsylvania Nurserymen's Association, 717/238-1673.

AUG. 18 1994 Michigan Turfgrass Field Day, Hancock Turfgrass Research Center, Michigan State University, East Lansing, Mich. Contact: Kay, Michigan Turfgrass Foundation, 517/321-1660.

AUG. 19-21 TAN-MISSLARK 94, George R. Brown Convention Center, Houston, Texas. Contact: TAN-MISSLARK Nursery & Garden Supply Show, 7730 S. IH-35, Austin, TX 78745-6698; 512/280-5182.

AUG. 25 Indiana State Lawn Care Association Summer Field Day, Northern Beach

Park, Indianapolis. Contact: ISLCA, P.O. Box 481, Carmel, IN 46032; 317/575-9010.

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.

AUG. 31 Eastern Pennsylvania Pesticide Institute, Days Inn Conference Center, Allentown, Pa. Contact: Pennsylvania Nurserymen's Association, 717/238-1673.

SEP. 7-11 RISE Annual Meeting, Ritz Carlton, Naples Fla. Contact: Responsible Industry for a Sound Environment, 1156 15th St. NW, Suite 400, Washington DC 20005; 202/872-3860.

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

SEP. 13-14 Turfgrass Research Conference and Field Day and Landscape Management Research Conference and Field Day, University of California, Riverside. Contact: Cindi McKernan, registration coordinator/research

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conferences, Department of Botany and Plant Sciences, University of California, Riverside, CA 92521; 909/787-3423.

SEP. 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.

SEP. 18-21 Florida Turfgrass Association 42nd Annual Conference and Show, Broward County Convention Center, Fort Lauderdale. Contact: FTGA, 302 S. Graham Ave., Orlando, FL 32803; 800/882-6721 or 407/898-6721.

SEP. 20-22 Virginia Tech Turf and Landscape Field Days, Virginia Tech Campus, Blacksburg, Va. Contact: J.R. Hall III, 703/231-9736.

OCT. 8-11 ASLA Annual Meeting & Expo, San Antonio, Texas. Contact: Janet Rowson, American Society of Landscape Architects, 4401 Connecticut Ave. NW, Fifth Floor, Washington DC 20008; 202/686-2757.

OCT. 12 Texas A&M Ornamentals Field Day, Texas A&M University & Extension Center, Dallas. Contact: Texas Agricultural Experiment Station, 214/231-5362.

OCT. 12-13 23rd Annual Pacific Hort Expo, San Diego Convention Center, San Diego. Contact: Margo Jonsson, 916/567-1133.

OCT. 19-20 ASA 1994 Annual Convention, Hershey Lodge and Convention Center, Hershey, Pa. Contact: Atlantic Seedsmen's Association, 298 E. McCormick Ave., State College, PA 16801; 814/237-0330.

OCT. 21-23 New Jersey Shade Tree Federation 69th Annual Meeting and Tree Expo, Seasons Resort and Conference Center, Mc-Afee, N.J. Contact: Bill Porter, N.J. Shade Tree Federation, P.O. Box 231, Blake Hall, Cook College, New Brunswick, NJ 08903; 908/246-3210.

NOV. 5-8 IA International Irrigation Exposition, Inforum/Apparel Mart, Atlanta. Contact: Irrigation Association, 5260 Willow Oaks Corporate Dr., Suite 120, Fairfax, VA 22031; 703/573-3551.

NOV. 6-9 National Institute on Park and Grounds Management, Twin Towers Hotel, Orlando, Fla. Contact: NIPGM, P.O. Box 1936, Appleton, WI 54913; 414/733-2301.

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.

NOV. 14-16 Turfgrass and Ornamental Seminar, West Lafayette. Contact: Midwest Regional Turf Foundation, P.O. Box 2285, West Lafayette, IN 47906; 317/494-8039.

NOV. 14-17 Green Industry Expo, St. Louis, Mo. Co-sponsored by the Associated Landscape Contractors of America, the Professional Grounds Management Society and the Professional Lawn Care Association of America. Contact: GIE, 1000 Johnson Ferry Road, NE, Suite C-135, Marietta, GA 30068-2112; 404/973-2019.

NOV. 15 ALCA Certified Landscape Professional exam, St. Louis, Mo. Contact: ALCA, 12200 Sunrise Valley Drive, Suite 150, Reston, VA 22091; 703/620-6363.

NOV. 17-19 Tree Care Industry Expo, Pennsylvania Convention Center, Philadelphia, Pa. Contact: National Arborist Association, P.O. Box 1094, Amherst, NH 03031-1094; 800/733-2622.

DEC. 6-9 Ohio Turfgrass Foundation Conference and Trade Show, Columbus, Ohio. Contact: OTF, 2021 Coffey Road, Columbus, OH 43210; 614/292-2601.

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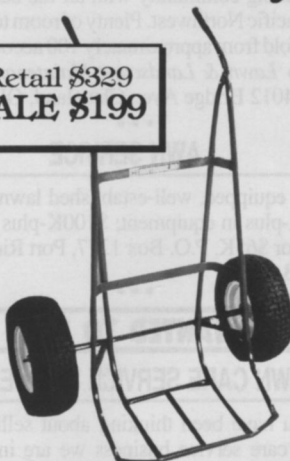
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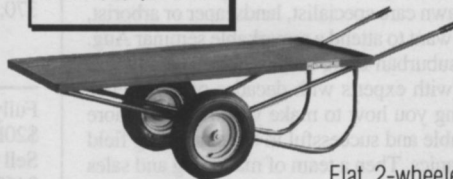
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Product Profile

(continued from page 81)

the trucks used by Lawnscap are equipped for a variety of tasks. The trucks are multi-compartmented, so technicians are able to apply different products to different lawns out of the same vehicles.

OUT TO PASTURE. His use of Roundup herbicide in turf renovation is another prime example of the efficiency for which he strives. Why renovate? According to Wills it's usually necessary because of drought, insect or disease damage.

"A lawn has a life span of seven to 10 years," he explained. As lawns get older, they have more problems getting through a dry spell, or getting through those 30-degree nights, Wills explained. "Instead of letting the lawn live out its life span, you want to do some periodic renovations to improve vitality. And that usually means some herbicide work to give the new seed the best possible chance of full germination."

Clifton suggested scalping the lawn to get more soil surface. "Always do a core aeration, if it hasn't already been done, to loosen up the soil. Often, you'll do either an entire herbicide application or some spot work. You certainly want to remove any undesirable plants before you seed.

"We begin by spraying herbicide at higher labeled rates on the turf areas that need to be redone. We choose Roundup because it translocates through the whole plant and weed control is complete," Wills said. "It's easier to rip something out if the root is dead than if it's still alive."

FREEING UP LABOR DOLLARS. "Herbicide use is also responsible for a significant return on our investment," according to Wills. "Labor is many more times expensive than the herbicide. Whenever you can do an eradication process with Roundup, you're doing it faster and will be time and money ahead."

Wills cited a recent example: "We were working in an area that would have required two of our men doing three days of mechanical work. For one thing, a complete kill isn't ensured by mechanical means. What we're usually trying to remove are those hard-to-kill, unwanted grasses, which all have a deep root system," he explained. "Sure we could come in with a sod cutter and completely eliminate the grass down to the bare dirt. But that grass is going to come back through the seed bed or new sod. So you really have to control it first. Using Roundup, we reduced the work to two men for one day. And we used about 20 ounces of the product.

"The mechanical job would have taken about 48 man-hours. Instead it was a 16-hour job. That saved the company 32 hours of work, for the investment of a few dollars worth of Roundup."

Wills is also proud of his company's fertilization program, which the firm considers proprietary information. "We feel we know things about Southern California lawns that no one else recognizes. We know what to do and when to do it — in order to 'punch' the grass up or set it down a bit.

"Fertilization takes place year-round out here. Each one of our service calls includes a feeding. Our minimum application schedule is six times a year to ensure a good, healthy lawn. Whatever you put down will last about two months. The quality of the lawn will increase each time you fertilize and then it decreases again, sort of a wave effect. What you should do is maintain a steady quality level. With monthly applications you can flatten out the variances."

"We think it's vital to avoid offering a 'standard' program, in all aspects of our service spectrum," Clifton summed up. "If you're going to be successful in this business, you have to provide non-standard results. And you just can't do that with standard programs."

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