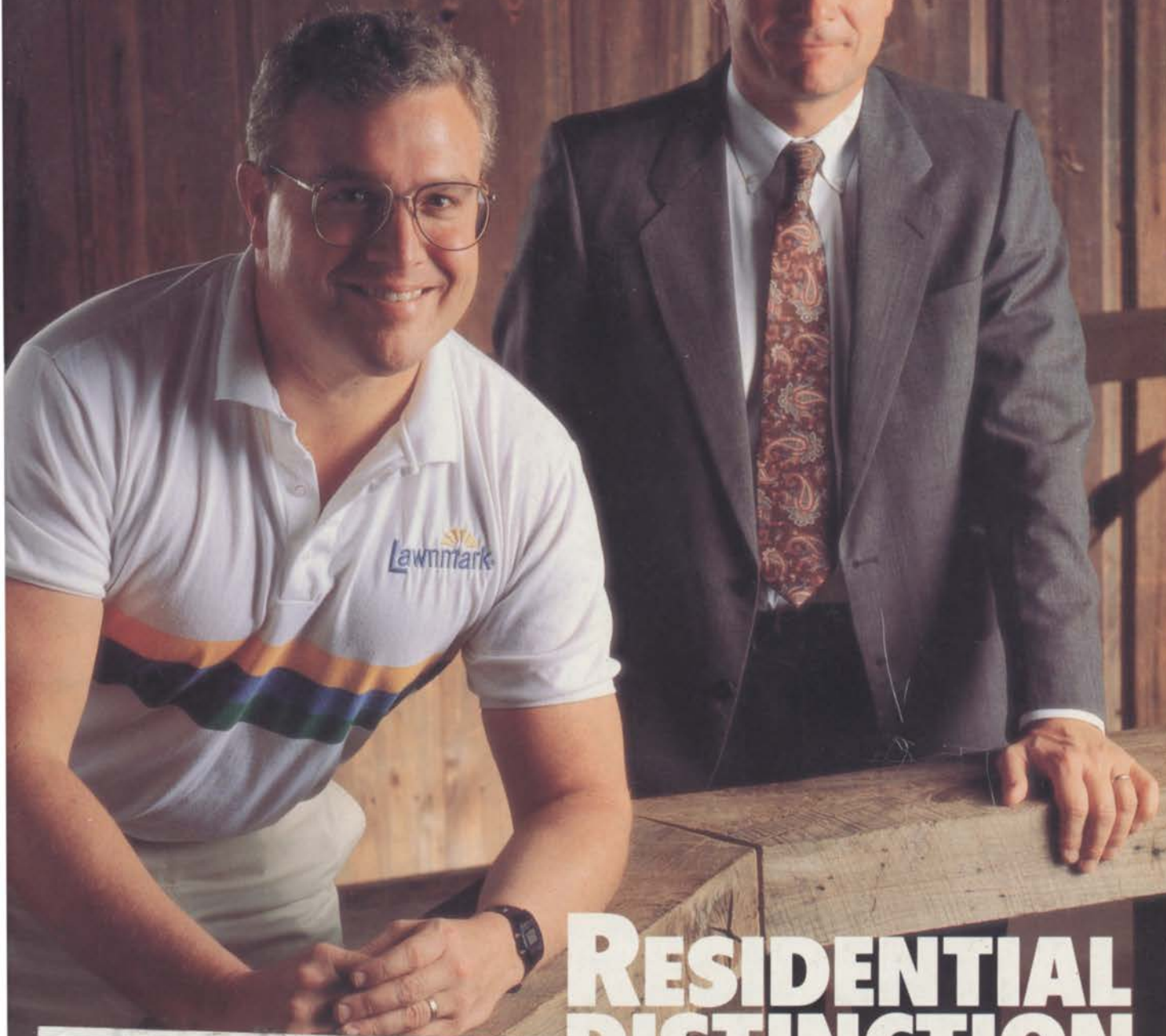


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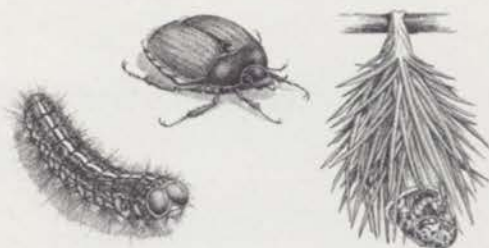
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Mower deck flips up vertically for easy access. (Do not attempt maintenance while mower is engaged.)



Lawn & Landscape MAINTENANCE

VOLUME 12, NUMBER 4

APRIL 1991

Cover Photo:
Roger Mastroianni,
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Editor's Focus

THE LAWN AND landscape maintenance industry has weathered some tough times this spring.

An uncertain economic forecast, reduced housing starts and a shaky construction climate have contributed to a wait and see attitude among buyers of equipment and purchasers of residential services.

Now that the Gulf War is over, new home sales have increased slightly and Americans are riding a wave of exhilaration, let's hope uncertainty is on its way out and a good spring and summer are in store for maintenance contractors across the country.

Despite the gloomy news to date, the industry has produced accomplishments to be proud of, as well as endured the scorn of the consumer press.

First the good news. The Associated Landscape Contractors of America recently held an outstanding Executive Forum. Based on the success of its "Breakfast of Champions," ALCA invited executives and managers to participate with their peers in small group discussions.

With competitive thoughts tucked safely away, more than 100 maintenance contractors divided into 16 small groups and discussed anything and everything including what it takes to be a successful landscape leader, inspiring and empowering employees and exceptional service.

In a time when the green industry is craving for education and business management strategies, the Executive Forum is a refreshing opportunity for maintenance contractors dedicated to the industry. Let's hope a second Executive Forum is in ALCA's future plans.

More upbeat news. Although the Gulf War has ended, heartfelt thanks and contributions are still the order of the day.

Employees at Randy's Landscaping in Baltimore wanted to show their support for the families of the troops in the Persian Gulf.

The firm established a scholarship fund called "Shattered Families of the Persian Gulf." The fund is to benefit and aide in the education of the boys and girls whose parents won't be coming home from the war.

The firm arranged for representatives of each branch of the service to assist them in determining where funds could most effectively be channeled, but no decision has yet been made.

Randy's Landscaping donated \$1,500 to start off the campaign and challenged businesses and individuals in the area to contribute to the cause by holding a weekend fundraising effort.



An account holding the funds is set up at the Maryland National Bank. It's not known how long the account will remain open, but you can call us for more details.

On a sour note, if you haven't seen it by now, pick up a copy of the April 2 edition of *Family Circle* magazine. The issue contains a completely unprofessional, biased article called "The Pesticide Scandal." Timed to coincide with the start of the 1991 lawn care season, the article slammed the industry's use of pesticides and likened professional applicators to money mongers; promoting dangerous chemicals for their own gain.

"Lawn care companies have perpetrated a massive con job on the American people. Let's fight the deadly dandelion, they say, even if it means using deadly toxins," Samuel Epstein was quoted as saying in the magazine article. He is a professor of occupational and environmental medicine at the University of Illinois.

Unlike last year's U.S. Senate hearings, no legislative action precipitated the article's publication. Instead, the story was an unprovoked rehash of old information and the same old horror stories of people becoming sick or dying from exposure to pesticides.

Much worse than the attack on the lawn maintenance industry (a group used to spring attacks) is the article's reference to organophosphates being the first cousins to chemicals currently stockpiled in Iraq's chemical weapons arsenal. This blatant act of sensationalism plays on emotionalism generated by the Gulf War.

The industry can't stop the publication of such articles, but we can do more to promote the benefits of healthy turf through consumer and legislative education. — Cindy Code ■

Cindy Code
Editor

Charlotte Goers
Art Director

Helen Duerr
Assistant Art Director

Tracy Green
Staff Artist

Jami Childs
Production Manager

Tracy Brubaker
Production Assistant

CORPORATE STAFF

Richard J.W. Foster
President

Christopher W. Foster
Business Manager

Maureen Mertz
Publisher

Rosalie Slusher
Circulation Manager

Mark Fosse
Marketing/Research Manager

Fran Franzak
Office Manager

Maureen Mertz
National Sales Manager
1723 South Hill
Milford, Michigan 48381
313/685-2065
Fax: 313/685-2136

Tim Kasperovich
Midwest Sales
4012 Bridge Avenue
Cleveland, Ohio 44113
216/961-4130
Fax: 216/961-0364

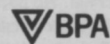
ADVISORY BOARD

Karl Danneberger, Tom Garber
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EDITORIAL OFFICES

4012 Bridge Avenue
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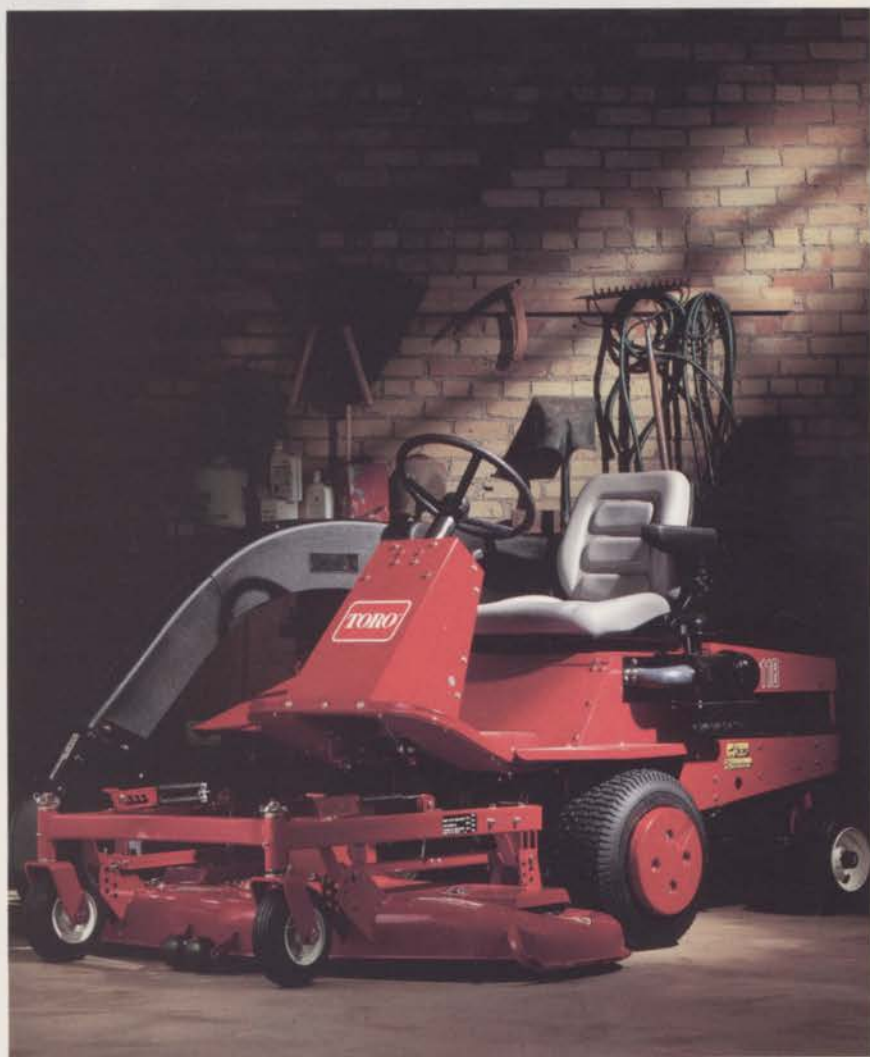
But it could also be a sign of real problems.

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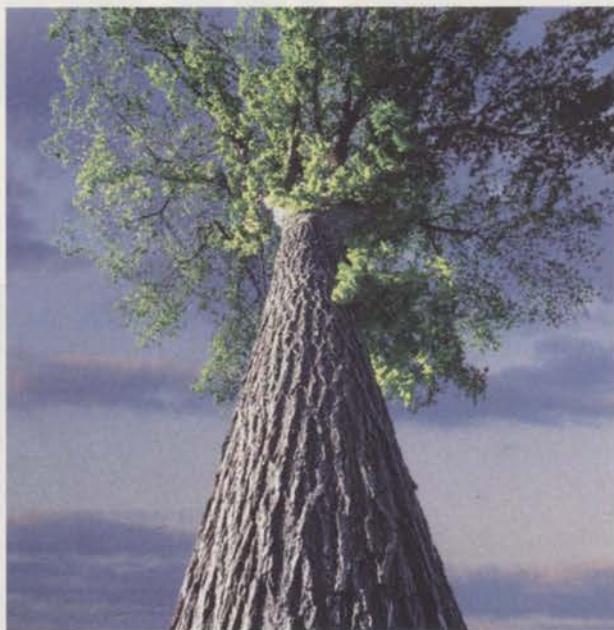
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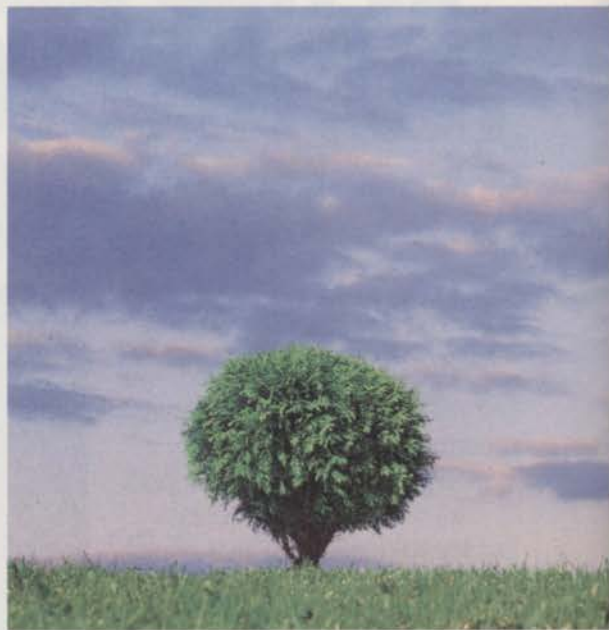
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News in Brief

NEWS DIGEST

ASPA Relocates Summer Show

Existing and potential problems associated with the five-year-old California drought have forced the American Sod Producers Association to relocate its summer convention from Santa Barbara to Portland, Ore.

The Convention and Field Days are set for July 31 to Aug. 2.

The California Sod Producers Association recommended the meeting be moved because of unpredictable water supplies and questionable field conditions.

Bayer Posts Net Sales Increase

Bayer USA Inc., the U.S. management holding company of Bayer AG, Germany, announced that its 1990 net sales increased nearly 9 percent to \$5.9 billion, up from \$5.4 billion in 1989. Net income fell modestly to \$149.3 million, from \$153.9 million last year.

The company said that its healthcare company, Miles Inc., continued to show solid growth in both sales and income. The decline in net income was due primarily to the downturn in the chemicals, Mobay Corp., and imaging technologies, Agfa Corp., segments of Bayer USA's business.

Scag Offers Buying Incentives

Scag Power Equipment is offering a "mow now, pay later" leasing plan on its line of mowers including the zero turn rider, hydro rider, zero turn hydro walk-behind and belt-drive walk-behind.

Payments start in June with a "buy out same as cash" or monthly lease payments.

Ecolab Earnings Up; ChemLawn's Down 5%

Ecolab Inc. announced record earnings of \$46 million, or \$1.95 per share, for the year ending Dec. 31, 1990, an increase of 56 percent compared with earnings of \$34.2 million, or \$1.25 per share, excluding a one-time charge of \$31.5 million, or \$1.15 per share, one year ago.

Although ChemLawn's sales were down,
(continued on page 12)

PLCAA Members Revel in Capitol Hill Surroundings

ENTHUSIASM FROM a U.S. Gulf War victory set a mood of invincibility on Capitol Hill as representatives from the lawn maintenance and pest control industries gathered to send their respective messages to Congressional leadership.

Sen. Robert Dole, R-Kansas, opened the "Legislative Day," sponsored jointly by the Professional Lawn Care Association of America and the National Pest Control Association, with war stories, wit and reflecting a mood of confidence.

"We're in a powerful position everywhere in the world," Dole said. "American people feel pretty good about America. I hope this is a fresh start for Congress and the President."

Lawn maintenance operators hoped to take advantage of that mood by educating state senators and representatives on the importance of turf as an environmental resource, how recycling grass clippings can reduce the demand for landfill space and the importance of

developing national standards for industry technicians through amendments to the Federal Insecticide, Fungicide and Rodenticide Act.

Initial reaction and impact of joint and individual meetings appeared to be good, according to Tom Delaney, PLCAA director of government affairs. Members representing 15 states spent two days on Capitol Hill, first being updated on such topics as environmental regulation and industry positions on FIFRA.

Victor Kimm, Environmental Protection Agency deputy assistant administrator for pesticides and toxic substances, warned that legislative issues at local and



Sen. Robert Dole addresses the crowd.

state fronts have to be watched closely in today's pesticide climate.

"In many instances, they're more stringent and will try new approaches to problem solving."

Federal legislation bears scrutinizing as well. Sen. Joseph Lieberman, D-Conn., is expected to introduce legislation calling for 72-hour advance notification of lawn care and structural pest control applications in and around public buildings.

As far as re-registration of pesticides used in the lawn maintenance industry, Kimm said, the EPA is involved in more testing of pesticides than the industry's ever seen. If nothing else, the industry will probably see changes in the way pesticides are used.

"In using them, we obviously need to ensure we target and promote judicious use," he said. "Historically, we've seen registration of chemicals that can be used across the country regardless of where you're located. Now, we see the need for more tailored or targeted use."

In addition, it's important for the industry to develop alternatives, pesticides with shorter half-lives and products used in lower quantities. The EPA is interested in integrated pest management and non-chemical alternatives, Kimm said.

Re-registration will also bring further reliance on restricted use pesticides to keep them in the hands of the professional and out of the hands of the homeowner, he said.

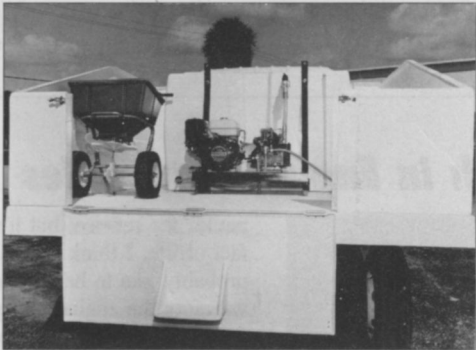
Attendees were also brought up to date on small business issues, selling Congress on the value of lawn care and effectively lobbying Congress.

Small business concerns such as family and medical leave bills, vetoed last year by President Bush, but bound to come up again; mandated benefits, how much is it going to cost and who's going to pay for it; civil rights bills; and strike bills were among issues discussed.

James Turner of Swankin & Turner, Washington, D.C., urged attendees to think ahead and discover ways to provide solutions before problems occur. "It could put you ahead of politics."

For the second year, the Senate is expected to hold hearings on lawn care pesticides, but a date had not been scheduled at press time.

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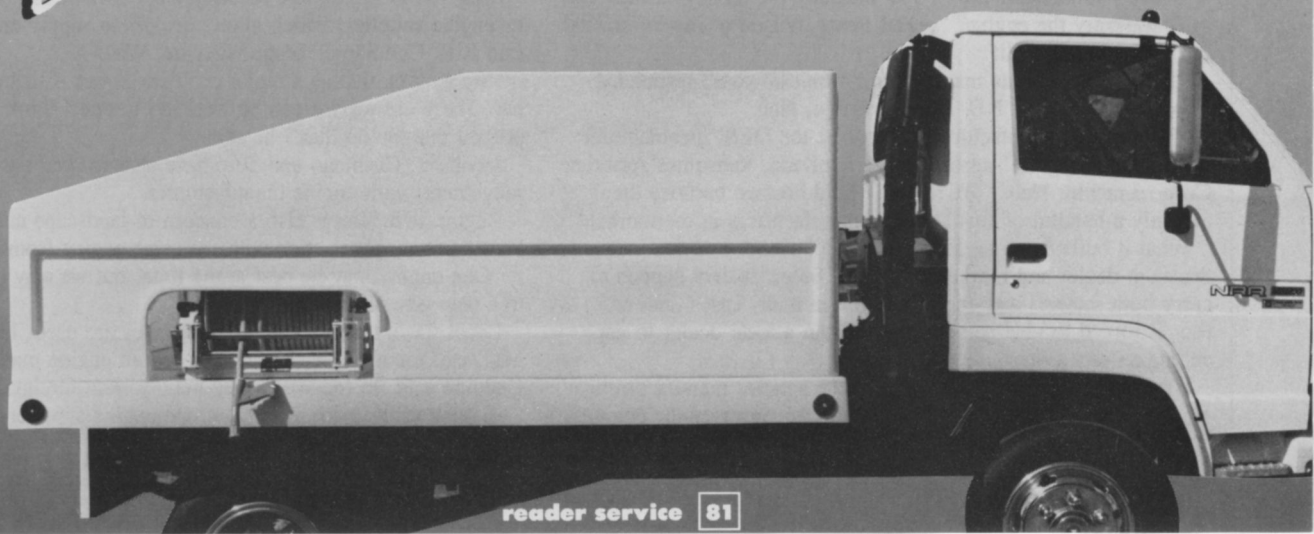
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News

(continued from page 10)

lawn care activity was up and ChemLawn's operating loss was significantly reduced, according to the company.

Fourth quarter revenues for ChemLawn were \$95 million, a decrease of 5 percent from revenues of \$100 million for the same quarter last year. For the year, revenues were \$383 million, a decrease of 3 percent from revenues of \$395 million in 1989.

Countdown to the Supreme Court Hearing

As the green industry's April 24 date with the U.S. Supreme Court draws closer, state attorney generals, departments of

agriculture and a variety of green industry associations are scrambling to share their view of the long-standing controversy over pesticide regulation.

Heretofore left to state and appeals courts, the U.S. Supreme Court this year decided to hear the case of a small Wisconsin village which wants the right to regulate pesticide applications despite a one-year-old ruling by the Wisconsin Supreme Court which said the Federal Insecticide, Fungicide and Rodenticide Act of 1972 preempts local regulation of pesticides.

Although Casey highlights the Supreme Court hearing, maintenance operators across the country have had to deal with local regulation of varying severity.

Although not directly involved with the case at hand, 11 states have filed amicus briefs offering their opinion for local

regulation of pesticide use to the Supreme Court. They include: Hawaii, Alabama, Illinois, Kansas, Maine, Michigan, Missouri, Nevada, Utah, Pennsylvania and Vermont.

Groups in favor of keeping the decision at the federal and state levels include the Professional Lawn Care Association of America, the Associated Landscape Contractors of America, the American Association of Nurserymen, the National Pest Control Association, the National Agricultural Chemicals Association and the Chemical Producers and Distributors Association.

More recently, California, Georgia, Washington, Oregon, Arkansas, Iowa and Louisiana have said they will file opinions against local regulation, and the National Association of State Departments of Agri-

ROUNDTABLE REFLECTIONS

Contractors Searching for a Breakthrough in Engine Warranties

ENGINE WARRANTIES is an area which continues to confuse and test the patience of the industry's end-users and suppliers.

"As far as warranties go, a manufacturer or distributor usually stands behind their equipment quite well. But when it comes time for the engines, they are belligerent and say it isn't warrantied," said Pete Scholz of Reinhold & Vidosh, Pontiac, Mich.

"That's the biggest problem of the walk-behind right now. If that engine doesn't start, then you're down for the whole day. The engine controls the whole thing. Our hands are tied," he said.

Scholz' comments were part of a day-long business roundtable between landscape contractors and mowing manufacturers. It was sponsored by *Lawn and Landscape Maintenance* magazine.

While end-users are frustrated with their dealers and distributors for lax or lack of engine warranties, a number of equipment manufacturers said it's not their fault.

"I don't understand why if you warranty the entire machine you can't warranty the engine?" asked Bruce Wilson of Environmental Care, Calabasas, Calif.

"Because the engine manufacturer won't let you," responded George Schaefer Jr., F.D. Kees, Beatrice, Neb.

"The engine manufacturer will not let the OEM manufacturer warranty the engine," agreed Gregg KinKade, Ransomes America Corp., Lincoln, Neb. "We're really held hostage because there are only a handful of small engine manufacturers in the market."

What it boils down to, is that the parts business varies from dealer to dealer and market to market. Some dealers happen to carry both mowers and engines, while in many cases, an end-user is forced to visit someone other than a local dealer to get an engine serviced.

It's a definite problem for some of the smaller manufacturers who do not have the ability or capability to warranty the engine," Schaefer said. "Nobody likes to send their customers to a com-



Engine warranties are a problem for small equipment manufacturers, said George Schaefer Jr., F.D. Kees. Photo: John Spink, Atlanta, Ga.

petitor for service, but it's a fact of life. I think we'd all probably like to be able to warranty the engine along with the product, but if you're not big enough, it's not going to happen.

And since the commercial mowing market can be considered the heaviest users of engines — averaging five hours a day, five days a week, 40 weeks a year; 1,000 hours — maintenance contractors have a legitimate stake in how

long an engine will last and how difficult it is to replace.

A few manufacturers have solved or are working on this warranty problem.

John Deere, for example, offers a one-year, unlimited hour warranty on its equipment — engines included — according to Bill Lee, John Deere Horicon Works, Horicon, Wis.

In many areas, the extent to which any dealer can or will work with the end-user depends on the relationship between the local dealer and local engine supplier, he added.

Scag Power Equipment recently made arrangements with two of its engine suppliers which allows dealers to supply engine parts, said Rick Cuddihe of Scag, Mayville, Wis.

"We've seen that as a major problem in our distribution channel. There are ways it can be worked out and I think it's very important that we do that," he said.

Jacobsen, Cushman and Toro have also worked out similar arrangements with engine manufacturers.

Engine switching is also a concern of landscape contractors. Why can't suppliers stick with the same engine from year to year?

"One engine may be best at the time, but we may drop it to go to a new generation," Lee said.

Local flavor also dictates what engines are used. In the Midwest, for instance, it's hard to sell an engine made overseas, Cuddihe said. In the West, they mainly want foreign engines.

A relationship with more than one engine supplier also protects a manufacturer in unforeseen circumstances.

culture has sent a letter to all 50 states explaining the implications of an unfavorable ruling, according to Tom Delaney, PLCAA government affairs director.

"We may be able to get a reversal from some of the 11 states who may or may not understand what impact a ruling in favor of Casey may have," Delaney said.

If the hearing goes forward as planned, a ruling is expected sometime before summer.

Spring Lawn Care Scare Strikes Again

Spring is upon us, so it must be time for the consumer press to attack the use of pesticides on home lawns.

That's just what *Family Circle* magazine did in its April 2 issue. Rehashing old horror stories of children who have developed rashes, blisters, headaches, weight loss and worse, the article is a biased, one-sided attack on the professional lawn care industry.

Presenting year-old information, unsubstantiated reports and sensational claims, the six-page article tells consumers that their lawns are being overdos-

ed with chemicals and that professional applicators have benefited creating a \$1.5 billion industry.

Besides a few token comments from the professional perspective, the author even went so far as to liken organophosphates as first cousins to chemicals stockpiled in Iraq's chemical weapons arsenal.

In response, the Professional Lawn Care Association of America reinforced the need for professional applicators to emphasize the benefits of a well-maintained lawn, avoid negative comments and answer customers' questions honestly.

Ringer Puts Hold On Grub Attack

The Ringer Corp. has put a hold on distribution of its commercial Grub Attack because of apparent inconsistencies be-

tween product field and laboratory data.

The hold is only on product shipments made this year and does not apply to materials distributed for last season, according to Scott Boutilier, commercial marketing director for Ringer. To date, only a few distributors have taken on product for the 1991 season.

"We're trying to solve everything as swiftly and with the minimum amount of inconvenience as possible," Boutilier said.

He said the situation is not completely uncommon in biologicals because a product might show efficacy in a field test, but not in a laboratory situation and vice versa.

If the firm finds that product already distributed isn't performing as it should be, Ringer will replace all materials in the hands of distributors.

Coalition Brings Fresh Look to Water Crisis

A coalition effort has been launched to enlist Californians of all viewpoints in developing a new approach to the state's water crisis.

The coalition — Californians for Water — will be led by Robert Monagan. Mona-



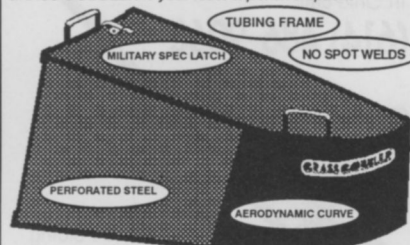
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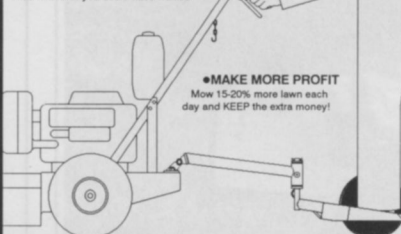
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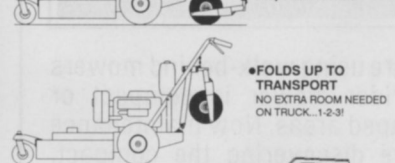


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gan, who will serve as president, is a former speaker of the California State Assembly and president of the California Economic Development Corp.

While the current drought has brought a sense of urgency to the group's efforts, the focus will be on long-term, environmentally sound solutions and that there are no "quick fixes" to the water crisis, Monagan said. The coalition is seeking fresh, new approaches and will have no initial positions on any specific course of action.

"At this point, we want to get as many people as possible to the table to talk about options," he said. "We're not beginning with solutions to sell, we're starting a dialogue to hear what people think the solutions should be."

One of the group's first steps will be to conduct opinion research to determine the general public's attitudes on water issues.

The coalition's ultimate goal, according to Monagan, will be a specific plan which will probably include a variety of solutions. He said it is premature to speculate how such a plan might eventually move forward, but undoubtedly legislative action will be necessary and a ballot proposition may be required. A consensus solution will be difficult.

PLCAA Revamps Membership Dues

In an effort to reverse a three-year membership decline, the Professional Lawn Care Association of America has revamped seven of its dues categories.

As a result, members currently paying \$400 in dues will pay \$250, those paying \$500 will pay \$350, those paying \$650 will pay \$500, those paying \$900 will pay \$600, those paying \$1,000 will pay \$750 and those paying \$1,500 will pay \$1,000.

The new 1991 dues structure is said to be more in line with dues of comparable associations.

In all, nearly two-thirds of PLCAA's membership will see a price decrease, according to board member Tim Doppel. Areas seeing the greatest impact are members with a sales volume between \$100,000 and \$199,999 and those \$99,999 and under.

Those with a sales volume between \$200,000 and \$399,999 will pay \$500; between \$400,000 and \$599,999 will pay \$600; between \$600,000 and \$799,999 will pay \$750; and between \$800,000 and \$999,999 will pay \$1,000.

Members reporting sales volumes bet-

ween \$1 million and \$4.9 million will continue to pay \$5,000; between \$5 million and \$10 million, \$7,500; and more than \$10 million, \$10,000.

The move is expected to attract 200 new members to the association in 1991. The association finished the year with 978 total paid members, 782 regular members, but have been fighting a declining membership. Paid membership peaked at about 1,300 in 1987.

"We found that former members and potential members were not joining mainly because of the price of our dues," Doppel said. "We are listening to them and are supporting them."

Study Finds ChemLawn Applicators Healthy

As a group, long-term ChemLawn specialists are healthy, according to a study released by the Columbus, Ohio-based firm.

Results showed no long-term adverse health effects attributable to the applicators' work with chemicals, and showed only minor ill effects related to their work.

(continued on page 17)

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News

(continued from page 14)

One hundred applicators participated in the study which began in 1987 and was intended to assess the general health status of veteran pesticide and fertilizer applicators.

While the study applies only to ChemLawn employees rather than the industry in general, other applicators will probably point to the study as beneficial evidence, although not their own, said Deb Strohmaier, ChemLawn public relations manager.

Du Pont Recalls Tainted Fungicides

Du Pont is recalling all dry flowable formulations of Benlate 50DF, Benlate 1991 DF and Tersan 1991 DF fungicides currently on the market.

Users of these fungicides are encouraged to return all new and old supplies of these products to the original point of purchase for a full refund.

The recall and stop sale were initiated by Du Pont because the products may contain atrazine herbicide. The firm believes the product contamination is limited and

occurred during packaging at its formula-tor, Platte Chemical, Fremont, Neb., but is recalling all product to avoid confusion over which lots may be contaminated, according to Trish Williams, Du Pont public affairs representative for ag.

It's the second time in two years Du Pont has been forced to recall products because of contamination. In 1989, product contamination was discovered in materials at Terra Chemical, Sioux City, Iowa.

For the 1989 incident, the Environmental Protection Agency ordered Du Pont; Platte; LESCO, a distributor of the products; and Terra to pay a combined \$2.4 million in penalties. Du Pont will pay about \$1.3 million of the fine, according to Williams.

Du Pont hopes to have a wettable powder formulation available by the end of the month, but doesn't anticipate the dry flowable version being marketed again until late this year or early 1992, Williams said.

Company representatives have investigated complaints from several golf courses, but to date have no confirmed reports of plant injury, according to Williams. Plant injury would be apparent in seven to 14 days.

The area of greatest concern is on sensitive ornamental plants.

Because of the incident, Du Pont will now bring full production of the product in-house and is readying a facility in Belle, W. Va., for production of the dry flowable products, Williams said.

Less than 10 percent of Du Pont's three fungicides are sold to the turf and ornamental market.

Ciba-Geigy To Market Biosys' Biologicals

Ciba-Geigy Corp. last month acquired the marketing rights to Biosys' biological insecticides for the professional turf and ornamental market. The first biological will be distributed under the name Exhibit.

In turf, the nematode-based product is said to control cutworms, armyworms, sod webworms and billbugs. In ornamentals, the product is designed to control Japanese beetles and black vine weevils.

Biosys, Palo Alto, Calif., will continue to manufacture the products, while Ciba-Geigy, Greensboro, N.C., will handle promotion and distribution, according to Scott Moffitt, Ciba-Geigy product manager for turf and ornamental insecticides.

Moffitt said the firm hopes to have Exhibit available for early June distribution.

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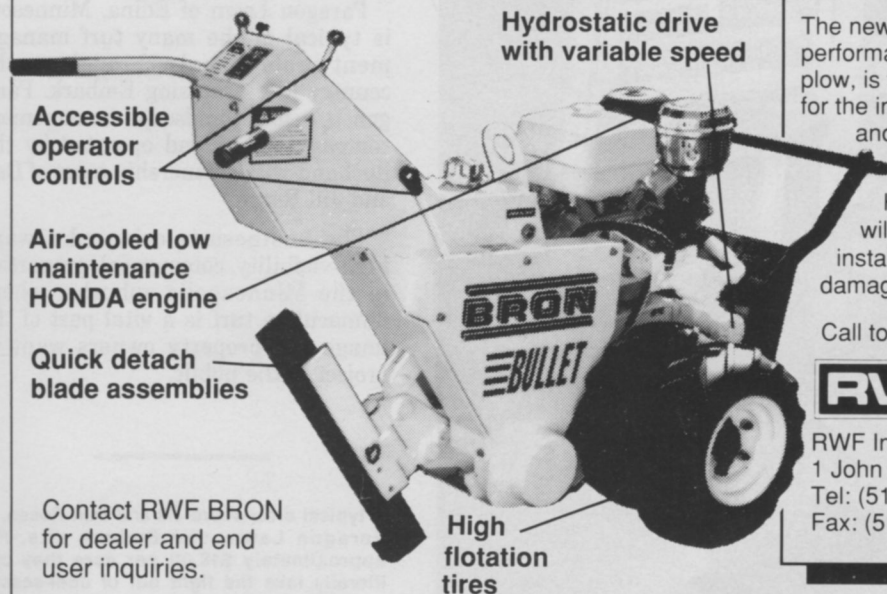
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Now, with new formulations of Embark and tank mixes with Limit[®], you can *tame* the growth of turfgrasses and reduce the mowing by up to 50% — or you can *slow* it down just enough to make regularly scheduled mowings easier and faster. In either instance, there are no concerns with objectionable discoloration, and the reduction in cost is very significant.

Everett Mealman, President
PBI/Gordon Corporation

The Embark PGR programs for growth regulation of fine turf are surely the most important developments to date in landscape management. They can dramatically increase the productivity of turf managers ... and productivity, of course, is the ultimate generator of profits.

The recommendation for maximum growth suppression of cool-season

fine-turf species is a tank mix of Embark Lite and Limit.

Embark Lite (Mefluidide) is specially formulated and labeled for use on fine turf. And Limit is amidochlor, the root-absorbed turf growth regulator developed by Monsanto and recently acquired by PBI/Gordon.

This easy-to-handle tank mix, when applied to cool-season grasses prior to

the major growth period, will reduce the number of mowings up to 50% for five to six weeks at a cost of approximately \$45.00 per acre — the average cost of one mowing.

But that's only part of the good news: Turf discoloration is avoided with this combination, when used as directed. At the end of the six-week cycle when untreated turf tends to fade, the release of pent-up energies in the Embark Lite/Limit-treated turf results in a rich, vibrant green color.

And, notice, we haven't even mentioned the environmental bonus of reduced clippings.

On the other end of the Embark programs, an application of just Embark Lite will by itself slow down the growth for three to four weeks to such a degree that the mowers will virtually float over the turf ... clippings will be significantly reduced ... you'll be able to stay on schedule even during the peak growing season ... and the cost will be only \$18.00 per acre.

What users say

Paragon Lawn of Edina, Minnesota is typical of the many turf management professionals throughout the country who are using Embark. Paragon is a total landscape management company owned and operated by the husband-wife partnership team of Dan and Jill Rosen.

The business is oriented toward high-visibility commercial properties in the Minneapolis suburbs, where immaculate turf is a vital part of the image the property owners want to project to the public.

A typical area where Jill and Dan Rosen, of Paragon Lawn, use Embark Lite. For approximately \$18.00 per acre they can literally take the fight out of cool-season grass, so that even in the peak growing period they not only can stay on schedule but the mowed premises will maintain their freshly cut appearance longer.



On several properties, Paragon has total responsibility for designing and executing the complete program on an annual bid basis. "Such property owners don't really care what we do or when we do it," says Rosen. "The issue is that a constant image of quality and neatness be maintained."

In such instances the Rosens factor into their bid an Embark Lite/Limit tank mix treatment twice a year. Once in the spring, ahead of seedhead emergence, and a repeat prior to the fall growth season.

"It reduces our mowing costs by more than 50%, at a cost of less than \$45 per acre, while actually improving the appearance of the grass ..." states Rosen.

On the other hand, Paragon has many customers who are on a regular mowing schedule. "We get paid a flat fee per mow," says Rosen, "and at the peak of the growing season it can be a real back breaker to stay on schedule and maintain a manicured appearance."

"This is where Embark Lite is ideal. During the peak growing season, we can definitely put money in the bank by spending \$18 per acre out of our own pocket for a treatment of Embark Lite that lasts three to four weeks. It eliminates double mowing ... it makes clipping clean-up a breeze ... it takes pressure off men handling the mowers ... and, best of all, it keeps us on schedule."

Interestingly, the Rosens were hesitant about getting started with Embark, and actually had a gallon in their machine shop for a year before they opened it. Like so many turfgrass professionals, the concept of suppressing growth made them uncomfortable in light of the fact that they had always measured turf quality and health on the basis of how vigorously it was growing.

Consequently, the Rosens started out very cautiously and tested both the Embark Lite/Limit tank mix and the Embark Lite mowing aid program in low-profile areas and expanded the total commitment as the evidence became overwhelming.



The Beauty of Embark Lite/Limit Tank Mix

Above: John Van Haften, director of research and development for PBI/Gordon, demonstrates the dramatic effectiveness of an Embark Lite/Limit tank mix. This test plot of bluegrass and ryegrass in suburban Kansas City was treated on April 25, 1990. It was mowed once, on May 1 after the PGR kicked in, and never touched again until this photo was taken on May 25. This dramatic reduction in growth occurred in spite of abundant rainfall and excellent growing temperatures.

Embark is the original, undisputed leader of all PGRs for use on turfgrass. It is foliarly absorbed and translocated to the growing points of a plant, and redirects the energy to the roots, thus preventing seedhead development and stem elongation.

For almost ten years, Embark has been virtually unchallenged for use on low-maintenance turf such as roadsides and hard-to-reach areas.

But use of Embark on highly visible fine turf was not recommended until 1986, when PBI/Gordon researchers, as well as several universities, had proven that tank mixes of Embark and Ferromec® AC Liquid Iron could eliminate the problems of turf discoloration.

Limit, on the other hand, is root absorbed and has been recognized from its inception as the PGR for maximum growth suppression on fine turf without problems of discoloration. The major drawback was its cost.

Happily, a tank mix consisting of reduced rates of both Embark Lite and Limit has proven to be the perfect marriage. It results in growth control for five to six weeks; control of seedheads and stem elongation; reduction of clipping volumes; strengthening of the roots ... and all of this for only \$45 per acre.

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Association News



CONTRIBUTIONS FROM John Deere Co. and The Andersons enabled the **Professional Lawn Care Association of America** to produce its 20-page Grasscycling Community Action Plan. The undertaking is now available to communities throughout the country.

The community action plan is a major part of PLCAA's environmental public education campaign to encourage the recycling of grass clippings. The plan, designed specifically for municipal governments dealing with landfill problems, includes a public relations strategy to promote public participation and support for the grasscycling concept, as well as technical guidelines for mowing, watering and fertilization.

The grasscycling community action plan will be available only through members of PLCAA. It may be obtained free by contacting a PLCAA member or by sending a check for \$5 to the association.

Lebo Newman has been elected 1991 president of the **California Landscape**

For More Information...

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Contractors Association.

Newman is president of Redwood Landscaping, Santa Rosa, and has been an active member since 1974. He has served three years on CLCA's executive board and was president of its North Coast chapter in 1983-84.

During those years, he served as co-chairman of the association's chapter presidents council.

Also elected to the executive board are

vice presidents Anthony Bertotti of Anthony Bertotti Landscaping, Novato; Peter Berghuis of Environmental Care, Sacramento; Jon Ewing of Landtrends, San Diego; and Richard Jark of South Coast Landscaping, Los Alamitos.

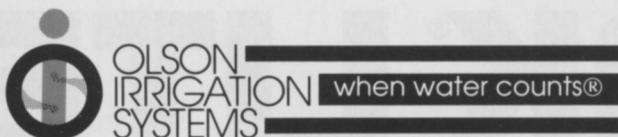
Rick Neugebauer of Neugebauer & Associates, San Bernardino, is secretary; Lloyd Thatcher, Lloyd Thatcher Co., Pine-dale, is treasurer and Susan Flores, Valley Crest Tree, Sylmar, will represent suppliers.

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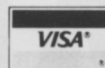


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reader service **48**

The American Association of Nurserymen has released a new publication, *Computer Notes*, which includes 10 automation-related reports written by AAN members.

Created by AAN's automated information committee, the publication offers the nursery and landscape professional money saving tips on a wide variety of topics.

"What do we have on hand that is available for sale?" This is a question common to nearly every business with an inventory. While there is nothing particularly special about the fact that nursery growers ask this question, the fact that nursery inventory has a life of its own, however, does make the growers' inventory problems special.

A successful nurseryman outlines a method that has been custom-developed to handle this question in, "Salable Nursery Crops Inventory Updating Procedure."

Other reports look at networking considerations, an accounts receivable flagging system, electronic bar-code scanners and more.

The **Associated Landscape Contractors Association** recently elected its 1991 officers.

Eldon Dyk, Allen Keesen Landscape, Denver, is president; Tom Garber, Colorado Landscape Enterprises, Arvada,

Colo., president-elect; Gary Thornton, Thornton Landscape, Maineville, Ohio, vice president of finance; Richard Akerman, Northwest Landscape Industries, Tigard, Ore., secretary; and Robert Maronde, Exotic Plant Rentals, S. Elgin, Ill., immediate past president.

Directors-at-large include Rod Bailey, Evergreen Services, Bellevue, Wash.; Joe Carpenter, Landmasters, Gastonia, N.C.; Bruce Hunt, The Brickman Group, Long Grove, Ill.; Ron Kujawa, Kujawa Enterprises, Cudahy, Wis.; and Richard Ott, The Botany Center, Knoxville, Tenn.

David Minor of Minor's Inc., Fort Worth, Texas, is chairman of ALCA's exterior landscape division; Josef Skelton of Lifescapes, Canton, Ga., is chairman-elect; and Michael Guthrie of Ground Control Landscaping, Orlando, Fla., is vice chairman.

Terry Anderson of Tropical Plant Rentals, Houston, Texas, is chairman of the interior plantscape division; Don Horowitz of Plantscape Inc., Pittsburgh, Pa., is chairman-elect; and Cynthia Peterson of McCaren Designs, St. Paul, Minn., is vice chairman.

Paul Rieke, noted turfgrass soils specialist at Michigan State University, last month left for a six-month sabbatical in Palmer-

ston North, New Zealand.

It's been 20 years since Rieke last had a sabbatical leave and he has been looking forward to rejuvenating his own knowledge and skills during his stay "down under," according to the **Michigan Turfgrass Foundation**.

Throughout the next six months, Rieke will be studying and writing at Massey University. He will also be conducting some research at the New Zealand Institute of Turf Culture nearby. One of Rieke's goals during his sabbatical will be starting a book on turfgrass soils and fertility.

Rieke will return to East Lansing in early September. He will be reporting on his trip at the 62nd Annual Michigan Turfgrass Conference next January.

The Ohio Turfgrass Foundation recently elected its 1991 Board of Directors. They are:

Joe Motz, president; Paul Jacquemin, president-elect; Sam Stimmel, vice president, Bill Pound, treasurer; John Fanning, past president; and John Street, executive secretary.

OTF trustees include: Ed Eaton, Fred Bosch, Sue-Ann Brown, Ed Fisher, Tom Walker, Hank Chafin, Don Sweda, Jim Loke and Peter Miller. ■

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Irrigation News

ALBUQUERQUE THRIVES ON SOLAR-POWERED IRRIGATION SYSTEMS

THE SUN IS shining on municipal irrigation projects in Albuquerque, N.M. Unlike what one might expect in an arid climate, the sun actually is making irrigation more efficient and less costly.

The city uses a couple of different solar energy powered systems to irrigate streetscapes and recreation areas, and is quite satisfied with the performance of all of them.

Big money savings don't come from reduced electric bills, however. Major benefits of the solar systems stem from lower initial installation costs, reduced manpower requirements and substantial water savings.

Pete Turpin, superintendent of park management for the city, said the systems have eliminated irrigation installation difficulties such as the tearing up of streets, stringing of power cable and similar hassles that go with a typical installation.

The on-going elimination of the monthly electric bill really is a minor consideration in Albuquerque. Although the city does buy power from the power company, they pay a minimal flat rate which is not even metered.

"On the few systems which do have meters, the power use is so low that sometimes the meter doesn't even go around once," he said.

Bringing traditional electrical service to the five-mile highway strip along Tramway Boulevard required nine controllers; an installation requiring less excavation than many other projects, but would have involved long cable runs.

The Tramway project is a xeriscape. It runs all bubblers and some drip irrigation on a landscape which includes native grasses and local trees and shrubs.

A second streetscape, Ridge Crest, making use of the solar system has more ornamentals, trees and turf. Although only a mile long, it was a more complicated job since there were a number of existing homes and roads which would have been affected, adding to the cost of a traditional installation.

Turpin figures he saved \$40,000 in installation costs on the Tramway project, and cut another \$30,000 off the cost of the job on Ridge Crest simply by avoiding



installation expenses.

Along Tramway, there are nine controllers. At a cost of \$2,500 per unit, the bill for installation was about \$22,500. With full installation costs, he'd have anticipated a bill between \$60,000 and \$65,000.

On Ridge Crest, there are six controllers. Because it is a more difficult installation, Ridge Crest ran about \$15,000 for solar vs. \$45,000 estimated cost for a typical installation.

Albuquerque first got its solar feet wet three years ago with a supplier which since has gone out of business. They made a good product, however, and most of its units are still functioning.

Most recently they are using a system from an Escondido, Calif.-based supplier. Turpin likes the fact that they supply complete systems: panels, poles and power units.

The system is compatible with a number of controllers giving the city flexibility in its choices.

Units generally are quite compact. The solar cell and the controller fit in an 8-inch by 12-inch space. Some, however, require the use of their own wiring system and valves.

Turpin figures Albuquerque now saves as much as 50 percent on water use since it went to the automatic, solar-powered setup. At the same time, he is saving man-hours.

Solar energy powered irrigation systems lower initial installation costs, reduce manhour requirements and save water.

In the past, watering was mainly done during the daylight hours — since that's when the workers were available to monitor the system, turn it on and turn it off.

Daytime, of course, is the least efficient time to irrigate — especially in an area like central New Mexico.

Now, the system turns itself on automatically, sometime around 1 a.m. or 2 a.m. The system's program is inside the self-contained locking unit which sits above the ground. Solar evaporation is at a minimum, and no humans have to be around to operate valves.

The system will function properly even if it has to go for three days without light.

When the city did its figuring, it planned on a six hour per day maximum for length of irrigation. Turpin also figured on going three days without any usable sunlight on the collectors. Actually, they almost never go beyond three to four hours for watering in any one location.

The solar panels are about 36 inches by 18 inches. There is one panel per controller.

The solar collectors seem to thrive on neglect — at least, that's been Albuquerque's experience. The city doesn't even bother to clean them.

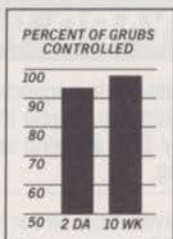
"The rain seems to keep them washed off," Turpin said. "We just let them go. They do everything we expect them to do. Their effectiveness has been great."

Currently, the city is just about finished with conversion projects which require or allow solar irrigation. New projects are expected, however. Turpin said they will consider solar on any new streetscapes which are away from a handy traditional power source.

With the savings on installation, water and manpower the various solar projects provide, it's a move other users of irrigation systems might want to try for themselves. — Curt Harler ■

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

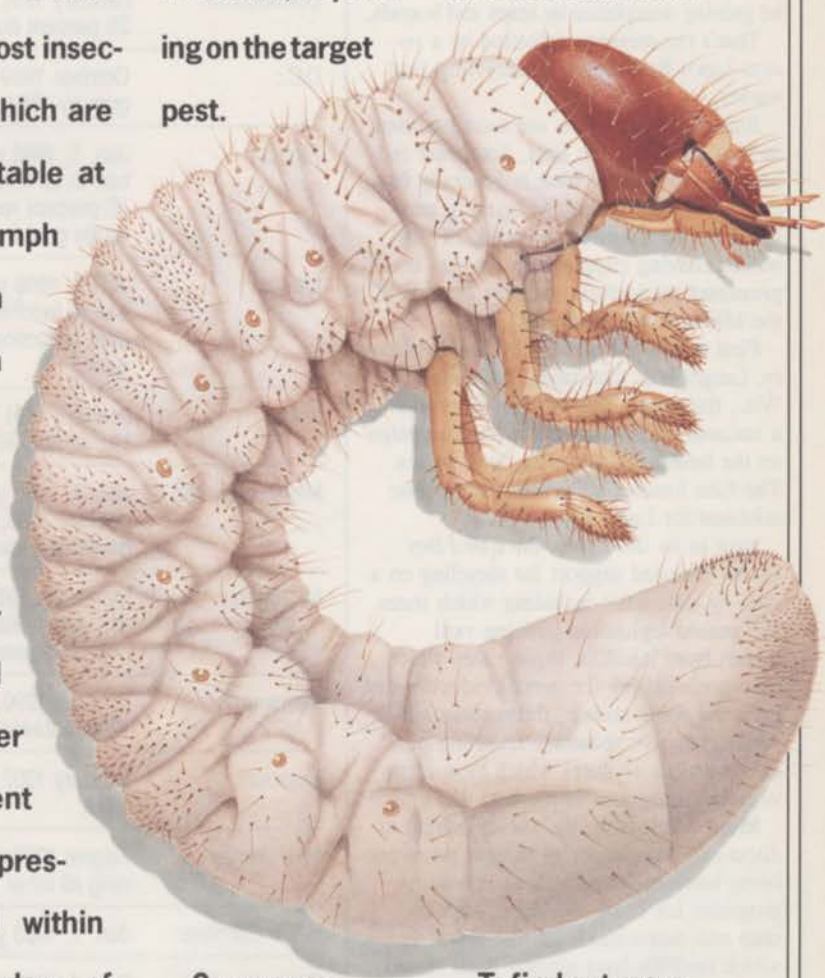
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Focus on Composting

Recycling, Compost Efforts Gaining Nationwide

THE RESPONSIBILITY for development, implementation and policing of recycling programs has landed square with the individual municipalities; and composting, both backyard and municipal, appears to be gaining acceptance by leaps and bounds.

That's the message delivered by a recent Lawn-Boy survey on recycling yard wastes.

Bans and restrictions are most prevalent in New England, the East, Southeast and Midwest, while the West is generally concerned with limitations to opening new landfills and voluntary recycling of yard waste. Leaving clippings on the turf is promoted particularly strongly in parts of the Midwest and Southeast.

First conducted in 1989 by Frankenberry, Laughlin & Constable, Milwaukee, Wis., the survey was initiated to promote a national community education campaign on the benefits of recycling yard wastes. The firm handles advertising and public relations for Lawn-Boy.

Now in its third year, the Lawn-Boy survey revealed support for recycling on a state by state basis including which states had passed legislation banning yard wastes from landfills, those states which have goals calling for overall reductions of the solid waste stream, those states which have aggressive voluntary recycling programs and those states which have some voluntary programs in place at this time.

More specifically, the survey sought to discover what categories of yard waste are being banned, what kinds of voluntary programs are being offered at both the state and municipal level, the extent to which landfills have already been closed, progress toward municipal or centralized composting, types of recycling being recommended by the state, homeowner education and private industry incentives.

Communications with state Departments of Natural Resources determined levels of legislative support for recycling yard wastes.

Certainly, current activities throughout the lawn and landscape maintenance industry show a clear trend toward recycling efforts. And as evidenced in the Lawn-Boy survey, the recycling of yard wastes has achieved a high priority status in nearly every state.

In fact, in many states, primary responsibility for facilitating recycling programs has been taken to the municipal level,

BANNED YARD WASTES

Alabama:	January 1991, all state-funded agencies (schools, parks, government offices, etc.) are required to recycle their yard waste; 25 percent reduction of waste goal by 1995 allowing up to 10 percent to be met with composting/mulching.
Connecticut:	January 1991, all leaves must be recycled. Reduction of waste goal of 25 percent during 1991.
D.C.:	October 1989 yard waste ban to landfills; 45 percent reduction of waste goal by 1994.
Florida:	Jan. 1, 1992 yard waste ban to all lined landfills; 30 percent reduction of waste goal by 1994.
Illinois	July 1, 1990 yard waste ban to landfills; 25 percent reduction of waste goal.
Iowa:	January 1991 yard waste ban to landfills; 50 percent reduction of waste goal.
Massachusetts:	Jan. 1, 1992 yard waste ban to landfills; 10 percent reduction of waste goal by 2006; 46 percent recycling goal and 10 percent reduction of generated waste goal by 2000.
Michigan:	March 31, 1993 ban of all yard waste from state municipal land; March 31, 1995 statewide ban of all yard waste to landfills. Fifty percent reduction of waste goal by 2005.
Minnesota:	January 1990, seven counties banned yard waste to landfills; January 1992 statewide yard ban; 25 percent reduction of waste goal.
Missouri:	January 1992 yard waste ban to landfills; 40 percent recycling goal by 1998.
New Jersey:	August 1989 statewide leaf ban to landfills; many areas in state also banning all other yard waste to landfills; 25 percent reduction to waste goal.
North Carolina:	Jan. 1, 1993 yard waste ban to landfills.
Ohio:	Dec. 1, 1993 leaf, grass and brush ban to landfills; 25 percent reduction of waste goal.
Pennsylvania:	September 1990 leaf-only ban to landfills and incinerators; 25 percent reduction of waste goal.
Wisconsin:	Jan. 1, 1993 yard waste ban to landfills.



where recycling coordinators are responsible for everything from public education to hands-on backyard composting demonstrations, overseeing large-scale composting facilities, recommending recycling products to consumers and even developing recycling programs for school curriculums.

Fourteen states and the District of Co-

lumbia have passed legislation banning yard waste from landfills or laws requiring yard waste be recycled: Alabama, Connecticut, Florida, Illinois, Iowa, Massachusetts, Michigan, Minnesota, Missouri, New Jersey, North Carolina, Ohio, Pennsylvania and Wisconsin.

Many of these states have also called

(continued on page 26)

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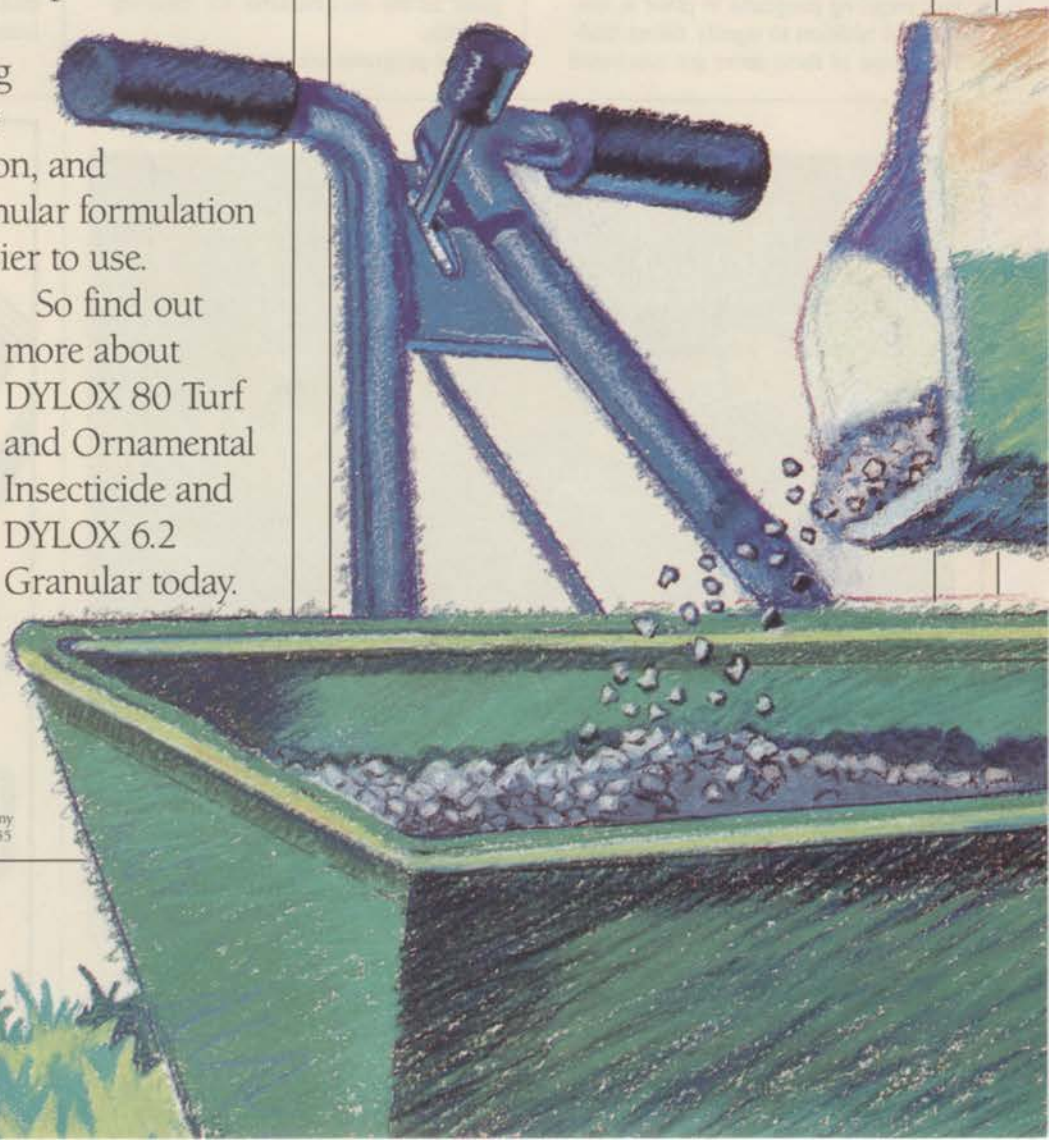
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Focus on Composting

(continued from page 24)

for an overall reduction of the solid waste stream.

Although not specifically banning yard waste from landfills, 17 states have established percentage goals for recycling to reduce the overall waste stream: California, Delaware, Georgia, Indiana, Louisiana, Maine, Maryland, Mississippi, New Hampshire, New Mexico, New York, Rhode Island, South Carolina, Vermont, Virginia, Washington and West Virginia.

A significant number of these states have chosen the recycling of yard wastes because of its cost-effectiveness.

A high proportion of voluntary recycling is apparent in 11 states — cooperation from more than 50 percent of the state — with some cities within those states already banning yard waste from landfills: Arkansas, Colorado, Hawaii, Kansas, Nebraska, North Dakota, Oklahoma, Oregon, South Dakota, Tennessee and Texas.

Seven other states are concerned about preventing a crisis and have some voluntary recycling programs in place at this time. In addition to rapidly filling landfills, some of these states are concerned

about serving as a dumping ground for other states: Arizona, Idaho, Kentucky, Montana, Nevada, Utah and Wyoming.

Alaska was the only state with no apparent concern for or knowledge of yard waste recycling.

In addition to a capsulized view of each state, the survey asked respondents to provide some detail on individual recycling plans within the state.

In Alabama, for instance, 30 percent of all waste to landfills is yard waste. As a result, each municipality will be promoting composting and mulching on a municipal level as well as the homeowner level.

The state supports backyard composting, mulching and leaving clippings on the lawn. Alabama officials have applied for an Environmental Protection Agency grant to produce a "Do it Yourself Composting Guide" for residents, and a composting guide for cities.

Although yard waste comprises 47 percent of all landfill waste in Arizona, the state has passed no bans or restrictions. There are a few small-scale, voluntary programs municipally funded, however, grant money isn't available for recycling projects.

Pilot programs are operating in select

areas of the state.

Resident opposition to backyard composting and leaving clippings on the lawn is predicted by California legislators. Concern also centers around improper homeowner composting leading to odors and health hazards.

Nevertheless, hundreds of voluntary programs across the state exist including large-scale composting facilities.

A previous ban of yard waste in Connecticut was changed to the recycling of leaves. The state prefers not to compost grass clippings due to the high volume and the potential odor problems.

Yard waste is being picked up in Washington, D.C., but it must be bagged separately by homeowners. The waste is being composted or stock piled.

All yard waste is either composted or land applied in Illinois forcing residents to learn and comply with new laws. The state Department of Energy & Natural Resources first promotes source reduction and then recycling, including backyard composting.

The state is responsible for dispensing grant money to municipal and not-for-profit recycling programs, and low interest loans to private industry. Grant funds are

(continued on page 92)

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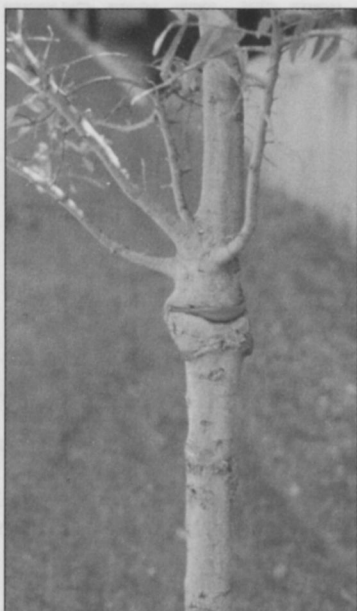
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Industry Viewpoint

UNLEASH YOUR TREE STAKES BEFORE IT'S TOO LATE

Ken Arnold is a semi-retired landscape consultant from Flemingsburg, Ky. As owner of his 20-year-old business, Arnold has worked extensively with trees, organized the first Kentucky Turfgrass Council, designed and constructed commercial landscape projects throughout central Kentucky and is a member of the Kentucky Nurserymen Association, American Association of Nurserymen, the Associated Landscape Contractors of America and the Southern Association of Nurserymen. In this article, Arnold encourages maintenance contractors to give consideration to the maintenance of trees, particularly through proper staking.



Hoses, wires and other materials used to stake trees should be removed as soon as possible.

was going to be special.

So the day those ladies came and chose me, I was happy. I heard someone say that they were from the garden club at the state capitol, so I was proud because I knew I would be placed in a choice spot where thousands of people would come to watch me grow, bloom and smile for years. It was great.

They took me to a special site near the capitol overlook, on an island at the entrance to the city. Everyone could see me, and I could wave hello to all entering the city and those going down the hill to the famous floral clock and great capitol. Some of my family are near the clock and capitol.

Everything went well. They chose a beautiful spot for me and they took along four of my first cousins so we could be a group and stand tall together. They placed our feet in soft peatmoss, gave us food and water and even wrapped our bodies with some soft white paper.

Then to help us stand and grow straight, they placed a rubber hose around us and wired it to the ground. I worried about that wire and hose, but someone said it would come off in one season as soon as we established some new roots.

I was so proud to be in my new home by the roadside that I could feel myself making my new roots. I pushed hard to establish myself, for I loved my new home; I was proud to be here.

After about a year, I kept watching for someone to come and take that wire and hose off me. I had grown and it had be-

gun to feel tight, but no one came.

In the fall, about one and a half years later, it began to hurt and I could feel its constant squeeze on my body. All my water comes up from my feet and I was getting thirsty. Nonetheless, I kept trying to grow in hopes of breaking that bond because it was really getting to me.

By the second year, I really began to pray. Everyday I saw people walking by me who could free me, but no one did.

Supposedly, they are trained to watch me, protect me, spray me and feed me. Once they came by and sprayed some worms who attacked me. They also came often to mow the grass from around my friends and me, but they couldn't see that we were being strangled to death.

I wanted to live, grow, flower, smile and show off my brilliant fall color and little red apples. Why did this have to happen to me?

Then one day last summer a man whom I hadn't seen before came to help, but I could tell from the look of sympathy and kindness on his face that it was already too late.

He began tearing loose the wire and hose. Two of my friends had already died, for it had been four years now since we were placed here by the roadside.

I had watched them die, it was an awful death. This new friend took my bond away and spoke softly and said a prayer for me, that God might spare me.

Once we were a family of five — proud and beautiful, full of life. Now I am a memory in the hands of my new friend. Three of my family lived to grow, thanks to my new friend.

But I am but a wooden memory to be shown to many as an example of how not to treat a beautiful friend, one that could have captured the eyes of thousands of tourists as they entered our capitol city. — Ken Arnold

LLM encourages its readers to submit their views and opinions. Send articles to 4012 Bridge Ave., Cleveland, Ohio 44113.

I WAS ONCE a small tree — maybe 12 inches tall. I stood very straight and stretched each day to grow taller, grow wider and to be beautiful.

I really felt good because I could see over my friends and I knew I would be the pick of the lot.

One day my friends told me how lucky I was to have a dad and mom who were really beautiful. My dad was tall and handsome, and my mom was short and pretty. She had a smile as big as a flower.

When I grow up, I asked, "Will I smile like a flower?" Everyone laughed and said "Sure you will silly, you're a flowering crab apple. You'll flower, then you'll grow beautiful little red apples that will shine bright nearly all winter long. Everyone will love you."

One day when I was about six feet tall, a group of ladies from a local garden club came by and picked me out of the lot. I had been dressed up by a nurseryman, pruned and my feet had been wrapped in some burlap, but he was careful with me. I knew by the way I had been treated, I

LAWNMARK: DEVOTED TO WHAT IT DOES BEST

Lawnmark's Marty Erbaugh and Jim Wilkinson retain a sharp focus on residential lawn care despite increasing regulatory interference and an industry urge to diversify.

By Kevin Tanzillo

LAWNMARK CARVED itself a highly successful niche by focusing on one service — residential lawn care. And the company and its energetic founder, J. Martin "Marty" Erbaugh, intend to stick with it.

The 12-year-old company, with \$11 million in sales in 1990 and plans for \$20 million a year by 1995, does 92 percent of its business in the residential market.

Erbaugh said that ratio may change slightly as Lawnmark targets a few more commercial contracts, but he doesn't see residential lawn care dropping below 85 percent of Lawnmark's customer base. Nor does he want it to.

And despite an industry trend toward service diversification, Erbaugh isn't interested.

"I have seen too many cases where diversification is not a panacea; where it ultimately causes a shift of focus on the part of management and employees," he said. "We stick to the knitting around here, and we're going to continue to do that."

It's hard to argue with success. Erbaugh, after all, guided the Hudson, Ohio-based company from ground zero to where it is today.

Before getting his start in lawn care, the 42-year-old president of Lawnmark studied religion at Denison University in Granville, Ohio, where he met his wife, Lynne, and was graduated in 1970. He then studied law at Case Western Reserve University in Cleveland, passed the bar in 1973 and took evening classes toward a MBA degree at Kent State University.

Erbaugh dabbled in law — "I never even hung my shingle out," he said — before getting into the business he continues in today.

His wife's family was involved in The Davey Tree Co. in the Akron, Ohio, area and Erbaugh began handling business leases for Davey. He became familiar with the business and went to work full time for Davey in 1974.

"One of the first things we looked at was why wasn't Davey in the lawn care business? ChemLawn was beating us at our own game. I did the market research which led to Davey starting a separate division focusing on high-production residential lawn care.

"I built that first division and grew it like hell, and in three or four years had it up to \$3 million."

But Davey was a family business and when the family decided to sell it, Erbaugh and a group of employees left to start Lawnmark in late 1978.

Their first move was to set up shop in Akron, Ohio; Milwaukee, Wis.; and Rochester, N.Y., for the 1979 season. Erbaugh had started operations in Milwaukee and Rochester for Davey

LAWNMARK, INC.

HEADQUARTERS:

Hudson, Ohio.

FOUNDED:

Incorporated Dec. 4, 1978 as Erbaugh Corp.
Lawnmark registered trade name Jan. 13, 1979.

OWNER:

Privately held company. Marty Erbaugh, primary shareholder.

PRIMARY SERVICES:

Residential and commercial lawn care including core aeration, overseeding, limestone application, soil testing, and in some markets, grub control.

EMPLOYEES:

250 year-round, 75 seasonal.

1990 SALES:

\$11 million.





A 15-year friendship between Marty Erbaugh (left) and Jim Wilkinson culminated in the latter accepting a position as chief operating officer with Lawnmark. Wilkinson will run the day to day operations of the firm. Photo: Roger Mastroianni, Cleveland, Ohio.

the season before. He brought the managers he hired then with him.

"We planned on losing money the first year, and exceeded our plan," said Erbaugh with only a hint of a smile. "But we had some things going for us. We had good banking and good personal contacts. As time evolved, we grew like a rocket in Rochester. Today, it is our largest single branch."

Lawnmark dumped the Milwaukee operation in 1981, concentrating its efforts on northeast Ohio and upstate New York.

"Hindsight is always good, but I wish we would have opened in Syracuse and Rochester rather than Milwaukee and Rochester," Erbaugh said in retrospect.

"In Milwaukee, a good smart

competitor came into town just about the same time and beat up on us. They had more resources to invest. If I had it to do over again, I would be more careful in my assessment of the competitive situation. We are more careful now."

GRANULAR EMPHASIS. From the start, the company emphasized the use of granular pesticides and fertilizers.

"We differentiated ourselves by offering a granular program and marketed that difference pretty aggressively," Erbaugh said. "It touched a responsive note. People apparently felt it was safer since they could see it; granules are tangible. There were also the

drift-related issues."

Growth has been steady through the years for Lawnmark, but Erbaugh recalls 1983 as a turning point.

"We took a lot of people with us from Davey Tree. We started with zero sales and a lot of costs. Our challenge was simple, to get to a break-even point," he said.

"We lost money in 1979 and 1980, didn't quite make back what we lost in 1981 and made enough to be happy in 1982. But in 1983, we did \$1 million worth of business in Rochester. That was the year I knew we were going to have a business here. Once we popped that, we were on the road."

It was in 1982 and 1983 that Erbaugh was president of the Pro-

fessional Lawn Care Association of America.

"During those days, it was a very close-knit group of entrepreneurs," he recalled. "I made a lot of friends."

One of those friends was Jim Wilkinson, a prominent figure in the professional lawn care industry. Their friendship of 15 years culminated a year ago when Erbaugh hired Wilkinson as chief operating officer of Lawnmark.

Erbaugh first got to know Wilkinson in the mid-1970s when Erbaugh was with Davey Tree and Wilkinson was a professor at The Ohio State University.

Wilkinson taught and conducted research at Ohio State for four years after earning bache-

lor's and master's degrees from the University of Rhode Island and a doctorate in turf management from Michigan State University.

Wilkinson then became director of research for ChemLawn for five years, followed by a seven-year stint as vice president and general manager of Old Fox Lawn Care in Rhode Island.

When that company was sold to TruGreen, Wilkinson became director of regulatory affairs for PLCAA, and later executive director of the Pesticide Public Policy Foundation.

"I fancy myself as a starter-upper kind of a guy. We have built this business to the size where it is in many ways beyond my capacity to manage efficiently," Erbaugh said frankly as he explained why he brought Wilkinson aboard.

Wilkinson, 43, now runs the day-to-day operations of Lawnmark which operate in 12 mostly small urban areas. The size of the markets are the result of a conscious business decision Erbaugh made long ago.

BIG FISH IN A SMALL POND. "We tended to focus originally on secondary population centers, a classic case of being a big fish in a small pond," Erbaugh explained.

"At the time those decisions were made, our major competition was big, strong and tough. We were intimidated in the metropolitan areas by ChemLawn and TruGreen. But as leadership has shifted, now we see we can compete in the big markets."

Lawnmark has its eye on Virginia and New England for expansion, and just recently acquired the assets of TruGreen branches in Rochester and Syracuse and Youngstown, Ohio. The move represents about 6,000 new customers.

Erbaugh and Wilkinson agree the top priority in moving into a new market is a capable, trustworthy branch manager.

"The people running it are much more important than where it is," said Wilkinson, adding that all Lawnmark managers have come from within the organization's ranks.

"Once people at Lawnmark become branch managers — other than the fact that we are just two wonderful guys to work for — I think we are able to keep them

excited about their jobs because of our continued growth and opportunities for them," he said.

"Also, we compensate our managers well. We provide a series of bonuses to our management people based on growth or profitability of their branch. They can do very well on their bottom line at the end of the year."

Lawnmark managers are paid \$30,000 to \$60,000 a year, depending on seniority and their market.

Erbaugh has a lot of confidence

Lawnmark has its eye on Virginia and New England for growth.

in the managers working for him:

"I'm the guy with a marketing orientation, but no historic background in turf. But I learned a lot at Davey Tree. I worked in the field — applications and sales — for three years there, and in the first three years here; I had to.

"As a result of my experience, there isn't a branch manager who runs an operation for us who hasn't done likewise," Erbaugh explained. "Some of our competitors hire from the outside, and there is a time and place for that, but I sleep at night knowing our branch managers know our business, the way we do things and are trustworthy."

TAKING ON COMPETITORS. The giants may have scared Lawnmark in the early days, but today, the company's biggest competition comes in small packages.

"Our principal competition is the smaller lawn care operator who can offer a low price because they have no overhead, and can offer personalized service because they have such a limited customer base," Wilkinson said. "Their relationship with a customer becomes one on one."

To counter that, Lawnmark hammers the importance of superior customer service into its employees.

"We recognize that price does play a significant role in this industry," Wilkinson said. "The

marketplace is price sensitive, and Lawnmark must be as price-competitive as our competition."

"There is a maturing of this market," observed Erbaugh. "Consumers are less swayed by sharp marketing. They are more knowledgeable. We are in a classic move from being marketing driven to being service and quality driven."

Accordingly, he said, "Our people at the customer service level are trained, experienced and empowered to act on behalf of Lawnmark. They have a perception of their job as one of high value."

For instance, if the applicator feels that a product mixture needs to be changed after looking over a customer's lawn, he or she is free to do so.

"I think we do a better job of lawn care than those people who have spread themselves thin and try to do a number of what we see as non-lawn care things," Wilkinson said. "They have taken their focus off what they are trying to do. We have our share of supplemental services, but they are aimed first and foremost at servicing residential lawns.

"Our principal focus is going to remain residential lawn care. We do recognize that there is a market for tree and shrub care and a number of lawn care companies have taken on that business, but we are very concerned that we don't let the tree and shrub business — should we get into that — take our focus away from residential lawn care."

Lawnmark's supplemental services augment the normal five-application program of fertilizer, weed killer and insecticide. Those services include core aeration, overseeding, limestone application, soil testing, and in some markets, grub control.

NEED-BASED APPLICATIONS. Lawnmark practices integrated pest management, but doesn't use that name with employees or customers. The company prefers the term "need-based applications."

"A significant part of integrated pest management is education of the consumer," Wilkinson explained. "Companies such as Lawnmark will never control every weed and every pest. If the customer mows and waters properly and plants insect resistant

varieties of grass, it contributes to lowering the overall use of pesticides on the lawn.

"On every invoice, we provide a site analysis. We tell the customer what he or she is doing right or wrong, particularly in mowing and irrigation. We'd like to say this works, but I have to say that the whole issue of customer education and cooperation is a long-term project.

"In far too many cases, the consumer still looks at the bottom line of the invoice, and doesn't pay as much attention as we would like to the information we leave on mowing and watering."

But Wilkinson said leaving notes is not enough for Lawnmark. The company's policy is that customer service representatives must talk to customers face to face or call them on the telephone. They also call customers to notify them of applications.

Lawnmark's top market and four of its other service areas are in a state known for its aggressive regulation of pesticides and lawn care companies.

Rochester, N.Y., is still Lawnmark's biggest market, and New York accounts for 55 percent of its business. The company also has operations in Syracuse, Utica, Binghamton and Albany.

"New York is significantly more aggressive in terms of regulating the lawn care industry. The bottom line is that it is more dif-



difficult and costly to do business there. But we have done our best to turn these regulatory issues into positive customer service issues," Erbaugh said.

"For example, we must have a written contract with customers in New York. Three or four years ago when the law passed requiring us to do that, the industry thought it was going to be a disaster. We have learned through properly wording our contracts, that there is a lot more positive that comes out of contracts than



Lawnmark anticipates a growth of more than 13 percent this year.

negative.

"As a result, we use customer contracts in every state we do business in, not just New York."

The U.S. Supreme Court's pending decision on whether municipalities have the power to preempt pesticide legislation set forth by the Federal Insecticide, Fungicide and Rodenticide Act have Lawnmark concerned, but not worried.

"If the court decides that localities do have the authority, clearly, it would have an impact on the lawn care industry. It would have far-reaching consequences," said Wilkinson, not that far removed from his pesticide lobbying days. "But with a couple of exceptions, there have not been real efforts on the part of localities Lawnmark operates in to regulate pesticides."

LOOKING TO THE FUTURE. A restored 120-year-old octagonal barn is headquarters for Lawnmark, a privately-held company which offers no franchises. Erbaugh holds a majority of the shares, but Wilkinson, three vice presidents and about four other

employees are also shareholders.

The company is looking for \$12.5 million in sales this year, a growth of more than 13 percent over 1990. But what about the recession?

"We haven't felt any impact from the recession at all," Wilkinson said. "For the most part, those metropolitan areas where our branches are located have been spared the worst of the recession. If we had a bigger presence in New England it might be more of a factor."

Looking beyond 1991, Erbaugh said, his company's mission will remain the same: To deliver high-quality lawn care to residences and businesses, and leading in its markets by aggressively and cost-efficiently marketing its services.

"As far out as I can see, people are still going to want to have the convenience of this type of service and to have nice, presentable properties. The demand will be there and I don't see a major shift in our focus," he said.

"We will take a stronger look at tree and shrub care because there are some customers that want the convenience of using one company. And we'll focus a little more heavily on the commercial market with Jim's expertise in that area.

"But I think the regulatory environment 10 years from now will become known rather than unknown. In that context, we will work with a given set of rules as

About 92 percent of Lawnmark's business is in the residential market.

opposed to an everchanging set of rules."

Added Wilkinson: "The regulatory environment will clearly be more restrictive, but we will know where we stand. Our job will be more difficult as the range of products available to us changes. But customers' demand for high-quality lawns will remain high and their demand for service will increase. The move to need-based applications will be even stronger."

Erbaugh, who tools around in a white Jaguar with the personalized license plate, "LAWN 78," has doubts that he could recreate his success if he had to start up in 1991.

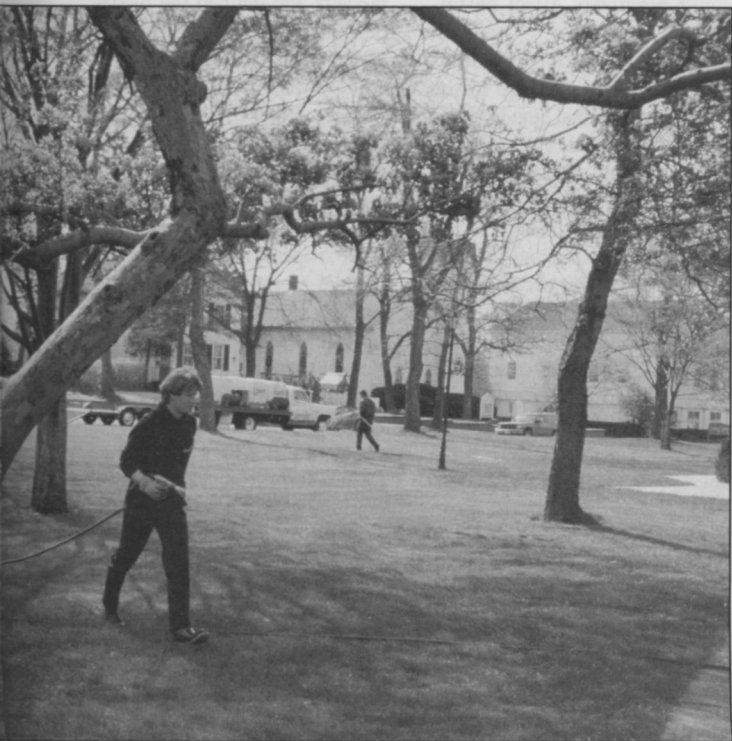
"Conditions are different today, in that consumer expectations correctly are a lot greater than when we started. The competitive dynamics are much different.

"How you approached the first users, those who were discovering lawn care, was a lively subject then. There are very few first users now. The other dynamic is the whole issue of liability related to being a user of pesticides.

"I tell people that we have the worst of all worlds. We have young guys driving trucks in residential areas carrying pesticides. But we have had the same insurance carrier since day one and have been treated well. Still, for a lot of people that question of liability would be a constraint on establishing a business."

With a few exceptions, Lawnmark hasn't run into many regulatory problems.

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



DEFUSING BLOWER BANS

BEFORE THEY CRIPPLE YOUR FIRM

The tool that modernized many lawn and landscape businesses is now the villain in many California cities, and quick action is needed before gas-powered blowers become extinct.

By Cindy Code



CALIFORNIA communities are retrenching and firing new ammunition in the nasty blower ban saga. And if landscape contractors don't look out, legislation could soon cripple their businesses.

So what's a contractor to do? The tool that modernized many lawn and landscape businesses, and often holds the key to labor and time shortages is now the villain in many California cities.

Quick action is needed to defuse the municipal urge to ban gas-powered blowers before it's too late. And although targeted as the number one culprit, it's not just backpack blowers. All power equipment — bans generally apply to 35 to 40 cc engines — will soon be scrutinized not just because of noise, but because of emissions.

The answer is simple: education, training and common sense.

"It's not insurmountable, but it's a definite concern," said Robin Pendergrast, a partner in Inter-

national Marketing Exchange, Northfield, Ill., and the predominant voice in the race to save blowers. "It's gone beyond the passive social stage. We don't want to get into legislative bureaucracy."

Pendergrast said he spends most of his time trying to educate council members on the role of blowers, namely backpack blowers, and encouraging landscape contractors to use common sense when operating blowers.

"Professional landscapers have ignored the appropriate use thing," he said. "The answer is to have a final judgment that the leaf blower is not the problem, but the people are."

Based on surveys in Santa Barbara and Los Angeles it became apparent that the concentration of complaints were generally lodged at 6 a.m. stemming from machines operating at full throttle.

The controversy has been ongoing, nearly since the indoctrina-

tion of gas-powered blowers in the early 1970s. But recent history dates back to 1986 when the Los Angeles City Council sent a message to manufacturers, challenging them to reduce the noise level of leaf blowers.

In the five years since, two generations of blowers have been introduced eliminating many pieces of equipment. Today's average dba is around 70 to 72 decibels at 50 feet, whereas four years ago the average was 88 dba at full throttle.

Can decibels be further reduced? No one knows for sure, but some are willing to bet that the industry has reached the limits of technology.

"If we get much lower, we'll lose all performance," said John Keeler, vice president of sales and marketing for Redmax, Norcross, Ga. "It's the fan noise not just the motor itself."

Indeed, it's the impeller, which generates air and forces the blower to whisk away grass clippings, leaves and other debris, which is considered the culprit. The impeller can be altered to a certain degree, but too many changes could negatively affect performance.

Following up on procedures established one year ago by the American National Standards Institute, the Portable Power Equipment Manufacturers Association is developing a proposal setting reasonable decibel levels.

ANSI set testing and labeling procedures for blowers, but level standards have yet to be set, according to Don Purcell, PEMA president. The manufacturers association isn't a standard setting organization, but its engineering committee is currently investigating possible recommendations for ANSI.

"Unless the industry comes up with a realistic level of sound and pays attention to the concerns of residents, it will be done for us on a patchwork basis," he said.

Although it's a controversial issue, Purcell hopes the association can come up with a fairly

quick recommendation.

City councils should realize that bans on blowers include city parks and recreation departments, he said. City costs will increase just as those of landscape contractors.

Knowing this, the quarrel still exists.

Regardless of repercussions, Los Angeles is committed to doing something, according to Pendergrast. Setting arbitrary decibel levels at 60 isn't realistic, but being considered nevertheless by city leaders. The only units said to operate at this level are electric.

"It'll be a railroad job if they get away with it," he said. "The city council doesn't know what they're doing. It's a dangerous precedent to set."

ORIGINS. During the Southern California water shortage of 1976, leaf blowers grew in popularity as operators discovered various ways they could use the equipment to conserve water.

When the residents of Beverly Hills complained about the noise, however, the council rejected the notion of trying to regulate leaf blowers and banned the blower outright. This ban has proven unenforceable, as leaf blowers are still spotted operating within Beverly Hills.

Afterwards, leaf blowers generally weren't considered an issue until the late 1980s. An influx of small lawn care businesses sprung up, and operators unfamiliar with the leaf blower's capability continually ran the machine at full throttle, and often began operations at annoying hours of the day.

Most landscape work can be cleared up at half-throttle just as efficiently as with a machine set on full throttle. Other pieces of equipment, such as the chipper and saw, are said to run at higher rpms, but haven't been targeted like backpack blowers because they aren't as commonly used.

Los Altos wants to ban gas-powered blowers beginning June 1, and restrict use of electric blowers to 9 and 5 p.m. seven

SAMPLING OF CALIFORNIA CITY BANS OR RESTRICTIONS ON USE OF LEAF BLOWERS

days a week. Blowers will be required to operate at 75 dba from a distance of 12 1/2 feet; unrealistic according to industry representatives.

Ojai, Calif., wants to update the city's 1974 noise ordinance to include barking dogs, blowers and other mechanical devices.

Conversely, the drought is forcing some California communities to rescind bans. Palos Verdes and Carmel are among them.

So it's an evolutionary problem and just beginning to pick up steam.

Other than California, three cities in the Chicago area, Palm Beach, Fla., and seven cities in New York are looking at restricting power blowers and users. Palm Beach essentially wants to ban gas blowers Jan. 1, 1992.

The priority in Lake Forest, Ill., is to get maintenance firms registered so they can receive timely information about manufacturers' changes toward quieter machines, according to Frank Mariani, Mariani Landscape, Lake Bluff, Ill.

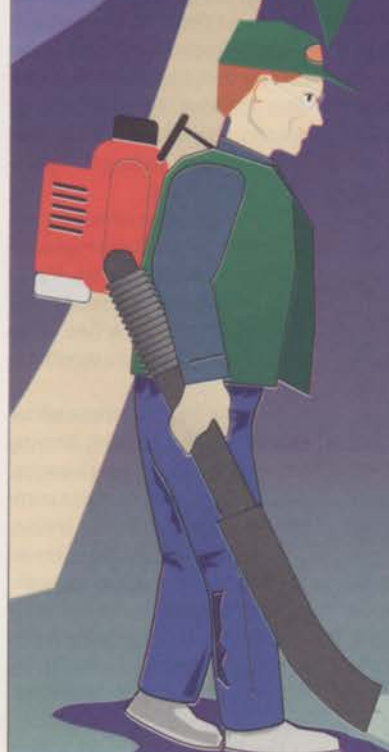
Secondly, common sense time restrictions are on the horizon: 7:30 a.m. to 8 p.m. weekdays and 8 a.m. to 6 p.m. weekends.

"Our firm has no problem complying with time restrictions; we do it already," Mariani said. "A lot of communities are discussing limiting decibel levels. That's going to be a nightmare."

Blowers registering at 70 dba are being rejected by city councils, while that noise level is remarkably quieter than one or two years ago, according to Mariani.

In a public meeting, Lake Forest reported it registered 12 complaints against blowers in a two-year period; a relatively insignificant number considering Mariani appears 100 times a week in the Chicago suburb.

"The majority of the problems aren't homeowners complaining about contractors, but neighbors complaining about neighbors," he said. "It's the responsibility of all of us not to start too early or run



Los Angeles	City Council to discuss ordinance requiring 65 dba for powered equipment in residential areas.	Coronado	Decibel limitations depend on zoning. 7 a.m. to 7 p.m. single family residential; noise can't exceed 50 decibels beyond property line where noise is produced
Berkeley	Total ban currently in effect. Questioning technique used to establish ban.	Davis	9 a.m. to 10 p.m. Sunday-Thursday allowed to operate equipment. Noise level for any individual piece of equipment not to exceed 83 dba at 25 feet.
Del Mar	Leaf blowers banned.	Palos Verdes Estates	Leaf blowers banned.
		Beverly Hills	Total ban on gas blowers. No restrictive ordinance on electric.
		Hermosa Beach	Leaf blowers banned.
		Laguna Beach	Blower has to be equipped with a muffler device sufficient to deaden noise.
		Palo Alto	Fuel powered leaf blowers permitted with 75 dba or less Monday-Saturday, 9 a.m. to 5 p.m. and Sunday 10 a.m. to 4 p.m.

too late."

To better deal with blower restrictions, Mariani Landscape will upgrade its equipment sooner than anticipated to obtain quieter blowers and weed whips among other things.

The bottom line: to protect clients' costs. A ban on blowers could easily increase time on the job by 30 percent, Mariani said.

Anywhere power blowers are used extensively in influential areas, there's going to be a problem.

Barry Konier, president of Landscape West, Los Angeles, Calif., said his firm solved the problem by installing governors

on power blowers before letting them out of the shop.

"Guys generally turn the throttle up all the way when there's no need for that," he said. "Governors results in about one-half the power. So far it's sufficing."

OUTLOOK. In Pendergrast's estimation, the situation is going to get a lot worse before it gets any better. To date, he has worked with about 75 municipalities, mostly in California.

Most assume California is suffering the brunt of the problem because they work a longer season, often start early and run late and service some affluent neigh-

orhoods. Whatever the reason, all it takes is a few constituents complaining to their council representatives, and the issue becomes a political hot potato.

Take Claremont, Calif., for instance. Despite pressure from Pendergrast and a group of landscape contractors, council members in that city went ahead and banned leaf blowers. Pendergrast thinks the situation could have been avoided, but warnings and opportunities were virtually ignored.

It's the same scenario in San Diego.

Illustration: Jeff Clark.

MACHINES FROM HELL OR JUST POWER TOOLS?

IN SOME cities, anger over the noise generated by gas-powered blowers has gone to the extreme. It may not be a problem in your community, but after you read the following situations, you'll quickly become aware of how bad it gets.

A maintenance worker cleaning a sidewalk with a leaf-blower was stabbed by a man who apparently objected to the noise drowning out his telephone conversation.

A report in the *San Gabriel Valley Tribune News* detailed how a Los Angeles maintenance contractor had been cleaning off a parking lot surface and was starting to work on a sidewalk when he neared a

man talking on a pay phone.

The man talking on the phone apparently walked up to the contractor, stabbed him with a knife and returned to the phone to complete his conversation. The attacker then walked to his car and drove away.

The contractor was treated for an inch-wide wound in his side. The attacker hasn't been caught.

A *Wall Street Journal* article told the story of a suburban woman who asked a neighbor's gardener to turn down his blower. In response, the gardener made an obscene gesture and told her what bridge she could jump off.

And in Santa Barbara, a reader of the *News Press* wrote: "Not only are they extremely noisy, but blowers blow pollen, dust, molds and dried animal and bird droppings into the air. Leaf blowers do not clean, they just move matter from one neighbor to the other."

Residents attending a Santa Barbara city council meeting said limiting the hours during which blowers can be used doesn't work. One councilman agreed saying, "We're picking on an industry that has already been hit hard (by the drought). But I hate these things and would like to get rid of them." ■

Proposed legislation states that gas-powered leaf blowers or similar blower devices producing 70 or more decibels measured at 50 feet, cannot be operated within 50 feet of any residence, hospital or similar surroundings.

After July 1, 1993, blower equipment will be limited to less than 65 decibels. The 50-foot restriction does not apply to the owner's own residence or operator's contract locations, but does apply to adjacent residences, hospitals, etc.

In addition, all machines must pass an annual noise level check performed by the city's general services department, communications and electrical division and any agencies designated by the division.

Blowers will be restricted between 8 a.m. and 7 p.m. weekdays and from 9 a.m. to 5 p.m. weekends and holidays. Testing fees are to be determined.

"Unfortunately, the activity in Los Altos and Los Angeles as well as other cities we are currently working with doesn't reflect the fact that the problem is not the noise of leaf blowers, but the continued inappropriate discourteous, and in some cases, absolutely incredibly rude use of all power equipment by some homeowners and commercial landscapers," Pendergrast said. "Lawn mowers, chippers, you name it, are going to make noise and quite candidly irritate the hell out of anybody if used at 5 a.m. or 3 on a Sunday afternoon.

In their hurry to enact restric-

With a little common sense, power blowers can stick around.

tions, many cities forget that homeowners and city crews use blowers extensively. Los Angeles city crews are said to use about five dozen blowers.

Homelite Division of Textron estimated there are 750,000 million gas blowers in use by consumers today. Industry sales of gas-powered blowers have increased from 50,000 annually in 1980 to an estimated 700,000 units in 1990.

ON THE BRIGHT SIDE. Fortunately, cities like Irvine, Calif., bothered to get input from those close to the situation. The city worked with residents, gardeners and leaf blower distributors and manufacturers when writing its ordinance.

As a result, Irvine last year instituted a benchmark program on licensing and training, including guidelines for appropriate operating hours and decibel levels.

Commercial operators must attend a 45-minute city course on proper use and maintenance of leaf blowers. All operators, whether commercial or private, must have their equipment tested to

make sure it doesn't emit more than 70 decibels at full throttle, measured from 50 feet away.

Commercial operators must carry a certificate showing they have attended the class, and all operators must have a seal on their leaf blowers indicating they passed the noise test.

Inspectors issue a warning notice on the first offense; repeat offenders are given citations. Violations are considered a misdemeanor, punishable by a fine of up to \$1,000 and up to six months in jail or both.

The city has had tremendous success with warnings, turning warnings into compliances. About 90 percent of noise complaints have dropped in Irvine.

Nineteen building and safety inspectors assigned to specific areas of the city have been watching for violations of the ordinance. Police can also enforce it, and residents are encouraged to report violators.

San Diego is expected to draft similar guidelines.

EDUCATION. The California Landscape Contractors of Ameri-

ca want to assist landscape contractors in understanding the importance of self-regulation. The association will offer educational sessions at its Green Tech Show in Long Beach.

Representing 2,000 members, the CLCA also plans to distribute a position paper on the proper use of equipment, according to Sharon McGuire, executive director. The association is encouraging contractors to discuss the issue with their dealers and distributors who in turn will contact the manufacturer.

It's Pendergrast's hope to incorporate a peer-motivated program through dealers and state associations which will rid communities of inappropriate use of all power equipment, not just leaf blowers.

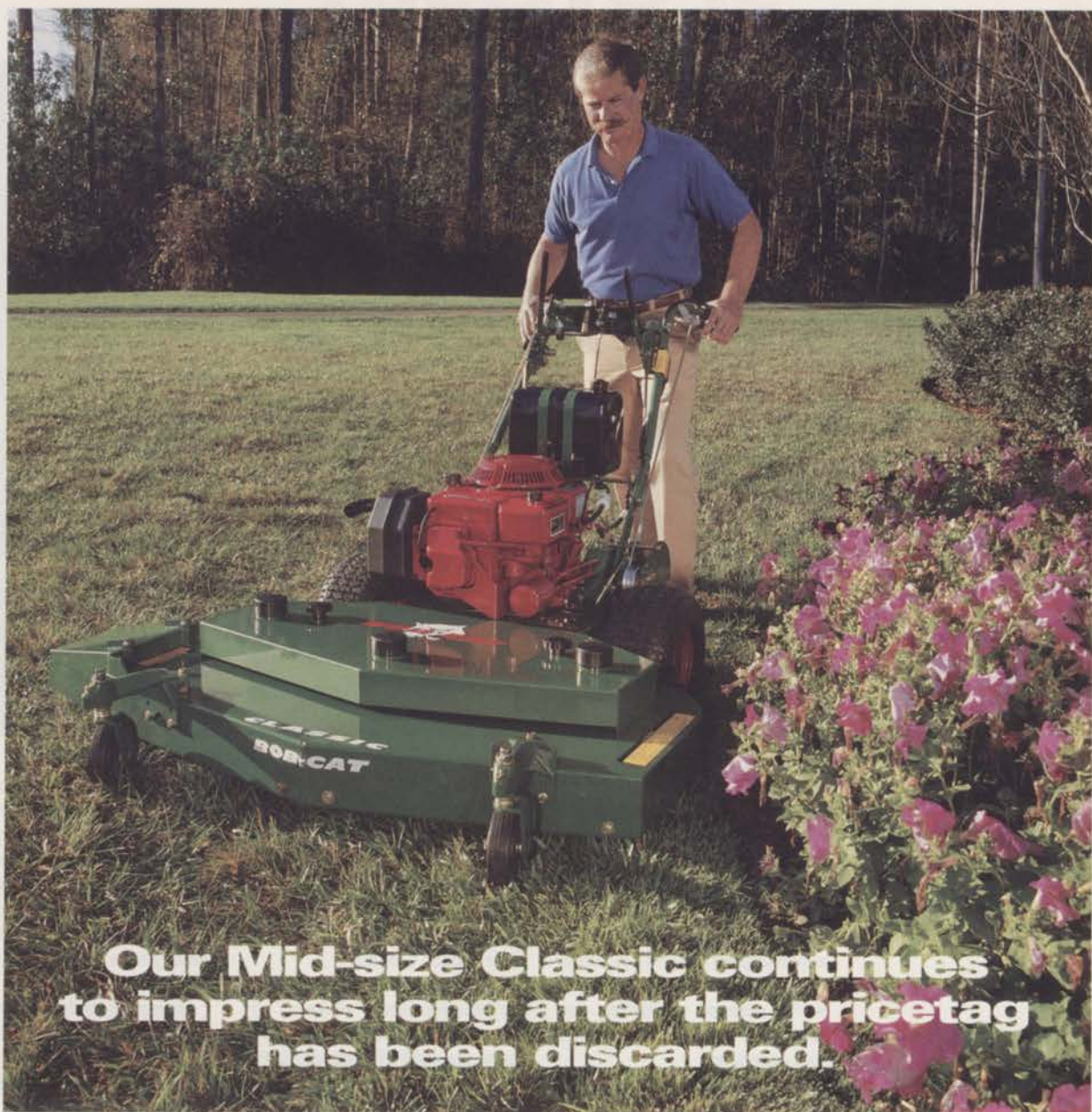
"It's important to use products appropriately, keep them maintained and pay attention to local ordinances," he said. "It's going to affect their bread and butter if they don't change their ways.

Pendergrast is instituting an educational program with Echo dealers in an effort to reach all users of leaf blowers. The four-hour program stresses courtesy in choosing hours of operation, avoiding neighboring properties, open windows and other places where dust and noise might be a nuisance, using such accessories as nozzle extensions, using lower and quieter speeds and cleaning up properly.

To reach small businesses, Echo also printed a brochure in six languages which explains the proper, courteous use of leaf blowers, whether gas or electric.

The author is Editor of Lawn & Landscape Maintenance.





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PAIRING PLANT NEEDS WITH **PROPER EQUIPMENT**

*Soil augers,
clippers,
loppers, shears,
spreaders and
more make up a
tree contractor's
equipment arsenal.*

By Bob Gitlin



**Aeration is an
important aspect
of tree
maintenance
to provide
breathing room
to overly dense
areas of trees
and shrubs.**

SOME PRETTY hot issues relate to the use of equipment for maintenance of trees and ornamental shrubbery, not the least of which is liability insurance.

Some operators wonder if it's worth it anymore to include trees as part of their general landscape efforts. Many "sub out" their tree work, perhaps stipulating any vegetation over 15 feet might go to a specialist.

Taking care of trees is no secondary matter, and landscape professionals involved in the area ought to keep that in mind.

"When you have a new installation, you invest a lot of dollars for trees. But a lot of people overlook the first 90 days," said Wayne Du Bois, who owns Mission Landscape Services, Santa Ana, Calif. "Regardless of what material you use, if it's installed wrong and trees are tied wrong, it's keeping the trees from growing vertically, it's keeping them loose."

Use of the proper pruning equipment to "tip" trees is an art not practiced as often and as well as Du Bois would like to see it. Too many people prune from the bottom up, he said.

His business concentrates on

carrotwood, ficus, jacaranda and eucalyptus trees.

"They let some of these eukes get up and they get mismanaged," Du Bois said, citing inept tree workers who cut off a growing limb at its end where it's three or four inches around.

This premature amputation process produces "suckers" all the way around. "And as they grow, the wind will just pop them, it's so weak. You could go up there with your finger and pop them," he said.

The proper technique is to "lace" the tree and tip the ends; this leaves the tree robust.

TOOLS FOR THE JOB. Du Bois said his arsenal is "typical," including a Model 80 Corona clipper and some other loppers. He's owned a true-cut machine for two years.

Aeration is an important aspect of tree maintenance. Soil augers are commonly used as part of the soil injection process that provides the necessary "breathing" to overly dense areas serving trees and shrubs.

Some problems also arise on the West Coast from transplanting in different climates.

"I just took over a project that had something like over 500 palms. And you're bringing them from a desert climate into one with so many different kinds of soil," Du Bois said. "And when you have muddy gumbo, with a high water table, you're fighting all kinds of difficulty."

He recommends knowing what you're up against going in.

"That's what a lot of people overlook, they just walk away because it's new and looks nice."

Root rot is a constant peril. "You can't just go out in that gumbo, that compacted soil, dig a hole, slap a 36- or 48-inch box tree in it, overwater it and overwater the project," he said.

Du Bois is commonly called upon to save customers from "expertise" such as this.

"It deteriorates for three months, and then we come in and we're supposed to perform all the miracles," he said.

Undereducation is a big problem, concurs Don Pagano, owner, VIT Products, Escondido, Calif.

This manufacturer of tree support products supplies vinyl ties that tie trees to lodge poles or to stakes. VIT also provides a metal



tie and an anchoring device for guy wiring.

"The big problem seems to be getting the information to the landscape contractor as to what is available," Pagano said. "I get out quite often and look at job sites. I see guys tying trees up with just bare wire or irrigation wire or they're tying things up with rope — whatever they can get their hands on, products that were not made specifically for that purpose."

Why can't you get away with rope and wire?

For one thing, rope is abrasive. Anybody that's ever tried to hold something back with a rope knows this. It'll burn the bark of a tree, same as it burns your hands during tug of war.

Wire can do worse damage, biting into the tree.

"If it is tied too tightly, it can end up girdling the tree. Or, it can actually allow the tree to snap," Pagano said.

POTENTIAL LIABILITY? Aside from the problem of inadequate tools for the job, a major problem in tree care is the danger involved in application of pesticides and fungicides, and the threat of law-

suits should such products miss their targets and blow off into a neighboring backyard.

The landscape management industry has done a lot to respond to this problem. Nonetheless, it has been severely chastised by high premiums being charged by insurance companies. Workmen's compensation insurance has risen alarmingly; sometimes from mismanaged equipment.

Jeff Mack, vice president of sales with LESCO, Rocky River, Ohio, maintains that better education would go far to solve some of those problems.

"Avoiding drift is all a function of how long you want to be out during the day and how high you have to get. Different heights require different pressures (gallons per minute). You really begin with the range of tree size you want, then you match a sprayer to it. And you accordingly match a spray gun to that," Mack said.

Not only do problems result from the possibility of blowing pesticides into people's properties, but they result from overexposure of employees to dangerous substances.

"The biggest problem in that regard," said Ron Parnell, owner

Whether reaching into treetops or shredding tree limbs on the ground, proper equipment is vital to your operation.

of Parnell Landscaping, Riverside, Calif., "takes place with your mixing and loading cages. We go with an enclosed system for spraying. No mixing, nothing of that nature. The industry is even going to conformity of apparel; I'm talking rubber gloves, safety equipment."

Parnell's employees use loppers, shears and gas-powered hedge trimmers.

"I tend to prune a lot of material that I don't feel should be sheared," he said, "just because of the effect. If you shear a lot of plant materials, you lose the beauty of the flowering of the plant. Junipers are one big example. My guys will never shear a juniper. They're hand pruned. Shearing a juniper keeps the inside from getting light, and it dies."

TOOL USES. The difficulties of tree work are not lost on Mark Cobb,

Shrubs need almost three times more fertilizing than trees.

owner of Elite Landscaping, San Bernardino, Calif. He goes outside for anything over 15 feet.

"We're using most of the normal pruning equipment, for the shrubbery and smaller trees: saws, loppers, etc.," Cobb said. "The large work, we sub out. It's all done with booms and hydraulic loppers, chain saws; equipment you can run out of a bucket."

Two certified arborists are employed by the 60- to 65-employee company, which has cut quite a swath in the area for its quality work. It's almost all com-

mercial. The only residential work Elite Landscape does is in multihousing units such as condominiums.

For fertilization, Cobb uses the standard complement of spreaders, soil augers and rig sprayers, as well as a few more techniques.

"We do soil injection. We'll auger, and drop in tablets. We soil inject with liquid fertilizers also. We'll apply to the foliage with the spray rigs. We'll also use broadcast spreaders."

The Elite programs for shrubs and trees differ.

"Trees don't need to be fertilized that often. Once a year is probably the max on most," he said. "Shrubs are a different story. We fertilize shrubs four times a year usually."

The spray rigs are used two ways:

- In some cases, his employees fully apply the spray liquid fertilizer right onto the foliage.

- In others, they will use the spray rig to soil inject. The equivalent of a big needle is injected into the ground and deposits the fertilizer into the soil.

For large ground cover areas that can absorb a lot of traffic, he uses a wheeled broadcast spreader. For smaller ground cover that can't take traffic, a handheld spreader is used. This piece of equipment hangs over the shoulder. The user holds it in his hand and turns the handle. The shoulder strap allows him to carry more weight.

Residential applications are more likely to use drop spreaders, which drop the fertilizers quickly from a hopper onto the ground. The broadcast spreader, upon the turn of the handle, turns a fan which "broadcasts" the material outward.

"Using the equipment requires some smarts," Cobb said. "You have to know what your square footage is to dispense the right amounts of nitrogen, potassium, potash and other chemicals per unit space."

Proper calibration of spreaders

is a must.

"With both the handheld and the larger spreader, you mark out a hundred square feet or a thousand on the large turfs, which are easier, because they're uniform, and you crisscross. For planter beds, you have these small areas. The technique here is to learn how to apply into a small area by turning the handle at just a certain speed. You have to get a feel for it. You work from a rougher calibration here."

PRUNING TECHNIQUES. Pruning involves another set of considerations and skills.

"Most people don't know how to prune," Cobb said. "Pruning does not mean you use a gas-powered hedge clipper and cut everything into a box or ball."

In this regard, Cobb echoes the philosophy of Parnell. Both like to see ornamental work that respects the natural inclinations of the vegetation.

"Our pruning is done pretty much the old-fashioned way,"

"If you're pruning properly, it doesn't look like you did much."

Cobb said. "We prune for natural effect. We use a good pair of Corona loppers. We have medium loppers, large loppers."

Only in special situations, where it is unavoidable, is anything as intrusive as a chain saw used, and Cobb prides himself on owning a good one.

Gas-powered hedge clippers are used just for shearing — which is not the same as pruning, a far more delicate process.

"If you're pruning properly, it doesn't look like you did much, but the plant is much healthier," Cobb said. "Somebody might say, 'Hey, what'd you do here?' even though you may have spent 10 times what it would have taken to trim the thing into a box or a ball."

You can "see through" a bush that has the proper "airy" look, he said.

"Destruction of shrubs through buzzsaw landscaping results from uneducated gardeners and un-



educated consumers," Cobb said. He fights this ignorance regularly.

"We start educating our customers right off the bat. If, when we bid a job, we see boxes and balls in our bid package, we tell them we don't maintain things like that. We'll even suggest cutting a shrub all the way to the ground and letting it grow back properly."

Stef Ringgenberg, owner of Boulder Tree & Landscape, Boulder, Colo., agrees with the other landscape professionals that soil aeration is a major concern in caring for trees and ornamentals — and that tree care can be a headache.

"We use as much soil aeration as application of fertilizer," he said. "We don't do a lot of spreading."

Augers are used to aerate the Colorado soil that comprises most of this largely residential business.

"Our primary method of tree fertilization is soil injection," Ringgenberg explained. "We do other things when the normal fertilizer won't cut it, or the situation is very severe. For some chlorotic trees, we use augers combined with other methods."

Every landscape business is different.

Whereas Cobb's clientele are best served by a careful "scissors-cut barbering" aesthetic, Ringgenberg's business runs on different principles.

For pruning, Boulder Tree & Landscape employees use no lopping shears or hedge clippers.

"We use strictly hydraulic tree trimming equipment with the possible exception of the hydraulic saw," he said. "We use hand snippers and hand pruners, pole pruners and pole saws. That's about it for hand tools, and that's for cutting in tight places."

In his 20 years in the business, Ringgenberg has noticed what most people do wrong.

"They overuse their pole tools. You can't make a good cut with a pole pruner or a pole saw. They shouldn't be used if you can get in there another way. People don't climb enough, they use pole tools too much."

He uses a high ranger and chipper trucks as major treetop maintenance tools. Saddles, ropes and ladders are part of the Boulder Tree & Landscape arsenal as well. Ladders can be a problem.

Ringgenberg wonders why any operator would send a man up a metallic ladder, which could conduct electricity from overhead wires through the worker's metallic equipment. Such electrocutions are not unheard of. Wood and fiberglass ladders are the obvious solution.

Guarding against injury with training programs has become part of the cost of doing business, Ringgenberg added.

"It's very difficult making

Proper tree analysis will result in a healthy tree, a happy client and an enhanced environment.

money trimming trees, because the capital costs and labor costs are so high."

And the costs relating to human use of that equipment are not less daunting.

"Workmen's comp rates are up now over 30 percent, in some places over 70 percent," he said. "Every dollar I pay my employee, I have to pay the state 35 percent."

Every landscape technician that handles trees has his own strategy to avoid liability situations.

Dave Elshoff, an arborist with Arborlawn, Lansing, Mich., uses the largest nozzle and lowest pressure possible to reach the top.

With a 10-foot crab apple, he may use 100 pounds of pressure per square inch and a nozzle that dispenses seven gallons a minute.

With a 50-foot elm, he may step up to 500 pounds per square inch and a nozzle that dispenses 16 gallons per minute.

A strict wind policy is observed. If it's measured at up to 10 to 12 miles per hour, his people stop spraying in order to avoid drift.

Arborlawn concentrates on applying insecticides and fungicides to trees and doing deep-root (soil injection) fertilization.

"We target trees with problems, we don't do blanket applications of anything — and only light, ornamental hand pruning."

New laws make operators prove their spraying is safe. The old way, complainants had to prove it wasn't.

For that reason, Scott Boodman of B&E Landscaping, Rancho Santa Margarita, Calif., has almost completely stopped spraying trees.

"If that's the situation I'm up against, I'd rather sub it out to guys who do that all the time," he said.

The bottom line is: Don't underestimate what it takes to take care of trees and ornamentals. Most landscape professionals agree that nothing dramatically new has come up in the area of equipment in the past few decades. Most business innovation revolves around intelligent use of the tools for the job. ■

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



January 4, 1991



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Bridgeport, NJ 08014

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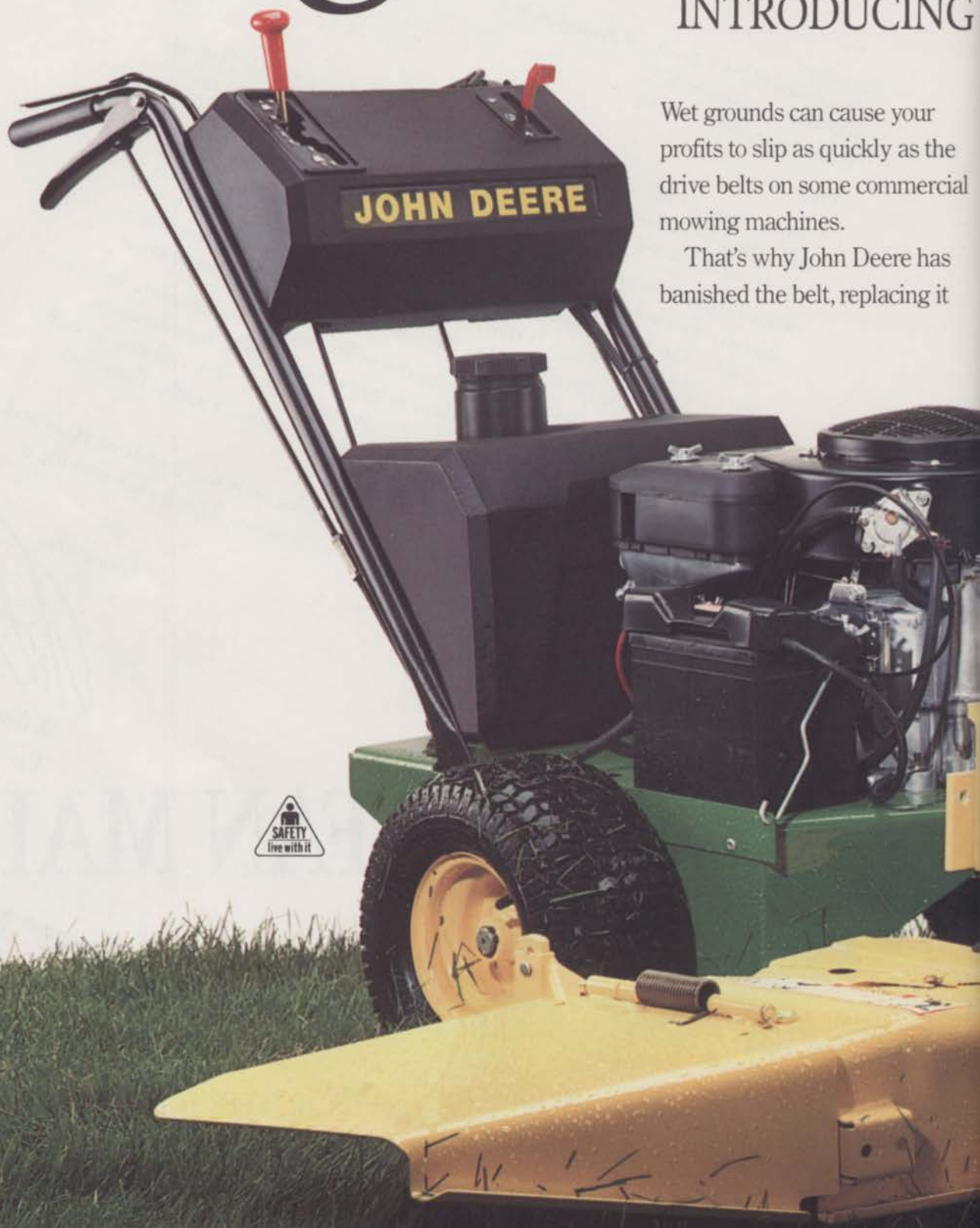
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TREE PRUNING:

Many landscape contractors are regularly pruning trees — those 15 feet and under.

But pruning shouldn't be taken lightly if the health of the tree is to be maintained.

By Terry Troy

START YOUNG TO AVOID PROBLEMS LATER



MOST LANDSCAPE maintenance operators rarely prune older trees more than 18 feet tall due to government restrictions and excessive insurance rates. But pruning smaller, younger trees is actually the time when pruning is most important, say arborists.

Pruning in the developmental stages directs the growth, shape and health of the tree as it matures. By pruning effectively early on, problems potentially leading to major reconstructive pruning later in a tree's life can be avoided.

If a tree is not properly pruned, it can become more susceptible to wind and storm damage as well as insect infestations. It may grow out-of-bounds, interfering with power lines or buildings and eventually become a safety hazard. All of these problems can be avoided with proper pruning throughout a tree's life.

"Proper pruning early on is key," said Larry Hall, senior arborist with Hendriksen, The Care of Trees, a Wheeling, Ill.-based

Identifying and eliminating problem areas will improve the health of the tree.

tree care company. "But improper pruning early can also cause major problems with a tree later."

Knowing when to call in a qualified arborist is important to both the health of the tree and the landscape maintenance operator's business. Bob Felix, executive vice president of the National Arborist Association, said that there are generally three basic reasons why a qualified arborist should be called in to work on a tree.

"If a person has to leave the ground to prune, an arborist should be called in," he said. "An arborist should also be called in if the pruning involves a tree that's

in close proximity to power lines, whether the pruning can be done from the ground or not. Also, once they have to operate tree care equipment such as chippers or chain saws, an arborist should be called."

Failure to comply with government guidelines could result in the operator receiving a fine from the Occupational Safety and Health Administration. Additionally, once such work is undertaken, workers' compensation rates skyrocket.

"Although the rates vary from state to state, operators could see a rate increase as high as four to



An improperly pruned tree can be more susceptible to wind and storm damage as well as insect infestations.



Many landscape contractors stick with pruning they can reach from the ground.

maintain the health of the tree and promote new growth, pruning should be performed within certain standards. To hear arborists tell it, pruning is an art form that requires restraint, aesthetic acumen and an overall sense of the tree's purpose in the surrounding landscape and environment. There are, however, general guidelines for pruning.

"As part of any standard prune, you should never take off more than 1/3 of the tree's growth," said Tom Tolkacz, manager of Denver-based Swingle Tree Co.

"As for thinning out live growth for aesthetic and health reasons, I usually suggest that you stay within 20 percent," Hall said. "The best compliment you can receive after pruning is that it looks like the tree was never touched."

MAKING THE CUT. Knowing how to make a collar cut is essential.

"If a person does not know how to make the proper collar cuts or does not know how to properly maintain the natural shape of a tree, then they have no business assaulting the shape of the tree," Hall said.

When removing limbs, the cut should be made at the branch collar to help facilitate the growth of callus tissue that guards against insect infestation or disease. Larger limbs should be pre-cut with an undercut several inches from the branch collar with a top cut about a half-inch further out.

After the branch has been removed, the stub should be removed at the branch collar. This three-cut process prevents accidental stripping of bark under the cut. For exceptionally large or hazardous limbs, a qualified arborist should be called in. Never leave stubs on a tree.

"Pruning is a function of where a tree is planted," said Matthew Synnstedt, owner of Synnstedt Landscape Co. an operator

specializing in landscaping and tree care through separate company divisions. "You first need to eliminate interference with power lines and buildings with larger trees. In younger trees, pruning should eliminate dead or diseased limbs that could become a problem later, like crossing limbs."

RECOGNIZE ABNORMALITIES. Other areas often overlooked by operators pruning younger trees are abnormalities that occur in growth such as chafing branches or deep V-crotches. Deep V-crotches are defined by arborists as a branch growing within a

Pruning in dormant months causes the plant to force more growth.

30-degree angle of the upright leader.

"These are areas where structural instabilities can occur, this can lead to cracking or splitting later on," Hall said.

"As these areas become weaker, they also become prime candidates for storm and wind damage," Felix said.

"Another reason to eliminate a deep V-crotch is that it is an area that collects moisture," said Tom Pope, horticulture specialist at Louisiana State University. "This provides an environment that is much more susceptible to insect or fungi attack."

Elton Smith, professor of horticulture at The Ohio State University, said vertical spacing of limbs on a trunk is also important. Clusters of smaller branches are naturally weaker than well-spaced individual branches.

"Branches should spiral out from the trunk of the tree, but they should be separated by at least six to eight inches vertically," Smith said. "Actually, in some instances,

10 to 12 inches is better."

Another potential problem with vertical spacing of limbs, according to Smith, occurs when a tree is growing too close to a walkway or patio. Since a limb remains at the same position on a trunk throughout a tree's life, the lowest limb should be high enough so it doesn't become a safety hazard. This could mean that the lowest limb on a tree should be as high as six to 12 feet off the ground.

Radial distribution of branches around the tree is also important to eliminate competition from sunlight, he added. Branches should radiate from the trunk as much as spokes do from a wheel.

Pruning can be performed at almost any time of the year with a few exceptions. "As a general rule, you never want to prune when the leaves are falling out or when the leaves are coming out," Pope said. "During those two times, there is excessive sap flow either upward or downward."

In the months of November, December and January, shearing can cause spring browning out in evergreen varieties, added Tolkacz. "But with trees such as Dutch Elm, you want to prune when they are dormant, because the beetles aren't in flight and they wouldn't be attracted to open wounds on the trees. Other than that, as a general rule, I don't like to be out in anything under 30 degrees."

"You can actually enhance and thicken growth by pruning in dormant months," Synnstedt said. "It causes the plant to force more growth. As for general containment, it's best to prune in high summer."

Another time to avoid pruning is late summer. Pruning could force new growth that might not have a chance to harden off before winter, and that could result in the death of the new growth and subsequent removal the following year.

In high traffic areas, pruning should be done every year. In other areas, once every three years should be sufficient.

five times what they are currently paying," Felix said.

Still, pruning younger trees can offer operators an additional service opportunity. While most operators can easily recognize dead, damaged, diseased or dying limbs that should be removed, they should also know when to eliminate branches that could cause potential problems later in a tree's life. Identifying and eliminating these problem areas, along with any dead or diseased branches, will improve the health of the tree and enhance its use in the landscape scheme.

MAINTAINING STANDARDS. To

PLANTING TO AVOID PRUNING. Planting the proper tree for both the landscape design and environment can mean avoiding major reconstructive pruning, or even removal of the tree later.

"The most common mistake that landscapers make is planting the wrong tree in the wrong area," Hall said.

"Go with a species that approximates the desired shape," said Roger Funk, an arborist with The Davey Tree Expert Co., Kent, Ohio. "There are a number of plants available from columnar to wide spreading. Select the one that's best adapted to the space available."

"In planting, there is a difference between

what grows successfully and what is available," Synnestvedt said. When planting a tree, landscapers should base their species choice on the amount of available light, drainage and rainfall, among other environmental considerations. When it comes to potential obstructions, allowances should be made for the tree to reach its full height and natural shape.

"That way, pruning is only necessary to maintain the health and enhance the natural shape of the tree," he said.

Another problem, Hall said, is planting a tree with a shallow root system such as Sugar and Norway Maples where a lawn is desired.

Competition between the root system of the lawn and the tree can be fierce. This cannot only lead to the development of problem areas in the tree that needs pruning, but can also adversely affect the lawn.

"In any root system competition, the tree will invariably win," Hall said. "That's why we always recommend using a mulch or ground cover around trees with a shallow root system."

"Another problem we encounter with grass around or directly up to the tree is the bigger and better mowers landscapers are using," he added.

The mowers can do damage to the base of the tree causing limbs to die off. Weed whips are also a hazard, "especially with trees that have thin bark. Many times we find a tree is phasing out because the base has been flailed to death by weed whips."

Another reason trees do poorly and require extensive pruning and care is that the tree is planted in the wrong type of soil.

"Nurserymen and landscape contractors have to get together to make sure the kind of tree being planted can thrive in existing soil conditions," Hall said. "A good example of this is Pin Oak."

Pin Oaks are better suited to acidic soil and "aren't happy in alkaline soil. But it's a popular plant so nurserymen are eager to sell it and landscape designers are quick to specify it."

Hall said a young tree can do well in almost any type of soil, but as it grows older, problems will begin to manifest that wouldn't arise if the tree were planted in the proper soil.

Another plant that often develops problems when planted in the wrong soil is White Bark Birch, according to Hall. It shouldn't be planted in many of the clay soils around Indiana and Ohio.

"Planting a tree in the proper soil can also help guard against insect infestations which could lead to major pruning," Hall said. This can lead to substantial pruning or even the ultimate removal of the tree.

Certain crabapple varieties should also be avoided because they are susceptible to diseases such as apple scab, cedar apple rust and fire blight.

"When it comes to pruning and proper tree care, both arborists and landscape maintenance operators share responsibility. A logical step for larger landscape operations," said Felix, "is to investigate the benefits of adding a tree service division to their operations." For small operations, the most logical thing to do is to develop a symbiotic business relationship with a qualified arborist.

"It can be a mutually beneficial relationship with landscapers referring tree care business and tree care businesses referring landscape jobs," Felix said. "We're both in business. But our business is the environment." ■

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

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You can take the trees out of the forest, but you can't automatically duplicate the same environment in residential or commercial properties without proper feeding.

By Mark Ward

"I start earning income about 30 days earlier than other operators, and keep earning income about 30 days later."



FOR LAWN MAINTENANCE operators seeking added profits, tree fertilization offers a wide open market. Why? Because in most cases, customers' lawns are literally starving their trees.

"While trees are well adapted to forests," said Ken Vahle, president, Warne Chemical Co., Rapid City, S.D., "in city or suburban lawns, they're poor competitors for soil nutrients. Turfgrasses are hungry and aggressive plants, so any fertilizers put on a lawn are quickly used up. Little, if any, ever gets to customers' trees."

Vahle's company provides lawn and tree care to both residential and commercial clients. Trees are also inadvertently deprived of their natural source of nitrogen nourishment when leaves are raked to protect turf needs.

The idea that lawn fertilizers help trees "is a common misconception among customers, but is really wrong," Vahle said. "In fact, if you applied enough surface fertilizer to help your trees, you would probably burn your grass so badly it would die."

Because trees are growing in

unnatural environments, "most are deficient in microelements such as iron, manganese and zinc," said Warren Wolfe, president of Creative Sales Inc., Fremont, Neb.

"With the resale value trees add to a home, people are realizing if you take care of trees, they'll take care of you," said James Sample, marketing representative for J.J. Mauget Co., a Los Angeles-based manufacturer of microinjected fertilizers. For that reason, he said, operators who add tree fertilization to their service offerings are drumming up substantial new business.

Both Wolfe and Sample agreed today's tree fertilization systems enable lawn maintenance operators to expand their services without heavy investments in new equipment. Tools are often found in operators' present inventory or are readily available.

Since Vahle got into tree fertilization, he said, the chief benefit has been extending his annual service season.

"The best time to apply fertilizer is before the spring sap run

and after autumn leaf drop," he said. "I start earning income about 30 days earlier than other operators, and keep earning income about 30 days later."

Extending its service season also lets Warne Chemical justify keeping more year-round employees. Vahle said he believes his core of full-time workers gives the firm greater stability and more consistent quality.

"The service cycles of lawn maintenance operators are ideal for tree fertilization," said Sample, "but where operators know a lot about grass, most know little about trees. That begins with understanding trees' nutritional needs — and then studying the different methods for delivering fertilizers."

In its "Standard for Fertilizing Shade and Ornamental Trees," (see sidebar) the National Arborist Association, Amherst, N.H., recognizes five methods for fertilizer delivery:

- *Surface applications* in which fertilizer is placed in a spreader calibrated to apply the proper amount of material for the square



Implants are left in the tree and the tree closes or calluses over in a growing season (far left). Handheld tree injection (middle) and fertilizer pellets (right).

footage covered.

- **Foliar sprays** designed chiefly to correct minor element deficiencies, and "should not be regarded as an adequate means of providing all the necessary mineral elements."

- **Drill hole method** where dry fertilizer is placed in holes dug uniformly around the tree to achieve even distribution of nutrients into the root system.

- **Liquid soil injections** which deliver slow-release fertilizer under pressure through a soil probe or lance, injected at strategic points near the root system to ensure even distribution of nutrients.

- **Trunk injections and implants** in which dry or liquid fertilizer is fed directly through drill holes.

Surface applications of tree fertilizers have largely fallen into disfavor among operators, Wolfe said, because "most of the benefits go to the turfgrass." Foliar sprays are also a smaller player in the tree fertilization market, since the method generally only corrects minor deficiencies, but

requires expensive spray equipment.

Drilling holes around trees to apply dry fertilizers is an early industry technique "that still works well, but isn't used much by operators anymore," said James Caldwell, president of Caldwell & Associates, Columbus, Ohio. After a 33-year teaching career at The Ohio State University, he is now horticultural consultant, writer and lecturer.

Many operators have switched because other systems, notably liquid soil injection, can be applied faster.

"The drill hole method is very labor intensive, since you need a lot of holes to get a broad distribution around the tree roots," Caldwell said. He also said drill holes can produce "columns" of dry nutrients that may result in high — even toxic — concentrations of fertilizers.

A FULL ARSENAL. According to Terry Tattar, director of the University of Massachusetts' Shade Tree Laboratory in Amherst, Mass., liquid soil injection is the

tree fertilization system used by many arborists today.

And by Caldwell's account, the method began gaining ground within the green industry about 35 to 40 years ago.

In a recent report, Tattar noted the drill hole method "used to be very common. But it's not as common anymore because it has been estimated to take about four times as long to drill a hole as to use a (liquid soil injection) needle."

Even six inches of topsoil hauled into a landscaped environment doesn't provide enough nutrients for vigorous, healthy trees, according to Vahle. "So we inject, under pressure, the proper amount of low-salt, slow-release fertilizer into the root zones of trees and ornamentals. We use a complete fertilizer, plus any iron/sulfur supplement."

He recommended that younger or "unthrifty" trees be fertilized annually, while mature trees be treated every other year.

Vahle said he believes all three fertilization methods employed by his firm — liquid soil injection, microinjection and systemic tree implants — are integral to his business. Operators need a full arsenal to tackle different fertilizing situations.

"Suppose the tree is mature and healthy and needs only basic maintenance," Vahle explained, "microinjection is a good alternative to liquid soil fertilization, because it's less labor intensive and faster to apply. Microinjection is also good for trees adjacent to pavements, where soil injection is impractical."

Soil injection is what maintenance operators use most often, but it's only part of a total approach to tree care, according to Richard Stedman of Clarence Center, N.Y. Stedman is president

of Tree Inject Systems and two other Buffalo-area lawn and tree care firms.

"You can't say one tree fertilization system solves all needs. You should be prepared to use different methods for specific situations," he said.

Stedman endorses liquid soil injection as a proven technique, but adds "microinjection is an increasingly popular method because it bypasses the roots and the

Soil injection, microinjection and tree implants are all accepted.

environmental problems that hinder nutrient uptake by urban trees. Applied in the fall or early spring, the fertilizer is immediately available in the stem for plant growth."

INJECTIONS AND IMPLANTS.

Founded in 1958, the J.J. Mauget Co. marketed its first commercial injection product seven years later. Today, the company's line includes six fertilizer formulations and five insect or disease control products.

Mauget looks upon its microinjection products as a total fertilization system. According to Sample, the technique is a five-step process:

- The number of drill holes is determined by measuring in inches the tree's diameter at breast height, and then dividing the "DBH" figure by two. A second method is to measure the DBH circumference and divide by six.

(continued on page 50)

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Value-Added Tree Care

(continued from page 47)

- Using an 11/64-inch bit, holes are drilled 1/4- to 3/8-inch deep to penetrate xylem tissue. These holes should be made on top of root flares (not in the trunk) within 4 inches of ground level, and spaced evenly around the tree.

- Aluminum feed tubes are inserted into each drill hole, and sealed firmly by tapping lightly with a rubber or plastic mallet. Plastic feed tubes are also available.

- Capsules of liquid fertilizer, each about 2 inches tall and 1 inch in diameter, are pressed onto feeder tubes and allowed to drain into the tree until empty.

- Within seven days, used capsules and feeder tubes must be removed from the tree, usually with pliers, and disposed according to state and local law.

"The lawn care operator's only investment besides the product is in a hammer and drill," said Sample, though he pointed out users must attend training seminars conducted by regional Mauget distributors.

Sample readily admitted many operators use both the Mauget and CSI fertilization systems because each is often particularly suited for a given situation.

"Trees have a process called compartmentalization," explained Sample, "which is a defense mechanism to wall off and bypass wounds. The larger a drill hole, the more a tree's defense can affect fertilizer release. Our research indicates an 11/64-inch hole is nominal."

According to Wolfe, Creative Sales' fertilizer implants are "not in competition with other tree maintenance systems, and are intended more for specific-use applications" such as correcting specific microelement deficiencies and for therapeutic applications.

The CSI line of four products includes implants for iron, manganese and zinc, plus a combination formula.

According to Wolfe, application of systemic tree implants can be accomplished with common tools:

- Holes should be spaced 4 to 6 inches, depending upon the severity of the tree's nutrient deficiency, and should spiral up and around the lower tree trunk base. Using a 3/8-inch bit, holes should be drilled 1 1/4 inches deep from the cambium surface. Trees with diameters less than 3 inches should not be treated.

- Fertilizer cartridges are then placed into the drill holes. Units contain preencapsulated, pre-measured dry fertilizers that are highly water-soluble and dissolved by tree sap.

- One end of the cartridge is a plug, so that no outside moisture can cause leakage of the fertilizer. Therefore, it is important the correct end of the unit be inserted first.

The CSI implants offer several benefits, according to Wolfe. The dry formulation allows a slower release of chemicals, so that higher

(continued on page 52)

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Value-Added Tree Care

(continued from page 50)

volumes of nutrients can be released without "overwhelming" the tree.

"Release of the fertilizer is

driven by the needs of the tree itself, rather than driven by the injection process," Wolfe said. For that reason, one application can stay active for two or even three seasons.

Wolfe also pointed out applica-

tion of systemic tree implants are a one-step process requiring no return visit, and no disposal of spent cartridges or feed tubes.

Recognizing the "controversy over potential injury to trees as a result of drilling holes," Elton

Smith of The Ohio State University department of horticulture told a recent symposium that research now suggests several recommendations for minimizing problems.

(continued on page 94)

A GLANCE AT NAA TREE FERTILIZATION STANDARDS

REVISED IN 1987, the National Arborist Association's "Standard for Fertilizing Shade and Ornamental Trees" includes sections of fertilizer types and formulations, application rates and timing, additional guidelines and recommended reference works.

- Surface Applications — Fertilizer is placed in a spreader calibrated to apply the proper amount of material per 1,000 square feet. Care should be taken to avoid excessive overlapping.

- Drill Hole Method — The drill holes should be placed in concentric circles in the soil around the tree beginning two to three feet or more from the trunk, and extending five to 10 feet or more beyond the drip line. Space holes two feet apart and drill them eight to 15 inches deep, depending upon tree species, root growth patterns and type of soil.

The recommended rate of fertilizer should be uniformly distributed among the holes. Depending on the diameter of the hole, it can be filled following fertilization with peat moss, calcine clay, perlite, small crushed stone, sand or other soil amendment.

- Liquid Injection Method — Injections using a soil probe or lance should be 2 1/2 feet apart, and eight to 12 inches deep for trees. Begin lance injection two to three feet from tree trunk and work out five to 10 feet beyond the drip line of the branches.

Use a hydraulic sprayer at 100 to 200 pounds of pressure, and a soil lance designed for liquid fertilizer with a manual shut-off valve and three or four horizontal discharge holes at 90 degrees in its point. Inject half a gallon of fertilizer solution into each hole.

- Foliar Sprays — To correct minor element deficiencies, spraying liquid fertilizer on the foliage may be considered. Applications are most effective just before or during a period of active growth, usually from spring to early summer. Response is usually observed from two to eight weeks after treatment. One or two applications a year will generally prevent or control deficiencies.

- Trunk Injections and Implants — These methods are used for specific element deficiencies particularly where there is restricted soil surface area under the drip line. Injections or implants should be made as low as possible on the trunk. Normally this is done with a clean, sharp drill of the appropriate size. Capsules should be implanted beneath the bark and completely into the xylem tissue.

Early spring, before growth starts, is the best time for trunk implants and injections. Wound closure is most rapid from spring treatment. Trees under four inches in diameter should not be treated with injection or capsule implants. Do not inject or implant when soil moisture is low, as severe foliar burning may occur.



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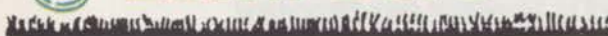
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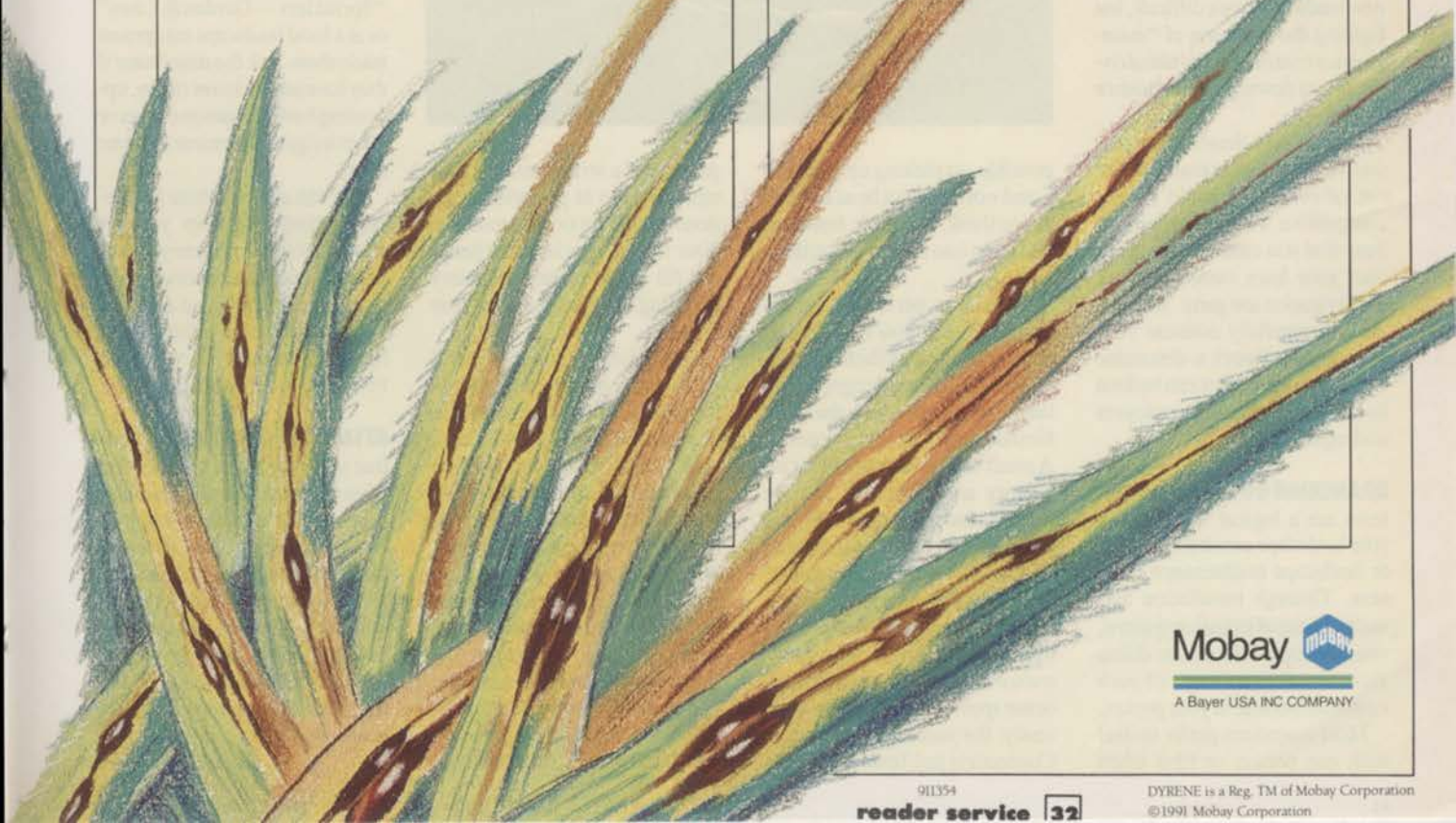


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MAKING IRRIGATION INSTALLATION, MAINTENANCE WORK FOR YOU

Since customers are already asking landscape contractors to maintain their sprinkler systems, why not make irrigation installation and maintenance part of your service package?

By Brian Vinchesi and Brendan Lynch

Editor's note: This is the first in a three-part series on incorporating irrigation into your service package. The next two articles will discuss installation procedures and diagnosing common irrigation problems.

AS THE COUNTRY dips into a recession and the economy in most of the country continues to be bleak, small businesses are being hit hard. Not only is finding new landscape work difficult, but fighting the new wave of "maintenance contractors" is also driving prices down for maintenance work.

At times like these, it's important to get the maximum dollar out of every job while staying competitive. The days of being so busy that you could just subcontract your lawn care, tree work and irrigation are gone. You now need to carefully evaluate your subcontracted work to determine how more of that work can be done in-house with existing employees and equipment.

BRANCHING OUT. Irrigation systems are a logical extension of your landscape construction and/or landscape maintenance business. Through installation and maintenance of irrigation systems, you can help produce more dollar volume and keep more of each customer's dollar in your pocket.

Most customers prefer to deal with one person or firm when



A good irrigation system spurs a healthy landscape and produces water savings. Photo: Moisturetek Irrigation Systems.

possible, so picking up the additional work may not be as difficult as you think. You can't, however, just jump into the irrigation business.

In order to perform at an acceptable level, you will need to educate yourself on the basic principles of irrigation design, installation techniques and the troubleshooting of existing systems. A small capital investment for inventory and tools will also be needed, but a prudent business person can get into the irrigation business with little investment.

Some states require that irrigation contractors be licensed; this may be a home improvement contractor business license or a license specific to irrigation. Currently, the states of New Jersey, Connecticut and Texas require the

passage of a written exam to obtain a license to perform irrigation installation or maintenance. Your local irrigation distributor can fill you in on any necessary licensing requirements in your area.

Depending on where you will perform the installation, plumbing or backflow permits may also be required for each job. Check with local officials for any permits required. Although the 24-volt electrical systems commonly used in irrigation systems generally do not require a license, an overzealous electrical inspector might require one. Again, check with your local distributor.

You have probably seen irrigation systems operate and are familiar with the basic components, but you may be somewhat con-

fused about where to start installing a system on your own. For information concerning irrigation equipment, your local irrigation distributor is your best bet.

Irrigation distributors can be found in the yellow pages under "Sprinklers — Garden & Lawn" or at a local landscape equipment trade show. Ask the distributor if they have any, or know of any, upcoming basic irrigation design or other irrigation seminars in your area.

You can also ask them for literature that will help you get started. You should arm yourself with as much educational information as possible and ask your local distributor if he/she might be willing to assist you with your first couple of installations.

ATTAINING CUSTOMERS. Now that you have made the decision to incorporate irrigation maintenance and/or installation into your list of services, you have educated yourself and your employees and feel comfortable with irrigation systems in general, an important question arises: How do you let your existing customers or potential customers know the good news? You will need to do some

(continued on page 56)

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Irrigation Installation

(continued from page 54)

marketing and keep it low budget.

There are several low-budget processes you can use with your existing customers, the first of which may involve an existing maintenance contract. When it comes time to renew a customer's contract, try listing irrigation maintenance as one of the services performed by your firm under that contract.

A second way of marketing your new service is by word of mouth. Inform everyone you know that you now do irrigation maintenance and installation. Add an irrigation piece to your billing invoices or to customer mailings. Add irrigation services to your trucks, site signs and stationary.

Add irrigation services to all advertisements and consider taking out a small Yellow Pages advertisement under Sprinklers-Garden & Lawn. If you are in the area where newspaper advertising works for you, place a small service or installation ad.

PRIMARY INVESTMENT. You will need to make a small initial investment in equipment to begin: a pressure gauge, flashlight, a 100-foot plastic measuring tape, a 5-gallon bucket, a short piece of hose and about 100 marking flags. Provided you have received some education, these items will equip you to estimate and lay out a system.

You can buy the necessary components after selling the system. To install piping, however, rent either a trencher or pipe puller depending upon your area's preferred installation method. It is not necessary to buy a large piece of installation equipment up front. Instead, wait until your irrigation volume can support that type of purchase.

If you anticipate or contract much service work right away, you will have to purchase a small service inventory of valve solenoids and diaphragms, sprinklers, fittings and so on so you are able to fix problems without having to buy the parts each time.

On the other hand, if you want to make the investment, you may purchase inventory equipment immediately. If you are placing an employee in charge of your irrigation division, make sure the individual has been educated in

necessary design and installation principles.

For your first irrigation system, you literally need a guinea pig. Your own house or that of a relative usually works well since the first system will take some time to install. You can anticipate having some problems, therefore, it is not a good idea to begin with a regular customer unless you want that customer to quickly become one of your competitor's.

Practice on someone who is patient and understanding, like a grandmother. After installing two systems, you will have the basic installation and layout techniques accomplished — the rest will come with experience.

IDENTIFYING PROBLEMS. Troubleshooting an existing system can pose problems ranging from a simple broken sprinkler or pipe to a puzzling wire problem. Other causes for a service call may be for sprinkler adjustment, low pressure, incorrect controller programming or poor performance.

Some problems are easy to identify and easy to fix. Others are difficult to discover and may require major repairs. Use the knowledge, expertise and troubleshooting equipment of your irrigation supplier to help you through the tough jobs.

Irrigation installation and maintenance can become excellent additions to your other landscape maintenance services if you are willing to spend the time and make the commitment to learn proper installation and design techniques.

Complementing your current services with irrigation can provide your customers with an overall landscape maintenance program. This will save both your customers and your firm the costs and headaches inherent in dealing with a variety of contractors.

The Irrigation Association has a number of publications to help you gain a thorough knowledge of irrigation principles and practices. *Turf Irrigation Design* by James Watkins, is an excellent guide to landscape irrigation design and installation. The book can be purchased by calling 703/524-1200. It may also be available from your local irrigation distributor. ■

The authors are consultants with Eastern Irrigation Consultants Inc., Pepperill, Mass.



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THOSE PESKY PESTS!

LIFE CYCLE TIPS, CONTROL STRATEGIES FOR COOL-SEASON INSECTS

Knowing when the bulk of June beetle grubs are in the intermediate grub stage, for instance, will help determine proper timing for a control.

By Patricia Vittum, Ph.D

WHEN A TURF manager wants to control an insect problem, he must *identify* the pest, have a basic understanding of the *life cycle* and think about general *control strategies*.

While there are several very good sources of information about turf insect pests, this article will outline the basics of the life cycles and appropriate control strategies for four common lawn and landscape insects.

WHITE GRUBS (one-year life cycle) *Life Cycle*. There are several species of white grubs — Japanese beetle, European chafer, masked chafer, among others — which damage cool-season turfgrasses, particularly throughout the Northeast and Mid-Atlantic states.

Each of these species has a similar life cycle. Adults are active in the early summer and lay eggs in July or August. Small larvae (grubs) emerge in mid-July to mid-August and begin feeding immediately. The larvae molt twice during late summer and feed well into the autumn (November).

The larvae migrate downward in the soil to spend the winter, return to the root zone in spring as soil temperatures rise and resume feeding for a few weeks. Depending on the location and the species, larvae complete their feeding and transformation to pupae — the transition stage between the soil-active grub and the flying adult — by early to late June.

After about 10 days, the new adults emerge to complete the cycle.

There are two periods during which the larvae feed actively and have the potential to cause considerable damage — early autumn (September and October) and spring (late April and May). Often

the turf is able to tolerate the feeding activity of several grubs (as many as 10 or 12 per square foot) without losing vigor.

Skunks and raccoons, however, are notorious for destroying turf while searching for white grubs, so sometimes grub populations must be controlled to prevent secondary damage.

Control Strategies. There are two times of year when application of insecticides should provide some level of control of white grubs. The preferred period is in late July or August (depending on species of grub and on geographical location) when most of the eggs have been laid, but the larvae have not had time to grow into second or third stage grubs and

remains active) and mobility in thatch.

In every case, however, it is absolutely crucial to water in the insecticide immediately after application. Generally, a half inch of irrigation is needed to move the material off the blades and provide enough moisture to draw grubs into the treated area. Note that several materials which are labeled for turf applications include statements on the label which require "watering in."

WHITE GRUBS (two- and three-year life cycles) *Life Cycle*. There are a few species of white grubs, notably the "May beetle" or "June beetle," which look a lot like one-year grubs, but are considerably larger.

In addition, these insects have a different life cycle which has a direct bearing on any control efforts a turf manager might attempt. The May or June beetle takes two or three years to complete its life cycle in cool-season turfgrass areas, depending on the species and the location.

In the three-year life cycle, adult beetles emerge from the soil in May or June, feed on assorted foliage, mate and lay eggs in the soil. Small larvae (grubs) emerge from these eggs in July and feed on turf roots, molting once before the oncoming winter.

The second stage grubs spend the winter deep in the soil, return to the root zone during the spring of the second year and feed during the entire growing season (May through October). At some point during that summer, they molt to the third and largest stage grub, which spends the winter deep in the soil.

These grubs return to the root

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Several species of billbugs can be active in cool-season turf. While they have similar life cycles, timing differs.

cause visible damage.

The second, and generally less preferred, period is in the spring (normally late April) when the grubs have just returned to the root zone to feed. Note that a turf manager who gets good levels of control from a late summer application should not have to treat the same area the following spring. No "new" grubs will materialize in the spring.

There are many insecticides labeled for control of white grubs. They vary in their speed of efficacy (how long it takes to work), residual activity (how long it re-

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Pesky Pests

(continued from page 60)

zone in the spring, feed briefly and then migrate downward several inches in the soil to carve out an earthen "cell." They pupate in this cell (July or August) and transform to adults in the same cell by September. The young adults remain in their cells through the winter and emerge the following spring to complete the cycle.

One primary difference between one-year life cycle grubs and multiple-year grubs is that the two- and three-year life cycles provide a year during which damage occurs throughout the growing season. (In one-year life cycles, grubs are not normally present in July, whereas in three-year life cycles, one of the three years is spent entirely in a feeding, intermediate grub stage).

In many locations, the life stages are quite synchronized, so that the bulk of the population is in the same year of development. That means that every third year, infested areas will experience



heavy feeding activity from the midstage larvae which feed for the entire growing season. Mercifully, those locations will also experience two "off" years when feeding activity does not persist for more than a few weeks or involves very small larvae.

Control Strategies. Very little field work has been conducted on the control of May beetle or June beetle grubs in turf, primarily because their occurrence tends to be more sporadic than that of their one-year cycle cousins.

The timing of application will be quite different, however. If at all possible, determine when the bulk of the population is in the intermediate grub stage. In severe outbreaks, applications might be directed toward these grubs early in the season.

The most efficient way to con-

Sod webworm larvae feed on turf blades and in thatch. Grubs emerge in mid-July to mid-August and begin feeding immediately.



trol a population, however, is to determine which year most adults will emerge. (The adults are large beetles and clumsy fliers, banging into windows and screens at twilight in May or June). During those years, consider applying a material in July to control the tiny larvae as they emerge. Again, watering the area immediately after application is absolutely essential.

GREEN JUNE BEETLE. Life Cycle. Green June beetles have become an increasing problem on many

kinds of turfgrass in the Middle-Atlantic states.

The life cycle is similar to that of one-year life cycle grubs — adults emerge in early summer and lay eggs in the soil, larvae hatch out and move through the soil, feeding on organic matter and molting twice before autumn. Larvae survive the winter in a semi-dormant state and resume feeding for a while in the spring before pupating in June.

The main difference between green June beetles and the typical

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Pesky Pests

(continued from page 62)

one-year life cycle grubs is that green June beetle larvae feed primarily on decaying organic matter. However, they can occur in large numbers and cause significant mechanical damage by burrowing aggressively through the root zone.

In addition, the grubs move only on their backs and often can be observed pushing their way across the surface of the turf.

Control Strategies. Fortunately, green June beetles are relatively susceptible to chemical control and normally can be controlled on an as needed basis. However, because the grubs are nocturnal (feed at night), insecticides should be applied as late in the day as possible.

Also, note that the grubs are mobile and may migrate out of a treated area. Therefore, applications should be made to sufficient areas to ensure coverage. For example, treat the roughs as well as infested fairways of a golf course.

Green June beetle larvae prefer to feed in areas with heavier concentrations of organic matter. Recent reports suggest that turf areas which have received applications

considerable damage on fine fescue lawns and generally thatchy lawns, particularly in the Midwest. Chinch bugs complete one or two generations per year

like adults except that they are redder in color and smaller. In cool spring conditions, an individual egg may persist for a month before hatching, while hatching occurs much more quickly in the summer.

Normally, an individual will take four to six weeks to pass through five immature stages. In areas where there are two generations per year, it is not uncommon to see all stages at any given time in the summer, as there is considerable overlap between generations.

Most damage occurs during the months of heat and drought stress — July and August. Chinch bug damage is most severe in periods of drought. In some cases, lawns or other turf areas which receive water during heat stress periods survive considerable chinch bug populations without visible signs of damage, while similar lawns (with similar population levels of chinch bugs) which do not receive water may experience damage from chinch bug feeding.

In addition, lawns which have

(continued on page 66)

Grubs are mobile and may migrate out of a treated area.

Applications should be sufficient to ensure coverage.

of organically derived fertilizers may be seeing an increase in the activity of green June beetles.

In addition, be aware that some areas have large populations of green June beetle larvae. When insecticides are used in these areas, the grubs come to the surface to feed and die in large numbers on the surface. The resulting odor of decaying grubs is considered a great nuisance.

CHINCH BUGS. *Life Cycle.* Chinch bugs are small insects with sucking mouthparts which can cause

in cool-season turfgrasses (generally two generations in southern New England and across to Ohio, and one generation in southern Ontario and upstate New York).

They overwinter in semi-protected areas as adults and emerge in the spring as temperatures approach 50 degrees. These adults begin to lay eggs in mid-April to late May. In areas where there is only one generation, egg laying may be delayed a bit and occurs over a longer period.

Eggs hatch into "nymphs" (immature stages) which look a lot



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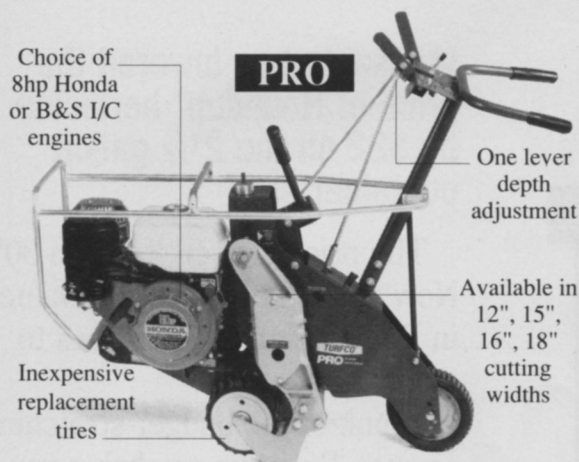


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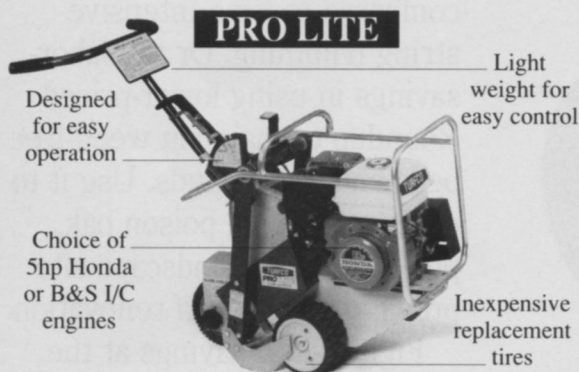
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Pesky Pests

(continued from page 64)

thick or dense thatch often experience more chinch bug activity, so any cultural strategies which reduce thatch should reduce chinch bug activity.

There is a naturally occurring predator of chinch bugs, the "big-eyed bug," which looks a lot like a chinch bug and is present in the same areas. The main differentiating character is that the big-eyed bug has large, bulging eyes.

If a client has been experiencing severe chinch bug infestations,

wintering adults have a chance to lay eggs to produce the next generation of chinch bugs.

The primary objection to this approach is that in some springs to observe spring weather conditions.

If cool, wet conditions prevailed, then chinch bug applications may not be needed at all that growing season. If spring conditions were warm or relatively dry, the manager can sample turf areas to determine whether chinch bug populations are present and likely to become heavy enough to warrant treating.

Most billbugs overwinter as adults in semi-protected areas, and emerge in the spring. Sometimes they can be seen walking near susceptible turf.

the big-eyed bug may have located the area and moved in. So be careful to determine which bug is present in the turf. If insecticides are used to control chinch bugs, those materials will also kill big-eyed bugs.

Control Strategies. There are currently two schools of thought regarding chinch bug control. One approach, which has been used by lawn maintenance companies in the Midwest and Northeast, involves applying insecticides in the spring before over- (notably cool and wet conditions), particularly in New England, many chinch bugs are killed by naturally occurring fungi (*Beauveria bassiana*.) In these years, the chinch bug population may never establish a foothold, and thus may never cause a problem.

Therefore, an early spring insecticide application may be unnecessary in these cool, wet years because the chinch bug population has already been reduced naturally, and may not have time to develop to damaging numbers.

The more traditional approach to controlling chinch bugs generally involves applying a material in June, as the immature chinch bugs are beginning to feed in the infested areas. The delay in application enables the turf manager

There are several materials registered for control of chinch bugs. Materials which remain "tied up" in thatch are ideally suited for chinch bug control, because chinch bugs are active in the thatch for much of their lives. Note also that the rate of application for chinch bug control is usually lower than the rate for the same material when it is used to control white grubs.

BILLBUGS. Life Cycle. Recent studies at Rutgers University, conducted by Jennifer Cicalese-Johnson, have shown that there are several species of billbugs which can be active in cool-season turf-grasses. Most of these species have similar life cycles, although the precise timing varies a bit.

Most billbugs overwinter as adults in semi-protected areas, and emerge in the spring (April or May). Sometimes these adults can be seen in late May or June walking on pavement near turf areas which are susceptible to attack. Females lay eggs in grass stems, and young larvae emerge by early July to begin feeding in stems and crowns.

By late July or August, larvae are near full size and feeding aggressively. One symptom of billbug feeding activity is a sawdust material which larvae deposit

in the thatch as they digest their food. Larvae complete their development by early September, pupate for about a week and emerge as new adults in autumn. Damage is usually most severe along the edges of paved areas. This pattern can often be a strong indication that billbugs are active.

Control Strategies. If a billbug population is to be controlled, an insecticide must be applied *before* damage is apparent. While the Rutgers study has demonstrated that there are several species of billbugs, the overall strategy at this time seems to be to apply an insecticide in June or early in July, when eggs are being laid and young larvae are just emerging. Such an application should eliminate the bulk of the population before it has an opportunity to cause damage.

Late summer applications in response to damage are normally doomed to failure because by the time damage is apparent, most of the larvae are virtually finished feeding and their metabolism is changing so that they are much less susceptible to control.

SOD WEBWORMS. Life Cycle. Sod webworm larvae are caterpillars which feed on turf blades and in the thatch. There are many species of webworms which attack turfgrasses in the United States, and their life cycles vary as well.

In general, however, webworms spend the winter as late stage larvae (caterpillars) in "hibernacula" (tent-like structures) in the thatch or soil. As the weather warms in the spring, these caterpillars emerge, feed briefly and pupate.

By late spring or early summer (depending on species and location), young adult moths emerge — dusty colored moths which fly haphazardly just above the turf, especially at twilight. Female moths lay eggs which eventually hatch into small caterpillars. These caterpillars may feed for three to six weeks (molting several times), pupate and emerge as new adults for a second generation.

Other species only have a single generation per year, in which case, the caterpillars spend more



time in the summer feeding on turfgrass. Because a given area may have more than one species of sod webworm active, a turf manager may find all stages (adults, eggs, young caterpillars, mature caterpillars and cocoons) throughout the summer.

Control Strategies. In most cases, sod webworms can be controlled on an as needed basis. Outbreaks tend to be somewhat sporadic, but most populations can be controlled reasonably with a

Chinchbugs are small insects with sucking mouthparts which can cause considerable damage.

wide range of insecticides applied when caterpillar feeding becomes apparent.

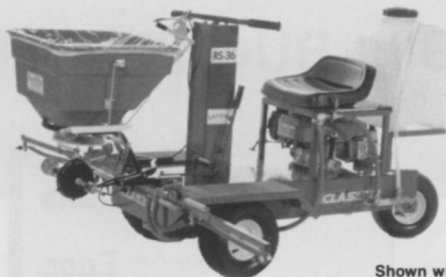
An even better method of timing an application, is to determine when the adult moths are flying in the greatest numbers and apply a material approximately two weeks later. In severe outbreaks, a second application may be needed, about three weeks after the first application.

In any case, sod webworms are nocturnal and virtually all of their feeding is done at night. Therefore, applications should be made as *late in the day* as possible. This ensures that the insecticide will be "fresh," not broken down by sunlight and should result in a significant improvement in the performance of the material. ■

The author is an associate professor in the department of entomology, University of Massachusetts at Amherst.

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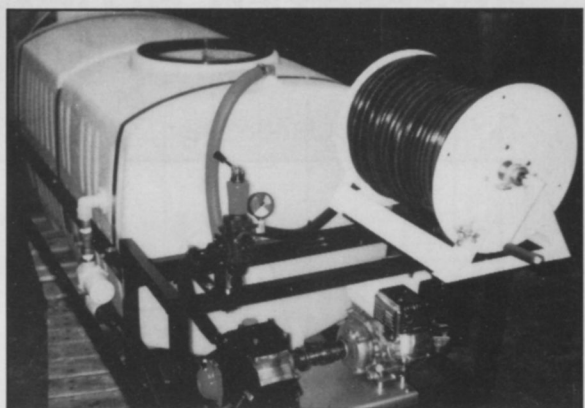
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WHY WAIT?

PREDICTING INSECT PATTERNS VIA WEATHER CYCLES

Success in determining the influence temperatures have on the development of insects has led entomologists to develop degree-day measurements for major pest groups.

By David Shetlar, Ph.D

FOR THOSE OF us who have managed turfgrasses, weather is always an important factor which greatly influences growth and development.

Warm seasons with good rainfall cause turfgrass to grow rapidly and makes us mow two to three times a week. On the other hand, cooler and dryer conditions slow down the growth of the turf.

Insects and mites are likewise influenced by weather conditions. Traditionally, we can expect outbreaks of chinch bugs and sod

webworms during years with hot, dry springs and summers. On the other hand, most of the white grub species have a hard time building up damaging levels in these same conditions.

All the common annual white grub species (Japanese beetles, masked chafers, European chafers, etc.) lay dehydrated eggs in the soil.

These eggs must absorb moisture from the soil (up to 50 percent of their weight) in order to develop. If they do not absorb

water within five to seven days, they die.

Unfortunately, turfgrass entomologists have had trouble scientifically quantifying the influence of rainfall on turfgrass insects. On the other hand, we have been quite successful in determining the influence of temperature on many of the important pest groups.

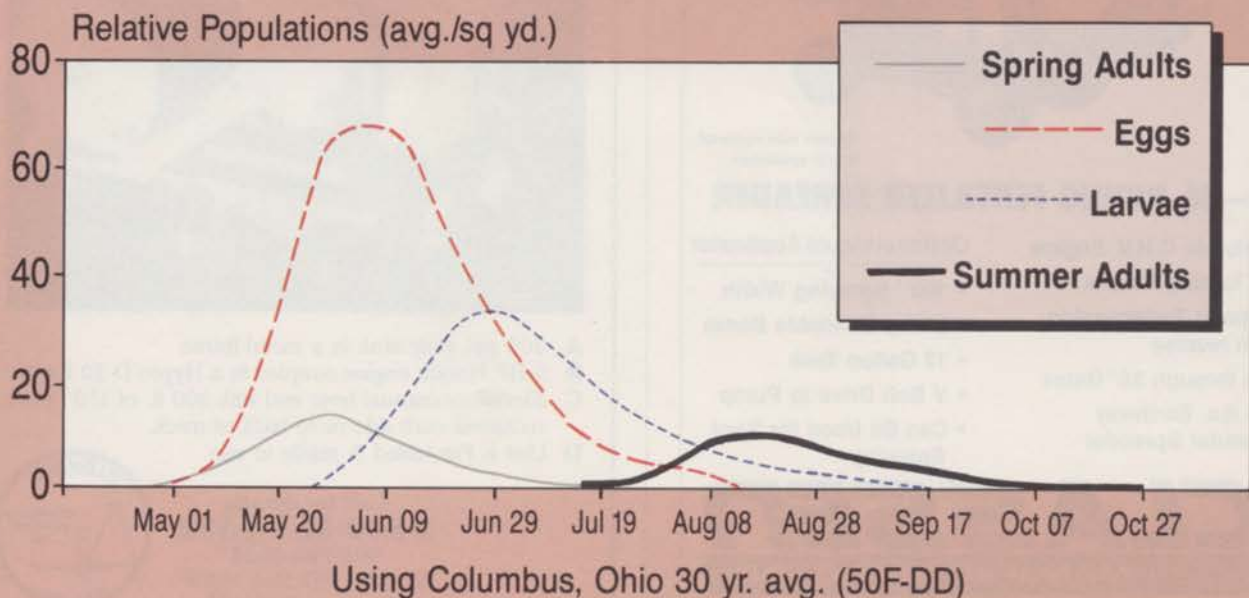
We know that insects develop at rates determined by temperature. In short, insects develop more rapidly at higher temperatures and slower at lower temperatures. Our measurement of this development is in degree-days (DD).

Degree-days can be calculated in a multitude of different ways and you need to be aware of the technique used. For instance, degree-days can be calculated using the average method, sine wave or instantaneous method.

(continued on page 70)

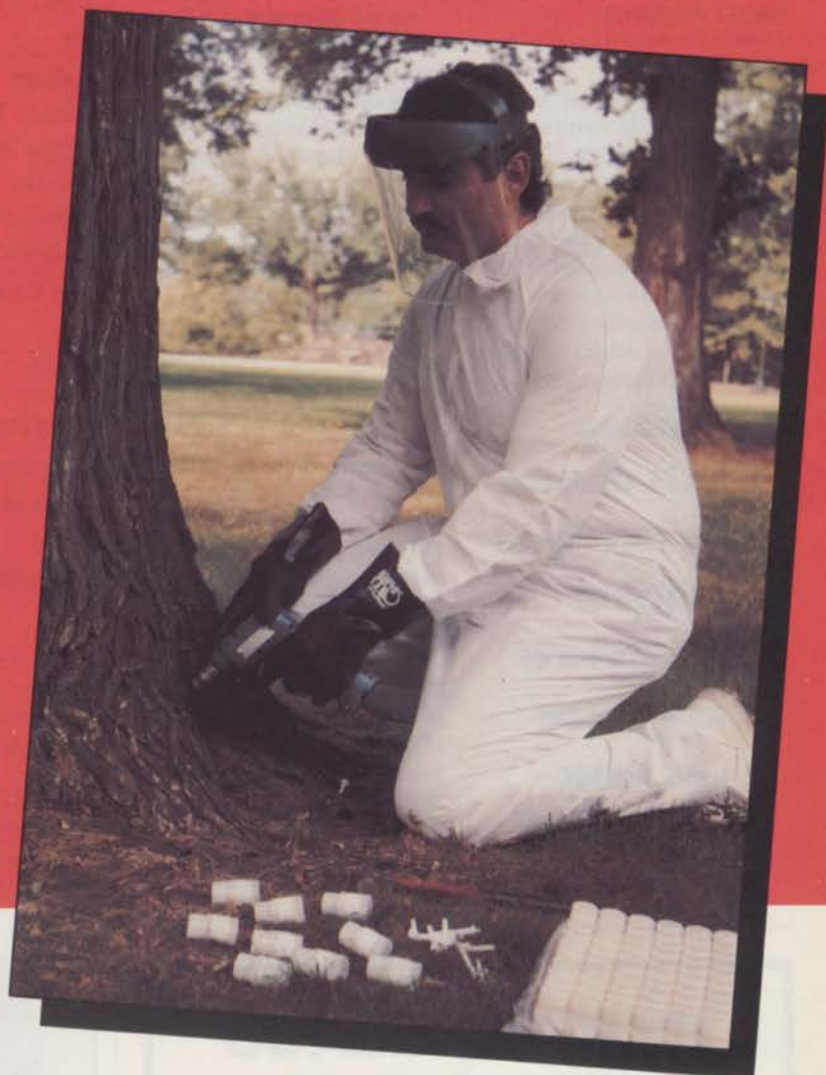
PREDICTED BLUEGRASS BILLBUG STAGES

(using degree-day model)



Graph 1.

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Insect Patterns

(continued from page 68)

The average method simply calculates the DD's with an average daily temperature. The sine wave method assumes that the rise and fall of daily temperatures resembles a sine wave. The instantaneous method requires a weather station and computer which takes temperatures on a short time interval and calculates the fraction of a DD accumulated.

**Insects develop
more rapidly at
higher
temperatures
and slower
at lower
temperatures.**

For my discussion, I will use the average method because of its ease of use.

The cumulative average degree-day is first calculated by determining a threshold temperature for the insect involved. For most of the turfgrass insects, development stops when the temperature drops below 50 degrees Fahrenheit (10 degrees C). This will be the threshold temperature.

To calculate the daily DD, simply take the average temperature (maximum + minimum divided by 2) and subtract the threshold temperature. If the result is a positive number, you have experienced some insect development. If the result is zero or a negative number, no insect development occurred and you simply record a zero. (See Table 1.)

Temperature development studies on insects have been reported by Dan Potter, University of Kentucky, for masked chafers; by Paul Heller, Penn State University and myself for bluegrass billbugs; and by Harry Niemczyk, The Ohio State University, OARDC, and myself for sod web-

Day	1	2	3	4	5	6	7
Maximum Temp	70	75	60	55	65	75	82
Minimum Temp	40	45	40	35	45	50	54
Average Temp	55	60	50	45	55	63	68
Ave-Base	5	10	0	-5	5	13	18
DD(base 50°F)	5	10	0	0	5	13	18
Cumulative DD	5	15	15	15	20	33	51

Table 1. Calculating cumulative average DD's for seven days.

Billbug Stage	% of Activity				
	10%	20%	30%	40%	50%
Spring Adults	283	347	405	461	518
Eggs in Stems	395	486	563	639	720
Larvae	810	941	1051	1154	1260

Table 2. Bluegrass billbug degree-day (base 50°F) predictions.

worms. Others are being developed for chinch bugs. For our discussion, the bluegrass billbug DD model will serve as a good example.

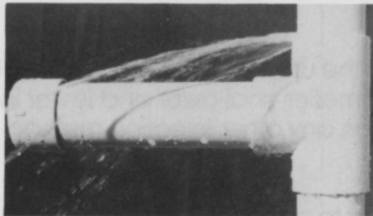
In 1984 and 1985, bluegrass billbug adults were captured in simple traps in order to determine the number active over the sum-

mer months. Eggs and larvae were also sampled in the turf to determine the numbers per square foot over the summer.

These numbers were converted to a percent of activity for each billbug stage and the percents were compared to DD units (base 50 degrees Fahrenheit) for each

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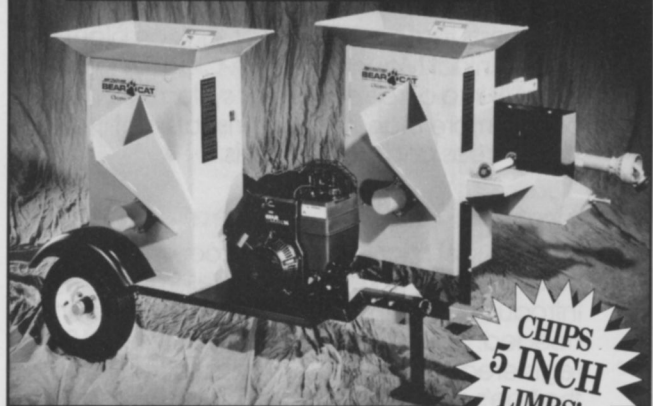
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year. The result was a mathematical line called a regression line.

This line can be stated as an equation. We can then calculate billbug activity by testing various DD's. These calculations can be plotted to form a predictive life cycle as illustrated in Graph 1.

The thing that struck us immediately about this curve was the short time interval between spring adult activity and egg laying. The model was predicting that significant numbers of eggs could be laid within three weeks. This means that the spring adult control period was much shorter than originally thought.

Therefore, if not all of the billbug suscep-

Monitoring insect activity with degree-day models is a good integrated pest management technique.

tible turf can be treated in the spring, some billbug control may have to be switched to the larval control tactic. Table 2 lists the DD targets for bluegrass billbug spring adults, eggs and larvae. I would suggest that control be applied before the 30 percent egg laying period (200 to 563 DD) and between the 10 percent to 40 percent larval period (800 to 1,150 DD).

An important thing to remember about these degree-day predictive models is that they do not predict if damage will occur. In other words, they only predict when an event should happen.

We are also finding out that some turfgrass insects may develop according to degree-days, but they may be heavily influenced by other conditions such as rainfall and soil moisture. As was stated above, northern masked chafer eggs must absorb moisture from the soil in order to develop. Therefore masked chafer adults may delay their emergence from dry soil until irrigation or rainfall occurs.

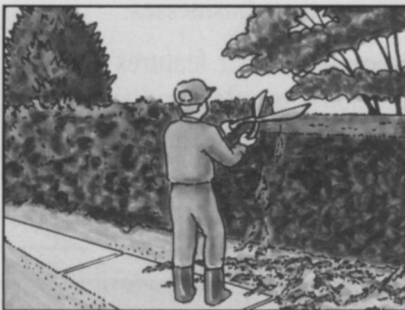
In Delaware, Ohio, 1987 was a "normal" year with adequate soil moisture. Peak emergence of masked chafers was predicted to take place in the last week of June and did. In 1988, a hot, dry summer occurred and predicted emergence was scheduled for the third week of June. Notice that emergence was delayed until July when two rainfall events occurred.

In 1989, above average rainfall kept the soil moist, but below average temperatures delayed emergence of the adults until mid-July. In short, though we have degree-day models for masked chafer adult activity, it is wise to monitor the adults with light traps in order to determine if low soil moistures are delaying their activity.

By using degree-day models and light traps for predicting and monitoring masked chafer activity, we can truly say that we are using integrated pest management techniques.

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Grubs exposed after removal of sod.
Photo: New York State Turfgrass Association.

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Generally, we know that the eggs of masked chafers take 10 to 14 days to hatch, and the young larvae take a few days to reach the soil thatch level where they are susceptible to controls. Therefore, the ideal time to apply a larval control would be about four weeks after the peak adult activity period.

Table 3 contains some turfgrass pests and their predicted degree-day targets. Remember that other conditions may influence actual

activity and these targets do not predict damaging levels of pests. You may also have to modify the charts slightly for your particular area because some of these insects may have regional differences in development.

Therefore, use the information as a beginning and modify it with your own experience. ■

The author is a landscape entomologist with The Ohio State University, Columbus, Ohio.

Target DD	(base 50°F)
Larger Sod Webworm (1st generation)	1050-1950
Larger Sod Webworm (2nd generation)	2600-3010
Bluegrass Sod Webworm (1st generation)	1250-1920
Bluegrass Sod Webworm (2nd generation)	2550-3010
Cranberry Girdler	1700-2750
N. Masked Chafer 1st Adults	898-905
N. Masked Chafer 90% Adults	1377-1579
S. Masked Chafer 1st Adults	1000-1109
S. Masked Chafer 90% Adults	1526-1679
Japanese Beetle 1st Adults	1050-1180
Japanese Beetle 90% Adults	1590-1925

Table 3. Degree-day targets for sod webworms and white grubs.

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Focus on Trees & Ornamentals

AMERIFLORA '92 SPROUTS INTEREST IN GREEN INDUSTRY

AMERIFLORA '92 will bring a trace of the Magic Kingdom to the Columbus, Ohio-based landscaping and horticulture event.

According to John Lumpe, communications manager for Ameriflora, Walt Disney World veteran, Scott Girard, is using his 23 years of landscaping experience to create a bright, bold and colorful display for the celebration.

The event, which features 106 exhibits and 65 common areas, commemorates the quincentennial of Christopher Columbus' landing in America. Columbus, Ohio, is the largest city in the world named after the renowned navigator.

Based on an 88-acre site including Franklin, Wolfe and Academy parks in Columbus, the show is the first U.S. floral event to be sanctioned by the International Association of Horticulture Producers.

"We take a positive view on it," said Joel Albizo, director of public relations for the American Association of Nurserymen. "It certainly has the potential to increase interest in horticulture."

Despite his experience at Disney, Girard said, Ameriflora presented a unique challenge because of its location. Girard and his crews made every effort to maintain existing trees in the 100-year-old Franklin Park. An assortment of new trees will also be added as progress continues toward opening day.

"This event will enhance the green movement currently under way," Lumpe said. "It shows what you can do to enhance properties rather than destroying them."

Lumpe said Walt Disney World or the Knoxville World Fair could fit in the total park area dedicated to Ameriflora.

The roots of the exposition lie in Europe. Following World War II, Europeans would select a site destroyed by the war, landscape it for exhibition, then dedicate it to the host city as park land. Unlike its predecessors, Ameriflora '92 is



Cascading waterways are one of the show's highlights.

being built around already existing park land.

"It's not like drawing on a blank sheet," Girard said. "You can't just draw whatever you want."

According to Girard, the most complex part of the project was building the exhibition around the landscaping already in place.

The resulting design includes features such as a four-acre main mall, a rose garden, a \$15 million expansion of Franklin Park Conservatory's current indoor botanical exhibit, an assortment of landscaped homes and a lake with cascading waterways and an island.

About \$50 million of the \$93 million Ameriflora budget is dedicated to construction, Lumpe said.

**Ameriflora is the
first U.S. floral event
to be sanctioned by
the International
Association of
Horticulture
Producers.**

"This is all founded and grounded in my Disney experience," Girard said.

His experience has also helped him design facilities that meet practical considerations and appeal to general interest visitors.

"First and foremost, the United States guest wants to be entertained," he said. "If you can teach them something along the way, great."

According to Lumpe, attendance for the event is expected to range between 2.6 and 4.6 million. The exhibition begins

April 20, 1992 and concludes on Columbus Day, Oct. 12, 1992.

Organizers plan to have something for everyone to see, from the professional landscape contractor to the home gardener. More than 40 exhibitors are currently lined up, with the majority expected to turn in commitments by this summer.

The Ameriflora site will be divided into five "theme zones" including the Gateway to Discovery, Olde World traditions, The America Presents, The Community of Nations and The Cutting Edge.

Formal gardens, competitions, American exhibits, international exhibits, entertainment and science and technology pavilions will highlight the theme zones. To date, Japan, Monaco, Great Britain, the Bahamas, Canada, the Dominican Republic and Spain plan to participate in the event.

Monaco, for instance, plans to build and fully landscape a structure similar to a back alley in Monaco. Japan is toying with the idea of building an authentic Japanese Garden on a 75,000-square-foot site. If built, the garden will remain in its location after Ameriflora ends, and will represent only the second authentic Japanese garden in the United States, Lumpe said.

Different theme weeks will highlight the six-month event, leading to some more heavily trafficked weeks than others. ■

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Focus on Seeding

New Bermudagrass Shows Tolerance to Nematodes

THE AGRICULTURAL Research Service, United States Department of Agriculture and the Georgia Agricultural Experiment Station, coastal plain experiment station released Tifton 10 bermudagrass, *Cynodon dactylon L. Pers.*

Tifton 10 originated as a vegetative introduction collected by G. W. Burton in 1974 from a lawn in Shanghai, China. It is vegetatively propagated and sheds pollen, but sets sparse seed. Foliage is coarse-textured with a natural dark bluish-green color.

Tifton 10 has been evaluated at nine locations in Georgia, Florida, Texas and New Jersey.

Tifton 10 rapidly established from stolons and above ground stems which limits weed invasion. Under low management (2 ½ lbs. N/1,000 sq. ft./yr., irrigated only in dry periods and mowed at 1 ½ inches once a week), it has maintained turf quality

similar, but coarser textured than others at all tested locations except Ft. Lauderdale, Fla., where severe mole cricket damage destroyed stands during establishment.

Salinity studies at the U.S. Salinity Laboratory in Riverside, Calif., showed that Tifton 10 is moderately tolerant to salinity. In field plots at Tifton, Ga., Tifton 10 has shown tolerance to ring nematodes in four-year old plots. No significant number of other nematodes were observed in the plots.

Tifton 10 is said to be good on roadsides, low traffic athletic fields, commercial landscaping areas and lawns. Its unusual dark bluish-green color will be useful for contrast plantings in various recreational areas.

'Dandy' Perennial Rye Receives Patent Protection

U.S. patent variety protection has been awarded to R.H. Bailey Seed, Salem, Ore.,

for its "Dandy" perennial ryegrass.

The newly protected variety was developed by Richard Bailey from germplasm originally selected and improved by Reed Funk and his associates at Rutgers University.

The firm reports the grass shows substantial improvements in heat and cold tolerance, pest resistance, mowing quality, wear tolerance, dark green color and seed production.

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Monopoly, a proprietary Kentucky bluegrass marketed by Peterson Seed Co., performed well in no-irrigation stress tests.

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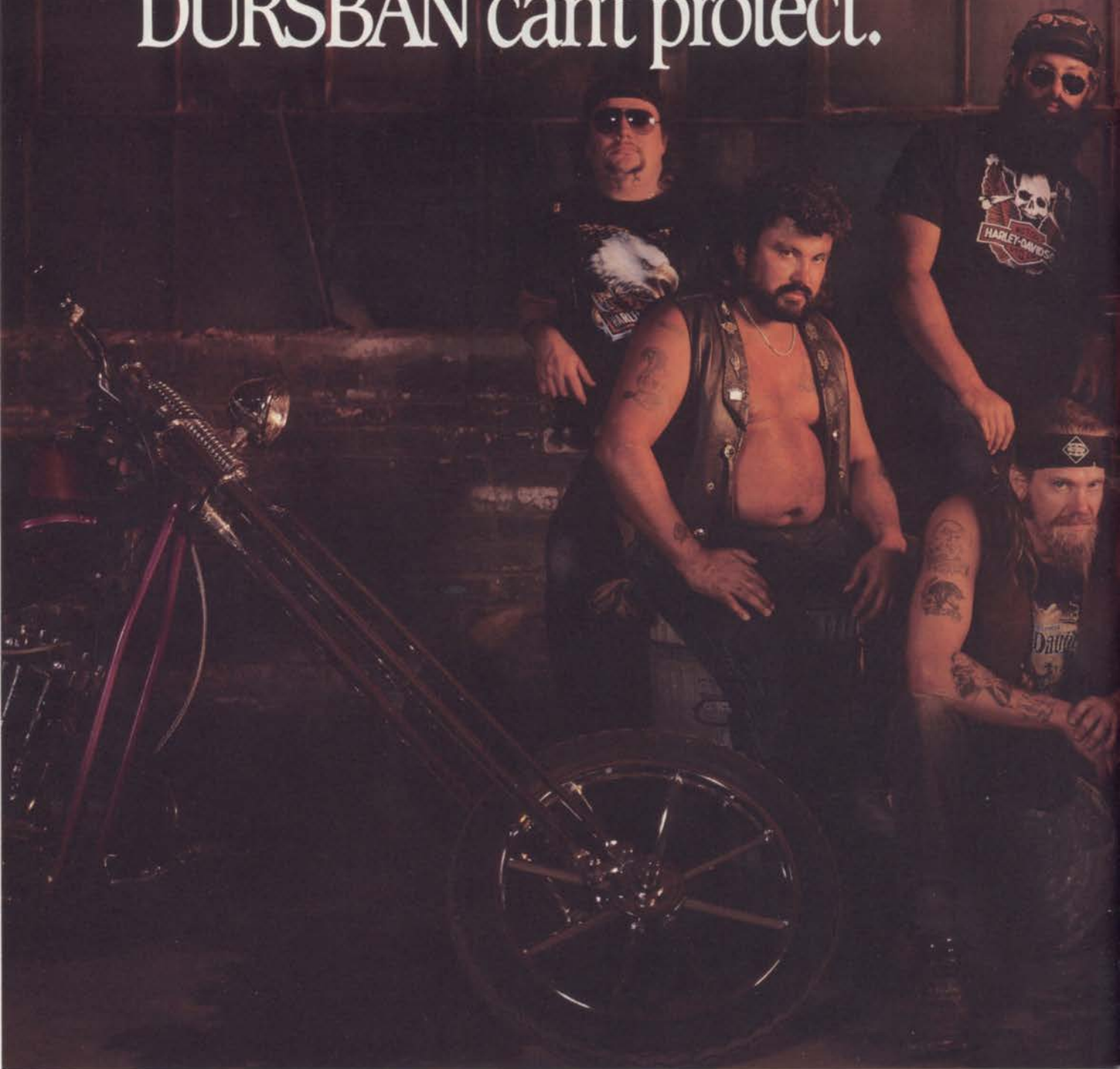
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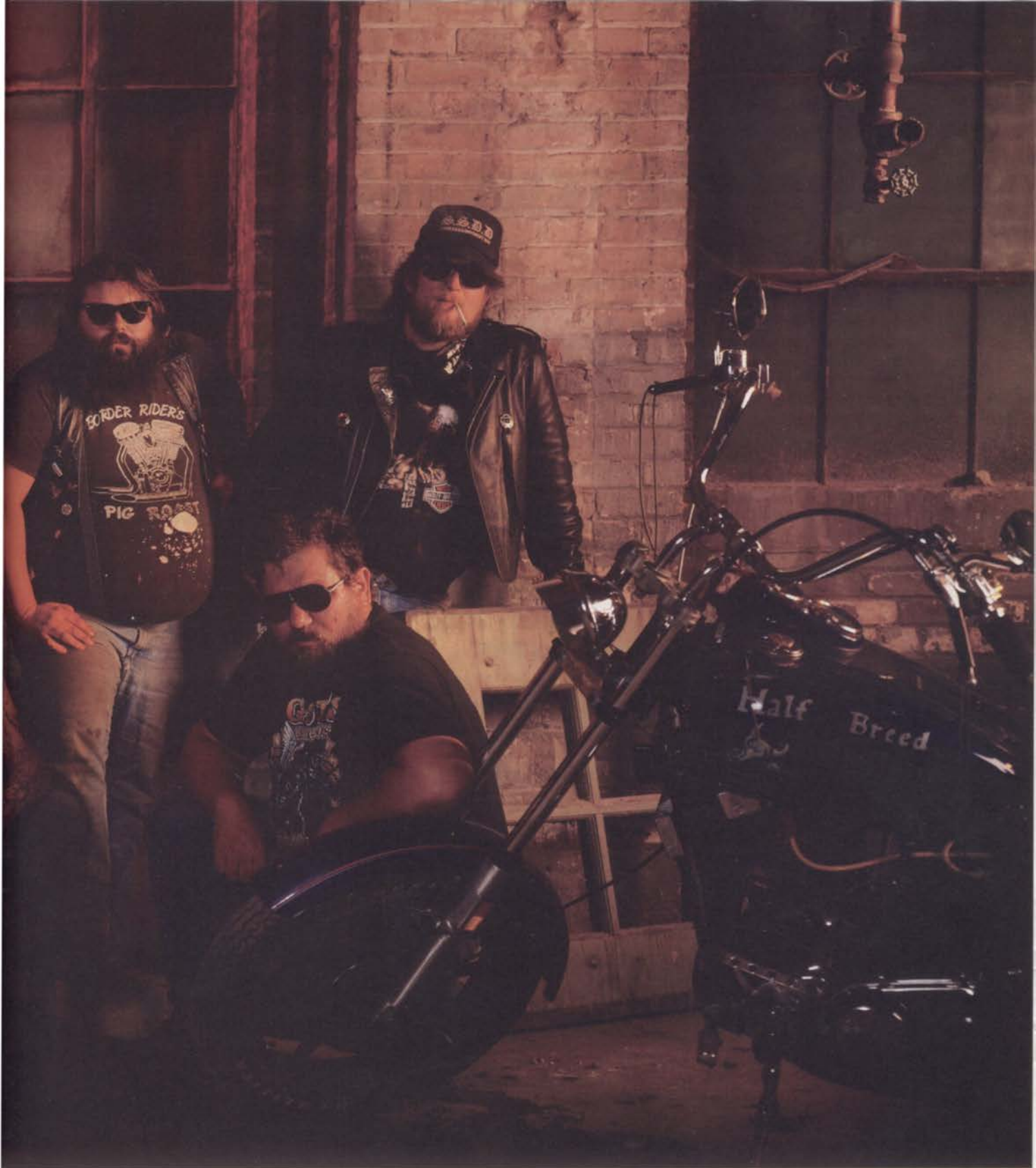
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Financial Corner

ESCAPING RECESSIONARY TURMOIL

THE EXPERTS differ over whether today's economic climate is actually a recession. But, look around. Many of your business neighbors haven't waited for the final determination, they beat the rush by going out of business now rather than later. And it's all so pointless.

That's right, any well-managed lawn or landscape maintenance business should be able to weather any temporary economic storm. And not only can many maintenance businesses survive, they should also be able to prosper if a few simple strategies are employed.

Obviously, any management steps taken in time of fiscal trouble must produce quick results, be simple, effective and not involve too many detours from the professional's main job of managing the business.

PERSISTENCE. The first step in coping with today's economic climate is to know the cost of operations. A maintenance operator who knows that \$100 in well-placed advertising draws 15 new prospective customers to his services is keeping good records. If it's also known that out of those 15, five will make a \$150 purchase, the business is well on the way to fiscal survival.

An excellent
opportunity to reduce
fixed costs is through
property taxes.

A simple increase in the advertising budget should, all other things being equal, result in increased customer traffic and increased sales. Common sense, right? Wrong.

Using the above figures, a maintenance contractor will increase his or her sales by \$750 for each \$100 spent on advertising. But how much of that \$750 sales increase equals real profit? Chances are that it's not enough to cover the ad budget.

Suppose, however, that instead of increasing the advertising budget a contractor uses that money for labeled uniforms and cleaning up equipment to create a better business image? The result should be prospects interested in his services. Making an effort to increase both the number of prospects who sign up and the dollar amount of each sale means more bottom-line profit.

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Consider, however, if the number of prospects buying is increased by lower prices. Will the decrease in net profit be offset by more sales? If prices are increased, will fewer customers buy at the higher price, decreasing the total number of sales and the total sales income? Only cost accounting will tell — before, during and after the fact.

In order to be effective, cost accounting must use the basic costs of providing the landscape services. Naturally, some allocation of fixed expenses, administrative expenses and other items of overhead must be allocated in order for that cost accounting to be adequate.

COMPENSATION. One of the biggest costs revealed by that process is no doubt for labor. The natural knee-jerk reaction to high labor costs is to reduce the number of workers. But the reduced customer service and morale problems created by layoffs are usually more expensive than cost effective.

If the employer cannot afford to increase wages, fringe benefits such as a health care plan or better health benefits can be offered to employees. Finding lower rates for benefits comparable or better than those already offered is possible.

Remember, however, that the majority of health plans have a one-year waiting period for pre-existing medical conditions. When those employees with existing medical problems do become eligible for coverage, the low cost health care plan rates suddenly increase and continue to increase.

Why not consider the direct approach to rewarding employees and increasing productivity? Typical variable pay plans include profit-sharing, year-end bonuses, gain-sharing, group incentives and individual incentives. Remember to let the employees know what you are doing and what you hope to achieve.

Similarly, communications should play an important role in your relationship with business landlords and bankers. Both hate surprises, but if the maintenance operator has done a good job of keeping them abreast of deteriorating business conditions both should be inclined to reduce expenses.

Banks charge a number of fees for the various services they perform. In fact, one of the ways in which any bank judges the value of a customer is by the number of bank services they use.

These and other restrictions may adversely affect the ability of an operator to adapt to today's business climate. High interest rates may be financially hurting the operation's bottom line. And bankers know this.

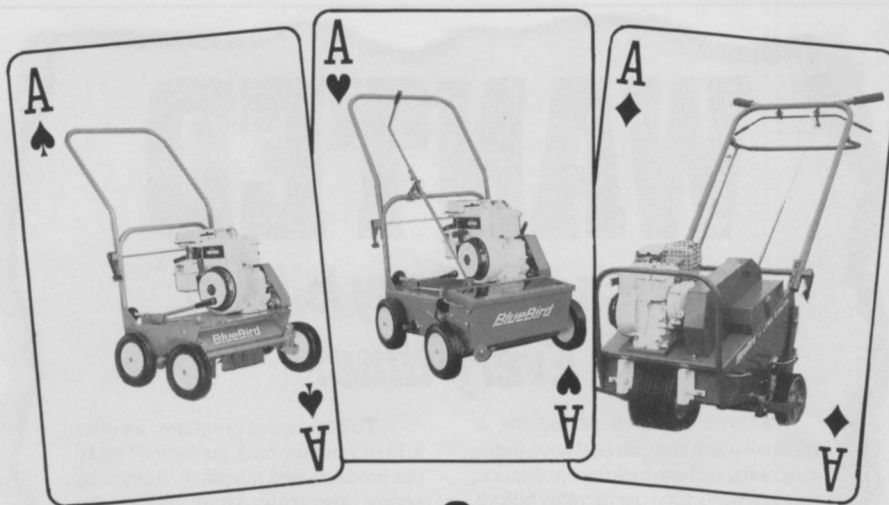
The prime rate published by a bank is supposedly the interest rate that they

charge their largest and best customers. Others pay that prime rate plus two or three percentage points. Of course, since a bank is in the business of lending money and providing financial services, they are an easy target for a smart lawn maintenance contractor who is interested in seeing his business grow.

Negotiated or renegotiated interest rates, lower checking account fees in exchange for using the bank's payroll services or free credit reports in exchange for maintaining a minimal interest reserve account are all negotiable.

ACCOUNTABILITY. Several recent court decisions have placed the responsibility — and liability — for a number of failed businesses on the shoulders of their banks because the banks refused to lend additional money, imposed too many restrictions or simply foreclosed, ruining the businesses.

Because of these adverse court decisions, most bankers are receptive to a borrower's plans for restructuring, renegotiating or easing the restrictions on existing loans — even those already technically in default. But, because of those court deci-



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sions, the borrower is the one who must take the initiative.

We all know that the bank thoroughly checks most of their customer's financial histories before entrusting them with their money. But very few, if any, professionals bother to check the solvency of the banks they do business with. Nor do they shop for the most economical bank to do business with — two musts for maintenance professionals.

An excellent opportunity to reduce fixed costs is through property taxes. Unlike our income taxes, the local government computes the real estate or property tax and

sends the owner a bill.

At least 70 percent of those who check with the assessor's office will discover that the real estate assessment is too high. Surprisingly, only 2 percent of all property tax assessments in this country are challenged, and an incredible 80 percent of those challenged are successfully reduced.

One school of thought dictates that any new equipment, fixtures or facility is more cost efficient than old. This accounts for those who immediately trade in old business vehicles, equipment and fixtures for new at the first sign of an economic downturn. Are they right or wrong? Pre-

sumably they have checked their figures and have adequate data before making this move.

From a strictly tax standpoint, trading in an inefficient piece of machinery, an outdated cash register or a fuel guzzling delivery vehicle for another does make a certain amount of sense. After all, if properly handled, that trade-in or exchange won't increase the operation's tax bill since exchanges of so-called "like kind" property are tax-free.

Selling any business asset and acquiring another, however, does have tax consequences. The difference between the value of the old asset is carried on the books, and the amount realized from its sale represents profit. When the new business equipment is acquired, only a portion of its value can be deducted in the year of acquisition. Cash out-of-pocket is usually more than the annual depreciation write-offs.

Basic financial statistics allow the professional to know just how well the business is doing financially. If those figures are converted into ratios, comparisons can be made between accounting periods or even between two businesses in the same industry.

Although time consuming, studying financial reports and creating ratios to measure the effectiveness of the business operation provides an early warning system for a business heading for trouble.

BANKRUPTCY? A final tool for financial survival deserves mention — bankruptcy. Bankruptcy can give any troubled business owner the time necessary to step aside from the pressures of creditors and turn around the business.

Although somewhat negative, bankruptcy does provide a tax-break for troubled businesses. If the contractor manages to renegotiate an existing loan, talk a creditor into forgiving a debt, etc., he incurs taxable income in the amount of the debt forgiven.

If that same business is in bankruptcy and a debt is forgiven, no taxable income results. Another plus for bankruptcy.

Finally, on a somewhat brighter note, the current economic climate offers many opportunities for any business professional. Just look at the number of lawn maintenance firms who are actively seeking acquisitions. What better time for an aggressive professional to expand his or her business by acquiring the competition? Prices will never be better and the targeted operation will, in all likelihood, be ripe for a turn around using all of the tools mentioned. — Mark Battersby ■

The author is a financial and tax consultant based in Ardmore, Pa.

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People

GREGG KINKADE was named director of creative support services for Ransomes America Corp., Lincoln, Neb.

KinKade will direct corporate communications programs, including marketing communications, for all Ransomes owned companies in North America. In addition to Cushman/Ryan in Lincoln, the companies include Ransomes Inc., Johnson Creek, Wis.; Brouwer Turf Equipment, Keswick, Ontario; and Steiner Turf Equipment, Orrville, Ohio.

Most recently, KinKade was senior account executive with Miller Friendt Lude-mann advertising in Lincoln, where he handled the Cushman/Ryan account.

Clarke Staples has been promoted to director of sales and distribution for turf and lawn care products at Cushman. He will handle sales of Cushman and Ryan products throughout North America and Japan. In addition, he will supply support to Ransomes Sims & Jefferies of Great Britain in pursuit of international markets.

Staples has spent 29 years in the turf and lawn care equipment industry, including 17 years with Cushman. He was named marketing manager for Cushman and Ryan turf care products in 1988.

Bruce Augustin has been named director of fertilizer marketing and development at LESCO. He will be active in developing, formulating and marketing LESCO fertilizer and fertilizer combination products.

Previously, Augustin was LESCO's director of technical support. Prior to joining LESCO, he was associate professor at the University of Florida and an extension turfgrass and water specialist.

Jacklin Seed Co. has named **Glenn Jacklin** operations manager for grower services and **Myron Lightbody** administrative manager of grower services.

For the past two years, Jacklin has managed the Ritzville facilities, and has now moved to company headquarters at Post Falls, Idaho.

Lightbody, an 18-year employee of the firm, will continue working with the Jacklin marketing department and remain at company headquarters.

Fermenta ASC Corp. has appointed **Jerry Pauley** to the newly created position of North American sales manager, turf and specialty products, reporting to the Northern Area Manager. Previously, Pauley was products business manager.

He will manage turf, ornamental and specialty product sales and personnel in the United States.



Augustin



Lightbody

ROOTSinc announced that **Randall MacDonald** has been appointed regional sales manager for the Mid-Atlantic and East Central states and **Wayne Williams** new vice president for the South.

MacDonald is responsible for all distributor relations, sales and sales training from New York, New Jersey, Maryland and Virginia, west to Indiana and Michigan. He has been the technical representative of ROOTSinc in the Mid-Atlantic states since March 1989.

Williams' territory includes the Carolinas, Georgia and Florida, west to Texas. Wayne leaves the New Haven office where he had been in charge of sales since July 1988.

H. D. Hudson Manufacturing has appointed **Gene Short** sales manager of its Green Garde division.

Short was previously sales and operations manager of Perma-Green Supreme. Prior to that, he was a sales representative for ChemLawn.

Lewis Minter was promoted to Supreme Corp.'s district sales manager for North Carolina, South Carolina and western Virginia.

Minter will handle sales of Supreme truck bodies through the company's distributors and fleet customers. He will be based at the firm's headquarters in Griffin, Ga.

A Supreme employee since 1981, Minter joined the company as a production line worker. He was first promoted to production foreman and was later named production manager of the Griffin plant. He served in the sales department before his promotion.

William Holt was named president of Great Salt Lake Minerals & Chemicals Corp.

Before joining GSL in February 1990 as vice president for sales and marketing, Holt was president and a principal of Chemquest, an Atlanta-based marketer of specialty chemicals.

Production activities will continue to be supervised by Max Reynolds, GSL's vice president of operations. Ken Warnick, the company's vice president of administration, will also remain at the Utah facility. ■

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reader service **54**

Product Spotlight

SNAPSHOT HERBICIDE from **DowElanco** has received federal EPA registration for use on established landscape ornamentals, container- and field-grown ornamentals, ground covers, non-bearing fruit and nut crops, non-bearing vineyards and nursery stock.

The new preemergence herbicide is currently available in a dry flowable formulation as Snapshot 80 DF.

Snapshot 80 DF provides up to eight months control of 86 broadleaf and grassy weeds before they emerge, reducing the cost and labor of hand weeding. Snapshot 80 DF can be applied directly over the top of established labeled ornamentals without injury and can be applied to wet foliage. It shows excellent tolerance to 174 labeled species of ornamentals.

Snapshot 80 DF can be used alone or tank mixed with other herbicides to control additional weeds. Because it is a preemergence herbicide, applications should be made in the spring or fall before weeds emerge, preferably one or two weeks before germination of targeted weeds. For best results, the herbicide must be activated by at least ½ inch of moisture within 21 days of application.

Snapshot 80 DF carries a caution human hazard signal word. It can be used in commercial and residential landscaped areas and commercial nurseries.

Circle 125 on reader service card

Two iron chelate micronutrient formulations from **Ciba-Geigy** — the Sprint[®] 138 and Sprint[®] 330, are available for use in nurseries, landscape plantings and turf.

Sprint 138 features 6 percent chelated iron and corrects iron deficiencies in alkaline and calcareous soils. Sprint 330 has 10 percent chelated iron and corrects deficiencies in slightly acidic to slightly alkaline soils. Both provide quick green-up to treated plants.

Sprint can be applied as a soil or foliar treatment. In soil applications, the product must reach the root zone. It can be applied as a drench, injected directly into the soil or banded.

Foliar applications should be made as thorough cover sprays. Both applications may be made in conjunction with most pesticide and fertilizer applications.

Circle 126 on reader service card

Technic Tool is offering a new circle saw accessory that operates on the Power Pruner's telescoping drive shaft. The circle saw accessory is designed to cut 1 1/2-inch and smaller limbs.

The circle saw accessory, with its 5 1/2-inch blade, is quickly attached to the power pruner drive shaft. It's easily maneuvered between branches, and the tool's safety guard has a special cutting shoe which ensures a clean precise cut.

Weighing only 16 pounds, the tool can be used either from the ground or a bucket truck. Ladders and tree climbing are virtually eliminated.

For the operator's protection, the circle saw's safety guard moves the sawdust away from the operator. The length of the telescoping drive shaft — up to 11 feet — provides additional safety.

The circle saw is available either as a power pruner accessory or as an individual circle saw unit, including the telescoping shaft of the power pruner.

Circle 127 on reader service card

Stallion chipper/shredders from **Salsco** are available in three models: 5-h.p. Briggs, 7.9-h.p. OHV Kawasaki and a 8-h.p. Briggs.

The units will handle 3 1/2-inch logs in

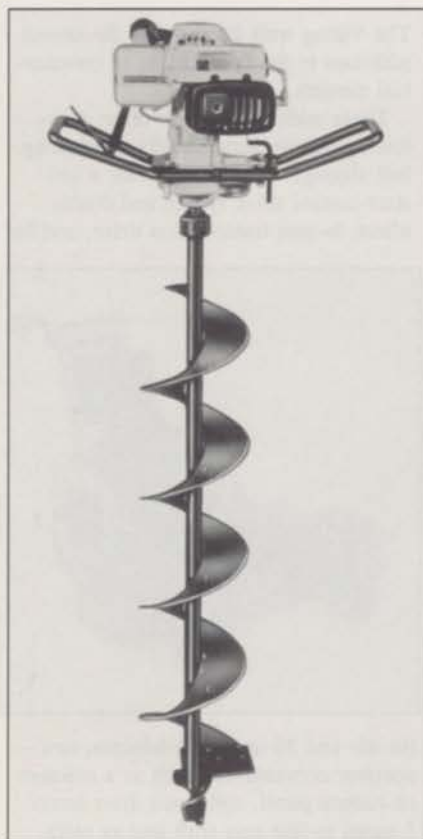


the chipper side, and brush up to ¾ inches thick in the shredder side. Options include an electric start, 12-foot hose kit,

transport wheel, over the road tires and a light package.

Circle 128 on reader service card

A replaceable forged steel carbide tipped earth auger pilot point is now available from **Feldmann Engineering**.



This new point uses mining grade carbide inserts which are solidly brazed onto forged steel. The new tip reduces down time and increases point longevity. The greater wear and shock resistance of the tungsten tip simplifies penetration of compacted clay soils.

Applications for the 2-inch auger include soil sampling, soil percolation for aerating and/or fertilizing around trees and shrubs and soil removal for mineral exploration.

The 12-inch auger drills to a depth of 14 inches, simplifying the planting of trees and shrubs. For post hole and other soil drilling applications, depths of 36 inches are reached with the 2-, 4-, 6- and 8-inch augers.

Circle 129 on reader service card

Orthene turf, tree and ornamental spray from **Valent** eliminates the need for extensive mixing. Its water-soluble formulation combined with its own wetting agent, makes the product convenient to mix and apply.

The soluble powder dissolves completely when mixed with water and will not clog sprayer screens or nozzles. Orthene

is non-phytotoxic to turf, even on young, overseeded grasses. No watering-in is required to control labeled insects.

Orthene's formulation kills insects on contact, then penetrates plant tissue within 24 hours to provide continuing systemic control.

Circle 130 on reader service card

Perma-Mulch from **ArborGuard** is a one-inch thick porous circular mat with a center hole for the tree trunk, and slit to allow the mat to be easily slipped around the trunk.

Mats are offered in various sizes to accommodate trees from under one to more than eight inches in diameter. They are given a texture and non-fading color to match any bark mulch. When installed around a tree's base, the casual observer would think it was ordinary organic mulch.

It's completely water permeable. Water readily flows through and the mat quickly dries out. Under dry conditions, the mat reduces evaporation by interrupting capillary flow from below. By volume, the mat is 50 percent air. Chemicals won't stain it and granular fertilizers will sit on top until dissolved by rain or sprinkler irrigation.

Circle 131 on reader service card

A NEW, COMPACT 45-h.p.-class trencher/vibratory plow is now available from **Ditch Witch**. The 4-wheel drive unit works well in confined areas.

The Model 4500 is smaller than many 30-h.p.-class models, yet has 50 percent more power.

It's available with a selection of all-hydrostatic digging attachments, center-line trencher, dual-position trencher, vibra-



tory plow and Combo — combination vibratory plow and trencher.

A power-efficient hydrostatic digging drive motor and hydraulic oil cooling system make the 4500 highly productive. A two-speed ground gearbox increases drawbar pull and plowing performance.

Circle 132 on reader service card

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Regal Chemical Company

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reader service 55

Grow Gun is an easy and efficient tool for fracturing and aerating tough soils. It also provides a convenient method to inject dry or liquid fertilizers, water and other materials directly to the root system of a tree or shrub.

The system uses compressed air injected into the soil to lift and fracture an area from four to 10 feet in diameter from the hole. These fractures can then be used to inject fertilizer or other material below ground.

Excellent results can be produced in

tough, heavy clay soils. Some amendments may be injected to help keep fractures open for a number of years.

Circle 133 on reader service card

BlueBird International introduced a new lawn aerator which pulls three-inch soil plugs in heavy turf.

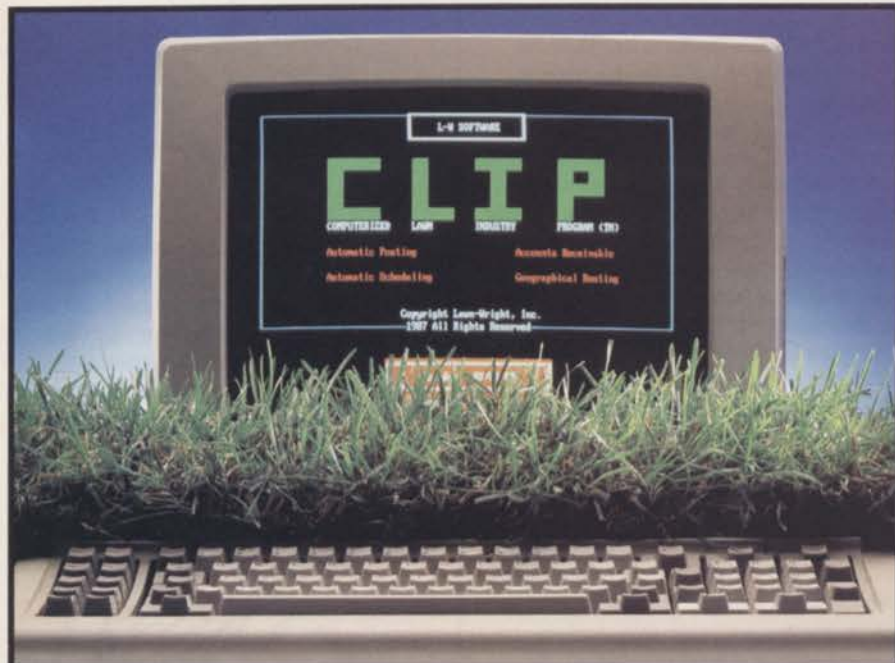
Weighing 265 pounds, the aerator maneuvers in tight spots through gates as well as in large areas, and is made of heavy gauge steel with shafts that run in sealed ball bearings.

The aerator is 40.5 inches long with its handle folded, is only 27 inches wide and has wheels that are fully adjustable for depth of penetration and stability. It has two removable weights that total 72 pounds.

Circle 134 on reader service card

The Viking walk-behinds are the newest additions to the **Exmark** line of commercial mowers.

These mid-sized mowers offer: posi-track pulley system virtually eliminating belt slippage in wet conditions; a constant-control drive system and double idlers; lo-torque transmission drive; and for



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reader service **56**



the 48- and 36-inch walk-behinds, new operator conveniences such as a redesigned control panel, soft-touch drive levers, 5-speed in-line gear shift and an extra-large fuel tank.

Circle 135 on reader service card

CON-TACK is specially formulated for use as a separate binder to stabilize straw mulch, hydraulic mulch or bare soil. Manufactured by **Conwed Fibers**, its outstanding performance stems from superior adhesive, mixing and distribution properties.

It was developed with the contractor in mind. It disperses uniformly when mixed with water, with little or no coagulation or "gumming" of the tackifier.

Improved binder distribution during mixing results in improved "on the ground" coverage. The improved tackifier coverage results in superior erosion control performance.

It's available in either 10- or 50-pound packages.

Circle 136 on reader service card

Bunton is offering a hydrostat rotary mower with premium hydraulics, zero turning radius and infinite variable speed adjustment.

Finger-tipped levers at the handle grip independently control forward, reverse

and power turning. Adjustable speed controls allow the operator to set the speed and know it will remain steady.

With a maximum speed of 6.5 mph in forward and 1.5 mph in reverse, the mower delivers a clean cut in a short time. The self-propelled rotary mower is available in 36-, 48- or 52-inch sizes, and offers a 1- to 4-inch cutting height.

Circle 137 on reader service card

A new hydraulically operated dump trailer that can haul up to 20 cubic feet of cargo, towed behind a **Cushman Turf-Truckster** vehicle, is new for 1991.

The turf-truckster must be equipped with the special quick-attach fifth-wheel hitch and the live hydraulics package available from Cushman. The dump trailer attaches to the turf-truckster with a two-inch ball hitch.

Even with a trailer box capacity of up to 2,500 pounds, the ground pressure is kept to a low 12 psi for the loaded trailer and slightly less than that for the turf-truckster. The dump trailer is equipped with 24-inch by 13-inch turf tires on 12-inch rims.

The trailer box measures 48 inches wide by 60 inches long by 12 inches deep. Hydraulic dumping of the trailer is controlled from the Turf-Truckster seat. Dumping height is 16 inches.

Circle 138 on reader service card

Blackburn Manufacturing has developed a rigid posting sign printed on tough corrugated plastic.

The 4-inch by 5-inch sign is printed on a choice of white or yellow corrugated plastic. The sign comes mounted on an 18-inch PVC plastic safety staff. The signs are shipped assembled, eliminating the problem of handling separate staffs and signs on the job.



The signs can be custom printed in accordance with individual state requirements as well as company logo or other information. Custom printing is available in any of seven ink colors.

Circle 139 on reader service card

The versatile Model 80 leaf mulcher and large area mower from **Woods, Division of Hesston** mows an 80-inch swath over parks, airports and rights-of-way.

For tractors rated 30-h.p. to 60-h.p.,

Woods offers pull-type or three-point hitch mounted models. Pull-types are also available in center-pull or offset.

Circle 140 on reader service card

Milliken Chemical has developed a concentrated Blazon® product in premeasured, easy to handle packets.

The original Blazon product features of non-staining, no heavy metals, pesticide compatibility and non-toxicity are retained in this concentrate.

Each packet will color 50 gallons of

spray solution. For smaller volume spray solutions a portion of the packet can be used, and the remainder stored for later use. The packets are easily disposed of after use.

Circle 141 on reader service card

MulchMate SuperTac from **PRSM** is a versatile, hydroseeding tackifier ideal for fiber mulch binding and hay/straw tacking.

It's a highly concentrated product conveniently packaged in four, 10-pound bags per case and can be used in small tank



The Ultimate Utility Truck

For dumping, hauling or general utility, the new Stahl Landmaster is the only body you'll ever need.



Designed specifically to meet the needs of municipalities, landscapers and contractors, Landmaster is the ultimate versatility vehicle. It's a heavy-duty dump body. A spacious utility body with 35 cubic feet of storage space, and a large capacity cargo body. The Landmaster mounts on a wide range of cab chassis with lots of available options for taking on virtually any task. For more information on Landmaster – The Ultimate Utility Truck – call Stahl today.

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reader service **57**

sprayers. It's produced from natural ingredients and contains a biodegradable dye for marking.

MulchMate SuperTac also contains additives minimizing product "balling," and reducing the clogging potential of fiber mulch.

Circle 142 on reader service card

Farmhand's Model 6650 commercial tub grinder grinds and reduces landscape wastes by up to 10 times, and is now being used for grinding leaves, grass clipp-

ings and tree trimmings for compost.

Material is discharged from the grinder and placed into piles or loaded into trucks via the Grinder's cleated, 22-foot long conveyor belt. Ground material can be hauled, if necessary, in larger, denser, fewer truckloads because of the reduced particle size. It can also be turned into compost faster because of the smaller size material.

In operation, the grinder's 40 free-swinging, reversible hammers can rapidly grind a variety of yard wastes when pow-



ered by the optional diesel power unit. An electronic governor on the grinder matches the diesel power supply to grinding materials and conditions, sensing and controlling tub rotation and mill input. It can process up to 20 tons per hour.

Circle 143 on reader service card

Crysteel's rugged Two-Yard Tipper is made for one-ton trucks with 10,000 GVWR. The Two-Yard Tipper doubles as a dump truck and contractor body.

Big on quality construction features, the Two-Yard Tipper has a box braced four-way tailgate with a front mounted trip lever for easy spreading. The rigid one-piece front bulkhead with quarter cab protector and window is standard.

Choose from three stable hoists for the capacity you need. Full length, low mount hoist and subframe speeds installation without adding to mounting height.

Lifetime greaseless composite Teflon bearings at critical pivot points eliminate problems and reduce maintenance. Preci-



sion hydraulic cylinders are double acting for complete, positive control. Select either PTO driven or 12-volt electric pump.

Circle 144 on reader service card

Provide years of experience in a video format for your shrub crews. Quickly orient them to efficient set-up and clean-up techniques.

This tape, from **C.D. Anderson Landscape Services**, offers tips to head off mistakes before it's too late.

Circle 145 on reader service card

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Calendar

APRIL 18-19

Green Tech '91, Long Beach, Calif. Contact: California Landscape Contractors Association, 2021 N St., Sacramento, Calif. 95814; 916/448-2522.

MAY 4-7

12th Annual Menninger Sunbelt Tree Conference, Palm Beach County Cooperative Extension Offices, West Palm Beach, Fla. Contact: MSTC, P.O. Box 6524, Clearwater, Fla. 34618; 813/446-3356.

MAY 7, 11 & 18

Deciduous Shrub Identification, sponsored by the Center for Urban Horticulture, University of Washington, Seattle, Wash., May 7, 7 to 9 p.m., and May 11 & 18, 9 a.m. to noon. Fee is \$27. Pre-registration required. Contact: Dave Stockdale, 206/685-8033.

MAY 15

North Carolina Turf and Landscape Field Day, North Carolina State University Turf

Field Center and Arboretum, Raleigh, N.C. Contact: Joe DiPaolo, P.O. Box 7620, NCSU, Raleigh, N.C. 27695-7620; 919/737-3666.

MAY 18-21

The 58th Annual Conference and Trade Show sponsored by the Western Chapter of the International Arboriculture, Red Lion Hotel, Modesto, Calif. Contact: Derald Weaver, 209/529-3177.

JUNE 6-9

Florida Nurserymen and Growers Association Annual Meeting, Buena Vista Palace, Orlando, Fla. Contact: Earl Wells, executive vice president, Florida Nurserymen and Growers Association, 5401 Kirkman Road, Suite 650, Orlando, Fla. 32819; 407/345-8137.

JULY 12-16

American Association of Nurserymen Annual Convention and Nursery Industry Trade Show, The Dolphin, Orlando, Fla.

Contact: Kevin Morales, AAN, 1250 I Street NW, Suite 500, Washington, D.C. 20005; 202/789-2900.

JULY 31 to AUG. 2

American Sod Producers Association Summer Convention and Field Days, The Red Lion Lloyd Center, Portland, Ore. Contact: Thomas Ford, Meetings Administrator, 1855-A Hicks Rd., Rolling Meadows, Ill. 60008; 708/705-9898.

JULY 28-30

International Lawn, Garden and Power Equipment Expo, Kentucky Fair and Exposition Center, Louisville, Ky. Contact: Expo 91, 6100 Dutchmans Lane, Sixth Floor, Louisville, Ky. 40205; 800/558-8767 or 502/473-1992.

JULY 30

Midwest Regional Turf Field Day, trade show and equipment demonstration, Purdue University, West Lafayette, Ind. Contact: Clark Throssell, 316/494-4785. ■

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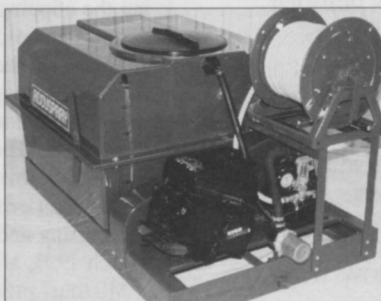
We currently have three Property and Casualty Programs for Lawn Care Operators underwritten by A+ rated insurance companies. Coverage is available in all states except Hawaii and Alaska. Herbicide/Pesticide Applicators coverages, General Liability, Property, Inland Marine, Commercial Fleet, Workers Compensation and Umbrellas are available.

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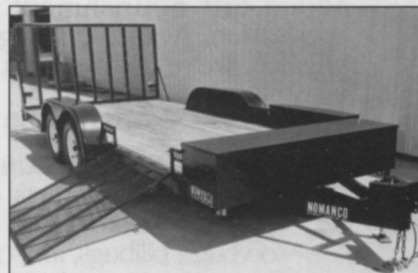
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*Denotes regional advertising.

Focus on Composting

(continued from page 26)

made available from landfill tipping fees.

Iowa enacted a ban on all yard waste this year and is promoting and encouraging all forms of recycling yard waste, including leaving the clippings on the lawn.

Louisiana promotes backyard composting, mulching and leaving clippings on the lawn, and directs all requests for written materials to the cooperative extension office.

Maryland counties are responsible for recycling 20 percent of their waste. The state's Environmental Services office has issued \$10 million this year primarily for composting facilities.

Michigan promotes leaving clippings on the lawn, backyard composting and curbside pickup for municipal composting. By March 1993, all yard waste is banned from landfills.

Missouri produced a pamphlet on backyard composting and uses the slogan "Cut it high and leave it lie" when promoting leaving clippings on the lawn. The state will disperse grants — from landfill tipping fees — when they are available.

Legislation to ban yard waste from landfills in New York failed last year, but the state plans to work with communities in the planning and implementation of large scale composting facilities. Future plans include producing a yard waste manual with Cornell University for counties planning a composting site.

Some municipalities in Ohio have already banned yard waste from landfills, although a statewide mandate goes into effect at the end of 1993.

Other cities are discouraging bagging yard waste, and some areas are encouraging haulers to charge extra for yard waste removal.

All towns in Oregon with a population of more than 4,000 are required to offer recycling opportunities to their residents. The state already reports one of the highest recycling rates in the country — 22 percent to 25 percent — without any legislation in place. Legislation is pending.

Classifieds

RATES

All classified advertising is 75 cents per word. For box numbers, add \$1 plus six words. All classified ads must be received by the publisher before the 1st of the month preceding publication and be accompanied by cash or money order covering full payment. Submit ads to: Lawn & Landscape Maintenance magazine, 4012 Bridge Avenue, Cleveland, Ohio 44113. Fax: 216/961-0364.

BUSINESSES FOR SALE

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After 35 years and an illness we are forced to sell our pride and joy, our well established and profitable landscape business. We are located in the fastest commercial growth area in the nation. Our business caters to commercial, industrial and corporate headquarters only. Our location is in the Northern Illinois area and we have a well established clientele of some 225 accounts. We specialize in landscape design, construction, maintenance, service to tropical plants, irrigation systems, tree service and other general related services.

All inventory, equipment, land and building will be sold. We will stay on to assist incoming ownership. We can arrange for easy terms. Our office personnel, crews, foremen and sales staff will stay on with the new owner. Asking price is approximately \$1.5 million. Only interested parties should respond. Send all inquiries to: *Lawn & Landscape Maintenance*, Box 344, 4012 Bridge Ave., Cleveland, Ohio 44113.

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Business and house near Cleveland, Ohio; west side area. Already established. 15 years experience. Clientele. 5,000 yards top soil included. Equipment consisting of backhoe front-end loader, 4-wheel drive front-end loader, 3 dump trucks, trailer, garage and much, much more. With house asking \$350,000. Willing to stay to help establish new owner. Call 216/324-3683 for more information.

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CHICAGO BUSINESS

Long established lawn maintenance and landscaping company for sale. Includes inventory, \$50,000; equipment, \$96,000; clientele mailing lists; and accounts, commercial and residen-

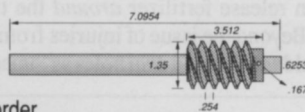
tial. More than \$200,000 in sales. Opportunity for growth unlimited. Located 45 minutes from Chicago. Asking price \$250,000. 815/756-7819.

FOR SALE

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Great money maker. 78-inch Big John tree spade. Great shape. Digs up to 10-inch diameter. Asking \$15,000. 303/841-8119.

MISC. EQUIPMENT

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♦♦♦

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For an outstanding employment opportunity contact: Hollandia Gardens Inc., 13057 Quincy St., Holland, Mich. 49424.

♦♦♦

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Growing firm needs well-versed salesman in all aspects of lawn and landscape maintenance. Outstanding compensation and opportunity. Send resume or contact: Ultra Green Lawn Care, P.O. Box 151, Holland, Ohio 43528.

♦♦♦

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Value-Added Tree Care

(continued from page 52)

Smith advised operators to avoid wounding trees on an annual basis, to make wounds as small and shallow as possible and never to place drill holes in vertical alignment.

He also cautioned against wounding trees when leaves are expanding in the spring, or injecting trees with large columns of decay.

While Smith has found properly applied systemic nutrient treatments to be effective, he suggested that operators also "do everything

else possible to increase the growth of injected trees — including watering, (conventional) fertilizing and pruning."

OTHER OPINIONS. Caldwell acknowledges that systemic implants and injections deliver fertilizers directly to the tree, but questions how much difference it makes.

"Drills are arranged in a circular pattern, but all the sap movement is in a vertical direction," he said. "There is no way systemics can release fertilizer *around* the tree."

Beyond the issue of injuries from wounds, Caldwell labeled drill holes as "unaesthetic."

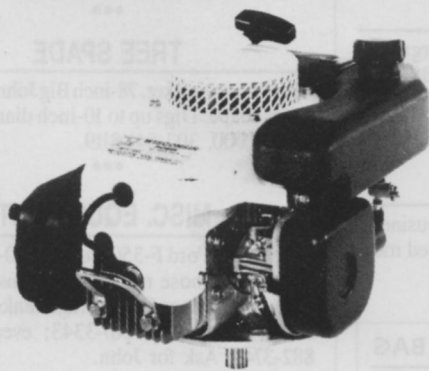
As a popular gardening columnist for his city newspaper, and frequent guest on radio call-in programs, Caldwell is close to consumers.

"I can assure any operator that if you walked down the street and asked homeowners whether they had fertilized their trees in the last five years, 99 out of 100 would say no. And with a little consumer education, most would at least agree on the eventual need," he said.

The author is a free-lance writer based in Schroon Lake, N.Y.

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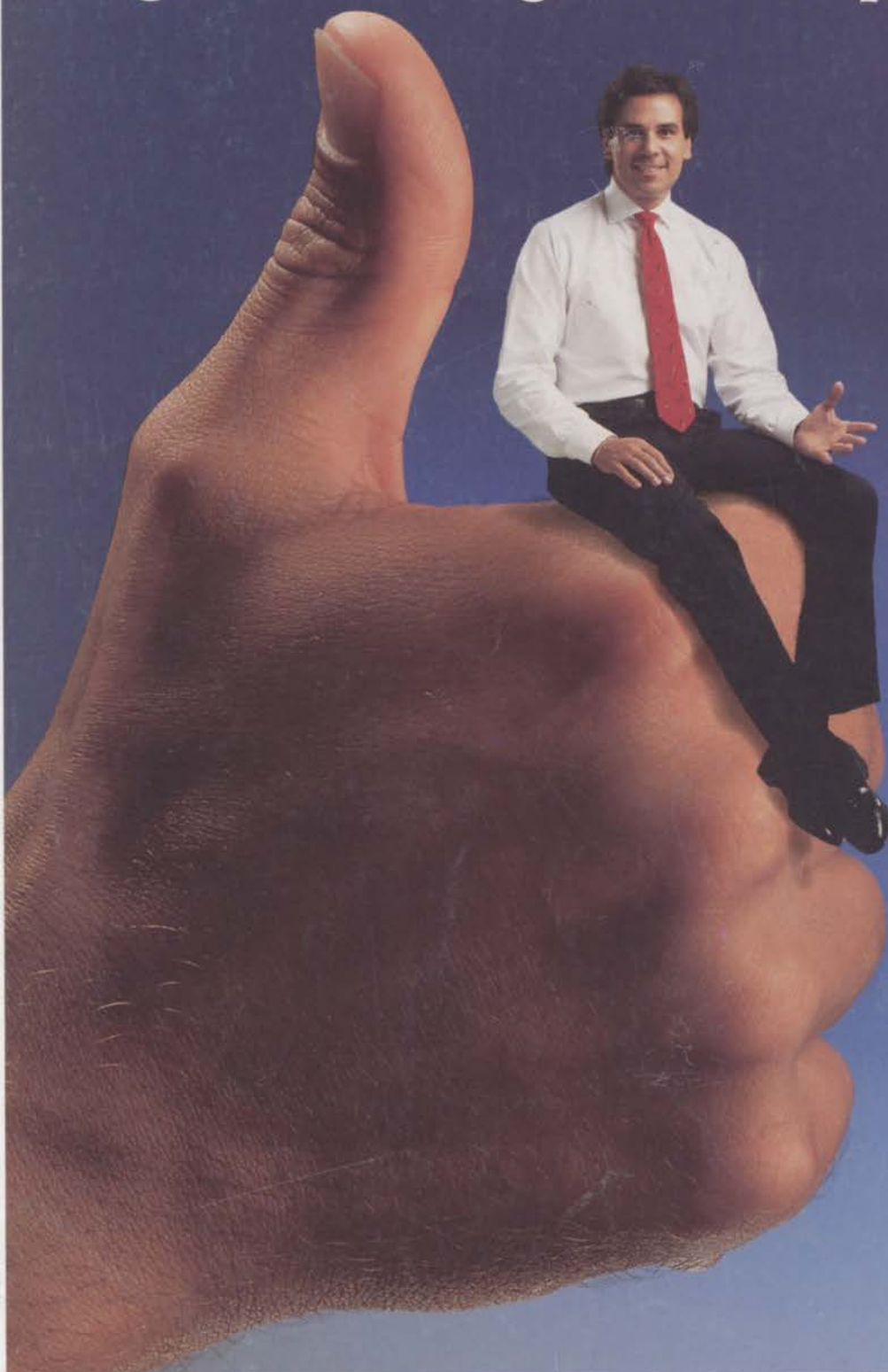
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"We are definitely saving money by using a premium herbicide," continues Rick. "We know that a treatment with Turflon costs about 50¢ more per lawn than a standard three-way herbicide, but we actually realize a 30% savings in our herbicide program."

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