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FORMERLY ALA MAGAZINE

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Cover photo by Jon Feingersh
Rockville, Md.



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EDITOR'S FOCUS

WITH ALL THE HULLABALOO OVER the downward turn the economy is supposed to be taking, there's some moderately promising news on the labor and building fronts.

In his annual economic message, President Bush indicated that major changes in the makeup of the U.S. work force may be in the offing. Bush's strategy will "shift attention away from worries about the supply of jobs that have haunted us since the 1930s, and toward new concerns about the supply of workers."

By shifting emphasis from the creation of jobs to uncovering more workers, the serious labor shortage the lawn and landscape maintenance industry and others face can be addressed.

The nation's economic report said that over the next 20 years, the challenge will no longer be to create jobs, but to assure that there is an adequate supply of workers with appropriate skills to fill the jobs that are available.

Once thought to be a detriment to U.S. workers, skilled immigrant labor is now being considered as a solution, in some areas, to labor shortages. And it should be welcome relief to maintenance contractors.

Particularly in the East, where unemployment rates are dangling right around 2 percent, finding personnel is vital to continued operations.

To compound the problem, lawn and landscape maintenance continues to be perceived as an easy-entry industry, resulting in competition not only for laborers, but for business. A lack of workers has caused some operators to turn down commercial contracts because they couldn't guarantee enough employees to get the job done.

While some areas, like the East, are experiencing building slowdowns, the nation's housing starts received an early boost. The number of housing starts rose to a record 29.6 percent in January. Experts attribute this to the unseasonably warm weather in the wake of December's brutal cold.

House and apartment construction began at an annual rate of 1,625,000 in January, an increase from December's total of 1,254,000. In addition, the U.S. Commerce Department reported a 24.8 percent increase in starts on single-family homes — the largest rise since 1979.

The report also indicated that the construction of multifamily housing also was



influenced by new fair-housing rules.

The housing industry has been in a slump for most of the past year, and despite January's gain, is expected to stumble again.

The news on the building front may bring mixed feelings to those in the lawn and landscape maintenance industry. Competition and building slowdowns may force operators to tighten their belts, but the demand from the consumer has not diminished.

And, to take advantage of this, operators must put any recessionary thoughts in the back of their minds and set their sights on retaining and acquiring new customers.

From what we've heard so far, a good majority of the industry is looking forward to a promising year. Although the figures aren't in yet, renewal rates are said to be substantially higher than last year.

...

Don't forget, April is National Lawn Care Month. The Professional Lawn Care Association of America made the proclamation to promote and heighten public awareness of the lawn care industry as well as the value of turf to the environment.

PLCAA suggests promoting a different message each week: Lawn appreciation, April 1-7; lawn maintenance, April 8-14; lawn product safety, April 15-21; and recycle grass clippings week, April 22-28.

The green industry must work together to garner support for lawn and landscape maintenance. It's easy to sit back and let someone else do the work, but it's your industry; you need to make a difference.

— Cindy Code

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Answers to the seven most asked questions about SUPERSORB®

When we introduced SUPERSORB® water absorbants a few years ago we were confident that they would be successful, but we had no idea that this practical and versatile water management tool would generate so much enthusiasm among landscape professionals.

We've compiled some of the most frequently asked questions and answers. If your questions aren't answered here, give us a call toll-free at the number below.

Q: What is SUPERSORB and what does it do?

A: SUPERSORB is a water absorbant. It consists of acrylic copolymer crystals which absorb water to increase the moisture holding capacity of soil. SUPERSORB crystals can absorb up to 200 times their weight in water and release nearly 100 percent of their reserves as the soil dries out or plants require it. SUPERSORB keeps on working for at least two years. It is non-toxic to plants, people and animals, and is eventually metabolized by soil microorganisms.

Q: What will SUPERSORB do for me in landscape installation and maintenance?

A: SUPERSORB C lets you and your customers extend the time between waterings. It helps trees, shrubs, bedding and container plants and ground covers survive moisture stress conditions. SUPERSORB F can be used as a rootdip for bareroot plants, added to hydroseeding mixtures or used to speed the establishment of sod. So SUPERSORB saves you time and water and gives you better plant establishment.

Q: What's the difference between SUPERSORB and other water absorbants on the market?

A: Aside from SUPERSORB's unique blue color, which is helpful when mixing it into the soil, you'll find that SUPERSORB's particle size is more uniform for more predictable performance. In addition, SUPERSORB is backed by AQUATROLS' customer service and 35 years of experience.



Q: Which particle size, Coarse or Fine should I use?

A: We recommend SUPERSORB C, Coarse Particle (1-2mm) for transplanting trees and shrubs, amending the soil in beds, containers and hanging baskets. SUPERSORB F, Fine Particle (<.5mm) is used for hydroseeding, installing sod, seeding and for root dipping bareroot stock.

Q: Will SUPERSORB waterlog the soil or take water away from plant roots?

A: No to both questions. SUPERSORB expands into discrete chunks; it doesn't form a soggy mass. As SUPERSORB expands and contracts it actually helps keep the soil or container mixes open and loose. Since water must be in a free state for SUPERSORB to absorb it, water clinging to soil particles or within plant root tissues cannot be absorbed by the crystals.

Q: How much does SUPERSORB cost to use?

A: It costs about \$.50 to amend the backfill for a tree or shrub with a one foot in diameter rootball.

Q: Where can I buy SUPERSORB?

A: From the turf and hort supply distributors throughout North America. If your distributor doesn't stock SUPERSORB, accept no substitutes. Call us toll free and we'll give you the name of the nearest SUPERSORB distributor.

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NEW PESTICIDE REGISTRATION TO INCREASE \$1.3 MILLION

THE BUSH ADMINISTRATION'S FIRST budget proposal to Congress calls for a \$5.3 million increase in funds for regulating the use of pesticides, but it expects to get nearly three times that from licensing fees to be imposed for the first time next year.

Although much of the increase is designed to cover requirements imposed on the agency by recent laws passed by Congress, it also includes extra funds to be spent on biotechnology research, some of it for the impacts of genetically engineered organisms introduced into the environment.

The proposed budget for the Environmental Protection Agency calls for an increase from \$104.8 million for pesticide programs for the current fiscal year 1990 to \$110.1 million for fiscal year 1991, which begins Oct. 1. Abatement, control and other programs associated with pesticides are reduced in the budget from this year's \$52.3 million to \$50.6 million for fiscal year 1991.

Both programs, however, are to share the \$14 million in funds EPA expects to collect from the licensing of pesticides, one of several fee-recovery arrangements included in the Clean Water Act that takes effect next fiscal year.

Assessed fees are also expected to cover the cost of implementing other programs, such as the continued enforcement of the 1988 changes in the Federal Insecticide, Fungicide and Rodenticide Act that requires registration of all pesticides reg-



EXPO will dedicate a four-acre site to commercial equipment.

istered before 1984.

Beginning with the 1991 fiscal year, however, the second and third phases of the reregistration process kick in, requiring a review of the submissions of reregistration, review of data offered to support the submissions and evaluation of preliminary data.

Not covered by reregistration fee assessments is another Congressional requirement that the EPA, when judging pesticides, consider the scientific risks of certain chemicals and that it tell the public about them. For that, EPA seeks \$31.3 million, an increase of \$3.4 million over fiscal year 1990.

Storage and destruction of pesticides canceled before the 1988 FIFRA amendments are expected to cost EPA another \$4 million. Any stocks of 2,4,5-T/Silvex are to be stored and disposed of when such a facility is permitted, the agency said in its budget report.

Registration of new pesticides is ex-

pected to cost the agency \$17.9 million in fiscal year 1991, an increase of \$1.3 million.

COMMERCIAL DEMO AREA NEW ADDITION AT EXPO

A four-acre site spotlighting commercial equipment will be added to the outdoor demonstration area of the 1990 International Lawn, Garden & Power Equipment Expo, Louisville, Ky.

"Traditionally, EXPO has mirrored the trends in our industry," said Dennis Dix, executive director and chief operating officer of the Outdoor Power Equipment Institute, which sponsors EXPO. "The industry is growing rapidly in the commercial area. Consequently, we are seeing an increase in those types of products at the show, as well."

The new section, which will be at the southwest corner of the existing demo area, will be occupied by manufacturers of commercial products and will increase the size of the park-like area to 500,000 square feet.

About 30 manufacturers have shown interest in exhibiting in the new section.

Warren Sellers, EXPO show director, said there were 185 percent more people who registered as landscapers and commercial mowing contractors at EXPO 89 than EXPO 88.

The EXPO 89 attendee survey indicated that 53 percent of the retailers and 74 percent of the distributors who registered for the show carry commercial products.

TORO TO MARKET AERATION SYSTEM FOR LAKES

THE TORO CO. HAS ACQUIRED exclusive marketing and distribution rights to a state of the art aeration system designed to control water quality problems in lakes and ponds.

Under a tentative agreement with Aeration Industries International, Chaska, Minn., Toro will become the worldwide distributor of its aeration products for the commercial landscape and golf markets.

The aerators, using Aeration Industries Aire-O₂® technology, control algae, scum, stag-

nation and their accompanying odors, thoroughly aerating and circulating pond water.

It eliminates the need for chemicals, keeps irrigation systems operating at peak performance and reduces maintenance costs while increasing productivity.

"This broadening of our irrigation product line is the first result from our recently formed Toro Ventures," said Kendrick Melrose, Toro chairman and chief executive officer. "Toro Ventures was created to

develop business opportunities that strengthen Toro's economic balance and market leadership with initial focus on environmental concerns such as water quality and lawn and turf reuse handling."

Aeration Industries is known worldwide for its innovative technology and expertise for the improvement of water quality.

The company was formed in 1974 by its present Chairman Joseph Durda and President Daniel Durda.

START-UP COMPANY OFFERS CONSULTING

Three former executives of Bolens Corp. have joined together to form EPIC of Wisconsin Inc., a start-up company offering video production, service training and new product development and consulting services to the outdoor power equipment field and other industries.

The new firm, located at 543 N. Montgomery St., Port

(continued on page 8)

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	PARADE	.3	.6
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	RUBY CREEPER	.1	.1
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News

(continued from page 6)

Washington, Wis., is headed by president Tom Wellnitz and vice presidents Jim Becker and Al Minderman.

The company is already producing sales and training videotapes for several clients, using the latest state of the art S-VHS equipment.

HUNTER INDUSTRIES PLANS EAST COAST EXPANSION

Hunter Industries, a manufacturer of sprinklers for turf and landscape, recently broke ground in Cary, N.C., for a new 83,000-square-foot manufacturing facility.

The plant is scheduled for completion in spring 1990 and will initially employ more than 200. It's located on a 17-acre site in the MacGregor Industrial Park, approximately five miles from Raleigh, N.C.

"The expansion of a major Hunter facility in North Carolina underscores our commitment to serving the growing East Coast market," said Paul Hunter, managing partner. "The new plant will enable us to be more responsive to the needs of our East Coast distributors, and will en-

sure broader technical support and faster product delivery."

Hunter Industries is said to be the first West Coast sprinkler manufacturer to



Hunter's East Coast facility.

open a plant in the Eastern states. Michael McGrady will be general manager of the new facility.

NATIONAL MAINTENANCE AWARDS PRESENTED TO RUPPERT LANDSCAPE

Ruppert Landscape Co., Ashton, Md., has been honored with six Grand Awards for their commercial landscape and maintenance efforts.

The winning projects were: The Canadian Embassy in Washington, D.C., Dulles Technology Center, Chantilly, Va., and the Transpotomac Canal Center in Alexandria, Va.

Three of these awards were presented by the Landscape Contractors Association, two were from the American Asso-

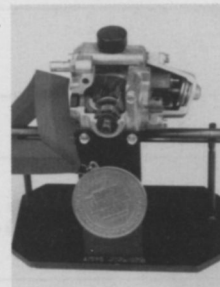
ciation of Nurserymen and one from the Associated Landscape Contractors of America, all of which are the highest honors bestowed by the three organizations.

HONDA'S HYDROSTATIC DRIVE SYSTEM 'BEST OF WHAT'S NEW'

Honda Power Equipment's newest technical innovation, the Honda Hydrostatic Drive System, was chosen by the editors of *Popular Science* magazine as one of the top 100 most significant achievements in science and technology for 1989.

The Honda HST, incorporated into walk-behind mowers, riding mowers and lawn tractors, was recognized in the magazine's second annual "Best of What's New" issue.

The "tiny hydrostatic," as it is referred to in the magazine, is the first hydrostatic drive system small enough and lightweight enough to fit on a walk-behind mower.



Honda hydrostatic drive.

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The Honda HST was reviewed along with products and scientific achievements in such categories as audio, automotive technology, aviation and space, cars, computers and other electronics, home products and technology, photography, science and technology, tools and video.

ALHA OFFERS PLACEMENT, JOB OPPORTUNITIES

The American Landscape Horticultural Association is offering a placement service for prospective employees.

Employers, and individuals seeking employment, can subscribe to this national placement program. ALHA will provide employers with information on individuals seeking employment in a desired discipline.

Through this service ALHA seeks to develop a labor resource pool nationally in the disciplines of landscape development, landscape management, landscape architecture and design and nursery sales and production.

For subscription information contact: Landscape Horticulture Center for Personnel Development, 2509 E. Thousand Oaks Blvd., Westlake Village, Calif. 91362.

2.5% APR FINANCING FROM KUBOTA TRACTOR

New financing rates from Kubota Tractor Corp. begin at 2.5 percent APR. The rates are available through the company's credit corporation.

Financing is available to qualified customers who purchase new Kubota tractors and implements. Customers can select a two-year contract at 2.5 percent, a three-year contract at 5.5 percent, a four-year contract at 7.5 percent or a five-year contract at 8.5 percent.

These special financing rates are available on qualifying equipment through June 30.

TURFGRASS CAMPAIGN RECEIVES \$500,000 BOOST

The \$1.5 million fundraising campaign for the Guelph Turfgrass Institute is off to a flying start. George and Beth Frost, who have owned and operated golf courses in the Toronto area since 1946, have donated \$500,000 to the campaign.

Money raised by the campaign will provide the institute with a research and information center that will serve as a focal point for the Canadian turf industry

and the public, said Ron Craig, president of the Ontario Turfgrass Research Foundation.

The new center will provide services to alleviate some of the pressures caused in recent years by the housing boom, increased demand for open park space and more outdoor leisure activities.

Established in 1987, the Guelph Turfgrass Institute conducts research and extension activities, and supplies information on turfgrass production and management to all sectors of the industry.

Recent research carried out by the institute focuses on turfgrass management and renovation, weed control and growth regulation, pesticide residues, soil and nutrition and turfgrass production.

KIM PARKER SWEEPS INTERIORESCAPE AWARDS

For the third year in a row, Kim Parker Assoc. Inc. has swept the interiorscape category in the statewide California Landscape Contractor Awards competition.

Its first place award recognized the Westgate Mall owned by the Sammis Company, and designed in partnership with Beals Lechner Landscape Architects, San Jose, Calif. ■

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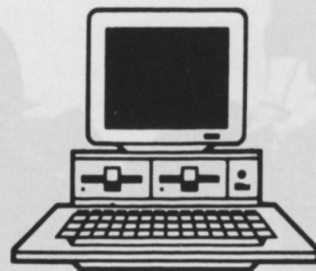
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ASSOCIATION NEWS

THE ILLINOIS CHAPTER OF THE American Society of Landscape Architects has recognized the Brickman Group Ltd. for landscape designs and installations on two properties.

Chicago's 633 St. Clair Place Sculpture and Flower Garden, an open-air art gallery of 16 contemporary sculptures, received a Merit Award.

Covering 33,000 square feet, the block-

long sculpture garden was created by developer Romanek Properties Ltd. as a summer gift to the city prior to initiating site work for a 27-story office tower now under construction.

The garden setting created by Brickman was enclosed by low security walls visible on three sides from public sidewalks. A combination of gravel base and back-

ground planters provided a screen wall of flowering shrubs as a backdrop for the sculptures. Some 3,600 annuals were planted and a temporary underground irrigation system was used for maintaining the plants.

In Boca Raton, Fla., The Colonnade at Glen Oaks, a community of 123 move-up homes with landscape redevelopment designed by Brickman, earned an Honor Award. Accent plantings border a serpentine concrete walk that leads to a model court and gazebo that creates a focal point and seating area.

The American Association of Nurserymen recently applauded the Uniform Code Council's vote to retain the current system for identification of floral products over a proposed generic system.

The current system is preferred because it allows the



FOR MORE INFORMATION . . .

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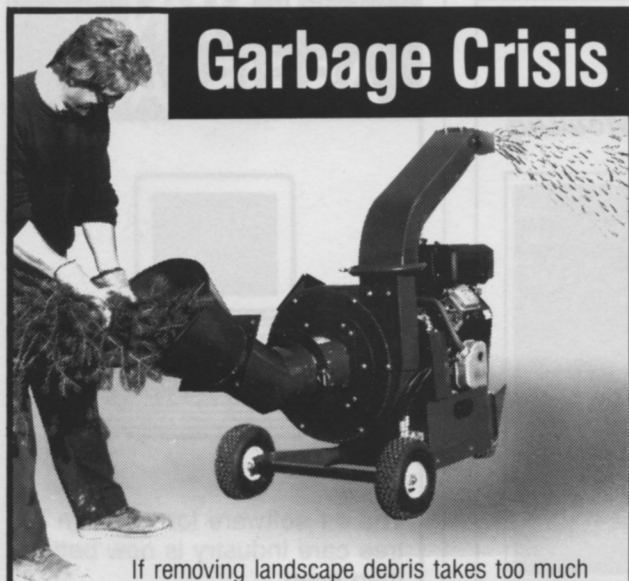
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What is your primary business at this location? (Please check only one.)

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- ☐ Chemical Lawn Company (excluding mowing)
- ☐ Landscape Contractor (installation & maintenance)
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- ☐ Other Contract Services (please specify) _____

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- ☐ In-House Maintenance including: Golf Course, Educational Facility, Health Care Facility, Government Grounds, Parks & Military Installations, Condominium Complex, Housing Development, Private Estate, Commercial & Industrial Park.

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tracking of sales by producer. A generic system could simplify labeling, but would fail to meet the needs of growers concerned with quality as well as those seeking to automate the re-order process.

"A generic coding system would transform the industry from one dedicated to quality of product and service to a commodity-based one where price would be the only selling point," said Lee Mitchell, AAN president.

The need to implement the Universal Product Code system intensified in recent years because of significant technological changes which were transforming conventional nursery product distribution into "high-tech" markets with greater geographic impact.

More information on the UPC system as it pertains to the nursery industry appears in the booklet "Nursery Growers Guide to UPC Bar Code Labeling" available from AAN. Cost is \$7 for members and \$14 for non-members.

A 21-minute interior pesticide training video is available from the **Associated Landscape Contractors of America**.

The tape is designed as an aid for interiorscape technicians and supervisors when training new technicians on how to safely apply pesticides and how to handle and clean up spills.

Produced in conjunction with the Environmental Protection Agency, the video provides the interiorscaper with up-to-date information on when and how to apply pesticides. It covers labels, material safety data sheets, right-to-know concerns, integrated pest management and safety procedures.

An instructor's guide includes some sample labels and safety data sheets. The video costs \$65 for ALCA members and \$95 for non-members.

The **National Arborist Association** named John Hendricksen president. He is president of both Aerial Equipment Inc. and Hendricksen, The Care of Trees in Wheeling, Ill.

He has served on the NAA board of directors since 1982 and is a past president of the Illinois Arborist Association.

Under Hendricksen's leadership, the association will undertake several major projects including a study of public and industry perceptions of integrated pest management on residential properties. The study is already under way.

Other changes for the NAA include a trade show scheduled for October and the addition of a management services division to provide management aids.

The first **Interior Landscaping International Corp.** Service and Installation Manager's Conference was held Jan. 25-27 in Denver, Colo.

The two-day conference was attended by 35 managers from the interior land-

scaping industry. It provided a forum for ILIC licensees to share information on topics and challenges facing the industry. The size made involvement in discussions easier.

Three well attended seminars included "Sub-irrigation: A Money Making Proposition," "Increasing Productivity: Employee Retention" and "Communication Skills."

The **Association of Montana Turf and Ornamental Professionals** was recently formed in Helena. Statewide representatives attended the organizational meeting.

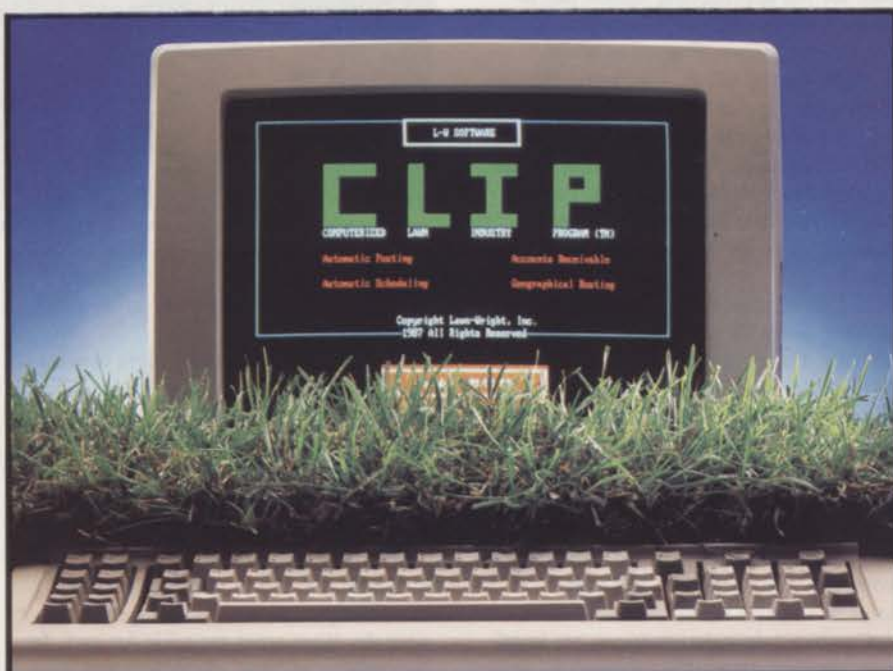
Robert Andrews, president of the Indiana State Lawn Care Association told

the group about the advantages of being a member of a state organization. He stressed the importance of being united as a group.

John Bass, president of the newly formed group, addressed the increased need for professionalism and how the organization can bring it about.

Attendees also elected a board of directors and a committee to help determine the group's main goals.

Recruiting more members is the first priority for the group. Every person attending the meeting was urged to recruit as many of their associates as possible. ■



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FOCUS ON:

IRRIGATION

CALIFORNIANS BRACING FOR 4TH YEAR OF DROUGHT

BAD NEWS TENDS TO TRAVEL FAST. While it's just the beginning of the irrigation season, Californians already know they are entering the fourth consecutive summer of drought conditions.

Generally, the amount of water available for the approaching season has already been determined by the end of March, said Dean Thompson of the drought control office, California Department of Water Resources.

"The water year in California begins Oct. 1," he said. "We get the best storms from October to March. By the end of March, the state has received about 90 percent, or more, of the year's precipitation."

In mid-March, state precipitation was running about 75 percent of the normal amount. Compounding the problem, snow pack was running at about 45 percent of the norm. With a significantly reduced snow pack, the amount of water gained from the runoff of melting snow will also be greatly reduced.

The slightly good news is that there is 10 percent more water in the state's reservoirs than the same time last year — a level that is still below normal.

Continued drought situations are imminent, but questions still surround its severity.

The first wave of action creating watering bans or conservation measures came in December, Thompson said. Cities are enacting measures that limit the hours or days that lawn watering is allowed. Common among the restrictions is curtailing watering between 10 a.m. and 4 p.m.

Some conservation efforts are more restrictive. Eldorado County had a moratorium on landscape construction last year and this year enacted a building moratorium that likely will stay in effect the rest of the year, Thompson said.

But the most restrictive action came from Santa Barbara where all lawn watering — except through drip irrigation systems — has been banned. Golf course watering and car washes have not been forced to reduce their water consumption.

John Brair, Acorn Landscaping, Santa Barbara, said there was an organized outcry from irrigation and landscape contractors about a proposed all-out ban. The city's compromise was to allow drip irrigation which releases water in smaller



Sprinkling bans will have a scorching effect on turfgrasses.

volumes.

Even so, business is going to be tough this year, he said.

"I have 19 guys working right now and we have enough contracts to keep us busy through May and June, but after that I may have to let some of them go," he said. "If people aren't watering, then a big part of our maintenance business will be gone."

When the ban was passed, Brair quickly altered the design plans for an apartment complex he was working on. Gone were the large areas set aside for turf. In their place are trees, shrubbery and hard-scape items.

People have been wasting water for a long time, Brair said, and he doesn't mind doing his part to conserve. But he is resentful that landscaping is the only industry targeted to reduce water use.

"There are other possible commercial/industrial cuts to be made," he said. "Restrictions could be set for car washes to be open only four or five days a week instead of seven. Hotels could be told to cut back on their occupancy. Everyone should have to cut back, not just landscapers."

In Southern California, the Metropolitan Water District, which receives most of its water from the Colorado River, has seen its allocation drop to 900,000 acre feet of water for 1990 from 1.2 million last year. It too has initiated an education program covering water conservation.

Some inroads have been made in reducing water use over the last several years, according to Thompson.

An acre foot of water is now defined as 326,000 gallons, or the annual amount

deemed necessary for a typical family of five. That amount used to be considered only enough for a family of four.

A more innovative attempt at getting the word out about conservation is San Diego's \$66,000 advertising campaign to convince people to do less watering.

Recognizing that 50 percent of urban water use is spent on landscape watering, the water resources department has implemented a landscape water management program.

The program is designed to create efficient irrigation schedules for improved turf appearance while reducing over-watering. By examining the site and amount of water applied the previous year, a computer software program can then determine potential savings both in quantity used and cost.

After the site is selected, field work examines the irrigation system to identify problems that need to be fixed. Tests are made to determine how evenly and quickly water is applied to the area. The precipitation rate and system uniformity are calculated by measuring the volume of water caught in a "catch device."

As a follow up, summary reports are made and given to the site manager. The schedules can be changed based on weekly updates of local weather trends.

In four years, the program has trained 450 landscape and irrigation managers. Those using the program have realized savings ranging from 10 percent to 25 percent, said Gary Kah, Agtech Associates Inc., Redwood City, one of the program's developers.

Everyone using the program may not experience the same savings because to date, only those sites with high savings potentials have been targeted for the program.

While the program's creation was funded by the state, people from other states have expressed interest.

"An interest in managing water use is not something unique to California," Kah said. "It may have started here, but it is something that can spread and be adapted to other states."

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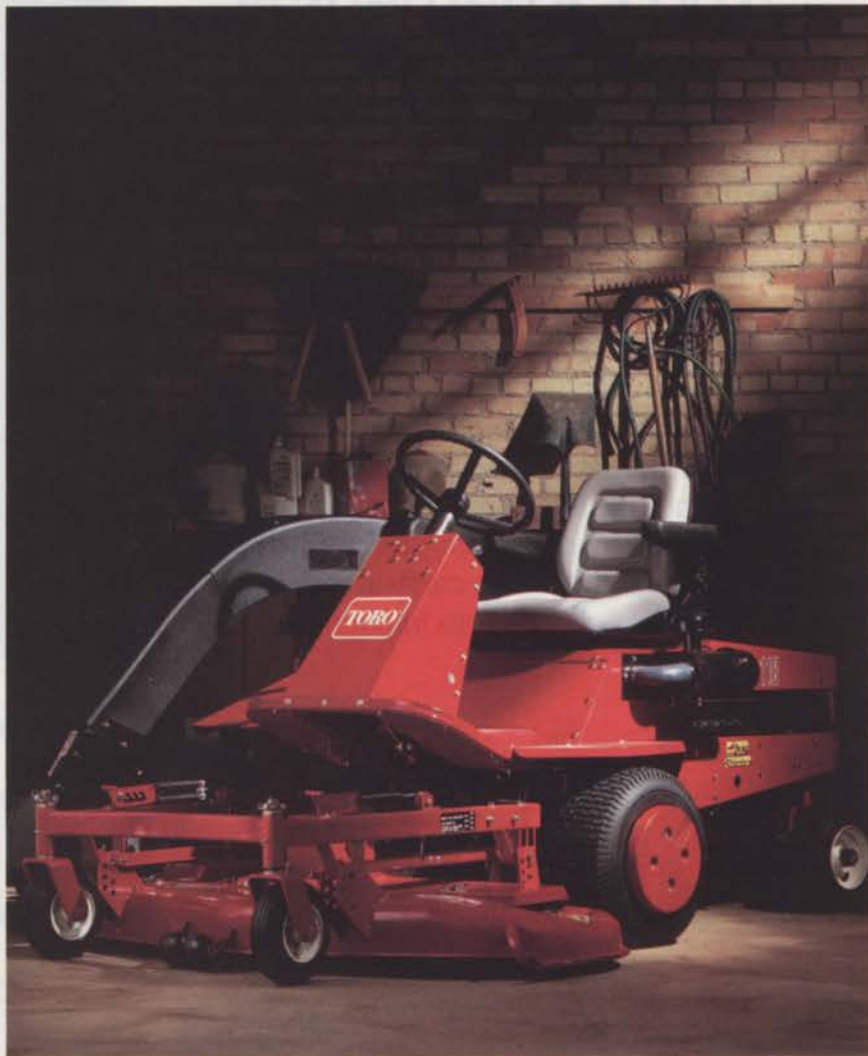
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ProLine 118 shown with 52" deck and optional six-bushel bagger.

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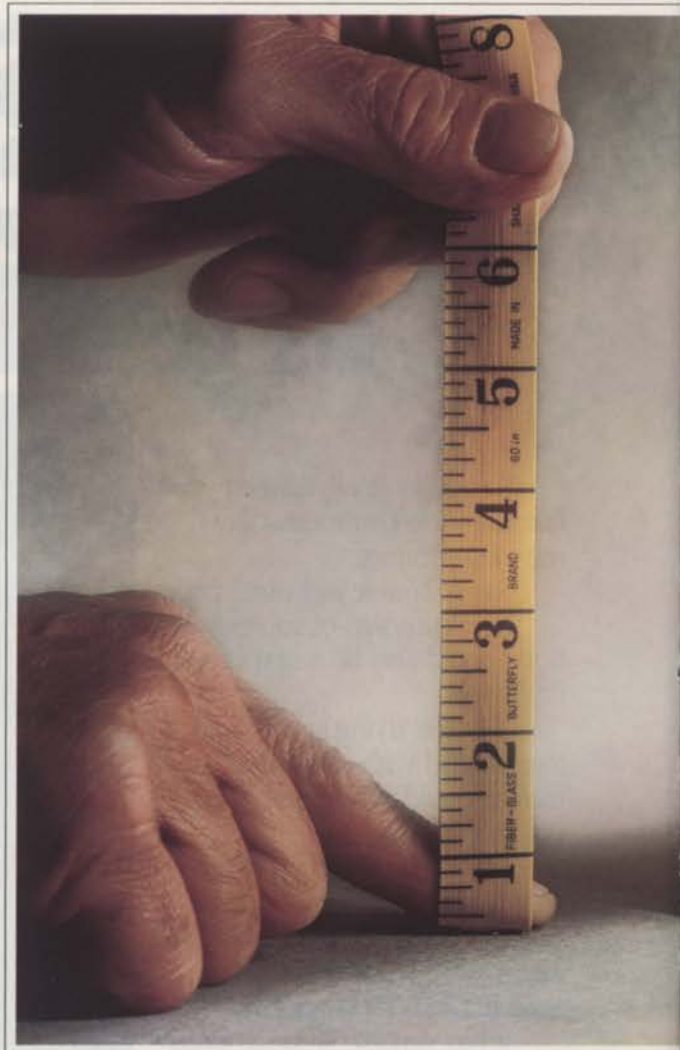
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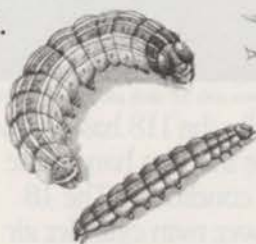
Weigh the alternatives. New TEMPO uses approximately 80% less active ingredient than the leading insecticide. Which means there's approximately 80% less chemical for you to carry around. And 80% less chemical to impact the environment.



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FOCUS ON:

SEEDING

SEED INDUSTRY FIGHTING THE HEAT WITH SOME FIRE OF ITS OWN

THE OREGON SEED COUNCIL AND Seed Trade Association are readying their battle coffers to defend the seed industry's practice of field burning.

While the industry reduced the amount of acreage burned last season — only 165,000 of the 300,000 acres eligible were burned — opponents are initiating a ballot measure to ban all field burning.

Members of the Oregonians Against Field Burning must raise at least 64,000 signatures by July 6 to get the measure on the November general election ballot.

In response, members of Oregon seed associations have initiated fund-raising drives to boost efforts for fair legislation and to finance lobbying efforts, according to John Powell, a lobbyist for the Oregon Seed Trade Association. About \$200,000 has been raised to combat the potential ballot issue.

Opponents of field burning hope to re-

duce the number of acres burned to 50,000 by 1995. Those 50,000 acres will be left for specific areas such as steep terrain.

The Oregon legislature passed a measure in 1970 which would have banned field burning by 1975, but the legislation was lifted in the mid-1970s. Nevertheless, acres burned has dropped from 320,000 in 1972 to an average of 200,000 in 1986 and 1987 and even fewer in 1988.

What ignited new efforts to reduce and/or ban field burning was an August 1988 accident in which a field fire spread to a neighboring field adjacent to an interstate, sending blinding smoke across a freeway. What followed was a 23-vehicle pileup in which seven people were killed.

The seed industry has not ignored the issue, but has been actively searching for alternatives to field burning. Methods include baling field straw and giving it away, propane burning and the experimental use

of a new chemical.

Propane burning involves moving a machine over the field using propane to scorch off the top layer. This alternative reduces the smoke, but is extremely expensive.

In some areas a new chemical product is being used on annual crops to both shock and retard the growth of seed which has fallen on the ground. The crops can be rotated by plowing, followed by the use of the chemical or propaning.

But this method won't work for all crops. Most of the varieties which are being burned are those in which it is crucial to the crop's survival, Powell said.

While the search for alternative field management methods continues, the seed industry says it needs to burn at least 125,000 to 175,000 acres a year.

While Oregon is leading the battle, the state ranks 10th in the number of acres burned annually. ■

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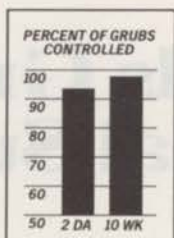
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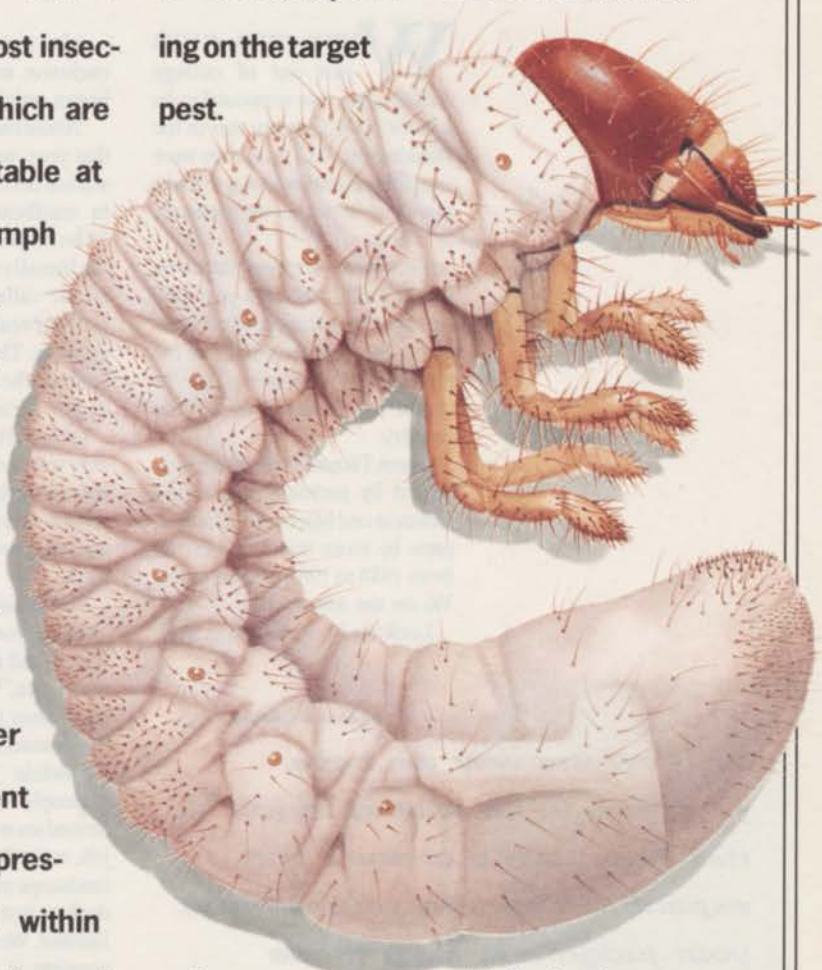


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Taking Chances Sends Green Thumb to Commercial Success

WHEN TWO GUYS just out of college started what was supposed to be a labor pool 12 years ago in the Washington, D.C. area, they were simply trying to find a way to make a buck while not having to answer to a boss.

They never dreamed they'd be running a \$10 million-a-year (and still growing) company that placed on *Inc.* magazine's list of the top 500 fastest growing entrepreneurial companies in the country.

Green Thumb Enterprises Inc., owned by partners M. Gerard Chauvin and Michael S. Daniels, grew by more than 900 percent from 1984 to 1988 placing it No. 316 on the annual list.

Looking back, Chauvin said,

.....

To grow the way we have, you have to be willing to roll the dice; take a chance and expand. Believe in yourself and your judgment. Take those risks others won't.

the way they started is a "textbook example of how not to start a business."

"We both just finished school so we were saddled with debts," Chauvin said. "We basically started it with cash advances from credit cards. We literally bought our first mower on a credit card paying 18 percent interest."

So the company was born in March 1978 with two mowers, a 1974 Datsun pickup truck and two eager guys ready to canvas neighborhoods, walking door to door looking for customers.

After they decided to target the exclusive neighborhoods, work began quickly.

"About two weeks before Easter that year, we drew up a flier and walked door to door putting them in mailboxes," Chauvin said. "The response was unbelievable. We literally could not get back to all the calls."

That breakneck pace hasn't let up since. The fledgling company attained the \$100,000 sales mark in just its second year, 1979.

In the early years, the main service was mowing. But increased revenues often came from selling additional jobs, which, they both agreed, was fairly easy to accomplish.

"In the neighborhoods we were working you couldn't just go in, fly up and down the lawns and then leave," Chauvin said. "For the money people were paying, they wanted to see someone stay for awhile. These were the kind of people we could sit and have an iced tea with after finishing the job, and talk about how we could landscape around the pool or the deck or just other enhancements like that. We made a lot of business contacts in the early years that have carried through to now."

The big break came in 1981 with their first commercial contract for a strip plaza shopping center.

"It wasn't a pretty place," Daniels said. "But it was the first one and we were excited about that. No matter what we've done, we've always done our best so we can be proud of it. And people usually take notice."

As good fortune would have it, that's exactly what happened.

"Right next to the shopping center was a town house project where the on-site engineer had seen what we had done with this otherwise dump of a shopping center," Chauvin said. "He ap-

proached us about a bid for his project. Michael wrote up the bid on a sheet of paper and handed it to the guy."

"The property manager called us and when we met, it turned out that we knew similar people. He liked us a lot, and we have since become good friends. That's basically how we landed our first multi-unit commercial account."

Revenues increased at an accelerated rate as more commercial accounts were acquired. Sales for 1982 reached \$500,000. In 1983 they climbed to \$600,000, followed by \$880,000 in sales in 1984. The million dollar mark was surpassed in 1985 and expanded to \$1.6 million in 1986. That figure doubled to \$3.2 million for 1987, and practically doubled again to \$6.3 million for 1988. Reports remain unfinalized, but 1989 sales are expected to exceed \$10 million.

With such dramatic growth, one might assume the two had a well-developed, master plan for the company. Not exactly true.

"We do approach it very much like a business and we do pay attention to the numbers," Daniels said, "but a lot of it is done by gut feeling, seat-of-the-pants decisions."

Chauvin added: "To grow the way we have, you have to be willing to roll the dice: Take a chance and expand, take on the extra debt to pay for the 10 extra trucks. You really have to make a full commitment to it. You have to do things the numbers sometimes say are unfeasible. You can't be bottom-line dependent. You have to believe in yourself and your judgment and take those risks others wouldn't."

New clients to fuel growth mainly came from word-of-mouth referrals.

"It's a hard community to get



Gerry Chauvin and Mike Daniels stand in their company-owned nursery. Photo: Jon Feingersh, Rockville, Md.

into — the commercial maintenance property management companies — but once you get in, there's a lot of work," Chauvin said. "They don't lead to only one other job. It may lead to dealing with five new property managers who each have five properties."

Today Chauvin and Daniels pride themselves in the fact that the mowing service they started out of that beat up Datsun is now a full service landscape maintenance firm. Along with that comes the satisfaction of doing all their own work.

One division of the company is a wholesale/retail garden center that provides much of the plant material for their jobs. They are also partners in a separate irrigation company.

"We don't sub out one iota of our work," Daniels said. "Where other companies might have to sub out for grading, we have our own bulldozers. We have our own hydroseeders. We even grow all of our own annuals and perennials

so we don't have to go to a floral shop, wholesaler or a grower.

"Things like that put us in a situation where a customer doesn't have to call another company if something unexpected comes up. The only thing we don't have is a sod farm. We lay our own sod, but besides that there isn't one landscape related service from heavy tree topping down to bulldozing and maintenance and installation that we don't do."

In the following interview, Chauvin and Daniels share some insights which helped take their company to *Inc.* magazine's top 500 list.

Q: With such spectacular growth, how do you keep up with equipment needs?

A: *Chauvin.* Each fall we set fairly aggressive, but what appear to be conservative goals for the next season. That gives us our equipment needs.

Daniels. For maintenance needs

we know that for every \$300,000 in contract sales, we know exactly what it costs as far as equipment.

It requires one F250 pickup truck, one 16-foot trailer, three 36-inch walk-behinds, two 48-inch walk-behinds, three edgers, two blowers and right on down the line. We know exactly what it costs.

Chauvin. It's the same with landscaping. For each additional amount of volume or jobs we've contracted we know if it requires an additional production truck,

We don't sub out one iota of our work, putting us in a situation where a customer doesn't have to call a competitor.

if it requires an additional backhoe or whether it can be shared with another crew.

What's been a real advantage

is that over the years our growth has been good and we've established very good relationships with financial institutions and truck dealerships.

Daniels. We spend the entire month of January and part of February doing nothing but pushing budgets based on the numbers we think we have. It's very business driven as far as those decisions go.

Q: Do you prefer buying or leasing your equipment?

A: *Chauvin.* We've always bought. We've never liked the idea of the leasing situation. Anything we're paying for, we would like to eventually own. Over the years, from managing a financial statement for making presentations to banks, we've found that our thinking has changed a bit. But most all of the equipment we have is owned by us and whoever is financing it.

Q: When do you buy equipment?

A: *Chauvin.* Typically we buy the equipment after we know the work is there. It's not too hard to round it up pretty quickly. Downtime has never been a problem.

It's almost the opposite. It seems like we never have enough trucks and it certainly seems like we never have enough equipment.

Obviously we have to balance it out. If a manager had his way, he would have a truck for every person. They're looking logistically at what's best for them. We have to weigh that out.

Q: Have you purchased new equipment for this season?

A: *Chauvin.* We're projecting sales of about \$13.5 million. Our



Commercial contracts such as this gave Green Thumb the boost they needed to grow.

Q: How large are your crews?

A: *Chauvin.* Maintenance crews are typically five or six men, landscaping are nine-man crews, pruning four to five men, irrigation three or four men and mulching includes everybody in maintenance. There could be 15 guys out mulching a property.

Q: You both have business backgrounds from college. Has that been a contributing factor to the company's phenomenal growth?

A: *Daniels.* I think it helps in a sense. There is an amazing amount of qualified people — whether they're designers or architects or the most conscientious guys in the world who once they get two or three crews, often don't have any idea of what to do. So they could be doing great work, but not have any idea of how to buy equipment or how to look for



Virginia Run, a residential community maintained by Green Thumb.

Q: While you were going through the major growth periods, how difficult was it just managing labor?

A: *Chauvin.* Very. Probably the most difficult part of the business. The market in Washington was such that every business had just been in a boom and there was an unbelievable shortage of labor.

We were going to the depressed areas of West Virginia, Pittsburgh and Dallas attracting and relocating qualified people as well as laborers.

Loudoun County, where we're based, even now has a 1.5 percent unemployment rate. It's a very wealthy county and has a great amount of people who are not attracted to working in this business. Practically everybody is employed. So that has made it doubly challenging to find people.

Q: As the company grew and

matured, did the type of person you were looking for as an employee also change?

A: *Chauvin.* In the early years of growth we found that every time we hired someone with experience, they'd come in with their own ideas that clashed with ours and would eventually end up quitting.

So now we're leaning toward people without previous experience. We're looking for people with good characteristics and who seem responsible so we can train them our way.

As we're growing, there's an increased need for mid- and upper-level managers with experience. As a result, we're starting to attract from the national market. We advertise in national publications for field supervisors and area managers.

Q: Some companies in the
(continued on page 24)

.....
When we hired someone with experience, they came in with ideas that clashed with ours.

spring equipment order was for 20 units — either a pickup or production truck. The capital expenditure for that was between \$400,000 and \$500,000.

good rates or whether to run it out of their home or when to get office space.

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Green Thumb

(continued from page 22)

Washington area report that they're experiencing reduced business because of a building slowdown. Is that the case with you too?

A: *Daniels.* There's an overabundance of offices/warehouses now. It goes through these cycles all the time. They will just slow down the building pace and let it catch up. But there's a lot of vacant offices and warehouses. The rental market, where we do most of our maintenance work, is very strong right now.

Q: The vacant, unleased office space is not affecting you?

A: *Chauvin.* Not too much. Office park maintenance is something that we're doing more of in our Philadelphia office. In the Washington area, our mainstay for landscape maintenance is high-end rental apartments, condos and town houses. The office parks we do are pretty low in terms of overall maintenance.

Q: What's your primary market for installation work?

A: *Chauvin.* Probably residential related, planned development. The 400- to 500-unit apartment complexes as well as the planned unit development where a developer buys a couple thousand acres and puts in all the streets, all the infrastructure and then sells off the parcels to a townhouse developer or a single-family home developer.

Our forte would be putting in all the street scaping: The 500 matching trees, the big beds by the side of the road, entrance

signs and the irrigation of the property.

Q: Was making the *Inc.* 500 list something you set out to obtain?

A: *Chauvin.* No. One of our managers was reading an issue and saw the postcard they use and thought we fit the set parameters, so he sent it in. We're not sure if we'll make the cut or not next year. We'll be just under 900 percent growth for 1985 to 1989.

Daniels. It's harder to be in it as you get bigger. You just can't multiply numbers at the same rate when you get farther into the millions.

Moving from \$500,000 to \$1 million isn't too hard to do, but going from \$5 million to \$10 million is a pretty tough thing to do.

Q: Have you received a lot of attention from making the list?

A: *Chauvin.* Immense. We've gotten local press coverage. Washington ended up fielding 13 or 15 in the top 500, so the newspapers have featured a number of them.

Again, it goes back to hoping that maybe we'll get some national exposure for the way we know how to run a company and know how to grow. And we hope it'll lend some credence to the fact that as we expand we're not going to be able to do it on our own.

One thing we didn't realize we'd get as a result of the notoriety was that we've attracted every money manager, CPA, investment banker, stockbroker, insurance man and health benefits person that's out there. We have been inundated with people sending their brochures and calling us.

Q: Would you ever consider selling Green Thumb?

A: *Chauvin.* No. Not outright. It's us. We started it and we just can't imagine it. We think a lot of the value in the future of the company is with us running it. Our names are synonymous with

Q: Even given the ever changing market?

A: *Chauvin.* Yes. The market's changing, but even during the worst recession the Washington area has ever seen in the early 1980s, we had substantial growth because there is so much main-

.....
We think a lot of value in the future of the company is with us running it.

tenance in this area. There are still a lot of people out there that, regardless of who you put in management positions, they want to deal with you. We are still very hands-on and we don't like to lose touch with that.

But we also realize that for us to continue to grow as we want to, it is going to be very difficult for a commercial bank to fund that kind of growth.

So when you say would we sell, we wouldn't sell and walk away from the company.

But we're going to need outside money. There is no question about it. Whether that comes in the form of an equity infusion, or merging, whatever. We're very open to that kind of discussion.

But if Ecolabor/TruGreen came along and wanted to buy the company and slap their name on it and hand us a check and say "See you two later," that definitely would not be acceptable.

Q: What are your specific five-year goals?

A: *Chauvin.* This is our second year in the Delaware/Philadelphia office. We're in the process of opening an office just south of here in the Fredericksburg area. We had the opportunity to do a couple jobs for clients there last year and we hope to expand in that area considerably this year and next year. Then we're looking to expand the Richmond office into the Norfolk/Williamsburg area the year after. We hope to have the company in the next four to five years in the \$40 to \$50 million mark.

Q: Is that realistic?

A: *Chauvin.* I think so.

tenance in this area.

Even if building slows down, maintenance doesn't. It may get more competitive, but that's where our quality, our client history and our track record will allow us to withstand increased competition.

Daniels. Also name recognition is important. Each market we go into, we find it easier to establish the business because there is a familiarity with the name.

A lot of the national developers that we work with are in all these cities so we're really just working with the same people in another location. They really like the comfort level and the familiar face. So each time we go somewhere it's easier.

Q: Do you have any pricing problems?

A: *Daniels.* We've been doing it for so long that when you throw in a bunch of bids, obviously once in a while you're going to get someone saying you're way high or you're way low.

But on the average, compared with the legitimate companies for landscape and maintenance, we're right in the middle of everybody.

Chauvin. A lot of the people around here know the quality of what they want and do not necessarily go with the low man. What we've always prided ourselves on is our ability to respond immediately. Some of the deadlines we've met in the past make us look like miracle workers. We've been on job sites up to midnight the night before a grand opening because a property manager found something he'd overlooked before.

Q: Do you work with a client



Green Thumb's primary market is planned developments.

GREEN THUMB ENTERPRISES INC.

Headquarters: Sterling, Va.

Branch offices: Philadelphia, Pa., Fredericksburg, Va., Richmond, Va.

Founded: 1978.

Owners: M. Gerard Chauvin and Michael S. Daniels

Primary Services: Full service commercial installation and maintenance, concentrating mainly on large apartment, condominium and town house developments.

Employees: 125 year-round, 300 during peak season.

1989 Sales: \$10 million.

when he comes to you saying he has to make cutbacks from the previous year?

A: *Chauvin.* We're very active in working with budget people. If they need to cut back, we'll sit down and try to work things out with them. We try to cut corners without it having an appreciable effect in the way it looks.

If we can cut out a service here or there without making it look too much different, we will. We will not do a job that will not look like it's one of our products.

Q: What typically can be cut?

A: *Daniels.* Turf applications can be cut from five to three a year. Tree and shrub can be cut one or two applications. We are mulching twice a year; that's a major cost. We can do it once later in the spring to keep the fresh look through the spring and summer. That's a main way of cutting.

We can also cut down on the frequency of mowing. Typically, you're cutting 24 to 48 times a year. In most cases you can get away with stretching that to about 10-day intervals instead of seven days. We'll work with people to try to get within their budgets, but if their price is so low that we cannot salvage it, then we'll tell them we can't do it.

Q: Since much of your business is in residential developments, do you ever get complaints about noise pollution from equipment?

A: *Chauvin.* The only thing is about the start time. We try not

to get on the jobs too soon. Our crews leave for the site by 7 a.m. On weekends they're not on the site until 8 a.m.

Up until July 4th, it's not unusual for guys to be blowing off sidewalks and curbs with the headlights of the truck.

It was so wet last year that we were playing constant catch up. Usually when it's raining hard we have the guys come in and do mower maintenance. But last year, it was so often that we had to work through it.

It wasn't the best way to operate. With the volume of work we had, there was no choice. It was "Get it cut and get back as soon as we can to redo it." It was not unusual to see guys with rain gear on mowers trying to get the major work done.

Obviously the fine work — the edging and cleanup — left something to be desired, but clients seemed to understand.

Q: What would you say is the main reason for Green Thumb's success?

A: *Daniels.* Never losing sight of doing the best possible job. *Chauvin.* We're not as bottom line driven as we are quality driven. The way the job looks when the crews leave is much more important than the hours put in — even if it was longer than what you budgeted. Because it's that attitude that leads to referrals and renewals. — *David Westrick* ■

The author is Assistant Editor of Lawn and Landscape Maintenance magazine.

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2,4-D: The Debate Over The Maligned Herbicide Continues

ALTHOUGH NO LONGER in the spotlight, a silent march to reduce or eliminate the use of 2,4-D continues in several nations.

The famed phenoxy has survived approximately 12 epidemiological studies in seven nations — and has remained relatively unblemished from the experience. Yet the search continues for a link between 2,4-D and non-Hodgkin's lymphoma as well as for 2,4-D alternatives.

What bodes well for 2,4-D is the overwhelming body of research which has been collected. It is said to be the most thor-

oughly studied herbicide ever.

From Agent Orange to a 1986-87 study of Swedish forestry workers to the National Cancer Institute's report of Kansas farm workers, the pursuit of a link between 2,4-D and non-Hodgkin's lymphoma remains persistent, but inconclusive. Yet the search goes on.

Preliminary reports from a Nebraska farm worker study as well as a Harvard School of Public Health review are just two recently released examinations on the subject. In addition, a variety of other research including two studies of ChemLawn wor-

kers and a methods assessment study to figure out the best way to gather exposure history are under way.

While the product remains under close scrutiny, researchers are now suggesting that proper clothing and equipment may be the key to breaking the link.

Although difficult to measure, widespread conjecture indicates the use of 2,4-D has not fallen off. Many lawn and landscape companies may have considered dropping the controversial herbicide after the Kansas report was released, but of the larger companies, only ChemLawn actual-

ly followed through.

Despite increasing controversy, 2,4-D formulations remained popular among maintenance operators from both cost and efficacy points of view.

Even today, maintenance operators stand behind the beleaguered product, which now faces reregistration by the federal Environmental Protection Agency.

"2,4-D is a good product; a very good environmental citizen," said Steve Derrick, service technical director for Orkin Lawn Care, Atlanta, Ga. "It does a good job with minimum risk. There's no evidence that it is a product

WORKSHOP FINDS 2,4-D CANCER LINK 'FAR FROM ESTABLISHED'

A RECENTLY RELEASED REPORT FROM A WORKSHOP convened by the Harvard School of Public Health calls the link between the herbicide 2,4-D and cancer "far from established."

The report states that animal research provides little reason to expect that 2,4-D causes cancer in people and that studies of people occupationally exposed to the herbicide, while suggesting a possible link, do not establish a cause-and-effect relationship.

The workshop made specific recommendations for additional scientific research to clarify the situation.

The report summarizes the findings of a panel of 13 scientists convened by Dr. John D. Graham of the Harvard School of Public Health. The workshop, held October 17-19, 1989, was sponsored by the National Association of Wheat Growers Foundation through a grant by the Industry Task Force II on 2,4-D Research Data, a group of six companies sponsoring ongoing research on the safety of 2,4-D.

The workshop was called to consider the weight of the evidence on a possible link between the use of 2,4-D and cancer. The report suggests that any risk associated with the herbicide can be reduced if workers wear protective clothing and equipment during mixing and application, and change clothes right afterward. Those not using 2,4-D directly are not known to receive significant exposures.

The report also indicates that alternative delivery systems now being developed by manufacturers could greatly reduce applicator exposure in the future.

As part of the workshop, panelists were asked to characterize 2,4-D as a "known," "probable," "possible" or "unlike-

ly" cause of cancer or as a "non-carcinogen." (These terms were used in their ordinary sense and not as a reference to specific carcinogen classification categories used by any regulatory agency.)

Of the 13 panelists, none considered 2,4-D a known or probable cause of cancer in people. The majority said it was "possible" that 2,4-D could cause cancer: One panelist felt this was a relatively strong possibility, but five thought the possibility was relatively remote.

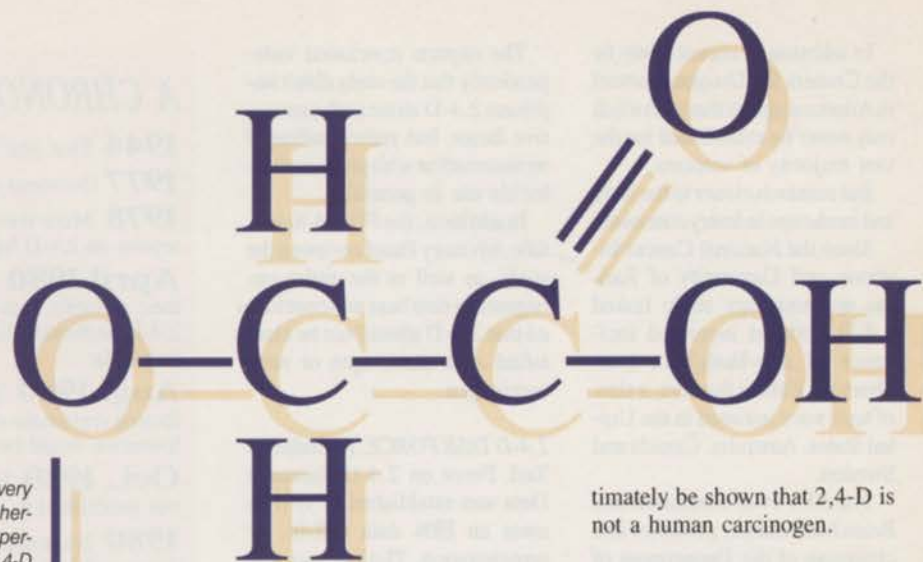
Two panelists felt it was "unlikely" that 2,4-D could cause cancer in people. Several members felt that the evidence was barely adequate to support any conclusion.

In arriving at these conclusions, the panel gave careful consideration to the National Cancer Institute studies on Kansas and Nebraska farm workers. The panel noted that these two well-designed studies, conducted by the same research team, found an association between occupational exposure to 2,4-D and a form of lymph cancer, non-Hodgkin's lymphoma.

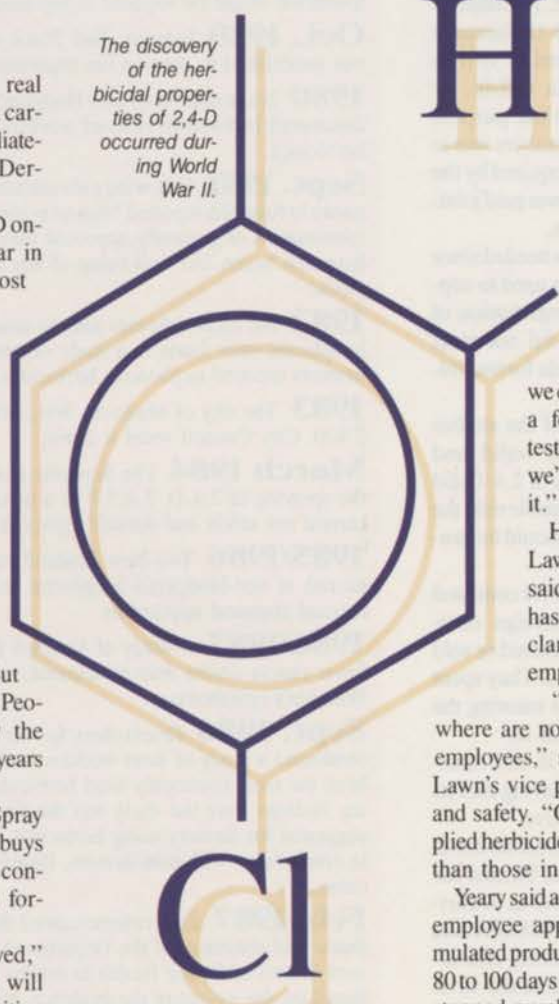
However, workshop participants felt this association needs to be interpreted cautiously, first, because other studies have not shown the same results, and second, because some factor other than 2,4-D might be involved.

As a means of resolving these issues, workshop participants stressed the need for future studies to develop more reliable and precise estimates of 2,4-D, to distinguish more clearly between 2,4-D and other agents in the collection and analysis of data and the reporting of results.

These questions will be addressed by additional studies of people exposed to 2,4-D which are already under way in the United States, Canada, New Zealand and Sweden.



The discovery of the herbicidal properties of 2,4-D occurred during World War II.



we should be afraid of."

If research reveals any real reason to suspect 2,4-D as a carcinogen, Orkin would immediately stop using the product, Derrick said.

Orkin operators use 2,4-D only two to three times a year in a dilute form; similar to most companies who buy 2,4-D as part of a three-way mix.

Bob Dahlin, president of Green Baron Inc., Yakima, Wash., said he never considered dropping the use of 2,4-D, but did stock a non-phenoxy herbicide in case of customer outcry.

"If there's another product that does as good a job (as 2,4-D) that people are more comfortable with, then fine," Dahlin said. "But you have to educate yourself. People don't bother to study the research that's been done for years and years."

Larry Bourbonnais of Spray Green, Riverside, Calif., buys 2,4-D in 2 1/2- and 5-gallon containers and mixes his own formulation.

"I'll use it until it's outlawed," he said. "Any replacement will be more expensive, but the writing is on the wall. People are terribly misinformed."

Despite such highly publicized pursuit, 2,4-D opponents insist their efforts are not to ban the substance.

"The NCI is not a regulatory agency," said Sheila Hoar Zahm, an NCI epidemiologist and author of the NCI/Kansas study. "NCI efforts are to initiate internal investigation of anything that's a possible carcinogen."

TO USE OR NOT? In the height of the controversy over 2,4-D, many lawn care companies made the choice to continue use of the

we continue to use it as a formulation. Until tests prove otherwise, we'll continue to use it."

However, ChemLawn's Roger Yearly said that ChemLawn has an obligation to clarify the issue for its employees.

"Studies done elsewhere are not applicable to our employees," said Yearly, ChemLawn's vice president of health and safety. "Our employees applied herbicides many more times than those in other studies."

Yearly said a typical ChemLawn employee applied a 2,4-D formulated product on average about 80 to 100 days a year. ChemLawn stopped purchasing the product in September 1986 and phased out its inventory through 1987.

To clarify the issue, about 32,000 ChemLawn employees will ultimately be tested in two phases. Phase one includes 5,000 workers who were employed by the company from 1969 to 1981. The second phase will include the original 5,000 plus 27,000 more who worked for the green industry giant between 1969 and 1987.

ChemLawn expected the first phase to take about two years, but now well into the third year of testing, the study still isn't finished. NCI is conducting the study.

Yearly said he thinks it will ul-

timately be shown that 2,4-D is not a human carcinogen.

BACKGROUND. 2,4-D, which is short for 2,4-dichlorophenoxy acetic acid, was one of the first organic herbicides. It was introduced for turf weed control shortly after World War II.

It's highly selective action in controlling broadleaf weeds in grass crops at application rates of one or two pounds per acre made the concept of selective chemical weed control a reality.

Even today, 2,4-D in combination with other related compounds is the mainstay of broadleaf weed control in turf management, offering a cost-effective alternative to other industry phenoxyes.

Experts began to question the use of 2,4-D when a link between a rare form of cancer, non-Hodgkins lymphoma, and 2,4-D began to draw attention.

One such link stemmed from Agent Orange. Agent Orange first became notorious around the time Paul Reutershan, a helicopter crew chief in Vietnam was dying of cancer.

Before dying at the age of 28, Reutershan sued Dow Chemical, Monsanto and Diamond Shamrock, all of which had produced Agent Orange, the chemical defoliant used by the military in Vietnam. The case was later extended to eight other chemical companies and was joined by a total of 250,000 veterans and their kin, according to an article in *Discover* magazine.

While the case was settled out of court in 1984, the scientific side of the Agent Orange story is this: In spite of years of effort by dozens of researchers who have spent tens of millions of dollars, no definitive link has been found between exposure to the herbicide and the veterans' health problems.

In addition, a recent study by the Centers for Disease Control in Atlanta suggests that such a link may never be established for the vast majority of veterans.

But research closer to the lawn and landscape industry continues.

Since the National Cancer Institute and University of Kansas epidemiology study linked 2,4-D with an increased incidence of non-Hodgkin's lymphoma in Kansas farmers, a slew of tests were initiated in the United States, Australia, Canada and Sweden.

The EPA even commissioned Brian MacMahon, professor and chairman of the Department of Epidemiology, Harvard School of Public Health to review the NCI/Kansas study.

"In my opinion, the weight of evidence doesn't support the conclusion that there is an association between exposure to 2,4-D and non-Hodgkin's lymphoma," MacMahon concluded.

"I don't believe the authors' conclusion that 'the study confirms reports from Sweden and several U.S. states that NHL is associated with farm pesticide use, especially phenoxyacetic acids' is justified."

MacMahon continued: "Taken as a whole, I believe that the weight of evidence indicates that an association between 2,4-D and NHL remains a hypothesis that is still to be tested. I am unwilling to speculate as to whether 2,4-D causes NHL (or some cases of NHL) until the evidence is clear that there is an association between them."

The EPA, which never seemed in a hurry to regulate the substance, finally announced a year later that it would not conduct a special review of 2,4-D based on carcinogenicity.

The EPA's decision results from a consensus that existing epidemiologic data was inadequate to assess the carcinogenic potential of 2,4-D. The consensus comes from EPA scientists, national experts on epidemiology and the Federal Insecticide, Fungicide, Rodenticide Act Scientific Advisory Panel.

The 1988 decision doesn't eliminate future special reviews should they become necessary.

Before its ruling, the EPA requested that four national experts on epidemiology review the findings of the NCI epidemiologic study.

The experts concluded independently that the study didn't implicate 2,4-D alone as the causative factor, but rather indicated an association with phenoxy herbicide use in general.

In addition, the FIFRA Scientific Advisory Panel reviewed the study, as well as the entire oncogenicity data base and concluded that 2,4-D should not be classified as a carcinogen or non-carcinogen.

2,4-D TASK FORCE. An Industry Task Force on 2,4-D Research Data was established in 1981 to meet an EPA data call-in, or reregistration. The sole purpose of the force's 13 members was to generate the data required by the data call-in, which was paid jointly by the members.

The new data was needed since many of the studies used to support the original registration of 2,4-D herbicides did not meet current day standards for toxicology tests.

Although most of the studies were scientifically valid and showed that the use of 2,4-D did not pose an unreasonable risk, the EPA felt new data should be generated.

Task Force members consisted of domestic and foreign companies that manufactured or sold technical 2,4-D acid. They spent about \$4 million in meeting the EPA's 1981 data call-in.

The Task Force is still in existence today, but having met its purpose, is not active.

Industry Task Force II on 2,4-D Research Data, was formed for the very same reasons as its partner, but to meet the 1988 EPA data call-in; a task requiring considerably more data than the first.

Estimates of the total amount of data required to meet the reregistration is between \$8 million and \$10 million. Six of the 13 original task force members remain and are committed to meeting the new EPA requirements.

Since many products fall into the same reregistration boat, concern is mounting that some may not have the market to justify reregistration. 2,4-D is one of them.

"I don't know of any major 2,4-D use that will be dropped as a result of the companies involved not being able to afford to generate the data in order to maintain them," said Don Page, chair-

(continued on page 30)

A CHRONOLOGY OF 2,4-D EVENTS

1944 First year 2,4-D was sold as a herbicide.

1977 Questions centering around the safety of 2,4-D began.

1978 More than 40,000 scientific articles and technical reports on 2,4-D had been published to date.

April 1980 The U.S. EPA said many of the studies in their scientific data files used to support the registration of 2,4-D herbicides did not meet current day toxicology test standards.

Aug. 1980 Because of significant data gaps, the EPA informed registrants of 2,4-D products that additional scientific information would be required if registrations were to continue.

Oct. 1980 Industry Task Force on 2,4-D Research Data was established to develop the requested scientific data.

1980 No deaths from non-Hodgkin's lymphoma were discovered in Swedish railroad workers exposed to phenoxy herbicides.

Sept. 1981 Following a six-month review, a government committee in Australia reported "that no evidence exists to suggest that the continuation of presently approved uses of 2,4-D will in any way harm the health and well-being of any members of the general public."

1982 No excess cancers and no cases of non-Hodgkin's lymphoma were found in a study of nearly 2,000 Finnish workers exposed to phenoxy herbicides.

1983 The city of Madison, Wis., tried to ban all use of 2,4-D. City Council voted it down.

March 1984 The Supreme Court of Nova Scotia ruled the spraying of 2,4-D, 2,4,5-T or a mixture of the two can be carried out safely and doesn't represent a health hazard.

1985/1986 Two New Zealand studies determined little or no risk of non-Hodgkin's lymphoma, even among former commercial chemical applicators.

1986/1987 A study of Swedish forestry workers showed fewer cancer deaths than anticipated, and no cases of non-Hodgkin's lymphoma.

Sept. 1986 Researchers for the National Cancer Institute conducted a study of farm workers in Kansas where 2,4-D had been the most commonly used herbicide. One of the most striking findings from the study was the sixfold increase in risk suggested for farmers using herbicides more than 20 days a year in comparison with non-farmers. Based on subset of seven cases.

Feb. 1987 EPA commissioned Brian MacMahon, professor and chairman of the Department of Epidemiology, Harvard School of Public Health to review the NCI/Kansas study. Based on the weight of the evidence, he found it to be inconclusive.

April 1987 New products containing 2,4-D will be allowed in Ontario. Moratorium on 2,4-D lifted.

Spring 1987 Interviews with more than 500 residents of western Washington found no increased risk of non-Hodgkin's lymphoma related to the occupational exposure to 2,4-D.

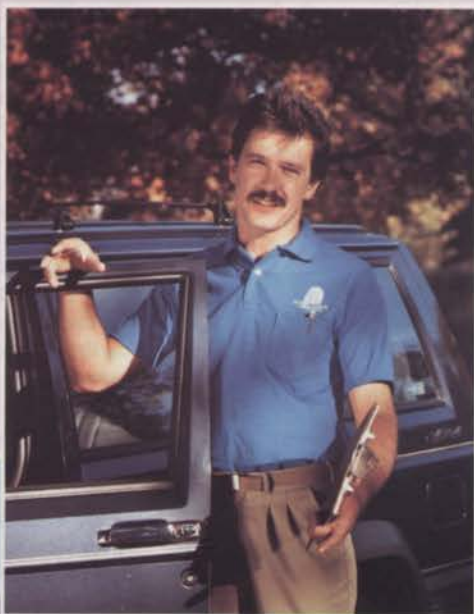
Aug. 1987 Centers for Disease Control in Atlanta failed to establish link between Vietnam veterans and 2,4-D.

April 1988 The federal EPA announced it would not conduct a special review of 2,4-D based on carcinogenicity.

1990 Preliminary findings of a control study of 385 Nebraska farm workers with non-Hodgkin's lymphoma showed a threefold risk increase associated with farmers using 2,4-D more than 20 days a year.

Preliminary findings of Iowa/Minnesota farm worker study, based on interviews with almost 700 persons, showed little or no association between non-Hodgkin's lymphoma and 2,4-D.

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2, 4-D

(continued from page 28)

man of the task force. "They've made that commitment and the major 2,4-D uses will be maintained."

The members of Task Force II are fewer than the members of Task Force I, but stems from the normal aging process of any product, he said.

"As it becomes less profitable with age, certain companies decide that it's not worth their while to continue in that business," Page said.

"One of the things we recognized was, because 2,4-D is a commodity cut product and is manufactured, formulated or sold by a number of companies, there's no one out there to be a focal point to handle any problems that arise," he said. "There's no one to champion the product. We discovered that even among researchers, they're not really kept up-to-date about 2,4-D, because no one is there to actively keep them up-to-date."

Task Force II has taken on the

role of trying to bring up the general level of knowledge about the product and about the status of the compound, particularly among higher cultural researchers, university researchers and public health people.

Foreign, as well as domestic companies, are anxious to meet U.S. reregistration requirements. If the U.S. registration is lost, it would no doubt impact registrations around the world. International companies know they can't

maintain worldwide registration in the absence of the U.S. registration.

NCI STUDIES. Although the Kansas study has been both criticized and lauded, Zahm stands behind the report's findings on farm worker exposure. She said the Kansas study consisted of exposure specific studies—a claim only a few others can make.

In some minds, the Nebraska study substantiated the Kansas

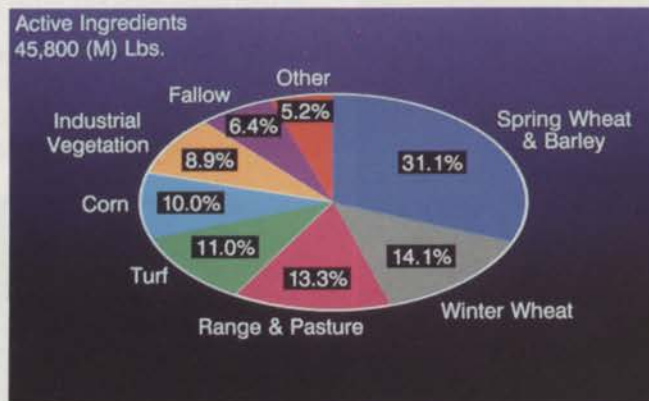
study.

"What they found was that there was a threefold, non-statistically significant risk of non-Hodgkins lymphomas as it relates to the Nebraska farm workers and their exposure to herbicides," said Garry Hamlin, DowElanco manager of corporate public affairs. "So that's been interpreted to support the Kansas study, but the Kansas study found a sixfold statistically significant risk. So there are differences. I think you could make the argument either way."

One researcher might say that the Kansas and Nebraska studies show a consistent trend, another researcher could just as equally say that the Nebraska study suggests that the risks, as reported by the Kansas study, are considerably less than initially thought, he said.

"Probably the best way to characterize the Nebraska results in my view, is as equivocal. Certainly further discussion will continue but we've got one reading of 13 scientists who have examined all the evidence on 2,4-D, including Kansas and Nebraska,

2, 4-D MARKET SEGMENTS



Graph: DowElanco.

EASY COME.



Top row: Leaf-feeding caterpillar, Mealy bug, Japanese beetle, Bagworm, Gypsy moth. Bottom row: Cankerworm, Leaf skeletonizer, Tent caterpillar, Webworm.

2,4-D: PUBLIC CONCERNS AND THE FACTS

FOR THE PAST 40 YEARS, THE herbicide 2,4-D has been consistently used to control broadleaf weeds for a variety of end uses: residential and commercial turf, forestry, power line maintenance, roadside brush control and farming.

There are a number of advantages in using 2,4-D:

- The compound is extremely effective against weeds and brush yet relatively inexpensive. This is important to farmers trying to hold down the cost of crop protection and reduce the cost of food to consumers.
- Users have had up to four decades of experience with the compound and have found it safe and highly reliable.
- The compound has been thoroughly

studied over the years, and conditions for safe use and environmental protection are widely known.

Few products on the market today have been as thoroughly researched or can match 2,4-D's extensive practical experience in the field. Many new studies are in progress to update previous research on the compound.

THE WEIGHT OF THE EVIDENCE.

Several studies have suggested a possible link between 2,4-D and a rare form of cancer, non-Hodgkin's lymphoma, among workers exposed to the herbicide during application. Publication of these studies has generated a lot of controversy and, in some cases, some misinformed, sen-

sational claims.

The weight of the evidence doesn't suggest that 2,4-D is a likely cause of non-Hodgkin's lymphoma or any other human cancer. Seven studies in four different countries have examined the issue of 2,4-D and non-Hodgkin's lymphoma and haven't found a connection.

This includes studies of exposed manufacturing and forestry workers in Sweden and Finland, and studies of cancer patients in New Zealand and the state of Washington.

A number of independent scientists and organizations have reviewed the scientific literature on this compound and have reached similar conclusions. — *Industry Task Force on 2,4-D Research.*

and that's their bottom line — far from established."

The next major state study: A combined study of Iowa and Minnesota farm workers. It's not known when results will be available.

More recently, Zahm sat on the Harvard panel, a meeting of in-

dustry researchers to evaluate studies already completed, including the Kansas study. They considered animal data, human epidemiologic tests, etc., to figure out what it all meant. No new information was presented to the panel.

General impressions from the

Harvard panel: People accept and believe an association between the herbicide and non-Hodgkin's lymphoma exists, but the extent of the association is wide ranging. Some believe the connection is with all phenoxies, while other panelists are more ardent believers in the connection with the

2,4-D formulation.

"NHL is a very rare disease. Even if (its occurrence) elevated, applicators aren't going to notice because (relatively) not many are affected," Zahm said. "They also may not be concerned because two studies have shown that if

(continued on page 84)

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Equipment Evolution Enhanced by Computerization

LAWN MOWERS CAN be simple machines. But add dual-hydrostatic drive, twin lever steering, counter-rotating blades and other options favored by many maintenance operators, and a "simple" lawn mower can become a highly sophisticated piece of equipment.

"Manufacturers of lawn care equipment never consider their products finished," said Pat Hammell, senior marketing coordinator for John Deere & Co., Horicon, Wis. "Constant innovation is required to stay on top because the field is so competitive — and because operators today are such professional and demanding buyers."

For example, John Deere allo-

cates some 5 percent of gross sales toward ongoing research and development "because lawn care product lines must be upgraded every three to eight years, depending upon the product."

Over at Cushman Inc., Lincoln, Neb., Lawn Care Products Manager Bob Brophy said, "we work on a five-year plan that's updated every year. The only thing permanent in this industry is change."

New product development also plays a large role at smaller manufacturers. "In fact," said advertising manager Ken Raney of Excel Industries, Hesston, Kan., "we think innovation is even more important for a company like ours. Having a distinc-

tive product is what keeps us in business."

Bob Walker pointed out his company, Walker Manufacturing, Fort Collins, Colo., makes only one product. "We spent half a million dollars to introduce a mid-size riding mower," he explained, "but since then, just to stay up with the industry and with our customers, we've had to make more than 200 refinements."

Product development at larger firms can involve sophisticated market research, engineering studies and computer-aided design. By contrast, smaller firms may rely on direct customer feedback and staff know-how to refine ideas and products.

But among all manufacturers, one common thread is evident in the process of introducing new technology: "To put it simply," explained Raney, "product development costs a lot of money."

DEVELOPMENT BY DESIGN.

Whether manufacturers are large or small, product development consists of seven steps:

- **Needs identification.** Through market research, customer feedback or simple "gut feeling," the need for a new product or improvements to an existing line is identified.

- **Product definition.** What should the product do? How should it be different from other lawn care products? Here the basic parameters of the proposed product or improvement are defined.

- **Initial design.** Working from the defined parameters, engineers develop plans and drawings. The goal, of course, is a design that enables the new product to perform its intended functions.

- **Prototype construction.** Based upon the initial design, one or more prototype units are con-

The 1990 version of the riding Walker mower.



structed. Often these prototypes are hand built from specially fabricated parts and with specially fabricated tools.

•**Testing and refinement.** Again working from defined parameters of how the unit should perform, a testing program is designed and carried out. Based upon factory and field testing of prototypes, final refinements are made in the product design.

•**Establishing production.** How will the new product be manufactured? Manufacturers must retool, reroute or expand existing production facilities or contract with outside suppliers, or both.

•**Introduction and marketing.** Dealers and distributors are familiarized with the finished product, which is then introduced to the end user through advertising, sales literature, news releases, equipment shows and other means.

"Historically, it's taken about five years to bring a new product from concept to market," said Hammell, "but in this decade, computerization has cut the process to two to three years."

For example, the company uses modern sampling techniques in its initial market research and needs identification.

Working with a national advertising agency, John Deere conducts telephone surveys of customers and dealers. The company and its agency also computer-select operators to participate in "focus-groups" comprised of both Deere equipment owners and non-owners.

"We don't let participants know our company is behind the focus group," explained Hammell. "We then ask them questions about their operations and needs. Sometimes we'll have them try out products and then get their reactions. In this way, John Deere can iden-

tify possible needs for new products or existing product improvements."

Brophy said Cushman also performs market research, because "our R&D is totally market driven." In addition, Cushman maintains a formal dealer council and customer council to advise the firm on product development needs.

"When a need has been identified," Brophy said, "rough parameters are developed, and the project is referred to our product development committee."

The committee has members from every department — engineering, production, marketing, even accounting. Ultimately a go or no-go decision is made, though it can take two years to reach that point.

Likewise, John Deere puts together a "product definition team" for each new idea. "Someone from every discipline in the factory is involved," Hammell said, "and the first few meetings are brainstorming sessions. What does the customer really want? How can a product meet those needs?"

Any decision to proceed with an initial design, Hammell added, is "based upon three criteria: Can John Deere produce this product? Is there enough sales potential to pay back our investment? And is the current technology advanced enough to produce a machine that can perform the desired functions safely?"

Both Hammell and Brophy confirmed computer-aided design is being increasingly relied upon by the larger lawn maintenance equipment manufacturers.

"John Deere installed CAD systems about seven to eight years ago," Hammell said, "and it has cut our design costs and time tremendously. There's a large up-



John Deere looks for ways to use existing components in new products.

front investment but, because our company is diversified, we can spread the cost around our different industries."

And how does a manufacturer know when a new design is ready to build? "We have a review process, coordinated by the product definition team and the engineering department," Hammell said, "and at this point several questions are asked. Is the product technically feasible? Can it be produced for a competitive price? Will it meet the specs? Will customers and dealers accept it? And will the product give us an edge in the market?"

READY TO BUILD. Based upon the initial design, John Deere builds five or six prototypes.

"To save money, John Deere looks for opportunities to use existing components in new products," Hammell said. "But even so, it takes about \$100,000 to construct prototypes, since each unit is made by hand from scratch."

Efforts of smaller manufacturers, admitted Walker, often center on the particular talents of its staff members. When the Walker family identified the need for a highly maneuverable rider mower for residential applications, "we fabricated our own parts and probably tried hundreds, even thousands of different configurations. Trial and error discourages most people," concluded Walker, "but my family thrives on it."

Testing programs vary by manufacturer. For example, John Deere operates test sites in Wisconsin, Florida and Arizona

"so prototypes can be run under a variety of lawn conditions," Hammell said.

By contrast, Walker began testing his new mower on his own lawn and the lawns of friends, neighbors and customers.

Raney added, "No matter who the manufacturer is, the purpose of testing is to find out how the product works."

When Excel recently developed its Turbo Shredder mower, it devised tests "working by the seat of our pants." The company sent prototypes to California, Texas and Florida to test the unit under different grass types, grass heights, terrain and wetness conditions. Then side by side comparative studies, with the Turbo

Shredder and an existing model were completed.

Not only did Excel have to construct prototypes by hand, but the company also found it necessary to specially fabricate testing equipment. "You just can't find ready-made equipment to shake-test a new product that only exists as a prototype," Raney said, "or to perform heat tests on the hydraulic systems."

REGULATIONS. Chemical lawn care products are heavily regulated by state and federal environmental and worker-safety rules. However, mowers and other lawn maintenance machines are primarily regulated by the American National Standards Insti-

tute (a private, voluntary standards setting organization) standards for thrown objects, blade stopping time and stability, according to Walker.

The federal Occupational Safety and Health Administration also sets standards for thrown objects, but they generally defer to the ANSI standards.

Hammell added that OSHA and a few individual states have noise-level standards for lawn maintenance machinery, and the Consumer Product Safety Commission requires certain blade disengagement features on push mowers.

REDUCING COSTS. Though any factory must gear up for produc-

ing a new product, manufacturers take different approaches to holding down costs.

"By choice, we don't job out many parts, so as a small company we design our products to be made with simple tools," Walker said.

Similarly, Raney said, "Excel makes all its own tooling, so over the years we've developed a lot of different tools that can be adapted to our needs."

At John Deere, explained Hammell, "the company tries to build new products with existing tools." While most components are manufactured in-house, Hammell added, "we do contract out for some parts. But to make sure we

(continued on page 36)

TURBO SHREDDER: DESIGNED TO MEET AN ENVIRONMENTAL NEED

FOUNDED IN 1960, EXCEL INDUSTRIES OF HESSTON, Kan., sells its line of Hustler commercial mowers throughout North America and Europe.

Over the years its innovations have included out-front rider mower decks, dual-hydrostatic drive, zero-turning radius, high-lift vacuum backs, range wings and other features.

But according to Ken Raney, Excel advertising manager, "we can't ever rest on our products. Excel bases its marketing on the technical superiority of our products. So in order to survive, we have to maintain leadership in the industry."

Recently the company introduced a new Turbo Shredder mower that is said to mow up to 50 percent more grass between dumping stops than conventional mowers, and produce clippings that "fill 25 percent less volume by weight, so operators empty the hopper less often and use fewer bags."

While new to the lawn and landscape maintenance industry, the initial concept is five years old.

"At the time," explained Raney, "our board chairman, Roy Mullet, saw that the disposal of clippings was becoming a big problem. Bagging doubles the time operators spend on a lawn. And while Excel didn't anticipate landfills filling up so soon, we knew operators were looking at big costs for transportation to waste sites."

Believing that "any manufacturer who could address the problem would meet a strong need in the market," Excel's research and development department began experimenting with several approaches.

"First we tried putting a rake behind the mower, but that didn't work," said Raney. "Then we tried shooting the clippings into a grinder and squeezing the nutrient-rich juice back out onto the lawn. But the grinder couldn't work fast enough to keep up with the clippings."

Finally, Excel engineers decided to add additional blades to the equipment to more finely chop clippings. "At first we mounted new blades near the grass catcher," Raney said, "but too many clippings dropped out because of the distance from the cutting blades. However, the methods seemed promising, so we tried moving the extra blades right into the mower deck."

What ultimately resulted — after three years of experimentation — was a new rotary mower deck with three high-lift blades, feeding grass directly into a shredded blade assembly. The latter consists of eight ripple shaped, double-edged,

counter-rotating blades mounted on a single spindle.

"Clippings come out so fine," Raney said, "they quickly fall to the soil surface for rapid decomposition, returning valuable nutrients without contributing to thatch build up. Using the equipment can even reduce the need (in some cases) for maintenance operators to fertilize turf so often."

Based on the final design achieved in the fall of 1988, Excel assembled several prototypes units for testing.

"We all tried mowing our own lawns with it," Raney said, "but the company also sent machines to California, Texas and Florida for testing at different grass types, grass heights, terrains and wetness conditions."

Excel also conducted factory tests for vibration durability, heat endurance of the hydraulic system and whether the Turbo Shredder had met thrown-object standards established by the American National Standards Institute.

"The testing process lasted about six months," explained Raney, "and because of results, the Turbo Shredder went through four to five revisions."

Next, the project was turned over to Excel's production engineering department. Using the final prototype as a pattern, the staff took off the specifications and produced working drawings. Then one to two units were constructed from these plans, "just to make sure the drawings were right," Raney said.

By February 1989, a "painted-up" prototype was introduced to dealers at an Excel national sales meeting.

After gearing up to produce the new units — chiefly with its inventory of existing tools — the company put its Turbo Shredder on the market last July, in time for the summer season. The introduction was accompanied by national trade magazine advertising and exposure at major equipment shows.



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New Technology

(continued from page 34)

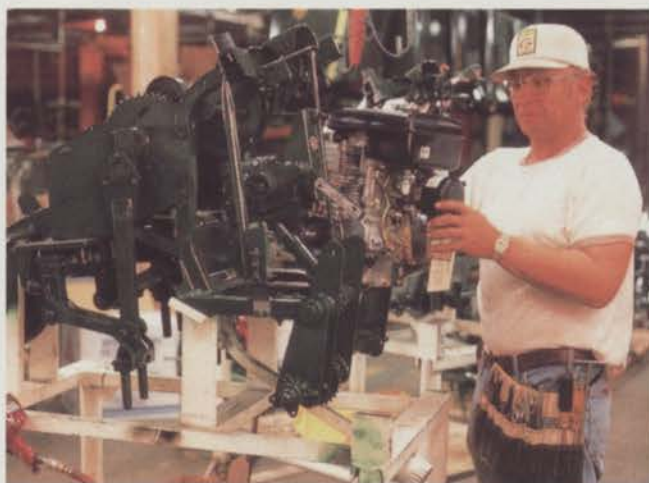
get quality, all our suppliers are required to go through a John Deere certification program."

A key concern when readying a product for distribution is determining how many units to make. "Make too many and if the product doesn't sell, the company is stuck with a lot of inventory," Hammell said. "But make too few, and you anger customers and lose the word of mouth advertising that's so important to new-product acceptance."

John Deere deals with the problem "by trying not to warehouse any products," he said, "and instead ordering parts on an as-needed basis, and putting finished units almost immediately into the distribution system."

"Because our manufacturing process is highly automated, we also have a lot of flexibility in changing over facilities to make other products as needs warrant."

According to Brophy, Cushman takes a different approach. "When we introduce a new product,"



Ryan LA28 in final assembly.

he said, "Cushman initially produces a 'pilot lot.' Customers buy these machines knowing they're only pilot models. Then we follow up on these sales and, if the customers like them, Cushman goes into full production."

As smaller manufacturers, Walker and Raney also took different approaches to determining their initial production runs. Walker Manufacturing generally limited its production to orders

generated at various equipment shows, while Excel worked through its dealer network to sell the majority of its first Turbo Shredder run before it was built.

TO THE MARKET. New products are typically introduced to dealers at a manufacturer's annual or seasonal sales meetings. "We'll show John Deere dealers all the new products being introduced for the upcoming season," explain-

ed Hammell, "and give extensive workshops to familiarize them with each unit."

Cushman has a similar program, according to Brophy, and also assigns its district sales managers to conduct new-product training sessions for local dealers.

Brophy added that "few operators realize how much also goes into producing the support materials required by a new product." Cushman has a full staff of illustrators and writers, plus an in-house printing plant, "to put out all the service manuals, parts manuals, operator manuals and instructional literature and videos, that go along with any lawn maintenance product."

Advertising and news releases for national and regional trade magazines play a large part in marketing new products. "Our thrust is to market the product to the operators and get them interested in using it," Walker said, "rather than market the product to wholesalers and dealers so they'll carry it. If we create interest on the part of the end users,

(continued on page 86)



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An Effective Outline Promotes Favorable Training

Editor's Note: This article is the second of a three-part series on training. This month, the importance of developing an outline and implementing a program will be discussed. Sample training situations and follow-up training will be featured next month.

A TRAINING OUTLINE is the basic tool a trainer uses to communicate information. It's merely a list of the major and minor topics involved with the subject, along with some supporting or clarifying information.

An outline can contain as much information as the trainer feels necessary to be able to fully cover the subject.

There are a number of questions that must first be addressed before tailor-making an outline and subsequent presentation. The questions are:

- Why is the training being done?
- What subject matter will be taught?
- Who is going to teach it?
- Who is going to attend?
- When, where and how should it be done?

These questions can be answered in the following scenario on which a training presentation



Training aids such as videos, brochures and check lists are designed to benefit presentations.

can be developed. For the purposes of this article, a training outline on fertilization will be used.

Training needs to be done to acquaint new hires with the fertilizer itself, its components and its uses. The group is comprised of people with no previous experience with fertilizer. The session will be taught by the manager who has five years experience in product usage, programming and troubleshooting. He also has some previous

training experience. The training will be conducted on Monday morning in a large room generally used as an employee lunch room.

The trainer should be prepared to work some training aids into the presentation, increasing the attention span of employees and hopefully increasing the percentage of information retained.

Training aids could be as simple as a bag of fertilizer or several different formulations of fertilizer. Slides, videos, university reports, vendor brochures and labels could also be used. A flip-chart or blackboard would also be appropriate for such a session.

The presenter must keep in mind that the materials should be designed to enhance, rather than detract, from the presentation.

The subject of fertilizers and fertilization is quite a large topic. Therefore, it must be broken down into digestible bits so that the trainee can grasp each concept

before moving on to the next. Each concept should interlock with the next building a flow into the presentation, rather than bouncing around addressing topics as they are remembered.

An outline can now be prepared. The major topics to remember include: definition, components, uses and application techniques.

An outline can include as many topics as appropriate depending on the level of experience of the trainee, need for detail and the amount of time available.

The definition can be as simple as a one sentence explanation or it can be broken into a number of additional topics such as: balanced, complete and incomplete, and their accompanying definitions. Use whatever explanation is necessary to help introduce the subject and lead into the body of the session.

The components will probably

(continued on page 42)



Hands-on training gives employees an opportunity to perform.

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Training

(continued from page 40)

make up the largest section of the talk and may or may not be combined with uses. This section can initially be broken down as follows: major nutrients, secondary nutrients and minor nutrients.

Each of these in turn can be broken down further into more manageable information bits.

The major nutrients will take some time to explain because of their nutritional importance to the plant. Reference should also be made at this point to the three numbers on a fertilizer label and their correlation to the major nutrients. Major nutrients can be outlined as follows:

- N — Nitrogen
- P — Phosphorus
- K — Potassium

The discussion of the major nutrients presents a good opportunity for the use of visual aids.

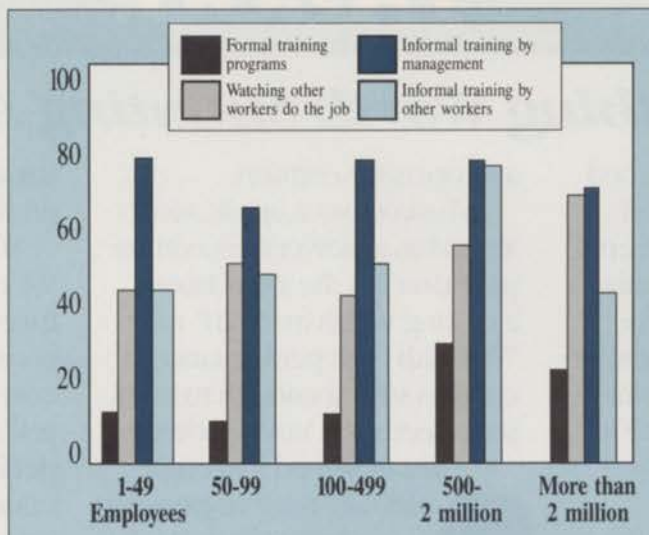
The secondary nutrients can also be broken down into the individual components: Fe — Iron, Ca — Calcium and Mg — Magnesium.

If these nutrients are used, it's important to explain how these materials are adapted to your program. Point out that Ca and Mg are found in limestone used extensively in the Northeast for soil conditioning.

The minor nutrients can be explained next, using any number of examples:

- Fe — Iron
- Cu — Copper
- Zn — Zinc
- Cl — Chlorine

The trainer's explanation of these nutrients should point out that these nutrients may or may not be necessary depending on the



Average number of hours spent in training activities in the first three months on the job, by size of employer. Source: Small Business Administration and U.S. Census Bureau.

region of the country and/or the soil type.

The uses can be discussed next or in conjunction with the component discussion. By handling the uses separately from the component, the trainer can ask the class to participate by naming the element in each nutrient category. This can literally be a laundry list of the elements followed by a brief explanation of the uses.

- Nitrogen — greening
- Phosphorus — reproduction
- Potassium — drought stress
- Sulfur — root strengthening
- Calcium — soil buffering
- Magnesium — soil buffering
- Iron — greening
- Copper — metabolic processes
- Zinc — metabolic processes
- Chlorine — metabolic processes

Finally, application techniques can be discussed. Detail whatever techniques will be used in performing daily service work. This is an excellent opportunity to use a video, if available. Or better yet, hands-on training, if appropriate.

Hands-on will undoubtedly be best if time and space permits. This type of training requires more trainers (veterans) and equipment so it must be well-planned. An additional site, often located away from the initial training area, must be selected.

Explain how to load the equipment, how to calibrate, walking speeds, patterns, overlap, etc. This is a very comprehensive topic, taking a lot of time, but it fits into the flow of a fertilization training program.

The final training outline may look like the following: (See next column.)

Practice following a training seminar gives employees more confidence in their abilities.

Fertilization

- I. Definition — supplying proper nutrients to a given plant population
 - a) Balanced — 10-10-10
 - b) Complete — 15-5-5
 - c) Incomplete — 46-0-0

II. Fertilizer

- a) Major Nutrients (relate to fertilizer analysis)
 1. N — nitrogen
 2. P — phosphorus
 3. K — potassium
- b) Secondary Nutrients
 1. S — sulfur
 2. Ca — calcium (Limestone)
 3. Mg — magnesium (Limestone)
- c) Minor Nutrients — (trace amounts)
 1. Fe — iron
 2. Cu — copper
 3. Zn — zinc
 4. Cl — chlorine

III. Uses — Have class repeat nutrients

- a) Major Nutrients
 1. N — greening
 2. P — reproduction
 3. K — stress
- b) Secondary Nutrients
 1. S
 2. Ca
 3. Mg
- c) Minor Nutrients
 1. Fe
 2. Cu
 3. Zn
 4. Cl

IV. Application—Hands on

- a) show equipment
- b) demonstrate use — calibration
- c) practice

There are a number of ways to set up a training outline. This is just one example. The most important thing to do is organize the content and flow of the presentation.

Use whatever "buzz words" are necessary to keep the session on track.

Once the outline is prepared, use it. It may not be used exactly as prepared, however, it will prevent straying and/or getting lost during a presentation.

A training outline is a vital tool in this business. Develop a good one, use it, update it and keep it on file. — Dave Jones ■

The author is director of training for Lawn Doctor Inc., Matawan, N.J.



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Fluctuating Economy Challenges Business Survival

ENTERING THE 1990s, many parts of the eastern United States are going through a building slowdown following a construction boom in the last decade. This slower economy is already having adverse effects on the lawn and landscape maintenance industry.

Business is slowing down. Operators are being forced to cut back on services or drop prices slightly to retain accounts. Surviving a recessionary period is a challenge many won't be able to meet and the number of consolidations, buy outs and failed businesses will increase before the market improves again.

Everything in business is cyclical and Sheldon DuBrow, owner, DuBrow Nurseries, Livingston, N.J., enjoys trying to keep up. He realizes he benefitted from a high real estate demand in the early 1980s.

"We got spoiled and fat during the boom times. Now we're cutting all of that," he said. "Everyone knows that business is always changing. That's the challenge. You have to find ways to change along with it or be left by the wayside."

Compounding the problem of locating and keeping customers are those of a still relatively young industry that is struggling to grow and mature. Customers are becoming more educated and aware, and operations are becoming more sophisticated. Operators today must find solutions to problems that didn't exist 10 years ago.

MARKET DEMANDS. These range from environmental concerns surrounding the use of

chemicals and disposal of wastes, to dealing with a shortage of materials caused by their increased demand to becoming computer literate just to survive.

More small operators are going to be finding themselves in such situations in the next couple years if they do not keep up with the increasing technology and sophistication that the industry as a whole has adopted, predicted Russ Frith, president Lawn Doctor, Matawan, N.J.

"As consumers and the industry become more sophisticated, the barriers to entering become greater," he said. "Today there is a battery of regulations and certifications that weren't there before. Increased competition calls for better marketing methods. And while just five or six years ago a computer was an office luxury, anyone caught without one in the next year or two is going to be seriously disadvantaged."

Whether in lawn care or maintenance, Frith said, the driving force behind the growing market is the same: An ever increasing number of dual-income families who simply do not have the time to perform the work themselves.

But he does see a great amount of consolidation in this decade.

"The small operators are going to have essentially three choices in the coming years," Frith said. "They'll either remain on their own and hope they can keep up, turn to franchising and keep some level of entrepreneurship or let themselves be bought out completely."

While the market is going through a natural down cycle, Frith is optimistic about the future for the East Coast.

"If you accept that single family dwellings are the mainstay of

this business, then this a great place to be," he said. "The Boston to Washington, D.C., area has close to one-third of the entire country's population. There are great potentials there for developing more business."

During slow times, one of the best ways to secure your position in the market is by offering different and original services that make you stand out from the competition.

ALTERNATIVE SERVICES. Eilen Kaye Inc., Washington, D.C., started providing a seasonal service several years ago that has become a major source of income, according to Scott Jenkins of the company. The service is Christmas decorating.

From November through January, the company puts up trees, decorates them, hangs wreaths and strings lights in several large shopping malls, a handful of strip shopping plazas and in about 100 bank branches.

"The service really originated from the old plastic flower arrangements that were big in the 1960s and 1970s," Jenkins said. "Our company used to place those in apartment buildings, hotels and banks. When a couple banks wanted more elaborate Christmas decorating they asked us."

The three-month operation generates about \$250,000 to \$300,000 in revenues every year.

"We've definitely built it up, but it has some unique problems," Jenkins said. "A lot of people don't realize how early we start the work. For the strip plazas and any other outside lighting, we want that done the first week or two in November. Otherwise the weather's pretty bad and we have guys working without gloves and it doesn't work."

Surviving the rest of the year

As the industry becomes more sophisticated, the barriers to entry become greater.

EASTERN MARKET REPORT



- A.** *Impending Legislation*
- B.** *Building Slow Down*
- C.** *Grass Clippings*
- D.** *Higher Material Costs*
- E.** *Creative Add-On Services*

depends on long-term work, he said. The company is fortunate because it's established and enjoys the benefits of long standing business relationships with clients.

"There's no doubt we're in for a flatter 18-month to two-year period," he said. "There's going to be a lot of shake out in that period. Already I've seen guys willing to do jobs for half of what I'd do it for. They're in a bind. At least by doing that, they might be able to salvage some of their equipment and maybe get through this slump."

LABOR SHORTAGES. Finding labor is proving to be a chore right now. The problem is twofold according to Jenkins. First is the increased competition. Because starting a lawn and landscape firm takes a relatively small initial investment, more people are trying to start firms.

But Jenkins doesn't lower his prices when he's the high bid.

"Where is it written that landscape work is supposed to be inherently cheap? If someone wants to do it for those prices, that's their business," he said.

For an established company, increased competition means its more difficult getting new work. "Generally our established customers aren't going to raise

a fuss or quibble about prices. They're satisfied with what we're doing," he said.

The other part of the problem is the competition for workers with the construction business. The area has a low unemployment rate. Even during building slowdowns, there is construction work going on.

This year, Jenkins only has one large government mowing contract.

"I wouldn't bid on a lot of big ones because you cannot find foremen in this area," he said. "Even if you do hire someone from construction, they yell and scream that the pay is so much lower. Given that kind of competition, we've been going into West Virginia and Pennsylvania finding 19- and 20-year-olds. Hopefully they'll stay on, want to learn more and move into the middle-level jobs."

PRICE CUTTERS. The bailing out of smaller, less experienced companies is a natural part of the business, DuBrow said.

"They're not turning a profit, they don't know their costs, they close," he said. "It's a house-cleaning, a corrective measure. If someone doesn't belong in the business, they'll eventually be taken out."

The Jersey area has felt the ef-

fects from the failure of major retailers and slowdowns in both the automobile and construction industries, DuBrow said.

Conditions are ripe for anyone with a pickup truck and a lawn mower to take a stab at landscaping. "It wreaks havoc on us, but all you can do is smile and wait for the thump. We have enough work to sustain us, but we won't be growing or getting many new customers."

Ineffective pricing is what usually kills the inexperienced person, he said. "We understand realistic pricing. We can cut back some and still survive, but guys coming in without the background will do it for whatever they can get. That'll get them in the long run."

It's also a time when customers have to be wary of the low-priced operators.

"The numbers of people going for the same accounts are practically multiplying by the tens," DuBrow said. "But the smart customer, while out for the best price, is also looking further. He should be

.....

The bailing out of smaller companies is a natural part of the business.

looking past the dollar amount and further into the firm. He should be looking for quality and reliability."

It takes a recessionary period to discover how alone you are in business, he said.

"The irony is that there are all kinds of books on how to expand in good times," he said. "But there isn't anything on contracting in bad times. When you need the work, it's so much tougher to get."

STRATEGIES. So what is DuBrow's plan of attack?

"Well there's no expanding or hiring because you have to promote good management tactics and find ways to cut costs," he said. "You also have to step up the sales effort just to stay at the same point."

At Eastern Land Management in Stamford, Conn., Bruce Moore has taken the plunge into a computer design imaging system. The system merges current photographs of a site with digitized images of landscape specimens to create an accurate image of how the site will appear at maturity.

With mostly commercial accounts, Moore is optimistic the imaging system will be an advantage in bidding longer-term contracts.

"It'll give them an accurate and exact picture of what we plan to do," he said. "That should be a plus because most people don't get the same thing out of looking at drawings that we do."

While the system was expensive, Moore said, he thinks it will pay off.

"We know we have to diversify to survive," he said. "One area we're moving into is residential installation, and this should be a great selling tool."

Moving into the higher residential bracket is a strategy Don Milbier of Patrissi Landscaping, Windsor, Conn., is using as an attempt to cushion the company from the fluctuating market. But doing so involves much more than just driving into a different neighborhood.

"We're targeting homes that have between \$250,000 and \$600,000 a year landscaping needs," he said. "It takes money to work in that market. These are people who want landscape architects and arborists checking the



Building slowdowns may have an effect on construction work this summer.

landscape periodically. It's not do the work and leave without seeing the owner."

Competition has increased recently, Milbier said, but he doesn't go head to head with the lowball start-ups because they don't go after the upper end residential market.

"The competition we have is legitimate for the most part," he said. "That makes it a little easier. We're not up against bargain basement pricing."

Besides the economy, another change DuBrow has to go along with is finding alternatives to bag-

operations eventually have to be passed on to customers.

Another part of the company's clippings are collected and hauled off, but DuBrow was pretty vague about where they are taken.

"They're hauled away. We don't do any dumping in the state of New Jersey," he said. "Beyond that I really don't know."

The disposal of hardscape items such as concrete and asphalt is much more of a problem than organic trash for Jenkins in the Washington area.

"No one wants to take it," he said. "It's that simple. You can't

agree to that, the crews bag the clippings and puts them somewhere else on the property.

He also predicted that tree spraying will soon come under fire and be faced with restrictive legislation. Some industry critics target tree spraying because the spray is often directed in the air. In addition, when the leaves fall they are not as carefully retrieved as grass clippings.

"I'm pretty friendly with several state legislators and I know that right now this is just light cocktail conversation, but eventually it will be introduced and probably passed," he said.

While Wyman has enjoyed considerable growth and seen competition increase, he said, Vermont generally is wide open and ready for the "big boys" to come in. The area has a large concentration of secondary homeowners from New York and New Jersey who are familiar with large companies' names, and sometimes ask why they aren't in the area.

"If one of them made an effort, they could really do a lot of business in this area," he said.

Just outside of Washington, Bruce Phillips, J.H. Burton & Sons, Olney, Md., is experiencing many of the same problems related to the building slump. But being more involved in commercial installation, he's facing the increased problem of finding larger trees that everybody seems to want.

"Finding the 5-, 6-, and 7-inch caliber trees is becoming really tough, almost a full-time job in itself," he said. "Once you find them the prices are so high because of the demand. Even finding the 3- and 4-inch calibers is getting to be more of a chore. It's no where near as bad, but they're not as plentiful as they used to be."

But while housing starts are down considerably, one type of work he can typically count on is residential renovation.

"The area is really transient. Being right outside the capitol, people are always moving around and not liking the landscape the family before them left behind," he said. — David Westrick ■

The author is Assistant Editor of Lawn and Landscape Maintenance magazine.

There's no expanding or hiring because you have to promote good management tactics and find ways to cut costs.

ging clippings and sending them off to the landfill.

"The real problem here is that we've been told we cannot dump clippings anymore," he said. "But no one has offered or suggested any alternative for what is OK. Most guys don't have the wherewithal to come up with plans on their own."

DuBrow has been chipping and grinding as much of its clippings as possible, but the costs for those

even get close to a dump or landfill with that stuff. We have to have it taken care of privately, and that really gets expensive."

Robert Wyman Jr. of Lawn Maintenance Co., Arlington, Vt., has already changed his method of clippings disposal even though it hasn't become a major issue in the state.

The commercial mowing firm either uses dispersal mowers for cutting grass or, if owners don't

When Lawn Doctor franchises move up to TURFLON, broadleaf weeds take a fall.



"TURFLON is more effective on the broadleaves that the competition is missing!"—

Russ Frith, president
Lawn Doctor,
Matawan, NJ

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"Weed control is the most important problem," explains Russ Frith. And as president of one of the nation's most successful lawn care franchisers, he ought to know. In explaining how TURFLON has worked for Lawn Doctor, Russ says, "It does a better job on the tough to control weeds."

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How do franchisers who use it justify broadcast spraying TURFLON at about \$9.50 per acre? "Reduced callbacks," Russ says. He adds that independent Lawn Doctor operators select their own products. Most are skeptical of TURFLON until they prove for themselves that it does a better job of controlling tough weeds. "Many who use it full service started with spot (spraying)."

Finally, Russ says one word describes the experience Lawn Doctor franchises have had using TURFLON: "Excellent."

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Tackling Tough Terrain Without Slowing Down



The Hustler 640 Hillsider self-levels automatically to keep driver upright when mowing on inclines.

SAM RUSSO OFTEN finds mowing to be an uphill battle — literally.

"Around here, developers added a lot of hills and ravines to the naturally flat land to add character," said Russo, owner of Bayville, N.J.-based Sam Russo Landscaping. "It's created a lot of cutting situations we'd ordinarily rather not have."

As maintenance operators around the country gear up for spring and summer mowing, *Lawn and Landscape Maintenance* magazine asked four top operators how they deal with tough terrain — slopes, ravines and tight spots around fences and trees.

Here's their advice:

For Russo, tackling problem turf all comes down to one thing — the right equipment.

"If you've got the right tools for the job, you can be twice as productive as the guy with the wrong tools, and you can charge the same price but make more," said the operator, whose firm cuts 2,000 lawns a day.

In tough situations, Russo calls on the DewEze MC70 self-level-

ing tractor or the Walker mower. He uses the Walker, a committed bagger, for mowing that requires a fine-cut finish, and the MC70 — which doesn't bag — for jobs that don't.

The DewEze works especially well on slopes because its unique design allows operators to remain upright while cutting slopes as steep as 30 degrees, Russo said.

Unlike traditional tractors, the \$15,000 MC70 has two stabilizing bars attached to its sides, somewhat like airplane wings. The bars move up and down as the terrain's slope changes but the MC70's body doesn't, so the operator remains seated upright and vertical.

By contrast, workers using other tractors end up sitting at an angle when they cut on slopes. "When it all boils down, the DewEze just looks civilized," Russo said. "The operator can sit upright on it when it's going, rather than hanging onto the tractor fender for dear life to keep vertical."

Russo said the MC70's special design reduces worker fatigue and virtually eliminates the risk of

the tractor tipping over.

Russo also likes the DewEze's 70-inch cutting deck and 15-mph capability, which add up to almost unmatched mowing speed. DewEze soon plans to market an even larger model — the MC144 — which features 14-mph mowing and a 12-foot cutting deck.

Despite such speed, neither DewEze model bags clippings, so Russo only uses his MC70 on retention basins, ravines, roadway berms and condominium commons. On finer-cut areas, he prefers the Walker.

A \$6,000 mower, the Walker features a 42-inch cutting deck and 4-mph speed. Like the DewEze, the Walker handles slopes as steep as 30 degrees, although it doesn't allow the operator to maintain an upright position.

Still, the mower features zero-turning-radius capability, making it ideal not only for precision cutting on slopes, but also around foundations, fences and trees.

"The Walker just turns on a dime, and it never deviates from its controls, whether you get on an old one or a new one," Russo said. "You can be pretty comfortable moving around a bird bath or awnings or aluminum-sided houses."

And since the Walker's deck projects further out than any other part of the machine, Russo said, an operator can use it to cut "rubbing tight" along fences or foundations.

"You can just slide the deck right along a fence and never get nervous for a minute that you're going to wind up through it," he said. "And by applying some force, you can just mash off whatever doesn't get under the deck."

Russo said the DewEze and Walker handle every type of tough

(continued on page 50)

When Rick Steinau moved up
to the performance of
TURFLON, his customers
gave him a big thumbs-up.



"TURFLON* herbicides give us about 95% control of problem weeds. The standard three-way products give control in the 80-85% range."

Rick Steinau, president
Greenlon Lawn Care Services
Cincinnati, OH

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Less callbacks.

"We started using TURFLON three years ago," explains Rick Steinau. "TURFLON simply does a better job on the hard-to-control weeds like spurge, oxalis, ground ivy and wild violets. These are the problem weeds that customers usually complain about most. With TURFLON, we've seen a 25% reduction in weed-related callbacks and a 15% drop in cancellations."

More savings.

"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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Difficult Terrains

(continued from page 48)

turf he faces except thick brush or sapling-covered parcels. For such parcels, Russo uses a tractor with brush hogs, rather than risk damaging his more costly equipment.

On all jobs, Russo recommends Mow Deck, a polymer treatment his operators spray daily on their mowers.

The friction-reducing product, which Russo compared to "Pam on a frying pan," eliminates grass buildup under the deck, thus speeding up mower operation and reducing wear and tear.

A 12-ounce can of Mow Deck costs about \$8.95 and treats decks up to 48-inches wide eight times, according to Russo.

CUSTOMER NEEDS. Before Florida operator Mike Guthrie cuts a single inch of problem turf, he sits down with his client to determine what look the customer wants, and whether it's worth the cost and effort.

"It's a question of making sure



Before mowing tricky terrain, such as a wooded area, operators often confer with their clients to determine their exact needs and what equipment will be used.

the client understands what they're asking us to do," said Guthrie, head of maintenance sales and estimates at Orlando's Ground Control Landscaping,

which does \$2.3 million worth of maintenance yearly. "If you're in a good relationship, you can give your professional recommendation and the client will listen to

you."

For instance, when one owner hired Ground Control to maintain a retention basin with a 3-to-1 slope, Guthrie advised against any sort of fine-cut finish, which would have required weekly string trimming.

Instead, he suggested using growth retardants on the slope every eight to 10 weeks, then buzzing it to an acceptable finish using string trimmers four times a year.

"The owners agreed, and the cost effectiveness of the growth retardants saved them money that they put back into landscaping other areas," Guthrie said.

For retention basins needing a more polished appearance, Guthrie uses 36- or 48-inch Bunton walk-behind mowers equipped with German-built JLO engines.

He determines which mower to use by looking at the severity of the slope involved, how firm the soil is and how fine a cut the customer needs.

Wherever soils are too dry or wet to mow without leaving tire

(continued on page 52)



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Its rewards.

"TURFLON did a much better job, particularly on our problem weeds like wild violets, ground ivy and spurge," Bob continues. "Since switching to TURFLON, we've reduced our weed related callbacks and service cancellations by 50% from a year ago."

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Difficult Terrains

(continued from page 50)

or rut marks, Guthrie uses string trimmers. He also often string trims the crown and base of a basin when the customer wants a highly polished look.

Guthrie's workers minimize rut marks by using a different starting point each time they cut a basin — beginning at the bottom one time, the middle another and the top on the third cut.

When finished-cut retention basins have ponds at the center, Guthrie often recommends adding aquatic plantings to cut maintenance costs. Such vegetation, he explained, lets operators maintain a finished look in the basin without mowing or string trimming to the pond's edge.

To cut tight spots — around foundations, fences and trees — Guthrie recommends creating 4- to 30-inch dirt or mulch borders around the obstacles. Doing so lets workers get a finished look by only mowing up to the borders, rather than squeezing their equipment against a fence or tree.

"Defining borders takes what can be an unsightly situation and instead keeps the appearance uniform throughout the property," Guthrie said.

He added that the method gives a lawn a polished look while eliminating the need for string trimming. It also reduces the risk of damage to equipment or the customer's property.

To create the borders, Guthrie's workers use a non-selective herbicide like Roundup® to kill all grass within about four inches of a foundation or fence, or 30 inches of trees.

Operators then line the border with cypress mulch or, less expensively, leave it bare. On subsequent visits, workers apply more Roundup as needed.

SUGGEST CHANGES. Employees at Clarence Davids & Sons of Blue Island, Ill., a Chicago suburb, always take a close look at a client's horticultural practices when hired to mow a tough area.

Company Marketing Agent Mike Davids said the firm, which

did \$5 million in maintenance work last year, frequently suggests changes — such as terracing an especially steep slope — when faced with hard-to-cut areas.

The company sometimes also recommends replacing hard-to-reach turf with ground cover, like Purple Leaf Winter Creeper, which needs only occasional pruning and weeding, rather than mowing.

In ravines, the firm advises adding riprap — three- to four-inch limestone rocks — to improve aesthetics and reduce mowing. Davids explained that with riprap in place, turf doesn't grow in the center of a ravine.

"If you have turf in the center, when it gets wet, then dries out, it tends to get moldy or blackened and unsightly," he said. "But with riprap, when it's dry, the ravine looks OK, and when it's wet it looks OK too."

When changing horticultural practices isn't enough, the company relies on proper tool selection to tackle difficult turf.

On hills, the firm uses 21- or

36-inch self-propelled walk-behind mowers, depending on how steep a slope is and how fine a cut the customer wants. Davids said the 21-inch works better than the 36-inch on steeper slopes and on areas needing a finished look.

Additionally, workers cut at a 45-degree angle rather than straight along a hill, which generates a stripe effect and reduces the risk of mowers tipping over.

In tight spots, the company uses string trimmers, replacing nylon cords with steel blades for thick cover, like cattails.

REDUCE SLIDING. In Denver, Eldon Dyk, vice president of Allen Keesen Landscape Inc., favors direct-drive or double-belted mowers for slope cutting.

"Having a double belt helps the mower go up a hill a tremendous amount, and having a direct-drive lets you just crawl right up it," said Dyk, whose business does \$1.5 million worth of maintenance yearly.

"With a single belt, you just don't have as much surface area

MITE.



on the pulley and the belt slides and slides," he said. "You have to help it along by pushing the mower, but when people do that, there's a risk they'll fall."

At Dyk's firm, workers use a Ferris walk-behind direct-drive mower, Toro 44-inch double-belted walk behind or double-belted Ransomes Bobcat on inclines. The choice depends on the size and steepness of the area that needs cutting, Dyk said.

Larger and steeper parcels rate the Ferris, while other finished areas get cut with a Toro. The firm uses its Bobcat on slopes needing a less fine cut.

For especially steep slopes, Allen Keesen skips mowers altogether, using hand trimmers to eliminate the risk of equipment tipping over. The firm also uses hand trimmers to cut small tight spots, such as grass around a single tree, and employs a 21-inch Ransomes on larger tightly landscaped areas.

Most of the ravines Allen Keesen maintains have riprap, so the operators generally don't need to mow them. Instead, the firm ap-

Special tools, like this sidearm mower, are needed to cut hard-to-reach areas. An operator can be more productive and efficient with the right equipment.



plies Roundup and Surflan as needed, then weed-whacks any remaining turf.

PRICING. When it comes to pricing, Allen Keesen uses a computer that generates costs based on 15 factors, such as equipment speed. Estimators classify mowing jobs by three degrees of difficulty: easy, medium and hard.

Clarence Davids & Sons first decides whether to use a 21-inch, 36-inch or 72-inch mower in a given area, then rates the difficulty of cutting a parcel on a scale of 1 to 5.

The firm also factors crew size into the price, since a larger crew costs less per-man, per-hour than smaller ones.

"We keep up-to-date time studies on how long different types of equipment and crews take to mow an average area," Davids said. "The computer generates costs using man-hour estimates developed during the 40 years we've been in business."

Ground Control's Guthrie uses a simpler formula for pricing.

He picks the equipment he plans to use, determines in percentage terms how much slower than normal the machine will

operate, and charges accordingly.

If a slope takes 30 percent longer to mow than similar flat terrain, Guthrie charges the customer 30 percent more.

Russo considers the cost of special equipment, added hazards his workers face and the chance customers will complain about tire marks and other damage.

He charges about \$5 to \$8.50 per 1,000-square-foot to fine cut tough-terrain areas, compared to about \$3.50 to \$4 for easy access parcels. — Jerry Kronenberg ■

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

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Colorful Landscape Uses of Popular Plant Materials

BEDDING PLANT PRODUCTION has increased almost eight times, an average of 10.7 percent annually, in the past 17 years and it's easy to see why. From transplant until frost, bedding flowers bloom profusely, offering instantly beautiful landscapes.

According to recently released 1989 statistics compiled by the Professional Plant Growers Association, Lansing, Mich., five annuals account for 53 percent of all bedding plants sold. These five top-selling species include geraniums, impatiens, petunias, marigolds and begonias.

Geraniums account for 18.3 percent of all bedding plants produced, impatiens 12.2 percent, petunias 8.6 percent, marigolds 5.9 percent and begonias 8.1 percent.

These five tend to be in high demand because they grow and

bloom prolifically in every climate of the country from spring through fall, even longer in the South, according to Terry Humfeld, executive director of PPGA. In addition, they come in a diverse range of attractive colors, offering variety in plant height and habit.

TOP FIVE BEDDING PLANTS.

Geranium plants are produced two ways: from stem cuttings and seed.

Cutting types are generally taller so they look better in containers. Seed geraniums have a more compact, branching habit, and they are more heat and fade resistant than cutting types making them ideally suited for transplant in beds and borders.

George Lucht of Malmberg's Inc., Brooklyn Center, Minn., said that cascading-type geraniums, although generally used in

hanging baskets, make a good ground cover. They are self-cleaning so spent blooms don't need to be handpicked.

Lucht, who is known for growing geraniums, explained that "geraniums should be in a well-drained location, watered when they start to dry out and receive a 14-14-14 fertilizer. Dried leaves and dead blossoms should be pinched back."

Geraniums massed together in beds and borders should be spaced about 10 inches apart while cascading types should be planted 12 inches apart. They're best used in beds, borders, containers, hanging baskets, ground covers and planters.

Impatiens are known for being prolific bloomers in the shade. Many new varieties also can be grown in the full sun in the North—a plus when mass plantings call for variances in lighting condi-

ORDER EARLY TO ENSURE QUANTITY, QUALITY OF PLANT MATERIALS

WITH EACH YEAR'S NEW INTRODUCTIONS, BEDDING plant varieties become more exciting.

New introductions often offer unique qualities, never before available in a given species. Growers continually strive for greater disease and insect resistance, stress tolerance, height variance, standardized growth habit and new colors or patterns within flowers and leaves.

Many breeders' goals are aimed at developing a complete series. A series is many colors (varieties) all maintaining identical blossom and overall growth habit characteristics of the plant. Each color in a series can be identified by its name.

For example, the 1990 All-American Selections Bedding Plant award winners are two petunias, "Polo Salmon" and "Polo Burgundy Star." "Polo" is the name for the series.

The primary advantage to buying two or more colors of one series is the assurance that the two varieties will perform uniformly.

PLACE YOUR ORDER EARLY. If you are looking for something different, growers can provide excellent suggestions since they are continually in contact with breeding company sales representatives. They have catalogs showing

color pictures and clear descriptions about each variety or series.

If you decide you want specific varieties, the best time to talk to growers is July through September to discuss orders for the following year.

Phil and Dorothy Bartlett, owners of Ocean View Farm, Nantucket, Mass., grow and sell bedding plants to landscape professionals. And like many growers, they order their seed by October.

Landscape professionals seeking standard plant material in quantity should plan ahead if at all possible. Advance notice can make a difference between getting the quantity wanted or not.

Depending on the species, growers need between six weeks and four-and-a-half months to grow bedding plants that are ready for the outdoors.



Greenhouse bedding plant trials.

tions. The key to growing impatiens successfully in full sunlight is maintaining a moist, cool soil.

The height of impatiens depends upon its variety, but they can be grown taller with heavy feeding and watering. If too little fertilizer has been applied, the lower leaves will begin to turn yellow. This can be remedied by applying a 20-20-20 or comparable fertilizer.

Impatiens should be spaced 8 to 12 inches apart based on the size of the variety at maturity. Beds, borders, under trees, planters and hanging baskets represent attractive landscape uses.

Multiflora **petunias** have smaller flowers than grandifloras, but have more blooms providing a more consistent blanket of color.

Petunias should be planted in areas where water will be sporadic since they can grow well under dry conditions. They also tolerate hot weather and can continue to bloom well into the winter in climates where it doesn't freeze.

Faded petunia flowers should be picked off to prevent plants from going to seed and causing the plant to stop blooming before the end of the season.

Petunias perform best when planted 10 to 12 inches apart. Overcrowding these plants tends to make them tall and leggy, rather than compact and stocky. Good growing sites include beds, borders, flower boxes, containers, ground cover and hanging baskets.

Marigolds are classified in three groups: French (short, compact), African or American (tall, large flowers) and triploid (slightly larger height and flower size than French). Because triploids do not set seed, they keep blooming in hot weather.

Late in the growing season, when nights become cooler and

wetter, Botrytis can affect marigolds. The best cure is preventive — pluck spent blooms.

For mass plantings, space French types about six inches apart, African between 12 and 15 inches apart and triploids about 10 inches apart. Marigolds do well

Begonias should be spaced between 7 inches and 9 inches apart, depending on the size of the variety. To maximize a full look in sunny spots, plant begonias closer together than in shaded areas. Begonias make nice flower beds, borders, planters and edgings.

.....

The key to the 1990s design is style, curves or geometric patterns instead of just straight lines.

in beds, borders, backgrounds, edgings, cuts and planters.

Fibrous-rooted **begonias** grow well virtually anywhere in the country in full shade and full sun.

Begonias can be susceptible to disease especially in the South. Bronze-leaved fibrous begonias, however, are less susceptible to diseases than green-leaved varieties. It's wise to transplant begonias early in the growing season so they can become established before it gets hot.

The key to producing lovely beds of begonias in warmer climates is to give them plenty of water. Begonias do best when watered early in the day (overhead watering during the heat of the day can cause the leaves to permanently become spotted). It's best to water with a light trickle irrigation system on a weekly basis vs. using overhead sprinklers.

BEDDING PLANT TRENDS. One trend emerging in the 1990s is the use of one or two weaved colors to form a sophisticated design. If the two colors are of one species, they should definitely be from the same series.

"The key to the 1990s design is style, curves or geometric patterns instead of just straight lines," Humfeld explained.

Gery Lebo, part owner and grower of Quality Greenhouses, a subsidiary of Country Market Nursery, Mechanicsburg, Pa., believes beds of one color can achieve a dramatic effect. Humfeld agrees. "People respond emotionally to a large splash of one or several colors."

For such an effect, "beds should be at least 10 by 50 feet, plus or minus, taking into account how far away the planting is viewed from," Humfeld said.

He added that beds and borders



For a more dramatic effect, notice how the white trailing throughout the bed adds interest and focal point.

with one or two colors of one species are easier to create and maintain. Many annuals lend themselves to such plantings. In fact, all five top bedding plant species make attractive beds designed with one or two colors.

Colors that work best together face opposite each other on a color wheel. For example, yellow and violet or orange and blue work well together.

When using one color in a large open area, there is another point to consider. Dark-colored flowers (such as scarlet begonias or red geraniums), planted at the rear of a landscape, can offer a more interesting focal point than light flowers. However, if the background setting appears dark, then light flowers (such as soft yellow triploid marigolds or white impatiens) provide a better contrast.

Landscapers can create a dramatic effect with the wide range of greens (yellow- to blue-green), in trees, shrubs, ground covers, turfgrasses and even flower leaves. For example, yellow-green leaves look more attractive with

'Judy' is a floribunda geranium having exceptional heat tolerance.



a red-violet than with red or orange, pure red looks best with true green foliage and orange-red flowers look better against a background of blue-green evergreens.

BEFORE BUYING. Start by determining the optimum location for beds and borders. Then determine the size and shape beds and borders should be. Draw a plan on graph paper making sure the measurements are accurate.

Next, determine what species will be planted in the area and how many plants will be required. Triploid marigolds, for example, require 10 square inches (1.4 plants per square foot). If the bed measures 350 square feet, you can

figure that 490 plants will be needed.

Unload plants as quickly as possible. Check for possible damages and to see if you received what you ordered. If there are damages, note the number of plants damaged and the type of damage, and immediately file a claim with your grower.

When unloading, place plants in a protected area until they are to be transplanted — in the shade and away from heavy winds and rain. Bedding plants must also be protected from possible frost.

If the flats feel light, water thoroughly until water runs out the bottom. To avoid stressing bedding plants, water before they begin to wilt. It's best to water in

the morning and again in the early evening if necessary. Use a hose with a water breaker.

John Gaydos, greenhouse manager for Bordine's, Rochester Hills, Mich., determined that in one day, one person can plant about 25 flats. As a result, he makes certain that when sending a crew out to do a job, he sends only the number of flats that can be planted in a day.

Before transplanting, prepare beds and borders to be planted by adding peat to clay or sandy soil. Spread a mix of 10-15-15 or 10-20-10 fertilizer, then till in the fertilizer with the peat and about 5 inches of top soil to help aerate the soil.

For more information on how landscape professionals can use and care for bedding plant annuals, a Professional Guide to Flowering Annuals is available through the Professional Plant Growers Association, P.O. Box 27517, Lansing, Mich. 48909. Each copy is \$2. — Kathy Zar Peppler ■

The author is a horticultural writer based in Toledo, Ohio.

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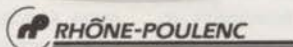
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Ryegrasses, Tall Fescues: Accepted Cool-Season Varieties?

THE FINE LEAF TALL fescues and the perennial ryegrasses are beginning to become more prevalent on home and commercial lawns.

One reason for this is the advent of hydroseeding. Perennial ryegrasses are ideal because they germinate quickly, becoming established before the hydroseeding stabilizing material begins to break down.

Kentucky bluegrasses are not well suited for hydroseeding because they germinate so slowly that the soil stabilizing material often breaks down before the grass germinates to stabilize the soil, resulting in wash outs.

Sometimes a mixture of Kentucky bluegrass and perennial ryegrass is used with the mistaken idea that the Kentucky bluegrass will eventually take over. Sometimes as little as 30 percent perennial ryegrass is used in the seed mix with the assumption that the majority of the stand will be Kentucky bluegrass, or that it will eventually predominate.

However, 30 percent perennial ryegrass in a seed mix with Kentucky bluegrass will result in a turf that is 70 percent to 80 percent perennial ryegrass.

A lot of the increased use of perennial ryegrasses is also the result of dissatisfaction with the



Necrotic ring spot disease in Kentucky bluegrass.



Brown patch disease in perennial ryegrass.

The Kentucky bluegrass also had many insect problems including grubs, sod webworms and chinch bugs. Because of these problems, people developed the notion that any turf species has to be better than Kentucky blue-

tural and biological means of managing necrotic ring spot, summer patch and some of the insect problems have finally been developed.

Kentucky bluegrass should still be the species of choice for the northern areas of the cool-season grass growing region.

PERENNIAL RYEGRASS. The main problem with the perennial ryegrasses is that they have several disease problems including dollar spot, brown patch, *Pythium* blight, crown rust, red thread and *Typhula* blight.

Perennial ryegrass is the turfgrass species most susceptible to *Pythium* blight. It is the second most susceptible species

(after the tall fescues) to brown patch.

In most cool-season grasses, red thread can be managed by applying adequate levels of nitrogen. But the perennial ryegrasses are so susceptible that they require fungicide use for effective red thread management, particularly in the cool weather of the fall.

None of the previously mentioned ryegrass diseases lend themselves readily to cultural or biological management.

Whereas the severity of dollar spot, crown rust and red thread can be reduced by increased nitrogen rates, they still require fungicide applications for acceptable levels of management especially in fall when plant growth begins to slow down.

In the southern areas of the cool-season grass region where *Pythium* blight and brown patch are severe problems, reducing or eliminating nitrogen applications during the warm summer months will reduce the severity of these diseases, but not eliminate them.

Acceptable levels of management will still require fungicides. The severity of *Typhula* blight can also be reduced by avoiding nitrogen fertility in the fall that causes the ryegrass to be in a succulent condition going into the winter. Fungicides are still necessary to prevent severe turf loss in areas of permanent snow cover.

FINE LEAF TALL FESCUES. Fine leaf tall fescue use and acceptance has been much slower. This is unfortunate because it is an ideal turfgrass for the southern areas of the cool-season turfgrass region and for the Kentucky bluegrass/bermudagrass transition zone.

(continued on page 62)

Kentucky bluegrass is still the best species for the northern, cool-season growing region.

disease and insect problems that occurred on the Kentucky bluegrass, particularly the patch diseases necrotic ring spot and summer patch (originally mistakenly called *Fusarium* blight).

grass.

While the dissatisfaction with Kentucky bluegrass is understandable from a homeowner or landscaper's perspective, it's unfortunate because effective cul-

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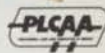
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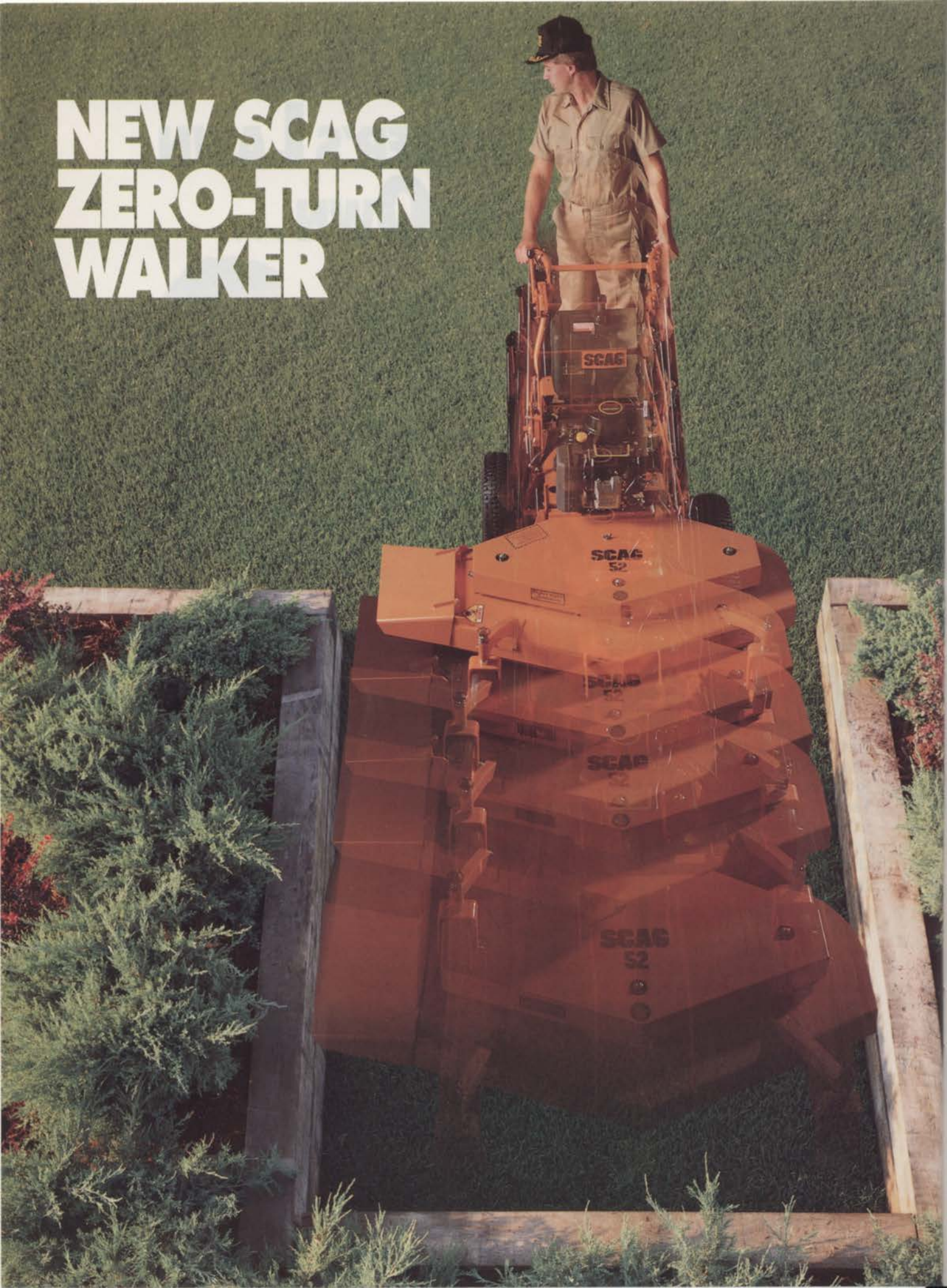


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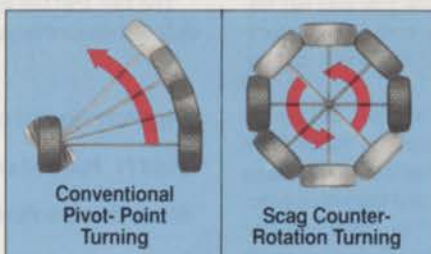
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Cool-Season Diseases

(continued from page 58)

Many agronomists who were educated in the northern areas of the cool-season grass zone became enamored with Kentucky bluegrasses and unsuccessfully tried to adapt them to the warmer area of the cool-season grass region and transition zone.

Also, many northern homeowners wanted to bring the Kentucky bluegrasses with them as they migrated South. They found it hard to get accustomed to the straw-colored appearance of dormant bermudagrass.

To many of these same people, tall fescue was considered a weed, and, in a Kentucky bluegrass turf, it certainly was.

The wide-bladed Kentucky 31 tall fescue cultivar, which was the only commercially available cultivar for many years, did not provide a high quality appearing turf even though these lawns were often the only green lawns in a southern suburb during a hot August.

This may explain part of the



Kentucky bluegrass turf (left), dollar spot on perennial ryegrass (right).

reluctance on the public's part to accept the new fine leaf tall fescues that are now being recommended by agronomists in these regions.

The fine leaf tall fescues do make an excellent home lawn turf in the southern cool-season grass region and transition zone. In these regions, deep root systems make the tall fescues much more drought tolerant than the Kentucky bluegrasses or perennial ryegrasses.

They are also much more heat

tolerant than the other grasses.

The fine leaf tall fescues have only one major disease problem,

August, but fungicide applications are necessary to manage the disease.

The problem is not having any fungicides that provide long term management of brown patch. Daconil 2787 is probably the most effective fungicide for brown patch management, but it requires an application every 10 days. This type of schedule does not fit the normal six-week treatment interval of a typical lawn care company.

A new product called Prostar from NorAm Chemical Company, currently registered only under an experimental use permit, can provide up to four weeks of brown patch management. If

.....

Agronomists became enamored with Kentucky bluegrasses and unsuccessfully tried to adapt them to warmer cool-season regions.

brown patch. The severity of this disease can be reduced by eliminating nitrogen during July and

Prostar finally receives a full registration from the Environ-

(continued on page 64)

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Cool-Season Diseases

(continued from page 62)

mental Protection Agency, it should go a long way toward solving this problem.

INSECT MANAGEMENT. One advantage both perennial ryegrass and fine leaf tall fescues have over Kentucky bluegrass is that many cultivars contain endophytes.

Endophytes are fungi that live intra-cellularly in a host plant in a mutualistic, symbiotic relationship. The plant provides the fungus with nutrition and the fungus, in turn, protects the plant from

foliar insects.

Endophytes protect grass plants from foliar insects by producing a toxic substance that kills insects that ingest it during feeding. It is a non-specific toxin that is fatal to all foliar insects, at least at the current time.

For perennial ryegrass and fine leaf tall fescue, this usually means protection from sod webworms, billbugs, chinch bugs and aphids. The reason it only protects against foliar insects is because endophytes are found in the above-ground portion of the plant — leaves, stems and seeds.

They are not found in the roots

and, therefore, have no effect on grubs.

The tag on the seed bag indicates whether a cultivar contains endophytes and if so, the percentage of the seed that does.

tend to gradually die in the seed over a two-year period, particularly since they are not refrigerated.

The use of perennial ryegrass or fine leaf tall fescues that con-

Fine leaf tall fescues make an excellent home lawn turf in the southern cool-season region.

For best results, 80 percent or more of the seed should contain endophytes.

The seed should be freshly harvested because the endophytes

tain endophytes will biologically manage an important group of turfgrass pests, namely the foliar insects.

This will eliminate the need for insecticide applications, except for the grub problems.

You should consult the turfgrass expert in your area for endophyte containing cultivars of perennial ryegrass or fine leaf tall fescue that are adapted for your area. — J.M. Vargas Jr. ■

The author is a professor, botany and plant pathology, Michigan State University, East Lansing, Mich.



Pythium blight in perennial ryegrass.



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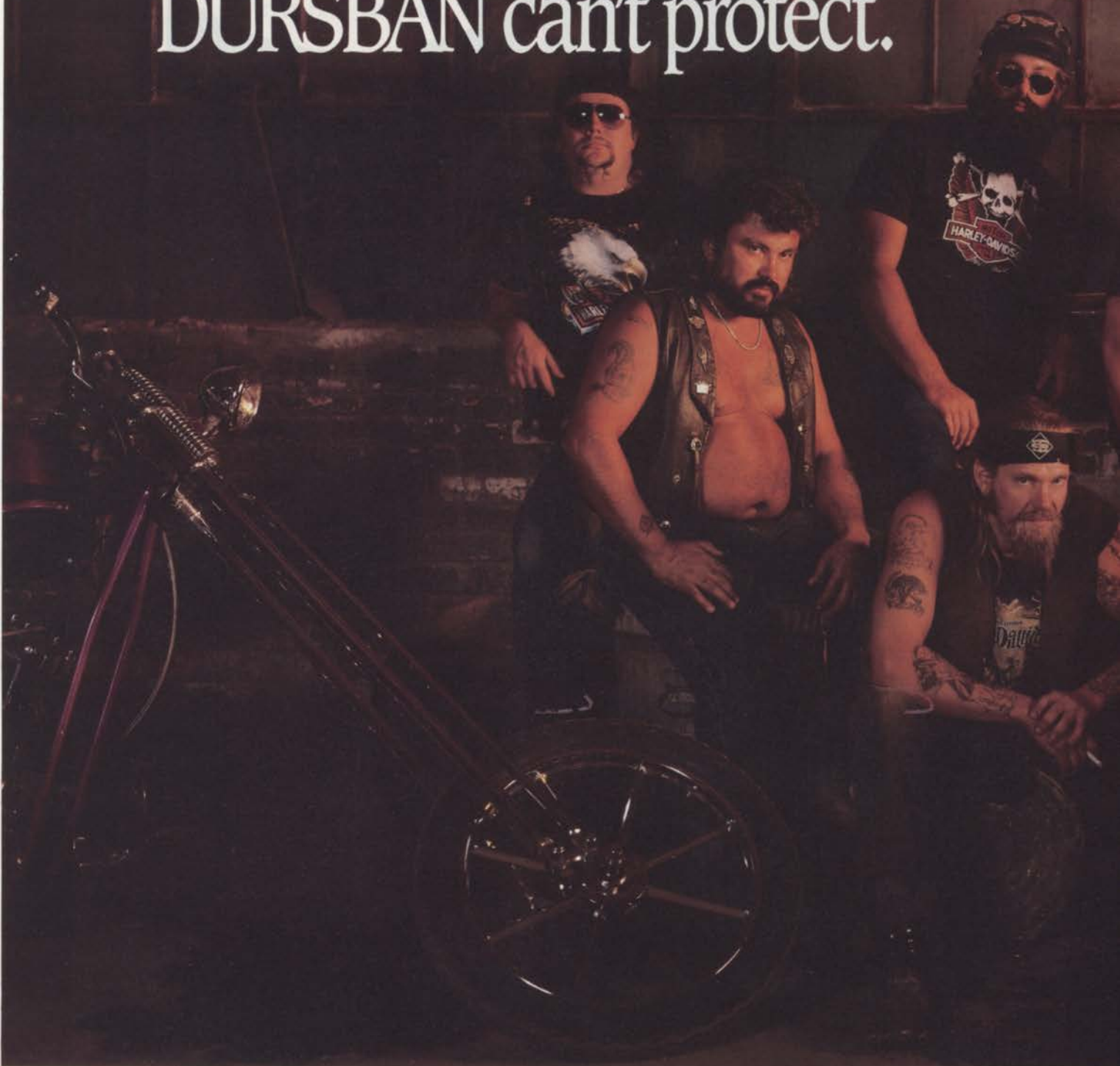
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Initiating IPM Into Your Maintenance Services

AS A LANDSCAPE manager you probably have heard about integrated pest management. You may have a good grasp of the principles of IPM and are convinced of its value in pest management. But being sold on IPM and selling it are two different things.

Recently many landscape maintenance companies have started offering IPM-based maintenance programs to their clients. These programs are an excellent alternative to the use of cover or insurance sprays. Through the use of a system of monitoring visits, cultural and biological control tactics and properly timed pesticide applications, IPM-based programs can reduce pesticide use and still ensure a healthy and attractive landscape.

rally do not fail because of technical reasons. Most companies make an effort to use sound IPM tactics, and technically their programs are a success. The failure comes, however, in the area of marketing and client services.

In this article the development and marketing of an IPM-based pest management program will be discussed, as well as ways to maintain client satisfaction. Three important points to consider when developing an IPM-based landscape maintenance program are included.

REALISTIC EXPECTATIONS. Clients must have realistic expectations of the program. Despite present concerns about pesticides, there are still clients that won't accept anything short of a

the landscape, and the client's objective, a perfect landscape, are different.

To prevent future misunderstandings, the realistic expectations of enrolling in an IPM program must be explained. Make prospective clients aware that certain types of plant injury, such as minor defoliation, does not necessarily decrease a plant's vitality.

Most clients will tolerate minor plant injury if they are assured it will not adversely affect the health of the plant. Clients should expect a healthy landscape. A perfect landscape, however, is not a realistic expectation.

EDUCATION IS KEY. Educating the client is the key to success. In a typical cover or specialty spray program, someone comes out to the client's property and sprays a pesticide on one or more plants. This is a fairly straightforward service in which the client pays for a certain amount of chemical.

An IPM-based program is significantly different. The value of the activities you perform is not immediately apparent. For example, to properly conduct a program you must monitor clients' properties. This means you will be walking through their yards checking the plants for pest

or health problems.

Perhaps you will find nothing that requires treatment during a visit; should clients pay for that visit? They must if you plan to stay in business, but don't be surprised if uninformed clients complain about paying for this service. Comments like "All you did was walk around my yard last week; I'm not paying for that!" can occur if the program is not properly presented.

The best way to explain the value of monitoring is to package your program as plant health care, not pest management. Explain that your program is really a health maintenance organization for their landscape.

Most people are aware of HMOs, perhaps they even belong to one. The premise of an HMO is that regular check-ups (monitoring) will detect health problems before they become too serious. HMOs also encourage preventive care such as regular exercise and a proper diet to prevent or minimize certain diseases.

Most people understand this concept, that a healthy body is more resistant to infection. The same is true for plants. Explain to your prospective client that what you are proposing is an HMO for their landscape. You will provide regular check-ups

Clients should expect a healthy landscape. A perfect landscape, however, is not realistic.

Despite the environmental benefits, however, acceptance by clients has been sporadic. Some companies have enjoyed great success with IPM-based programs while others have experienced only failure. Why the difference?

IPM-based programs gene-

nuclear bomb when it comes to controlling pests on their trees and shrubs.

The indiscriminate use of pesticides to satisfy these clients is not recommended, however, it should be understood that the landscaper's objective, environmentally sound management of

Using a Shigometer to evaluate the vitality of a tree (left); a healthy *fraxinus quadrangulata* (center); an operator discussing findings with a client (right); page 69, checking for pests is important but not the only function of IPM (left); and make clients aware of any structural problems their trees have (right).



(monitoring) and care treatments (cultural, biological and chemical) to maintain and improve the health and appearance of their landscape.

TARGET THE CLIENT. The focus of your program is not the pest or the plants, but the client. The pests and plants are not paying for your program. You can have the finest program around, but if the client is left out, it is going to be an academic success rather than a business one.

In a marketing study I conducted several years ago, I found that people receptive to IPM-based programs were generally concerned about their landscape. They may not have the time or knowledge to care for their landscape, but they are interested. They want to be kept informed.

If they are home during a monitoring visit and want to ask some questions, take the time to talk with them. Don't worry that it will throw you off schedule. A schedule won't be necessary if everyone drops out of the program.

Show your customers what you have found, point out any new plant health concerns and inform them of the success or progress of any past care treatments. If the client is not at home during a monitoring visit, leave a door



While it's important to manage pests, keep in mind that the focus of the program is the client.

hanger so they know you were there. Make sure your telephone number is on the hanger in case they have any questions.

After every monitoring visit, the client should receive an inspection report. The report should explain what you have found: what plants were affected, where those plants were and what is being done about the problem.

For example, in a June or July report you might say the paper birch on the side of the house is maintaining a high level of vitality, hence bronze birch borer pesticide treatments are not necessary. Keep the reports brief, but informative.

Vague reports result in the failure of many programs. Vague reports such as "We found some pests and treated them," are useless. Pest situations with no specific treatment should also be reported. These inspection reports are your primary contact with your clients. Without these reports, they will not know what you are doing.

BILLING. Another important client contact is your billing. There are two common billing methods: Charge a contract price for monitoring with all care treatments billed on an as performed basis, or charge a contract price for the entire package — monitoring and care.

Either will work, however, you may want to start out using the first method. You might tell a prospective client that the monitoring will cost \$200 per year, for example, and for that price their landscape will be inspected six times. Any care treatments you provide will be billed separately, but according to set rates and only with the client's approval.

In other words, if during a monitoring visit you notice a scale infestation you would notify the client of the problem, explain it can be treated with a timely application of oil and the price will be \$30. If they approve it, you return and apply the treatment.

The advantage of this method is that you don't have to estimate the total cost of treating the entire landscape for the year. This is an important advantage, especially

when you first initiate an IPM-based program. It often takes a couple of years of good record keeping before you can predict what problems may

occur in a particular landscape and what it will cost to treat them. While good for the beginner, there are two primary disadvantages to using this method. First, clients may be leery of the possibility of extra charges since care treatments may cost more than they can afford.

Second, this method is not efficient. First, you identify the problem, then you get the client's approval for treatment and then you go back to provide the treatment. You end up making two visits for something you might be able to take care of in one.

In addition, the delay while getting approval might make the treatment ineffective. For example, if it takes too long to obtain the client's approval in the scale problem mentioned earlier, it might be too late for effective control with oil.

In time you'll find that the second method is best for both you and your clients. A contract price for the entire program enables the client to budget the expense easier. For the client there is a greater peace of mind in knowing that it is going to cost \$400 — no less and no more — to manage the health of their landscape in one year.

It's also more efficient for the landscaper — no longer do you need client approval before implementing treatments. If something can be taken care of during a monitoring visit you do it.

As in the first case, there are disadvantages to this method. You



have to be clear in defining what services and treatments are included in the price. Certainly the price should include monitoring and any pesticides, but what about fertilizing and pruning? These are two critical treatments for improving the vitality of trees and shrubs. If you keep the plants healthy, there will be fewer pest problems that require pesticide treatments.

It's recommended that you include fertilizing in your service price. With a little practice, you can quickly estimate the fertilizing cost for a landscape, particularly since it's a treatment that does not require a lot of equipment. Pruning is another matter, however.

For many mature landscapes, the initial pruning cost can easily exceed the price of the rest of the program. As a result, you may want to leave out pruning from your contract price.

Instead, tell your clients that in the inspection reports you will prioritize their pruning needs and provide an estimate to do the work. You may want pruning recommendations to be the focus of your

final inspection report. That way the pruning can be spread out during the winter months.

The main disadvantage of the second billing method is that you have to be good at estimating your costs for the year. To make an ac-

curate estimate, use the key plant concept: Certain plants within a geographical area are going to have most of the pest problems.

curate estimate, use the key plant concept: Certain plants within a geographical area are going to have most of the pest problems.

In the upper Midwest, for example, honeysuckle, birch and crabapple can occupy a lot of monitoring time and require treatments for a multitude of pest- and site-related problems. If a property contains these plants, budget extra visits to provide these treatments. Before starting, formulate a list of key plants in your area and the cost of treating each plant.

MONITORING SCHEDULES. Regardless of the billing method you use, you'll have to develop a monitoring schedule. You need to assure the client that the contract price includes a minimal number of monitoring visits.

Most programs provide between six and 12 monitoring visits

.....

Don't be too discouraged if you only have a few clients the first year or two. Actually, that's good.

a season. The number generally depends on the length of the growing season. Plan your first visit just prior to bud-break and your last after the first hard frost. For example, if your first visit falls in April and the last in October, monitoring visits total seven.

You don't have to visit the property exactly once a month. Most pest problems occur in the spring and early summer so you may find that your visits are timed three weeks apart at the beginning of the season. When fewer problems occur, however, the visits may be every five weeks.

Remember, these are monitor-

ing visits. You'll probably be on the property more times than this since not all care treatments can be scheduled during a monitoring visit. Certain diseases may require weekly fungicide applications in the spring, for example. But try to anticipate what problems may occur during a monitoring visit and what appropriate treatments can be provided. Anytime you can save a trip, it saves you money.

This advice should be useful in developing your individual program. Don't be too discouraged if you only have a few clients the first year or two. Actually that's good. You can spend the time learning the trade and refining your procedures.

It may take three or four years before you have a large client base. Stay with it, learn from your mistakes and remember you are providing a much needed and important service for your clients and the community. — John Ball ■

The author is manager/tree care and landscaping for Arrowhead Tree Service, Duluth, Minn.

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RANSOMES

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SURVIVING A VISIT FROM THE INTERNAL REVENUE SERVICE

WITH NEARLY ONE HUNDRED MILLION tax returns coming in annually, it's no wonder the Internal Revenue Service audits only a small percentage of them each year. However, if the IRS comes knocking at your door, here are some facts on tax returns that are most likely to come under IRS scrutiny, according to IDS Tax Services, a division of IDS Financial Services Inc.

First, there's the random audit from which no taxpayer is immune. These returns are computer selected by Social Security numbers to generate a statistically valid random sampling. The statistics are then used to update a computer program that kicks out the larger number of returns that will be audited.

Based on the statistics, the IRS determines an average score for tax returns. Returns that deviate too far from the average, either too high or too low, have

an increased chance of being audited.

Generally, as the complexity of your tax return increases, so do your chances of being audited. For instance, income from several different sources, tax-sheltered investments or an error may trigger an audit notice.

Some audits are conducted by mail. In that case, all you'll need to do is mail whatever records are requested to the IRS. If you're scheduled to meet with an IRS agent, you can act on your own behalf or be represented by an attorney, a CPA or a tax preparer. It's wise to have someone along who can speak the same language as the tax agent.

Some suggestions for relieving tension when the IRS comes knocking at your door:

- Keep good records. The only defense is good offense. Keeping good tax records can better your chances of clearing up any disagreements or misunderstandings on your tax return. Hang onto receipts for

at least three years after the date you file your return because the IRS can initiate an audit within three years from the date of the original return.

- Don't volunteer information that isn't asked for. Unless you want the auditor to broaden the investigation, do not volunteer any extra information or bring any extra records.

- Voice your disagreements. If your judgment on the validity of a deduction seems right, you do not have to accept the auditor's judgment. Request an appeal on the controversial item, read some more on the topic and return in a few weeks to present your arguments.

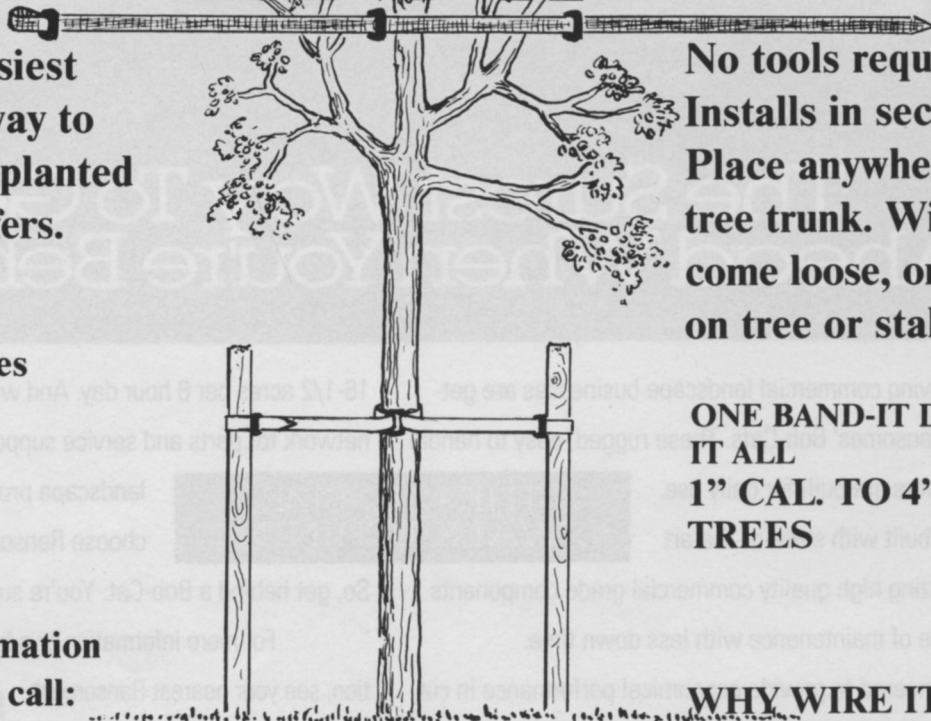
For a nominal fee you can further appeal an issue to the U.S. Tax Court, which is similar to a small claims court. The court's decision on your case is legally binding for you, but does not set a precedent for all other taxpayers. ■

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PEOPLE

JERRY BACH IS NOW SELLING grass seed for Farmers Marketing Corp. His territory will be the state of Arizona.

Bach previously worked for LESCO where he consistently ranked as one of the company's top sales performers. He will be responsible for helping to introduce and promote the newly available NuMex Sahara as well as testing other material from the company's turf breeding program.

Atochem North America Inc. has named **William David Smith** regional sales supervisor for the Agchem division.

With the company since 1983, Smith was a sales representative covering Iowa, Missouri and Illinois.

Also in the Agchem division, **Douglas Edwin Green** has

been added to the sales staff. He is responsible for sales of agricultural chemicals in Iowa, Missouri and southern Illinois.

Mori Hayashi is now president of Ku-

bota Credit Corp. and vice president of Kubota Tractor Corp. overseeing finance, accounting, administration and information systems. ■

The American Sod Producers Association has awarded grants totaling almost \$20,000 to six university researchers. The group's research committee reviewed 23 projects from 21 researchers requesting \$216,800 before arriving at its decisions.

Grants for the 1989-90 year go to:

James Goately Jr., Mississippi State University for "The Influence of Fall Fertilization on the Physiology, Turf Quality and Winter Hardiness of Bermudagrass."

Anthony Koski, Colorado State University for "Influence

of a Soil-Incorporated Water-Absorbent Gel on Irrigation Requirements of Transplanted Sod."

Harry Niemczyk, The Ohio State University for "Fate and Vertical Mobility of Insecticides and Herbicides Applied to Turfgrass."

Richard Schmidt, Virginia Polytechnic Institute and State University for "Bioassay Development to Measure Activity of Biostimulants Used on Turf."

Tom Watschke, The Pennsylvania State University for "Polyacrylamides for Turf."

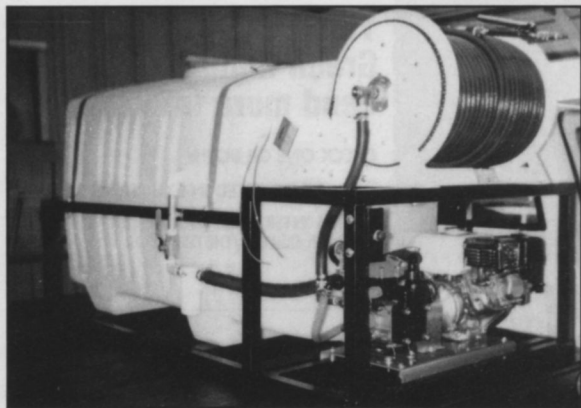
Henry Wilkinson, Univer-

sity of Illinois for "An Integrated Biological Control Program to Reduce Fungicides Used for the Control of Lawn Diseases."

Funding for the ASPA research grants comes from the organization's general revenues and a \$5,000 contribution received from the Ciba-Geigy Turf and Ornamental Group.

ASPA is an international non-profit trade association representing the cultivated turfgrass sod production industry with members across the United States and Canada, as well as in 16 additional countries.

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FOCUS ON: NEW EQUIPMENT

IMPROVEMENTS HAVE BEEN MADE by **The Toro Co.** in its ProLine mowers that will help increase ease of operation and performance. New features include a 33 percent larger fuel tank, self-propelling system for longer life and Vac-U-Power blade for improved bagging.

In tests with commercial cutters, the new self-propelling system lasted three times longer than standard systems. The redesigned transmission includes new needle bearings with grease seals on the output shaft for increased durability.

The transmission's center pull engagement allows for equal load on bearings instead of loading on one side. The reversed gear sequence has a third gear in the center to match up with the center pull engagement allowing for equal load on the output shaft.

Also included in the self-propelling system are plastic double seal wheel covers and sealed pivot arms to keep out sand and debris.

Circle 127 on reader service card

A 72-INCH TACTICAL MOWER IS THE latest addition to **National Mower Co.**'s line of triplex reel mowers. It's designed for use on athletic fields, parks and general landscapes.

It disperses grass cuttings in a wide swath using less power than rotary mowers. The model allows close trimming around trees and shrubs with no scalping. With a 4-speed gear box and a 9-h.p. Kawasaki 4-cycle engine, the mower makes short work of important lawn grooming tasks.

Circle 128 on reader service card



THE SELF-PROPELLED MODEL 524-100 seeder from **Jacobsen** can be used to overseed existing lawns, fill bare spots, repair damaged turf or plant new seed for a lawn.

The new model seeds below the soil surface for a germination rate three times better than broadcast methods, according to the company. A built-in floating action allows it to follow ground contours for even planting, while a handle-mounted lever controls planting depth from zero to two inches below ground level.

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AVAILABLE FROM **SALSCO** IS AN E-Z Curber ideal for small curbing jobs and patching.

Weighing only 112 pounds, it can easily be transported to and from job sites. Simple to set up and operate, it installs straight and curved curbing. The machine is propelled by raising and pressing down on the pump handle.

Because of the compact size (48-inches by 23-inches), it can easily work in tight

areas. It's designed for curbing driveways, parking lots and around planted areas. It will also perform patching jobs resulting from snow plows and general use.

Circle 130 on reader service card

TRUE TEMPER'S CYCLONE® PUSH broadcast spreaders, models CB3000 and CB4000, are durable and have features that increase ease-of-use and productivity.

Among the key features are dual ground props for added stability, handle-mounted on/off control and a hopper screen that breaks up clumps to ensure a consistent material flow.



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The CM224 is powered by a 22-h.p. diesel engine while the CM274 has a 27-h.p. engine. Both are available with 60-



inch mower decks, snow throwers, snow blades and rotary broom attachments for year-round work.

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Circle 132 on reader service card

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Circle 133 on reader service card

AN ATTACHMENT FOR ENCORE'S Pro Power-Thatch is now available. Cutting blades adjust to 3½ inches in depth, and from 1½ inches to 2 inches in width. Blades are 0.06 high carbon tempered steel.

The dethatcher easily cuts a 20 1/4- to 23 1/8-inch path through dead grass. Tough on thatch, it features a single action height adjustment along with 28 self-cleaning, flail-type fingers and minimal vibration. Power is provided by a 5-h.p. Briggs & Stratton engine.

Additional features include a dead-man clutch for positive belt disengagement,



collapsible handles for easy transporting and heavy-duty wheels with sealed ball bearings and semi-pneumatic tires.

Circle 134 on reader service card

VERTI-DRAIN INTRODUCES A walk-behind aerator called the Pedestrian. The model incorporates the company's patented deep-tine soil shattering feature into a compact and easy-to-use machine.

The machine was successfully test marketed in Europe. Test results show that the Verti-Drain aeration method pro-

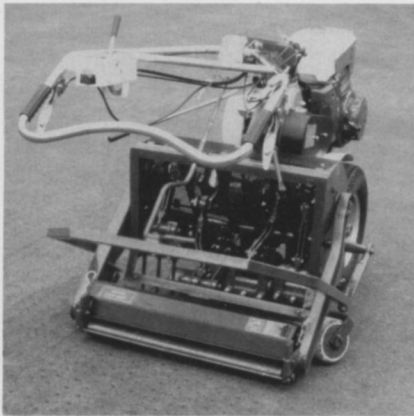
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duced better turf with deeper rooting grasses and improved overall soil drainage.

The aerator is powered by a 7-h.p. Kubota power unit and operates at a comfortably slow walking pace of 0.8 miles per hour. It's working width is 24 inches which provides easy access to hard to reach turf in lawns and sports fields.

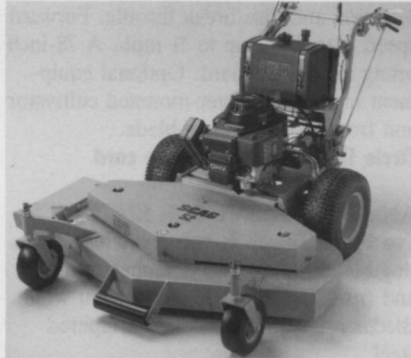
Circle 135 on reader service card

JUST A SQUEEZE OF THE CONTROL handles is all that's needed to move from forward to neutral to reverse with the new zero-turn walker from Scag Power Equipment.

With independent drive control of each

wheel, one wheel rotates forward and one in reverse for true zero-radius turning capability. Counter-rotation turning also means tight turns can be made with no grass scuffing. Hillside cutting is also controlled, and the drive system provides a positive reverse for backing out of tight spots or up inclines.

The cast-iron hydro drive system uses



two heavy-duty White motors along with two Sundstrum pumps, components which are engineered to last the life of the machine.

In addition, each component can be serviced with a minimum of labor time and parts cost.

Circle 136 on reader service card

RANSOMES HAS ADDED THE TURF-trak System to its line of turf products. The line offers two four-wheel drive pow-



er units with engine options ranging from 16.5 h.p. to 24 h.p.

More than 12 optional attachments are available including a mower deck, snow thrower, power broom and stump cutter.

Circle 137 on reader service card

THE NEW BROUWER VAC 138 IS A light, compact and maneuverable unit, with a "small tractor" requirement designed for fast clean up of leaves, grass clippings and litter.

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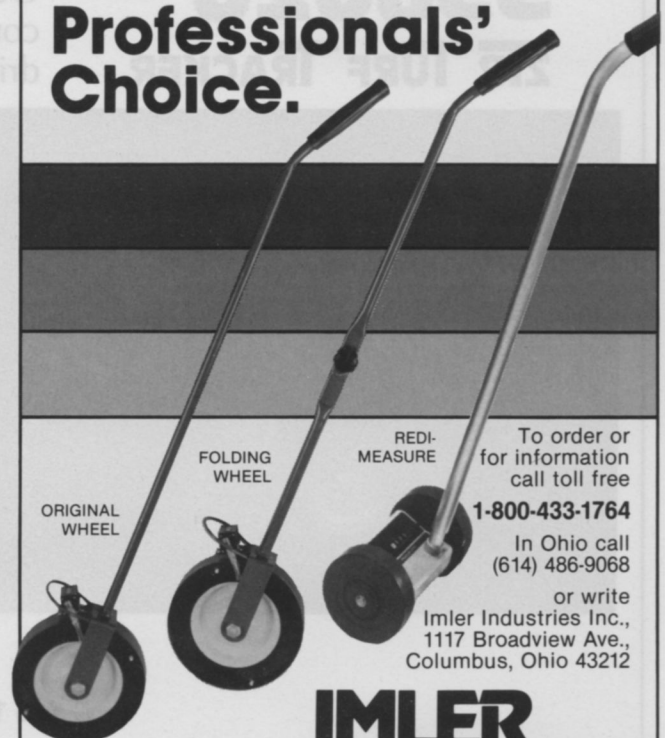
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CALENDAR

APRIL 26-29

11th Annual Menninger Sunbelt Tree Conference, Holiday Inn at Sabal Park, Tampa, Fla. Contact: Menninger Sunbelt Tree Conference, P.O. Box 6524, Clearwater, Fla. 34618; 813/446-3356.

APRIL 29-MAY 2

Chemical Specialties Manufacturers Association 1990 Mid-Year Meeting, Chicago, Ill. Contact: CSMA member services, 1913 I St. NW, Washington, D.C. 20006; 202/872-8110.

MAY 16

North Carolina Turf and Landscape Field Day, North Carolina State University Turf Field Center, Raleigh, N.C. Contact: Joe DiPaolo, P.O. Box 7620, NCSU, Raleigh, N.C. 27695-7620; 919/737-2657.

JUNE 7-9

Florida Nurserymen & Growers Association Annual Meeting, Boca Raton Club, Boca Raton, Fla. Contact: Earl Wells, executive vice president, 5401 Kirkman Rd., Suite 650, Orlando, Fla. 32819; 407/345-8137.

JUNE 8-9

The Playground Design and Safety Symposium, Chicago, Ill. Contact: National Institute, P.O. Box 1936, Appleton, Wis. 54913; 414/733-2301.

JUNE 7-15

Association of Official Seed Analysts/Society of Commercial Seed Technologists Annual Meeting, Holiday Inn, Annapolis, Md. Contact: Maryland Department of Agriculture Turf and Seed Section, 50 Harry S. Truman Parkway, Annapolis, Md. 21401; 301/841-5960.

JUNE 20

Fifth Annual Midwest Sports Turf Institute, College of DuPage, Glen Ellyn, Ill. Contact: The Sports Turf Manager's Association, 400 N. Mountain Ave., Suite 301, Upland, Calif. 91786; 714/981-9199.

JUNE 26

The Lawn Institute Annual Meeting, Hyatt Regency Grand Cypress, Orlando, Fla. Contact: Eliot Roberts, executive director, P.O. Box 108, Pleasant Hill, Tenn. 38578-0108; 615/277-3722.

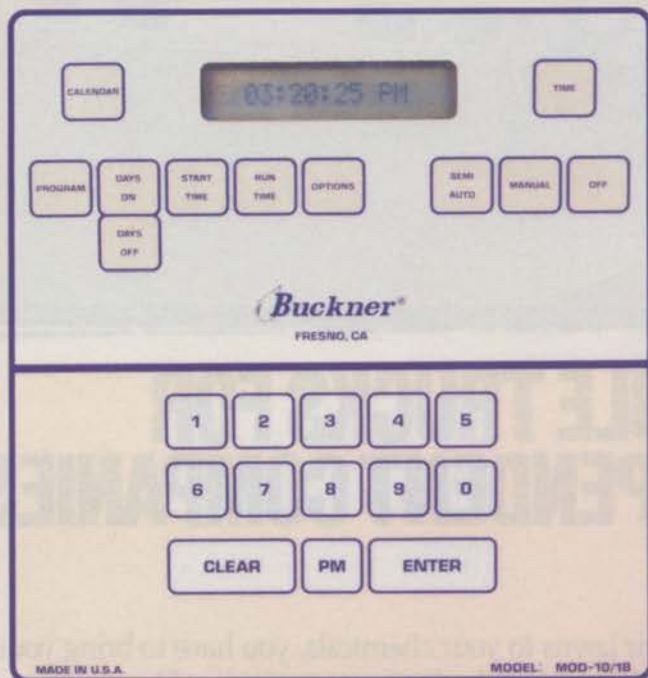
AUG. 12-15

CONSERV 90, National Conference and Exposition Offering Water Supply Solutions, Phoenix Civic Plaza, Phoenix, Ariz. Contact: National Water Well Association, 6375 Riverside Dr., Dublin, Ohio 43017; 614/761-1711.

SEPT. 30-OCT. 3

Florida Turfgrass Association Annual Conference and Show, Orange County Convention Center, Orlando, Fla. Contact: FTA, 302 S. Graham Ave., Orlando, Fla., 32803-6332; 407/898-6721.

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Circle 13 on reader service card

2,4-D

(continued from page 31)

proper precautions are taken, risks are substantially lowered."

FUTURE OF 2,4-D. Zahm said the results of the ChemLawn exposure studies — about two years away — will tell the best story.

"Initial occupation records seem to suggest protection may be enough, and it's certainly a cost benefit for farmers," she said. "But best exposure levels won't be known until ChemLawn results are available."

Before more studies can be conducted, the most accurate methodology must be determined.

"We wouldn't want to start anything new until we know the best method," Zahm said.

The controversy will, however, continue simply because one link has been established, and the NCI has seen some evidence in the Nebraska study.

"Certainly we recognize public concerns about the product and we want, as our users do, to have a safe and effective product out there, and I think at this point that we do," Hamlin said. "Certainly, further scientific research will continue and we support that. Over time, I'm

sure these controversies will be resolved."

Dahlin, however, thinks significant changes are in store.

"The long-term picture looks pretty bleak 10 years from now," he said. "We don't have a feel whether it's going to be banned or restricted, but the way we use it is definitely going to change."

Dahlin compares the 2,4-D controversy to that of chlordane, a popular termiticide voluntarily withdrawn from the U.S. market by Velsicol Chemical Corp. after coming under EPA scrutiny.

"All it takes is a vocal minority and eventually 2,4-D and all phenoxyes will be in the same boat," he said.

One of the industry's main concerns is that continued use of 2,4-D has become a political issue.

"We don't really know what we're facing when we're dealing with one's motives not necessarily driven by what will best benefit society," said Russell Frith, president of Lawn Doctor, Matawan, N.J.

"It's a political issue, not a safety issue. The EPA has looked at this thing every which way but loose. The overwhelming evidence says there is virtually no risk."

Derrick shares the same frustrations.

"There's no evidence that 2,4-D is a culprit of anything," he said. "It's the kind of product we want to use and people

want on their lawns."

Despite continued 2,4-D support, DowElanco recently released Confront, a true broad-spectrum, broadleaf herbicide containing no 2,4-D or phenoxy herbicides. Confront research indicates the product is extremely active in turf at low rates.

The product was developed in part from industry confusion and concern over 2,4-D. DowElanco has been committed to defending the use of 2,4-D in the lawn maintenance industry, but wanted to offer an alternative for use in issue-sensitive areas.

"We're still committed to 2,4-D, but we believe to be a good industry supplier, we need to provide a product choice," said Rob Peterson, DowElanco product marketing manager. "We want to make sure our customers are comfortable with an alternative if they need one."

Confront contains triclopyr/clopyralid and is said to control annual and perennial broadleaf weeds in cool-season turfgrasses.

He added the company has received a good response to the new product.

"We were relatively surprised at the level of interest in a year with no major controversies," he said. — *Cindy Code* ■

The author is Editor of Lawn and Landscape Maintenance magazine.

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New Equipment

(continued from page 36)

then the dealers will fall into line."

Another necessary aspect of new product marketing, Raney said, "is getting your equipment exposure at trade shows. Excel takes its products to about 20 to 30 shows per year, everything from national shows to state fairs. It's incredibly expensive, but it's expected if your company wants to be a player in the market."

After two to three years of development, and the expenditure of perhaps hundreds of thousands of dollars, if the product takes off, the manufacturer's job still isn't finished, Hammell said.

"Our company has a follow-up program that includes surveying the first 300 to 400 units in the field to see how they're working. We also have a service hotline for dealers — direct to the plant — that alerts us to any 'bugs' that might need working out."

Through such follow-up, continued Raney, "a manufacturer identifies improvements, refinements and changes that can or need to be made in the product. So in essence, soon after a product hits the market, the development cycle starts all over again." — *Mark Ward*

The author is a free-lance writer based in Schroon Lake, N.Y.

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