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Growth for Four
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*Breaking into
the Parks Market*

*Cooling Effects of
the Large*

*Is Our Sports Turf
Holding Up?*

*Warm-Season
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FORMERLY ALA MAGAZINE

Cover photo by Jim Karageorge
San Francisco, Calif.

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EDITOR'S FOCUS

IF YOU SPEND ANY TIME READING articles from various newspapers, you can discover some interesting as well as enraging stories about the lawn and landscape maintenance industry. Following are several clippings from across the country.

A new fertilizer is on the market in the small town of Gold Hill, Ore. Apparently the mayor of this southwest Oregon town, Jay DeYoe, is selling packages of guano to help fund the city's police force.

This guano, or bat manure to those not familiar, is collected, cleaned and sold as fertilizer. DeYoe first screens the brown, gritty product for bones, then zaps it in a microwave before bagging it.

DeYoe printed labels with a bat silhouette and the warning, "For external use only." He sells eight ounces of guano for \$5 and one ounce for \$1. The proceeds will help outfit the town's six volunteer reserve police officers. Gold Hill, a town of 956 residents, can only afford to pay one police officer.

If you're interested in purchasing some guano or helping the boys in blue, send your order to P.O. Box 308, Gold Hill, Ore. 97525.

On a more serious note, the Poconos and Indiana Township, Pa., are experiencing epidemic proportions of the gypsy moth.

"It's like the invasion of the killer tomatoes," said Robert Uguccioni, executive director of the Pocono Mountains Vacation Bureau. "You can actually hear them at night, crunching. The trees look like a forest fire went through."

Apparently the gypsy moth, on a population boom, have made themselves at home on the thousands of acres of oaks in this resort area. Not only do the pests defoliate trees, but the unwanted critters, in the 2- to 3-inch caterpillar stage, are just plain ugly.

The gypsy moths are said to give even the most outdoorsy person "entophobia."

Near Pittsburgh, the moths are said to hang like fuzzy black tinsel from trees.

"They're everywhere, from toilets to patio furniture, turning areas all around Pittsburgh into an Indiana Jones nightmare," said an area resident. "It's really like a grade B horror movie."

To fight back, towns in the Pittsburgh area have appointed gypsy moth coordinators, gypsy moth hotlines and gypsy



moth newsletters. There's even a gypsy moth tune titled, "Inch Along Song," published by the American Forestry Association.

While the bugs are a nuisance, they're generally not dangerous although some people might experience a rash if they come in contact with the caterpillars' hairs.

Cities here have spent millions of dollars trying to eliminate the pest, but the moths are still expected to strip more than 1 million acres of trees this year.

And from the "We don't get any respect department," a column in the Sacramento, Calif., *News & Review* titled "Lawns R Us" bemoaned the billions of dollars spent annually on lawn care.

"Lawn grass, in general, is a weak, utterly useless variety of plant developed in sterile laboratories for color and cutability," wrote Todd Walton, an area novelist. "It is an organism entirely dependent on copious amounts of fertilizer, herbicides and constant watering. Left unattended for a few weeks, stronger plants will invade a lawn and overwhelm it. Or it will simply die."

Walton said he isn't advocating the end of lawns, but offered a few suggestions for those spending time on their yards: "Don't worry so much about what your neighbors think of your long lawn hair. Be true to your self and not to them." and "Meditate on the time, energy and money you and your friends spend on our lawns and consider where it all might be better spent."

Walton apparently doesn't know a good thing when he sees it. — *Cindy Code*

Cindy Code
Editor

David Westrick
Assistant Editor

Charlotte Goerss
Art Director

Helen Duerr
Assistant Art Director

Tracy Green
Graphic Assistant

Jami Childs
Production Manager

Tracy Brubaker
Production Assistant

Richard J.W. Foster
President

Maureen Mertz
Publisher

Arnie Rosenberg
Vice President/Editorial

Christopher W. Foster
Business Manager

Rosalie Slusher
Circulation Manager

Michelle Mindell
Research Assistant

Maureen Mertz
National Sales
42480 Park Ridge Road
Novi, Michigan 48375
313/348-9636
Fax: 313/348-3719

ADVISORY BOARD

Karl Danneberger
Tom Garber
Des Rice
Joe Vargas
Patricia Vittum
Richard White

EDITORIAL OFFICES

4012 Bridge Avenue
Cleveland, Ohio 44113
Phone: 216/961-4130
Fax: 216/961-0364

Subscriptions and Classifieds:
216/961-4130



CHEMLAWN PAYS \$100,000 TO SETTLE ADVERTISING SUIT

AFTER MORE THAN THREE YEARS of dispute, ChemLawn Services Corp. has agreed to pay \$100,000 settling a New York state lawsuit accusing it of false advertising.

ChemLawn, based in Columbus, Ohio, admitted no wrongdoing, but accepted the settlement and agreed to present a copy

of the decree to any New York customer who asks for it.

"We made an agreement to disagree," said Deb Strohmaier, public relations manager. "We want to put it behind us and focus on the future."

The 1988 lawsuit, preceded by a year of debate, stems from New York Attorney General Robert Abrams' claim that ChemLawn provided false and misleading information concerning pesticide safety to

its customers.

Specifically disputed in ChemLawn advertising were phrases such as pesticides "are safe and free from risk of harm," "are safe or safer than use of common household products such as baby aspirin or coffee," and "do not cause harmful effects to adults or children."

The brochures in question were circulated between 1985 and 1987, but have not been used in New York since 1988.

Strohmaier said ChemLawn stands behind the information presented in its brochures which were provided to customers in response to their health, safety and environmental questions.

ChemLawn serves about 60,000 in the New York area, but the settlement is not expected to have an adverse affect on business.

RINGER FERTILIZERS RETURN TO CANADIAN MARKET

RINGER NATURAL ORGANIC commercial turf and horticultural fertilizers are once again available in Canada.

To meet Canadian packaging and label requirements, the products were taken off the market

for more than a year, according to Scott Boutilier, Ringer commercial division director. The product itself remains unchanged.

Ringer's commercial line includes Turf 10-2-6 for general

turf applications.

The firm worked closely with Ag Canada on product claims appearing on packaging. Boutilier said the Canadian market represents a significant customer base for Ringer.

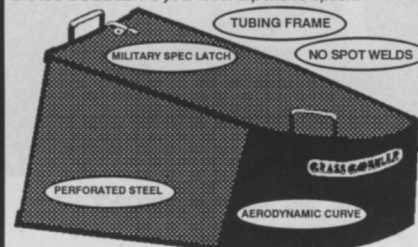
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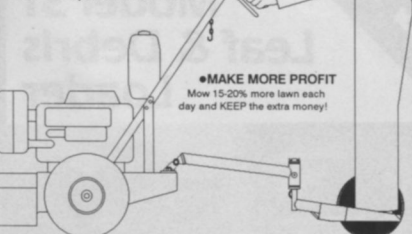
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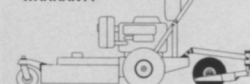
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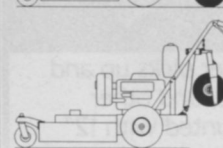


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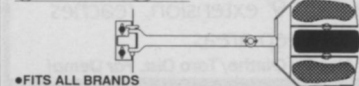
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NO EXTRA ROOM NEEDED ON TRUCK...1-2-3!



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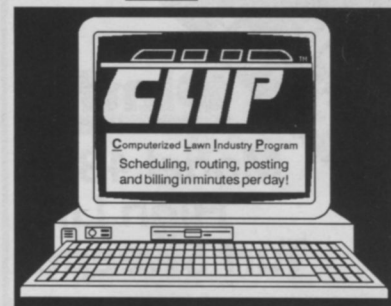
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ChemLawn is now poised to set an industry standard for advertising. It has submitted ad guidelines to the U.S. Environmental Protection Agency and the Federal Trade Commission. It also plans to introduce the guidelines to the Professional Lawn Care Association of America with the intent to encourage member companies to adopt them.

CLASSEN SELLS AERATORS TO JACOBSEN; NOW LOOKS TO FUTURE

Classen Manufacturing, Norfolk, Neb., recently sold its line of aerators to Jacobsen, Division of Textron.

Jacobsen will market the six aerator models along with its existing aerator line, according to Jim Byrnes, advertising manager. Classen's smaller aerators are designed to serve the commercial landscape market, while Jacobsen's are generally used on larger turf areas.

The newly purchased aerators were temporarily taken off the market pending engineering revisions, Byrnes said. Both lines of aerators will be manufactured in Norfolk, Neb., and at Jacobsen manufacturing sites.

Tom Classen said Classen will come back with a new product line for turf.

INCREASED COMMERCIAL SALES EXPECTED TO BOLSTER CHEMLAWN

A recent investor study on Ecolab Inc. reports that its stock has lagged in the market since acquiring ChemLawn in 1987.

ChemLawn, a wholly owned subsidiary of Ecolab, has struggled to maintain its customer base in recent years. But strong growth is expected in its commercial division according to The First Boston Corp., author of the report.

Peak profitability came from ChemLawn in 1984 when sales reached \$292 million with an operating profit of \$27 million. Sales increased in 1989 by 5 percent, but it came through price increases and expansion of commercial services.

Sales to the commercial market represented 10 percent of ChemLawn's 1989 \$395 million total sales.

Although the report questions Ecolab's ability to turn ChemLawn around, Ecolab has no plans to give up on the lawn care firm, according to Bruce Bentcover, Ecolab vice president/treasurer.

"We're in a refocusing and rebuilding program. There are costs involved, but we're working hard to implement our strategies," Bentcover said.

Bentcover would not reveal Ecolab's

timetable for turning ChemLawn around, but said the firm would continue to explore the commercial lawn care market.

NEW SEATBELT PROPOSAL WOULD STRAP IN WORKERS ON THE JOB

The U.S. Labor Department recently announced a proposal requiring the use of safety belts in vehicles used on the job.

If instituted, the plan would force employers to require all workers to buckle safety belts in cars and trucks equipped with belts. The rules would be enforced by the Occupational Safety and Health Administration.

Labor Secretary Elizabeth Dole is expected to use the plan as a way to promote transportation-related safety. It was Dole, as transportation secretary, who introduced rules that led to widespread state laws requiring the use of safety belts.

OSHA officials and Dole said motor vehicle accidents are the largest single cause of workplace fatalities, accounting for 36.5 percent of occupational deaths, with about 2,100 fatalities and 91,000 injuries a year. The rule will save more lives than all other OSHA safety rules issued over the past decade, they said. ■

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"Surflan also took care of our oxalis and chickweed. And many other problem weeds, too. For almost eight months."

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Cynthia Harper
Color Burst, Atlanta, Ga.

Ritz-Carlton, Buckhead
Atlanta, Georgia



ASSOCIATION NEWS

THE PROFESSIONAL LAWN CARE Association of America is sponsoring a national public awareness campaign to encourage the recycling of grass clippings. The campaign — "GrassCycling: Today's Turf, Tomorrow's Earth" — was designed to help eliminate tons of grass clippings that are now taking up valuable space in the country's landfills.

The campaign includes the development of a community action program designed specifically for municipal governments, cooperative extension agents, lawn maintenance professionals and other groups dealing with landfill problems.

The program includes guidelines for mowing, watering and fertilizing, along with strat-

gies to promote participation and support.

The community action program is being adapted from the "Don't Bag It" plan developed in 1989 by Bill Knoop, turf-grass specialist, Texas A&M University. Knoop's pilot program, conducted by Fort Worth Clean Air Inc., won the 1989 national Keep America Beautiful award in the local government category.

Lawn and landscape maintenance operators interested in the benefits of recycling clippings can obtain a copy of the community action plan from the PLCAA.

The Sports Turf Managers Association named Dale Keller Jr. its new executive director.

Keller's responsibilities include determining the specific objectives and goals for the association including fund

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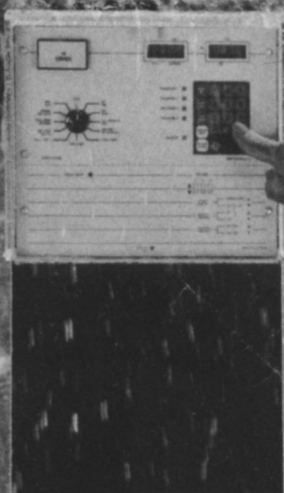
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UNLESS YOU CAN AFFORD THIS RAIN SENSOR, YOU NEED MINI-CLIK.



raising, membership development, foundations, education, research, scholarship, promotion and awards programs.

A new management firm, R/K Communications Inc., was also appointed for the association.

The group was conceived in 1981 by key members of the sports turf industry. Its membership is comprised of people from all segments of the sports turf industry including professional sports turf facility managers, head groundskeepers from four-year colleges and universities and groundskeepers of parks, schools, extension agents and municipal facilities.

Members work together combining the science of growing grass and the art of maintaining sports turf to produce aesthetically pleasing and safe playing areas.

An invaluable learning tool for conserving water is now available from the **Irrigation Association**.

A 12 1/2-minute video titled "The Key to Effective Irrigation" enhances the association's role as the primary source of expertise regarding the use of water conserving irrigation.

The videotape demonstrates the five essential steps to saving water through irrigation in both urban and rural landscapes: design, equipment, installation,

maintenance and water management.

Programs and projects now being undertaken by the association to conserve water are also outlined in the video. These include certification programs for irrigation designers, contractors and water managers; and development of national and international standards for all aspects of irrigation including product safety and equipment performance.

The National Arborist Association is seeking funding from the Environmental Protection Agency for its Integrated Pest Management Project — a research and education project that could significantly reduce commercial arborists' reliance on conventional pesticides.

The association submitted a formal grant request for \$50,000 and has lobbied for congressional support of the proposal.

Studies indicate that pesticide use can be reduced by as much as 75 percent with sound IPM practices. However, the association believes that consumers as well as operators are reluctant to accept IPM because they either don't understand the processes involved or lack confidence in their effectiveness.

The NAA and International Society of Aboriculture awarded an \$83,000 contract to the Illinois Natural History Survey to

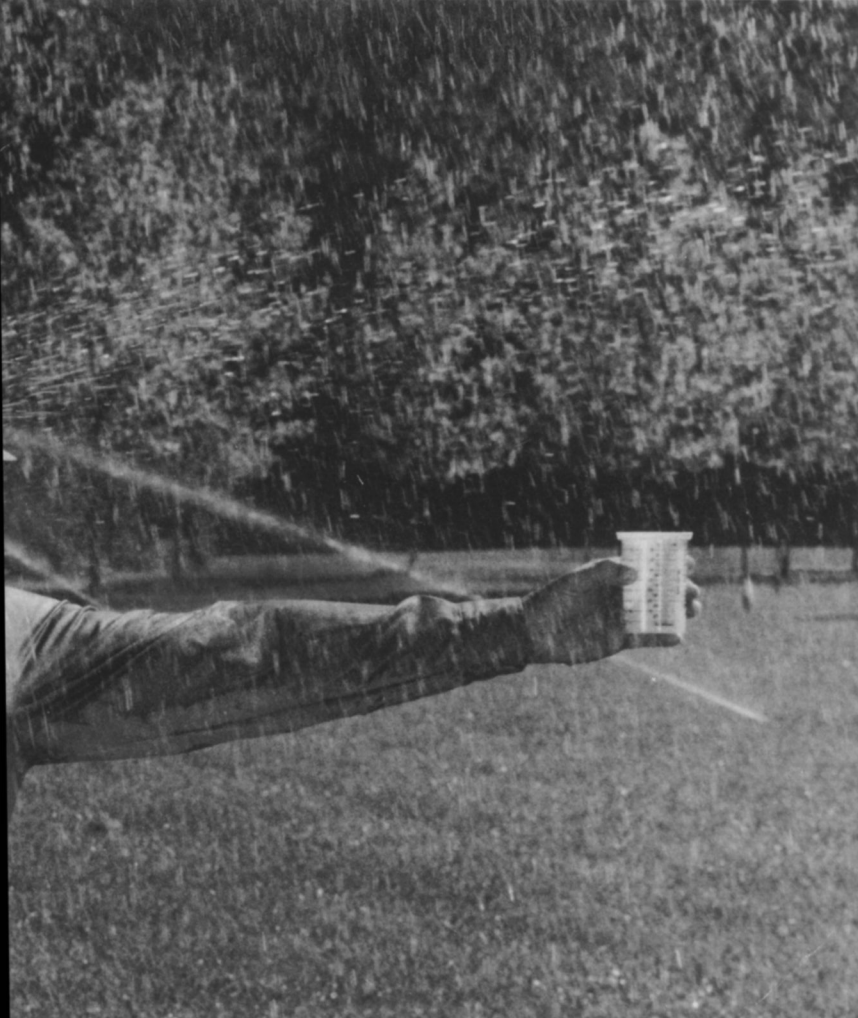
study public and industry perceptions of IPM, and develop marketing and operational strategies. To date, members of the two organizations have contributed almost \$35,000 to fund the project.

The American Society of Consulting Arborists has a new brochure on protecting trees during construction. Using a question and answer format, the brochure answers questions builders and property owners most frequently ask about the potential damages, prevention methods and who should bear any added costs resulting from damage.

Property owners are becoming more aware of construction related tree injury and death. As a result, they are seeking ways to prevent it or to gain restitution from careless builders.

Bob Ray, ASCA immediate past president, provided much of the information for the brochure. His practice concentrates on helping builders prevent construction damage. He notes that many operators, researchers and scholars agree that more trees are killed each year by careless construction methods than by all insects and diseases combined.

For a free copy, call the ASCA office and ask for the brochure "Protecting Trees During Construction." ■



One way to keep your sprinklers from watering in the rain is to stay out there with them.

The far better way is to use the Mini-Click II, the best-selling rain sensor in the world.

It shuts off your sprinklers during rainfall. And keeps them off until grass and shrubs are thirsty again. Without disturbing your system's automatic controller. So instead of sprinkling your money away, you save it on a rainy day.

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For more information and the name of the distributor nearest you, just call Glen-Hilton Products at **1-800-476-0260**. To find a better rain sensor, you'd have to take the job yourself.

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FOCUS ON:

IRRIGATION

EASY TO USE IRRIGATION SYSTEM PROVIDES PLANT-SAVING SOLUTION

THERE ARE PLENTY OF IRRIGATION problems in Santa Barbara, Calif., these days and Dennis Axelrod, owner, A & D Greenworks, was presented with a serious one.

One of his clients had spent a great deal of money on a luxury home and grounds high on the city's cliffs overlooking the Pacific Ocean. The problems started when four years of drought forced severe restrictions on water use in the area, resulting in the real possibility that his client would lose most of his lush landscaping.

"We could use city water to irrigate by one of two methods," Axelrod said. "By a hand-carried bucket or drip irrigation. The choice was obvious and my client was willing to spend what was necessary to install drip irrigation on the ground cover and in the shrub beds."

They decided, however, that drip was



A combination of drip and low volume irrigation saved this property from ruin.

not a practical way to irrigate the large lawn area.

"The property was on a well-designed, state of the art sprinkler system which we could no longer use," he said. "But I had

recently tried a new product which made conversion from sprinklers to drip easy and economical."

Axelrod's firm employs five full-time landscapers who maintain many proper-

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M-200

M-100 Standard Ramp — built for standard size American made pickup trucks. Loading capacity 1300#.

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Quality you'll ask for again and again!

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ties with elaborate landscaping in the Santa Barbara area.

It was the Olson EH-12 Drip Irrigation System that Axelrod decided to use.

"This product allowed us to utilize the existing underground PVC," he said. "All that was necessary for installation of the drip system was to remove the existing sprinkler heads, cap off those which were no longer necessary, screw on the EH-12 heads, extend the distribution tubing to the desired plant locations and stake the outlets in place."

These emitter heads have 12 individually pressure-regulated outlets. The system operates at pressures from 5 to 60 psi, and handles elevation changes up to 22 feet without changing the output from outlet to outlet. This further simplified the conversion, since no pressure regulators were necessary.

The ground cover was planted with ivy geraniums and jasmine, and Axelrod placed the outlets between 14 and 24 inches apart which gives adequate coverage on the adobe-type soil.

In the shrub beds, he placed outlets at the base of each plant (output is one gallon per hour per outlet). On large specimens, he used two to three outlets.

"We installed the system in February and have been pleased with its perfor-

mance," Axelrod said. "The plants are doing well, the system is easy to maintain and, most importantly, we're conserving water."

The EH-12 Vibra-Clean Drip Irrigation System was developed by Olson Irrigation Systems of Santee, Calif., a pioneer in the development, design and manufacture of low volume irrigation systems. The company's roots date back to the first drip irrigation systems commercially installed in the United States.

"When we decided to develop a product for the professional landscape market, we evaluated the existing landscape drip irrigation equipment available, and we talked with many landscapers and designers," said Donald Olson, company president.

"It became apparent that most systems on the market are complicated or are at least confusing to the first time installer.

"These systems include a wide variety of 'bits and pieces' which snap, glue or twist together to form systems which normally lie on the ground where they can be damaged by vandals, thirsty animals and accidents."

Instead of a maze of tubing, filters and fittings, Olson developed an emitter head that contains all the key drip system parts — 12 individually pressure-regulated

emitters, a 150-mesh filter/fertilizer applicator, on/off plugs and built in outlet fittings.

"It had to be quick and easy to install, it had to be reliable and it had to be simple enough for the end-user to understand and maintain," Olson said.

"When I asked contractors what they wanted in a drip system, they often replied, 'Make it simple for our customers to understand and operate. Callbacks are costly.'"

The EH-12 appeals to all landscape professionals. The designer finds that it takes about half the design time out of drip irrigated projects.

The installer is able to use the same piping as conventional sprinkler systems and there is no need for odd sized tubing or special fittings.

He finds it simple to quote jobs by counting the plants and estimating the number of heads needed.

The lawn and landscape maintenance professional finds less damage and vandalism to the irrigation system because it can be installed underground with only the outlets exposed at the surface.

It appeals to the end-user because it is trouble-free and simple to operate.

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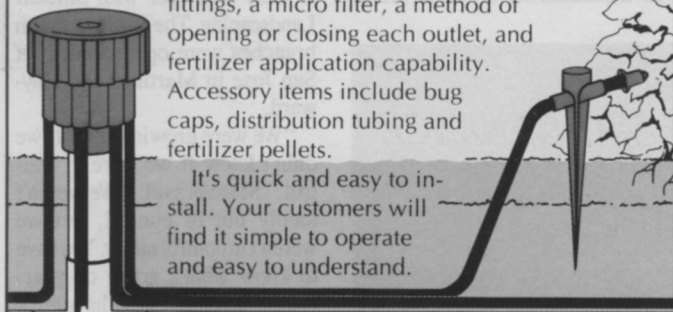
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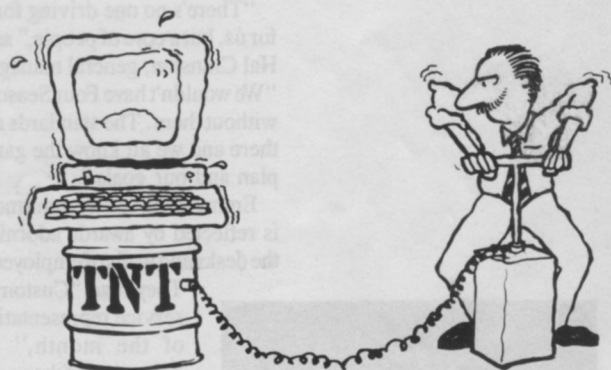


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Four Seasons' Branch Expansion Initiates Growth

IT'S PEOPLE THAT MAKE Four Seasons different from the others. Sure many companies can make that claim, but the people here really make you believe.

From top level management to the \$6 an hour gardener, employees know no limits at Four Seasons Landscape & Maintenance Inc., San Jose, Calif.

The company may be owned by four majority stockholders, but it's clearly the strength of 300 employees spread over four branch offices which makes Four Seasons a \$7 million and growing commercial maintenance firm. It's grown more than 50 percent in the last two years.

"There's no one driving force for us, but a core of people," said Hal Cranston, general manager. "We wouldn't have Four Seasons without them. The standards are there and we all know the game plan and our goals."

Enthusiasm and commitment is reflected by awards adorning the desks and walls of employees.

They read "Customer service representative of the month," or "Foreman of the year" and so on; a category for every employee. But they're not handed

out without merit; each award is earned.

Employees here are used to hard work. Many of the branch managers, sales managers and customer service representatives were previous business owners before coming to Four Seasons, but decided they wanted the support of a big firm to back up their individual talents.

"We try to get people enthusiastic no matter what job they have," Cranston said. "We try to get them involved. As a result, they continually make suggestions to improve service."

About 100 of the firm's 300 hourly employees have stayed for two or more years.

If you take a look at Four Seasons' management team, it's tough to find any two with identical backgrounds:

Cranston, with the company since 1987, previously worked for the consumer products division of Crown Zellerbach Corp.; Controller Rob Bilotti, also with the firm three years, was an accountant and controller in the electronics industry; San Jose Branch Manager James Cumbra Jr., going on eight years with Four Seasons, was a project manager for a national home builder; Ken

Sinclair, Sacramento branch manager, with the firm since 1984, was co-founder of Sinclair Landscaping which merged with Four Seasons; Roger Vesey, Martinez branch manager, came to the firm in 1984 after owning and operating Clean Cut Landscape; and Scott Haile, Hayward branch manager, with the company since 1987, previously worked as district sales manager for Crown Zellerbach.

President Jim Marcus, Cranston, Cumbra and Sinclair all share in ownership of Four Seasons.

Four Seasons was founded 15 years ago by Marcus. While most of the industry was doing crew work, he initially promoted an on-site gardening program.

"We were taking properties that commanded a gardener on site anywhere from three to five days a week. Our concept was unique," Marcus said. "We've become less on-site oriented now. We changed our mode of operation as we matured and developed rather than just maintaining one concept."

The company's headquarters remain in San Jose, also home of the first branch office. A second branch was opened in Sacramento after a merger with Sinclair Landscaping. The third and fourth branches were opened north of San Jose in Martinez and Hayward.

"We were growing so fast, we didn't know if we were in control," Marcus said. "We weren't totally out of control, but we weren't in control either. You have to know what's going on year-round, not three months after it happens."

The third and fourth branches stemmed from logistics more than anything else. Customers were becoming hard to reach in the Bay area and it wasn't uncommon for



FOUR SEASONS LANDSCAPE & MAINTENANCE

Headquarters: San Jose, Calif.

Branch Offices: San Jose, Sacramento, Martinez and Hayward, Calif.

Founded: By Jim Marcus in 1974. Incorporated in 1975.

Owners: Jim Marcus, Hal Cranston, Jim Cumbra and Ken Sinclair.

Primary Services: Full service commercial maintenance including irrigation installation and maintenance.

Employees: 300 year-round, 325 to 350 seasonal.

1989 Sales: \$7 million.



a truck to spend long hours in traffic.

When Four Seasons made a commitment to opening a branch in Hayward, they backed it up by transferring about \$30,000 worth of monthly revenues and some personnel from the San Jose branch; presenting a challenge to the rest of the San Jose group.

"Everyone likes it because they like to see the company growing and people moving up," Cumbra said. "They look around and pick out a spot for them."

The San Jose branch has about seven full-service crews and four mowing crews, teams which only mow properties maintained by on-site personnel. In addition, the original branch keeps a landscape architect on board to handle any design work. Full-time mechanics are on staff at each of the branches.

San Jose and Sacramento each represent \$2.5 million annual sales and Martinez and Hayward bring in about \$1 million each annually.

Depending on the season, each branch typically handles two to three installation crews and each

branch has one person on call over the weekend to handle irrigation problems and other emergencies.

Wanting to maintain their growth objective, yet balance out the control, the company converted from a limited number of managers to their idea of branch management.

For two and a half years now, each branch has operated as a separate profit center. Managers participate in the firm's annual plan, yet are free to give more attention to the customer.

"It's the only way we can run a large maintenance company," Cranston said. "Each manager has a budget so he's not making decisions in a vacuum."

Although 90 percent of the business stems from referrals, Four Seasons often stages an all out blitz to generate new sales leads.

Continuing its on-site gardening teams, the company now combines full service crews for the traditional full service accounts. Larger properties function with gardeners reporting directly to the site, but are supported by mowing crews. On-site gardeners are

managed by route supervisors.

"It enables gardeners to continually focus on the grounds. There's no logistics of dropping off mowers. It's a better utilization of our equipment," Cranston said.

Four Seasons manages about 500 commercial accounts ranging from multifamily homes, homeowner associations, shopping malls, industrial parks, office parks and fast food chains, but has shyed away from the residential market.

"We don't try to be all things to all people. We can do the best job for the commercial maintenance customer," Marcus said. "Of course we offer extras which are customer driven. It'd be a disservice if we didn't offer it to them."

Full-service maintenance contracts account for 80 percent of the firm's business. The remaining 20 percent is derived from extras such as irrigation, some new installation and rehabilitation — taking an older property, ripping it out and starting over with all new materials.

All full service accounts re-

Operations Manager Sam Baez, General Manager Hal Cranston and President Jim Marcus discuss logistics at the company's San Jose branch office. (above). Cranston and Marcus (on page 14).

ceive mowing, fertilization, irrigation, pruning; anything and everything that's needed.

Four Seasons strives to be as self-sufficient as possible keeping an on-site inventory of chemicals, fertilizers, gas, mulch, irrigation parts and nursery stock. This efficiency flows over into other aspects of business as the firm is essentially self-insured for collision coverage on its trucks.

To keep on top of things, department heads meet weekly, and branch teams meet monthly to discuss new sales, labor, hires and service requests. This contact communicates how the branch is doing, recognizes employee contributions and serves as a staff get together.

It also serves as a forum to look at the coming month and get people focused on the same set of goals.

Annual companywide meetings reaffirm that each branch is supported by the resources of a large company.

Though it may sound like Four Seasons spends a lot of time in meetings, these short get-togethers reinforce the importance of communication. "Our job is in the field not in the office," Cranston said. "But we see the value in spending a lot of time communicating among ourselves."

Accountability is also tracked through a "dot board" displayed in each branch office. The board lists all current accounts followed by two grades — one from the customer standpoint and one from the company's viewpoint. Grades are marked by a blue (good), yellow (acceptable) or a red (not acceptable) dot.

Red grades are accompanied by an action plan to get the property back on track. It's then reviewed weekly until it's brought up to par. While red carries a negative connotation, it could also represent a new property which hasn't yet received necessary improvements.

In the following interview, Marcus and Cranston share their views on the lawn and landscape maintenance industry.

Q. What future expansion plans do you have?

A. Marcus California is growing everywhere, particularly in major metropolitan areas like San Diego, Los Angeles and Fresno. The Bay area has



Four Seasons concentrates on commercial maintenance accounts.

room for two more branches; we'll probably open two to five total in the next five years — more if we're successful. I picture our growth reaching anywhere from 10 to 20 branches in California.

Those projections follow along the lines of population growth. Expansion is so rapid in our area. In landscape maintenance, for instance, it's practically an untapped market.

We've experienced tremendous growth and we expect that to continue. We don't have a tremendous debt; we've grown pretty much internally, but it's not haphazard growth. It's a push/pull situation, but people understand we expect a lot from them. They're very much involved in the decision to grow.

The market is pretty easily penetrated without a lot of upfront costs. But the sophistication in the landscape business, and the way people market and sell themselves is behind most service and manufacturing markets.

However, going in with a good sales program, a good presentation, good technical background and good references like we have, it's easy to get established and we've been successful in three areas going in relatively unknown. Sacramento was really our first branch experience, and in four years we've got 100 employees and a couple million in gross sales. We're profitable.

Cranston We did a detailed analysis before opening up our Hayward branch and found a good solid hub with good growth potential. It's somewhat segmented. Sacramento is probably cheaper than the Bay area. There's more mowing down there and the acreage is mid-sized, probably one to 15 acre properties.

Well, won't it affect you in the long run?
A. **Cranston** Temporarily. There's so much business out there. We're just going through some abnormally dry years, un-

Q. Do continued concerns over droughts and water shortages have a negative effect on business expansion?

A. **Cranston** No people are going to become more waterwise, and water management is going to become a much higher priority. It's going to benefit those companies who know how to manage water. It really represents an opportunity for companies like Four Seasons.

Santa Barbara is in a unique situation. Southern California, as a whole, hasn't really begun to seriously go through water conservation measures and right now, Los Angeles is debating whether to cut water usage by 10 percent and San Francisco and the Bay area are looking at a 25 percent cut.

Marcus We haven't even started to conserve water. It hasn't really hurt business. We've focused our energies into water management — more aeration, irrigation, time clocks and flow restrictions on sprinkler heads.

Cranston What has helped us is that our customers are sophisticated. If they're going to invest their money in the landscape, they want someone to be proactive and tell them what to do and how to conserve water. The majority know they're in it for the long run.

If we were in installation, it would affect our business dramatically, because some areas have banned new installation, period, during the summer. The key is designing landscapes which don't gobble up your water.

Q. Well, won't it affect you in the long run?

A. **Cranston** Temporarily. There's so much business out there. We're just going through some abnormally dry years, un-

less you subscribe to the greenhouse effect.

In new construction, the landscape budget is the first to be cut and cheap irrigation systems are inserted instead of good ones. Irrigation systems, however, can pay incredible dividends down the road by reducing your ongoing maintenance costs.

Q. You view yourselves as being customer driven. How do your customers view Four Seasons?

A. **Marcus** I think they know the company as an organized, well run business organization that provides a lot of service for the dollar. People are really impressed with our company, the type of people we put before them and our communications.

I think people are impressed with our type of business because the majority of the guys in business are owner/operators who do everything themselves. I've been in that situation and I think we've gone beyond that where our company performs a whole service.

The larger customers really like that. We have lots of insurance, communications, justification for new projects and have experience working with budgets. In a lot of ways, we're further ahead than our competitors. But I'm not saying that there aren't some good people out there.

Q. What goals do you have for Four Seasons?

A. **Marcus** Our basic goal is to develop a company where we can hire people and can grow with them. So we're not just hiring good people and saying "Here's a job and you're going to love this for the next 10 years."

Instead, we're hiring people and presenting them with opportunities in sales and branch management. We don't want to be a dead-end organization. We have the ability to grow and we can take our people and move them along with us. Not only do they have the opportunity to grow financially, they have the chance to become more of their own boss. Our branch managers are basically running their own business with a lot of support.

Cranston We want to build on our core group of managers who are really dedicated to the long-term, giving us a good pool to draw from for branch growth. Employee ownership is a possi-

bility. Anytime they own a piece of equity, they do better.

Q. How mature is the West Coast maintenance industry? Is it a cut-throat market?

A. *Marcus* The California maintenance business is behind the East Coast. People are more prone on the East Coast than in California to want extra services. In the past, the industry was more prone to doing maintenance work on their own, but now things are changing. Mowing and chemical service applications are becoming major industries out here.

In retrospect, we have a lot more landscape per city, more density and it's a year-round situation rather than seasonal. The sophistication is coming on strong. We feel like we're catching up to the East, in that sense fairly rapidly, but feel we're behind in maturity as far as companies go and the type of service that we offer.

Cranston There's some natural attrition. It's an up and down industry and a lot of guys don't make it. It's easy to get into but we see a lot of turnover.

Larger commercial property owners don't want to mess around with changing maintenance crews all the time. It's a real hassle for them so they're going to pick someone more substantial. Basically, they become willing to pay.

You have to work smart, be oriented toward making a profit. You have to know you can't be in business for 10 months straight and lose money. So you also have to know how to make money in this business and there are various ways of doing that.

Q. What was the most difficult aspect of growing so fast?

A. *Cranston* Getting people; people who were team players and fit into our organization. We have a rigorous interview process. We're always in a recruiting mode. When you find someone good, we hire them even if we don't need them.

The key is to have the right balance and the right mix. You don't want all horticulturalists when you need some people to do the customer service.

In addition, all of our crew leaders are bilingual because 75 percent of our workers come from a Hispanic background.

Q. Describe your typical customer.

A. *Marcus* They come from a couple different angles. If they're in a business park or apartment complex, we need to provide an aesthetically pleasing environment for the tenants. If we provide the service in a way that's consistent and high quality, they don't have to be involved with the landscaping.

In addition, our job is to protect and hopefully add to their investment giving it a better value. So whether they're in the sales mode and they want top dollar for it, or whether they are trying to lease it for the maximum dollar, they're going to need service.

We're not only problem-solving, but anticipating future obstacles.

Cranston Our customers want a more sophisticated service with depth in personnel; someone who's here all the time and can respond to their needs. We don't believe in good people sitting behind the desk all the time. We like to be on the leading edge not the following edge.

Q. If you're meeting all of your customers' needs now, what can you offer them in the future?

A. *Cranston* Being more proactive in irrigation, for example, and making sure our services are cost effective.

We use a remote control device in irrigation which saves us time. Instead of running back and forth to the controller to test the system, you can walk around the property with a remote control device, fire up each line and test it for leaks, breaks or clogs.

Our account managers are always working with the customers on their budgets and increasingly becoming more sophisticated to the point we can let our customers know what we think their needs are going to be in the coming year.

It's not just an exercise, budgets are adhered to. It's also our job to let the customer know about upgrades in plant materials.

Q. What are your main concerns for the future?

A. *Marcus* Water, labor pool and a widening range of competition who don't know their costs.

It's a real battle; you can't push too hard. But I think in the next five years you'll see a fallout because of liability problems and consistency. We've seen that with

a number of our customers where we've passed along some pretty large price increases. They've gone out and gotten someone else, only to come back to us.

I think on the average we passed along a 6 percent increase this year, or a range of 3 percent to 10 percent.

It's tough, but you have to consider labor costs, insurance, gas and the price of fertilizer. Or sometimes you'll take over a new property with young plants and you hold on to that property for three or four years and all of the sudden the landscape becomes more mature and you need more hours on that property. It's not only the cost of supplying the materials, but you just need more manpower on that property.

Q. How do you price your services in comparison to your competition?

A. *Cranston* We're not trying to get rich in one year. We charge what we think is the fair rate of every property we bid on. We look at ourselves as being right in the middle — we're never the lowest and we're not the highest. I don't think we lose a lot of business because of pricing.

There aren't that many other companies out there who offer the same package. Our goal is to continually improve our service; narrow down the number of firms customers can go to.

Q. How much will Four Seasons grow this year?

A. *Marcus* About 15 percent to 20 percent. We're not trying to grow just for growth's sake, we're more concerned with making sure that we're doing it in a way where we have the people behind us.

Cranston To keep good people you have to grow. Our whole program is based on the fact that people want to grow with us. It's exciting. We've seen it happen.

Q. What was Four Seasons like in the early days?

A. *Marcus* It was a lot easier to acquire business, but there was also a lot of transition. The Bay area is so large we did a lot of moving and covered a lot of ground. We offer the same services, but have become much more focused.

We had every intention of putting a gardener on-site and it turned out that having a gardener there, whether it was two days a week, three or four, it worked well

with the property owners because they wanted to see somebody there. They hated to see the crew coming in one day a week. It was really something so that concept worked well.

As we grew, however, it was more efficient to have crews on certain properties, because you have supervisors and more equipment.

Q. How has your branch management concept changed your business?

A. *Marcus* It's changed a lot. Before that we had our operations manager, sales manager and other managers working out of San Jose and there was nobody at the branch who was responsible. We had a single man running all three branches at the time. He became the branch manager and was more or less responsible for the change in concept.

We didn't have any of the information systems that we have now, and being in control meant doing an incredible amount of work getting people together to talk about what's going on.

Cranston What's really increased the level of performance in the company is that we pulled ourselves up in terms of performance as well as sales. That's hard to do, sometimes if you push sales, you push quality down. But our quality's actually improved as we've pushed our sales because of our people.

I think one reason for our success is they want to set a new standard in terms of how to do things. They're team players; they're no prima donnas.

Q. What advice can you offer someone new to the industry?

A. *Cranston* Focus on consistent quality of service. You have to have quality service and you have to be consistent at it. If you have both of those, sales will follow.

Listen to your customers; there is no one right way of doing things. You need to be tuned in to what the customers need.

In addition, obtain and retain a quality work force. Make sure your employees are involved and recognize their achievements. — *Cindy Code*

The author is Editor of Lawn and Landscape Maintenance magazine.

Increased Services Yields Vibrant Midwest Economy

NO LONGER IS THE Midwest referred to as the "rust belt." After scraping the bottom of the economic barrel in the early 1980s, the Midwest has steadily pulled itself up by its bootstraps.

Though some one-industry towns may never recover and certain regions lack vibrant economic activity, by and large the Midwest has diversified and is booming back to economic health. Lexington, St. Louis, Chicago, Cleveland, Indianapolis and Milwaukee are just a few of the cities on the upswing.

Established lawn and landscape maintenance operators generally reflect the trend toward increased consumer services and report good growth, although this growth has been accompanied by a price pressure on margins through increased competition.

Weather considerations are important in the Midwest as elsewhere, but abundant rainfall, especially around the Great Lakes area, has spared the region the drought and water regulation problems which plague much of the country.

The Midwest is one of the most vocal regions in its desire to control the use of pesticides and other factors perceived by the general public to be damaging to the environment, and Midwest operators are generally among the most eager to make the green industry

a part of the solution.

STRONG PROSPECTS. The Milwaukee market is active and the economy is strong reported Ron Kujawa, president, K.E.I., Cudahy, Wis., which has been experiencing an average annual growth of 10 percent to 20 percent, with annual revenues between \$1 million and \$3 million.

But success in a healthy economy brings its own problems. "The competitive environment is very strong as well, making it difficult to maintain margins," Kujawa said.

Kujawa added that labor continues to be a problem because of the many employment opportunities in other service areas.

Milwaukee was hit by a late snowstorm in mid-May which caused some short-term plant problems. Since most of them were indigenous, however, they survived and the long-term outlook is good. "It's been very wet, with lots of profuse growth, so everything looks lush," Kujawa said.

Kujawa contrasted his present situation to the lengthy shrinkage which took place during the recession years of 1980-82. "Prospects continue to be very strong."

INCREASED LICENSING. David Todd, president, Indiana Association of Nurserymen, Indianapolis, reported that his state is also experiencing good times.

"For the past three or four years there has been a constant upward trend," he said. "The city of Indianapolis has not reached the point of being overbuilt. It's still growing and is very horticulturally aware."

Todd credits the prospering lawn care market to the good economy, loosening up of money and consumers' desire to enhance the real estate values of their homes with attractive lawns and gardens.

"As the baby boomers, the people who originally got involved in the green movement, get older and can afford more things, they want to live in natural surroundings without violating ecological principles," he said.

The main change in the business over the past few years has been the marked increase of pesticide regulations and applicator licensing. "The lawn care industry has been actually supporting these moves, almost to the point of leading that movement," Todd said. "There are problems, however, for very few biological controls are effective at this time."

Don Vandewalle, operations manager, Foegley Landscape Contracting Inc., South Bend, Ind., reported he has attempted biological controls, but with only limited success.

"Working with predatory beetles on interior plants worked to some degree, but keeping the right population balance was a problem," he said. "We're exploring the use of soaps or safer chemicals for lawns and are testing for effectiveness. But our biggest concern is callbacks."

Foegley Landscape, originally a contract design company, has grown about 8 percent annually over the past 15 years through heavy expansion into maintenance services. Annual volume now stands at \$1.3 million.

Competitive pressures have increased but not, in this case, because of a surrounding healthy economy. "In our particular area a lot of factories are closing down, with those people being laid off getting into maintenance," Vandewalle said. "And that's forcing us to be very price competitive."

TECHNICIAN TRAINING. Industry pricing is a tough issue in Michigan. "There are over 400 licensed companies in the metropolitan Detroit area alone," said

Companies are diversifying their services giving customers an opportunity to create their own environments.



MIDWEST MARKET REPORT



Tim Doppel, president, Atwood Lawn Care, Sterling Heights. "That does an awful lot to keep prices lower than they should be."

As is the case throughout the country, it's difficult to determine the exact size of Michigan's lawn and landscape maintenance market. The trend toward diversification and the frequency of those entering and exiting the profession are leading contributors.

However, a recent study from the Lansing-based Michigan Turfgrass Foundation indicated there are about 2,500 lawn care and landscaping companies in Michigan. About half of those responding to the survey reported gross sales of less than \$200,000, while a fourth of the respondents reported annual sales between \$500,000 and \$5 million. The rest fell somewhere in between.

"This seems to show that the companies are generally either fairly small or pretty good sized," said Doppel, who reported that his company has been growing about 5 percent to 10 percent a year to its current \$500,000. "This year has been a particularly good year for growth, though profits

stayed level."

The biggest issue in Michigan is the registered technician program being implemented in the spring of 1991. "Every applicator has to be trained and tested, which means it will be a challenge to get the industry up to speed," Doppel said. "This is part of an overall trend. A number of states already have legislation like this to some degree, but the Michigan law is fairly strict compared to the ones I'm familiar with."

Doppel said the regulatory environment is getting so tight it's significantly changing how business is being done. He explained that in the short run, there will be problems for employees having to gain experience before they can get a license, that hiring and training will be difficult and the added demands on the employees may force higher wages.

But the effort will enhance professionalism.

SPECIALTY SERVICES. Betty Ackerlund, president, Rockford Landscape Engineering Inc., Loves Park, Ill., said that her company, in business for 17 years,

has recently been growing at the rate of more than 50 percent.

A key reason for this growth has been increasing her services.

"Rather than going in and doing the same sort of lawns, we're responding to the demands for more specialty maintenance," Ackerlund said. "People are interested in creating their own environments."

The big environmental issue in Illinois is that, effective July 1, no landscape wastes can be taken to landfills. They must either be composted or burned. "This will increase prices," Ackerlund said.

Patricia Cassidy, executive director, Illinois Landscape Contractors Association, Lombard, Ill., said her association has spent the past two years educating its members on the new law, and encouraging them to find ways to adjust to it.

"Since 16 percent to 18 percent of landfill waste comes from landscape materials, it is a major problem," she said. "While the law may be inconvenient, we are not fighting it in any way, for we do care about the environment."

Cassidy said that the new law

affecting the posting of pesticides is not so clear cut. "The pesticide law is being unevenly applied," she explained. "Different communities are embellishing the state posting regulations, and trying to comply with many variations on the theme can be both costly and time consuming."

ESCALATING LANDFILL COSTS. Lack of landfill space is also creating problems for operators in Minnesota. "We are being inflicted with outrageous costs," said Paul Barton, president of Bloomington Landshapes Inc. He said that a dump truck load of landscape wastes

has gone up from \$75 to \$300, while grass clippings, previously dumped for free, now cost \$1.50 to \$2 a bag.

Despite the increased competition in his area, Barton said, he has grown from 20 percent to 25 percent over the past five years to his current annual revenues of more than \$1 million.

Diversification of services is also the key to his success. "Over the past three years people have taken a greater interest in perennials and small garden plots," he said. "We've involved ourselves into providing more customized maintenance and have had to educate

ourselves in ground covers and wild flowers. This has been an asset, though, for as people take more interest in their property this helps our design/build operations."

Although many Midwest cities are booming, this is not the case everywhere. Rick Steinau, president, Greenlon Lawn Care Services, Cincinnati, Ohio, said, "Ten years ago this was a go-go market, but for the past five years it has been relatively static. We are finding that certain areas are resistant to growth."

Steinau reported that he has been experiencing about a 15 percent annual growth, but this has come about not so much through finding new customers as "going back and knocking on old doors to offer new and diversified services."

As president of the Professional Lawn Care Association of America, Steinau sees pesticides as not only a regional, but a nationwide issue. "If an operator is not concerned with notifying his customers and giving them the proper information of what he is applying, he is not a good operator and probably has a limited amount of time left in the business."

Kansas also represents a slowing economy. "The market is maturing and won't expand as rapidly as before," said Reg Robertson, president, Custom Lawn & Landscape Inc., Olathe. "The real estate situation is such that a lot of property is marginal, not profitable, so managers feel eliminating landscape maintenance is a good way to cut costs."

Robertson added that more people entering the business is making pricing more competitive. Still, he said, business is up about 10 percent over last year to his current overall volume of \$750,000.

SHRINKING PROFITS. Pesticides are also a problem issue in Kentucky. "Companies are reluctant to bring out new products and new ones are being taken off the shelf. We're having a hard time combating some of the pests," said George Day, president/owner, Day's Garden Center, Henderson, Ky. "We're getting into biological controls, but it will be several years before they actually are really effective."

Day reported a volume of more than \$750,000 last year, but added that increased competition, especially from part-time landscapers, increased taxes and insurance, and the higher minimum wage means "smaller and smaller profit margins."

Drought has hardly been a problem in Kentucky. "We've had rain, rain, rain and are still getting it," Day said, "so much so that many farmers have had to give up on planting their corn and soybean crops."

Carol Salomon, president/owner, Creative Greenery, St. Louis, Mo., said her company has been growing about 15 percent to 20 percent annually to more than \$1 million in sales.

But she also said that this is a soft time in real estate. — *Michael Major* ■

The author is a free-lance writer based in Port Townsend, Wash.



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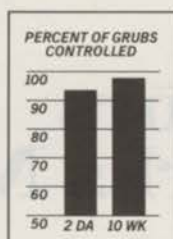
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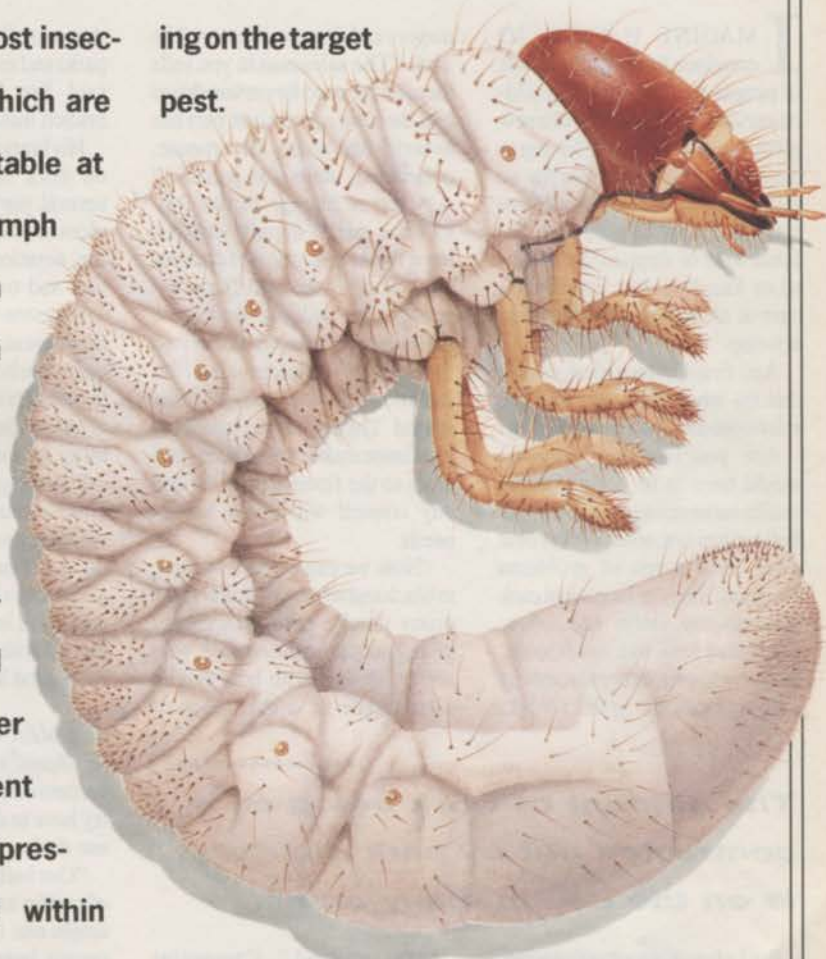
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Maintenance Operators Breaking into the Parks Market

IMAGINE HAVING TO convince literally thousands of people for the need of an add-on service or the viability of a new piece of equipment. Or having to maintain areas that receive so much traffic that seedlings have a small chance of surviving because they're stepped on, mashed or knocked over before they have a chance to establish and develop.

And finally, imagine doing all this on what often can only be referred to as a shoe-string budget.

Are you thinking someone would have to be pretty foolish to take on an account such as that? Believe it or not, some people deal with these types of problems every day. They're municipal park maintenance staffs and often, when they have too much to do, they turn to private contractors by subbing out some of their work.

mayors and finance directors," he said. "The salesman in you sells them on the need for certain things and then the accountant part has to verify and justify the expense, convincing them it is feasible."

A recent change in the Providence parks department has been the assimilation of computers. They make justifying expenses less tedious because a maintenance manual is devised for each new development or installation before the project is ever started. The manual strives to project future maintenance needs and costs so the finance director and city council will know budget needs.

"Now we can present to them in black and white and dollar signs pretty precise costs. It's finally giving people on the outside, who aren't familiar with how fragile a landscape is, a real sense of

they can fit into the scheme of parks and recreation departments, said Jim Johnston, TruGreen branch manager, Warwick, R.I.

His branch has successfully bid on work that is subbed out by several park districts. The services most often wanted are seeding, aeration, chemical fertilization and tree care.

Johnston said his impression is the amount of work being subbed out by park districts is on the rise, and that it's a good way for a strictly residential operator to start dabbling in commercial accounts.

"Starting with park districts is good because they know exactly what they need and you go in and do that," he said. "It gives you a chance to see the different concerns and learn about a different market without actually selling it. It's a good learning experience."

SUMMER OVERUSE. A major problem Campanini and many of his counterparts around the country have to deal with is excessive use during the summer months.

"Our ballfields see an awful lot of traffic to the point that every single one is overplayed and we cannot keep up," he said.

That overuse can hamper the development of freshly seeded grasses depending on when baseball and softball seasons begin. To help offset some of the damage resulting from overuse, Campanini wants to educate residents on the frailty of turf and landscapes in general.

"The city has a rather large amount of people relocating on a regular basis," he said. "Our goal is to educate the new residents and make them aware of the limitations of turf areas. While it seems basic to us, many people don't realize or ever give a thought to the fact that grass is not indestructible."

Reaching that goal is important for the consistent upkeep of the more than 1,000 acres the Providence parks department is responsible for maintaining.

"The budget's not being cut, like in many areas," Campanini said, "but it's not going up all that much either. To keep things as they are, there can't be too many surprises that demand extra resources."

Like many municipal park districts, Campanini and his crews care for one main "showcase" park and other smaller facilities. The Roger Williams Park covers 465 acres and has a high maintenance, manicured look.

"We put a lot of time and energy in there, but that is really our showpiece; it's what we want our department to be associated with," Campanini said.

A pleasant change in the last several years has been the increased use of ryegrasses and fescues, he said. Bluegrasses are still preferred in garden areas and major ball fields, but the department has been more selective in other areas, choosing varieties based on shade and sun tolerance.

CREATIVE ALTERNATIVES. In Pontiac, Mich., the parks department is in a little worse shape, according to Tony Dombrowski, grounds superintendent.

The past several years have been a test of stamina and creative budget alternatives, according to Dombrowski. The city has received funds from Federal Block Grants and Land and Water Conservation Grants for several projects. In addition, some employee salaries were transferred to special funds that derive from the state.

"It's been tough," he said. "The budget and available money is constantly shrinking while the costs are rising. It becomes a real challenge."

.....

The amount of work being sub-contracted out by park districts is on the rise in many areas.

But before they get to that point most park superintendents prefer to do the work by themselves, with their own people.

GETTING THE FUNDS. A general consensus among parks and recreation directors is that their biggest headache is dealing with their prospective budgets and their attempts to increase those allocations.

Being in charge of a city's parks requires many more skills than just being able to supervise crews, said John Campanini, chief parks planner, Providence, R.I.

"You pretty much have to become both a salesman and an accountant when dealing with

what's involved," Campanini said.

Because so many parks and recreation departments are overworked, they do sometimes sub out some of their needs. The services that are subbed out can also vary drastically between departments. Some will subcontract for specialty services, such as tree care, because they do not have the resources or manpower to devote to those areas. Others with a large number of acres to maintain and limited budgets, may sub out the mowing needs of several parks or baseball fields.

A private lawn and landscape maintenance operator can definitely benefit from realizing how



KNOW YOUR PARKS

Although parks aren't generally considered to have the potential for high profits, it is an area of the green industry where maintenance operators can expand their business in anticipation of larger gains.

Rather than take on all the responsibility themselves, parks departments are choosing to sub out services to area contractors. Services such as tree pruning, irrigation installation and maintenance and turf and ornamental spray programs are often considered too costly to do in-house.

In Michigan alone, \$24 million was spent on turf maintenance in parks in 1988. Most of the parks' turf area required high maintenance, more than 11 mowings a year, or medium maintenance, five to 10 mowings.

Take a look; it may be the market for you.

Add to that the general economy which is suffering from the glut U.S. automobile manufacturers find themselves entangled in.

"The area used to be totally dependent on the auto industry and is finally realizing it can't be anymore," he said. "So right now as new industry is beginning to develop, there are still quite a few people unemployed which means our revenues are down."

An issue that is taken seriously in the city is weed control and tree care on the city's tree lawns.

"That's important because it's something that every resident can see," he said. "They can look out the window and see that the tree is alive and healthy and that there's no patch of weeds surrounding it."

The department's 17 full-time and 13 seasonal employees spend the rest of their time maintaining 28 parks. Much of that has been

reduced to basic, bare bones maintenance.

The only work the district subs out is certain irrigation work on several baseball fields. Hydroseeding, when needed, is also done on an outside contract basis. But those occasions have diminished because it's more cost effective to use the department's slit seeders for most seeding needs.

"The basic reason for subbing out work is to get a specialty service done while not tying up the staff's time," he said. "We could probably buy a hydroseeder and have our guys do it, but there isn't enough demand to warrant the purchase. So when we absolutely need it, we go to an outside source."

Not surprisingly, Campanini has a different view of subbing out work. His main reason for not doing it more is the feeling of not

having total control over the operation.

The Providence parks do sub out chemical applications and tree trimming and pruning. That's mainly done for convenience. With this plan, the city doesn't have to worry about employees being registered to apply chemicals. They just don't do it.

RESIDENTS DISREGARD FUTURE. Bill Katzenberger knows only too well the problems and frustrations of heading an operation that people take for granted. He's director of parks and community activities for Leavenworth, Kan.

The state of Kansas recently went through a reappraisal for

property tax. Assessed values on most properties went up a-

long with the residents' tax bills and their indignation.

Some of those newly collected tax dollars are being earmarked for the creation of additional park facilities for the Leavenworth area. That has created some discord among residents.

"If you look at the situation in the short-term, you're probably going to conclude that new parks are not needed," he said. "But looking at the long-term and the fact that the county is experiencing rapid growth, planning additional parks makes sense."

The town is also home to Fort Leavenworth, a U.S. Military Training Center. It's one of the few military centers that is actually adding personnel after the re-

cent cuts in the federal defense budget, Katzenberger said.

PROFESSIONALISM OBTAINED. Leavenworth has come a long way in a relatively short time. It was just recently that the city had a parks superintendent who held a horticulture degree. It made the budgeting process easier, though there's still plenty of additional needs, he said.

The 1990 parks budget stands at \$312,000 for the maintenance of 360 acres. The nine-person staff concentrates on basic maintenance. "Nothing really flashy, no high profile flower beds yet, but I do think that's in store for the future," Katzenberger said.

"The superintendent brought the department an immense amount of credibility that could not be earned any other way," he said. "As a department, we also learned a lot from him."

That new found level of professionalism translated into the department receiving more attention from those holding the purse strings.

"It used to be that parks and recreation was low man on the

totem pole — first to be cut and last to be reinstated," Katzenberger said. "When the city manager and finance director talk about wanting to see more trees and flowers around, they also talk about finding the money for it. They don't expect us to pull this stuff out of our hats anymore."

This year's biggest headache has been attempting to beat excessive rains.

"We had 5 inches of rain in June," he said. "All the grass everywhere was growing, but it was murder getting the mowing done."

FINDING AND KEEPING EMPLOYEES. Employee retention poses a problem that Katzenberger has yet to find a solution. Municipalities, for the most part, pay lower than private companies and cannot offer bonuses and incentives.

"It's tough finding and recruiting someone with professional training," he said. "Right now we're looking for a new parks superintendent. We're getting good applicants, but when they find out we're offering what is sometimes \$10,000 less than what

they're now making, they understandably lose interest."

Calvin Ginnavan, maintenance foreman, Ocean City, Md., is quite familiar with the problems surrounding a lack of experienced workers. Once last year, the wrong chemical was sprayed on the trees along a 10-mile stretch of the city's median strips.

"We had a total kill of the trees," he said. "So that meant we had to take \$35,000 out of this year's budget to use for replacing the trees, and that meant cutting back in other areas. It's a constant juggling game."

A significant part of that juggling routine is dealing with the eight seasonal workers the department is allotted.

"The city money people don't see past the immediate dollars spent," Ginnavan said. "I'd much rather hire a couple people as full-time, and take the time to train them right and know they'll be around longer than several months. I think we'd get better productivity, but they see it as seasons being cheaper, period."

The city's parks and public grounds needs are combined in-

to one budget totaling \$1.5 million for the care of 160 acres.

With 12 of 18 workers mowing five days a week, the major concentration is basic maintenance. The main 58-acre park does have a heavier emphasis on ornamentals with several large perennial and annual gardens.

Being a heavy summer tourist area, crews have to be finished and off the mowing sites by mid-afternoon on Fridays.

"We have at least 100,000 people coming into the area on summer weekends, and most of them on one highway. We try our best to be finished before that hits every week," he said.

Another facet of the employment dilemma is firing someone who is not performing up to par.

"It's much more difficult in the public sector because there are so many procedures to be followed," he said. "It's a lengthy process that can have bad side effects on other workers." — *David Westrick*

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

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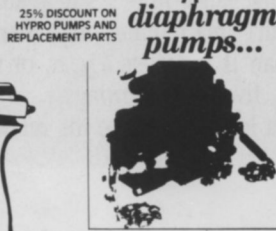
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Reducing Water, Energy Costs With Landscape Plantings

LT DOESN'T TAKE A Rhodes scholar to figure out that urban downtown areas — concrete jungles — are much hotter than a house surrounded by turf and shaded by trees.

It's not an unusual sight to see people flocking into a park thick with turf and trees for relief on hot summer days.

While common sense tells everyone that it's generally cooler to be in the shade than in direct sunlight and on a lush lawn rather than reflective cement, the actual cooling effect of landscapes can translate into energy savings for both the heating and cooling of a building.

COOLING EFFECTS OF TURF

In a three-year study, James Beard, professor of turfgrass physiology and ecology, Texas A & M University, College Station, Texas, demonstrated that actively growing turfgrass can reduce soil surface temperatures by 30 to 40 degrees compared to bare soil. When compared to synthetic turf surfaces, the temperature difference in turf can be as high as 70 degrees.

In addition, another benefit of turfgrass, according to Beard, is that its growth process removes carbon dioxide from the atmosphere. That substance has been identified as one of the potential factors that may cause global warming.

By absorbing carbon dioxide and releasing clean oxygen, the grass plant is helping cool the earth as well as our homes and offices.

Other researchers have calculated that the front yard of eight average houses has the cooling effect of about 70 tons of air conditioning. The average home air conditioner has about a three- to four-ton cooling capacity. But remember, air conditioners generate their cooling through

electricity which requires the burning of fossil fuels or nuclear power that may contribute to our air pollution problem.

Grass on the other hand, achieves its cooling effect by using its own self-powered evapotranspiration system.

DESERT CONSIDERATIONS

Another study, conducted at the University of Arizona by landscape architect Greg McPherson and micrometeorologist Jim Simpson, considered the water use and energy needs of three varying landscapes: rock mulch, a foundation planting of tall shrubs and a full lawn.

The shrub-planted landscape saved 18 percent on watering and energy costs compared to the rock mulch. While the cooling effect of plants has been accepted for some time, there's been some concern that for survival they need water — a pretty scarce commodity in some parts of the Desert Southwest these days.

The researchers found primarily that the energy savings from a vegetative landscape did compensate for the cost of the increased water usage. But a major key to controlling that was using irrigation.

They designed three models at one-fourth scale that resembled recently built homes in the Tucson area. The models were insulated, had overhangs on two sides, windows on three sides and identical air conditioners.

All landscape treatments with vegetation saved money compared to the unirrigated rock mulch when both cooling and irrigation costs were considered.

USEFUL IDEAS. While most homeowners often want shade trees in their yards to provide a place to retreat to during summer heat, most don't carry that through to the next logical step:

saving on fuel costs, said Nancy Benninghouse, a landscape architect with Buettner & Associates, Milwaukee, Wis.

"Typically, people want trees and shrubs around a house so it doesn't look barren," she said. "It's not all that often someone says 'I want trees and grass and shrubs because they'll lower my heating and fuel costs.'"

One of the first moves Benninghouse makes on a newly constructed home is to decide where several trees are needed.

"There's a definite trend in home building lately to have a room with very large, just immense windows," she said. "That should be a clear sign to anyone involved — the builder, a landscape architect, landscapers or the homeowners themselves — that something has to be done there to cut down the glare and the reflective nature of the glass."

Her most often suggested approach: a good sized, somewhat mature tree planted not far from the windows or doors.

"You want to plant something that is going to provide immediate shading, so it needs to be more than a sapling," she said. "But at the same time, that house is going to be there 30, 40, 50 years or more. It probably won't be the first owners, but some owner down the line will have problems and maybe have to get rid of a tree that's planted too close."

Another of her suggestions is to always use deciduous trees. In the summertime, they block the sun and keep the house cooler while in the winter they allow the sun in to provide additional free warming for the house.

A different idea on use of trees involves using evergreens and not deciduous trees. Jack DiClementi, director of landscape architecture, Rolf C. Campbell & Associates, Highland Hills, Ill., usually tries to create a noise and

wind barrier around a house by planting several evergreens in a row.

"You're doing several things when you include evergreens in a landscaped setting," he said. "First is the noise barrier; more people ask about finding ways to block out the street noise around their homes than anything else. Second, you're insulating the house from the winter wind and third, you're blocking out the summer sun, keeping the house cooler."

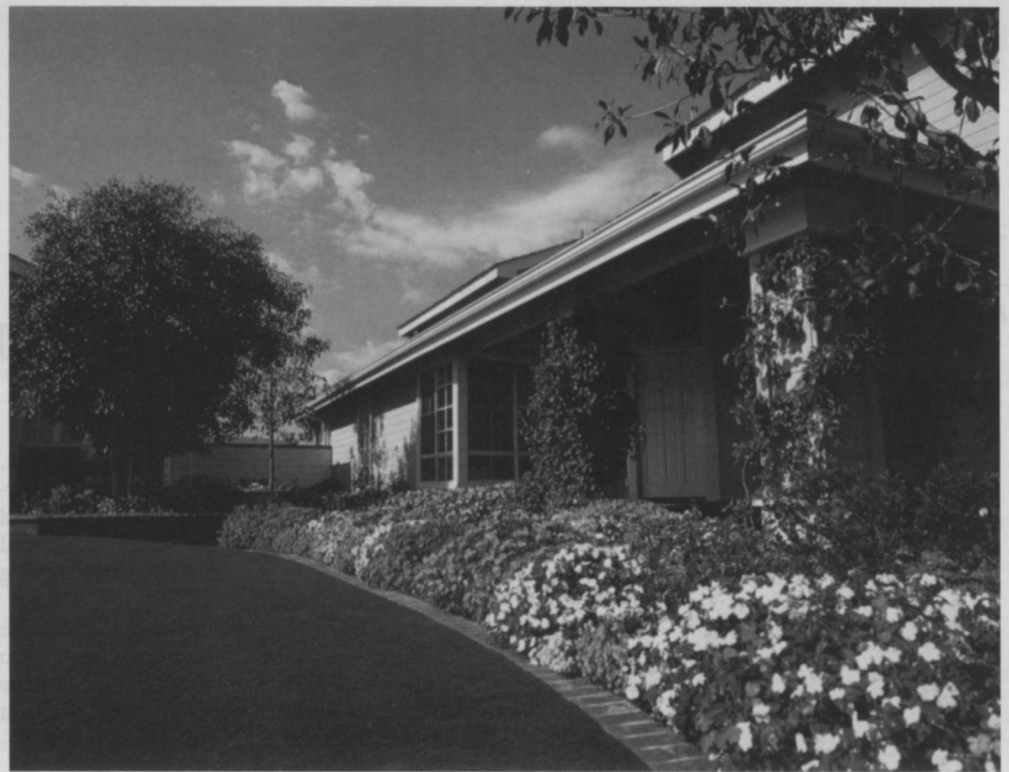
Another idea that more builders are turning to is reducing the amount of cement around buildings. Sidewalks constructed of bricks or other materials darker in color absorb more of the sun's rays rather than reflecting them back up into the air and on to the house.

COMMERCIAL IDEAS. Commercial properties that take the most advantage of their surrounding landscapes are those in campus-style office parks, DiClementi said.

"Commercial applications are slightly different because there aren't too many businesses keen on having the front of their building hidden behind a row of evergreens," he said. "The ones that have a good amount of turfed areas between buildings are really taking advantage of that landscaping. That space doesn't go to waste. It's often used by employees as a lunch area or the company puts a fitness trail in to promote good health practices within the company."

Considering that soil temperature is usually pretty constant between 55 and 60, Benninghouse said, she sometimes suggests a berm or small hill in front of a building planted with shrubs.

"They're not as popular as they could be mainly because people envision the wrong thing when



you say berm," she said. "We're not talking a major hill, just a small incline. They really do a good job of insulating the foundation."

In commercial applications, there's a constant battle with the client who doesn't want to give up anything for the benefits of a good landscape, said Mary Hughes, landscape architect with E.G. & G. Inc., Fairlawn, Ohio.

"The biggest battle is always with parking spaces," she said. "We want to put in trees and some green areas to reduce the heat generated by the massive paved area, but for most clients parking spaces are far more valuable to them than the cooling effect trees have on pavement."

LOSTSOME STEAM. The greatest interest in energy conscious landscaping came in the mid-1970s at the height of the OPEC oil shortage, said Robert Reimann, Reimann Buechner Partnership, Syracuse, N.Y.

In the 1970s, Reimann was commissioned by the Environmental Protection Agency, along with two other landscape architecture firms, to study the development of a new community and the residents' responses toward its energy efficient scheme.

"The most optimistic talk of energy savings is 46 percent, but most people who have studied it

usually cite a possible 25 percent savings," he said. "A problem we found in a developing community like that was a reluctance on the builder's part.

"The benefits and savings are long-term. Our clients were the developers, but the people saving the money were going to be the eventual homeowners. The developers didn't want to spend the money needed because they didn't think they could recoup the additional money they were putting into the homes."

To create a truly energy conscious community, Reimann said, many other considerations have to be made besides landscaping. How a community is zoned has energy implications. How far is it to schools, shopping and churches? Can those places be placed close enough so people will be encouraged to walk?

The aim should be on a collective basis," he said. "Sure it's good that an individual homeowner is saving on his fuel bills, but imagine the effects on the environment and our resources when hundreds or thousands in a community can do that. Unfortunately, I don't think we, as a society, are far-sighted enough to look at it that way." — David Westrick

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

Deciduous trees can keep the house cooler in the summer by blocking the sun, but allowing the sun in in the winter to provide additional warming for the home.

Improving Sports Turf Tolerance From the Ground Up

THE HEALTH CONSCIOUS society that we live in has increased the usage and demand for all types of recreational facilities.

Education and awareness of sports-related injuries due to techniques, equipment and playing surfaces at these facilities has resulted in the need for enhanced conditions and preventive actions. A return to natural turf from artificial and synthetic surfaces is good, preventive action to reducing field-related injuries.

This trend has created a need for healthy natural turf playing surfaces, and turfgrass managers to maintain them. It has also generated a greater need for improving wear tolerance on sports turf surfaces.

WHERE TO BEGIN. There are three basic benefits to improving wear tolerance. The most obvious and noticeable is the aesthetics or eye appeal. We as a society have become "experts" in evaluating a field's playing condition from our favorite easy chair. Whether it be at home or in the stands, a nice green playing field is perceived to be a healthy and sound playing surface.

Second, is the increased stability for footing and a higher level

of athletic performance. A thick, dense turf with a strong anchoring root system can support and withstand the lateral force exerted by the charging and turning athlete.

The ability to withstand this use also enables a groundskeeper to predict its response. The response of a surface then becomes a habit or instinct which can greatly enhance performance.

The playing surface and grounds manager are two silent members of the winning team, but are star players and big contributors of the losing team.

Third, and probably the greatest motivator, is the possible reduction of liability exposure. A poorly maintained field with worn turf can result in the twist of a knee or ankle and the end of a career.

Unfortunately, we tend to stress this only in professional sports where there are multimillion dollar players, when it should be important from the professional field to the public grounds to the local sandlot.

To sum up the major benefits: Improved wear tolerance provides an eye-appealing field which has increased stability for enhanced athletic performance at a reduced liability to its users.

Consequently, the responsibilities of the grounds manager are of greater importance than in the past. One's support of research, continued education and specialized duties are essential for the advancement of the sports turf industry.

Unfortunately, most grounds managers today hold such wide ranges of responsibilities that playing field maintenance involves only a small portion of their time.

The needed time and specialized commitment demands money and financial support for proper

athletic field construction, maintenance and capital needs. All too often, turf maintenance is the first item to be reduced in a budget review. In reality, proper maintenance and improving wear tolerance on our sports turf areas should be viewed as an investment and an obligation.

TAKE ACTION. Wear tolerance is often associated with only the leaf blades of the grass plants, but in practicality, wear tolerance is soil deep and needs to be associated with all factors influencing surface playability.

Improving wear tolerance usually becomes a concern and priority on existing fields while it should have been top priority during design and construction.

Managing sports turf for improved wear tolerance involves determining quality standards by which to compare. The best approach is to understand the design and needs of a new athletic field construction project. Once this is understood, existing sports turf areas can be evaluated for deficiencies, and management practices arranged to compensate and correct them.

The following guidelines are based upon the United States Golf Association's perched water table profile for putting green construction. These guidelines have been used since the early 1960s and have proven predictable and successful when properly executed.

As each step of the profile is presented, an explanation of its agronomic importance and relationship to existing playing surfaces will be included.

GUIDELINES. Proper athletic field construction starts well below the actual playing surface. A sound and compacted subsurface grade is the first area of concern

While the surface of athletic turf is all many people see, proper athletic field construction starts well below the actual playing field.





and should occur 16 to 18 inches below the desired subsurface level.

The grade of the subsurface should be relatively representative of the top surface grade. This provides the base for constructing a top quality athletic field as does a strong foundation in building a house.

Next, a drainage line network needs to be laid out and installed. Because of the outlet source, various design styles can be used. Some of these are herringbone, grid iron and straight laterals. No matter what style is used the laterals on the playing surface should be placed on 20 foot centers to accommodate the quick removal of excessive moisture.

A laser or transit-type instrument must be used in establishing proper pitch or grade for positive drainage flow. The desired pipe sizes for laterals is four inches in diameter and six inches for the mains.

A solid, smooth-walled perforated drainage pipe is preferred because it has greater wall strength. It also shows less resistance to drainage flow and increased self-cleaning action.

A few inches of 3/8-inch pea gravel should be installed below

the drainage pipe. This can be raked and moved to establish the desired grade for the pipe. Once properly graded, the drainage pipe can be installed and the drainage ditches backfilled with pea gravel.

After the drainage lines are completed and backfilled, the entire playing field surface should receive a four-inch layer of 3/8 inch pea gravel. This provides a means of freely moving the excessive moisture to the drainage lines for rapid removal.

Subsurface drainage is extremely important. It allows for the removal of excessive moisture and promotes desired levels of soil oxygen. Does it have much importance? Well, an old-timer said it best, "It only takes two things to grow grass — common sense and drainage. If you don't have common sense, double up on the drainage."

A properly installed drainage system manages the uncontrollable moisture received from Mother Nature.

Next, a two-inch layer of a 1-to 2-mm size gravel needs to be put on top of the pea gravel blanket. This is referred to as a choker layer and plays an important role in assuring the integrity

of the perched water table profile.

The choker layer acts as a buffer between the pea gravel and rootzone mixture. It prevents the smaller particle sized rootzone mixture from migrating down through and clogging the larger particle-sized pea gravel.

Unfortunately, this is a labor intensive and time consuming operation which is often left out to save time and money. Kurtz Bros. Inc. has developed a patented system for applying this choker layer at about half the normal cost in time and labor. This system involves the use of a vehicle which has been specifically balanced and equipped with flotation tires and a spreading device to accomplish the needed task.

The next step is the selection, blending and installation of root zone mixture. An approved USGA soil testing lab such as Agri-Systems, K.W. Brown and Associates or Tifton Laboratories, should be given samples of representative materials available for blending.

They will perform a series of tests to determine: particle size analysis, water permeability, capillary and non-capillary pore space, bulk density, water retention and pH. Having tested and

Improved wear tolerance provides an eye-appealing field which has increased stability for enhanced athletic performance.

evaluated this information, they can recommend the desired materials and their ratios for blending the optimum rootzone mixture.

This testing basically revolves around proper particle size selection and interaction of the rootzone mixture. Ideally, the particle sand should be in the 0.75 to 0.25 mm range, with no particle greater than 2 mm, less than 10 percent fine particles, less than 5 percent silt and less than 3 percent clay.

This would be considered a uniform soil and lend itself to maintaining desired air and water pore space, in addition to being somewhat compaction resistant.

A visual way of understanding this is to take a room of any size, fill the top with baseballs and softballs, Next, imagine shaking the entire room. the different-sized softballs and baseballs would bridge against each other, maintaining desired air and water pore space while resisting compaction.

Now take that same room, fill it with beach balls, basketballs,

footballs, baseballs, softballs, tennis balls, Ping-Pong balls, golf balls, marbles and BBs. Shake it in the same manner and the larger sized balls will bridge against each other and the smaller sized balls will fall in between.

This action results in reduced air and water pore space and ultimately compaction. A soil of this particle size distribution would be considered well-graded and an excellent choice for road base.

Once a lab has tested, approved and recommended the proper materials to use, a qualified soil blender needs to be contracted to execute the desired mixture. Soil blending equipment assures conformity and homogeneity from top to bottom in a root zone mixture. Bucket blending with a front-end loader or rototilling makes management of the field difficult.

Varying soil in the same profile will cause water infiltration and nutrient response to differ. Ask yourself, "Which area of turf do I want to puddle water or experience nutrient deficiencies be-

fore electing not to use a qualified soil blender?"

SURFACE DRAINAGE. The final step of the rootzone mixture is its installation, 12 to 14 inches over the choker layer. This should then be graded to final grade promoting positive surface drainage. Dips, puddles and wavy surface grades are not acceptable.

The surface drainage enables the quick movement of rainfall off the playing area and lessens the amount which must pass through the subsurface drainage. You might say that surface drainage acts like a precleaner for an engine air filter. It removes the large portion while the actual air filter handles and refines the smaller portion.

The drainage and soil structures are the two most important factors involved in planning a successful management scheme. They dictate the moisture requirements, soil nutrient interactions, stability, root growth, resiliency, pesticide response and overall field integrity. As a result, what

you seed or sod on top of them, and how you will need to manage it are solely dependent upon drainage and soil structure.

Because of the variability in desired grasses across the nation and required maintenance needs with fertilizers and pesticides, only general guidelines have been included here.

Consult your local and state organizations for recommendations of seed or sod which will perform well in your area. They will also be able to assist you in obtaining training and seminar information on turfgrass maintenance and care.

In addition to the local and state organizations, fertilizer and pesticide suppliers can assist you with developing a plan of attack. A soil test is one of the first steps to determine the pH and nutrient deficiencies of the soil.

Overlooking a soil test is like taking a long trip without a road map to your destination.

It's important to keep turf actively growing while the sports turf is in use no matter what fer-

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tility needs and pesticide programs are called for. This enables it to recover quickly from any damage.

A grass plant may have its leaf blade scuffed or ground off, but if the crown of the plant is intact and actively growing, the field can quickly recover for future play.

IRRIGATION. Watering needs are universal. It doesn't matter if you are in Nome, Alaska, or Miami, Fla., let the grass plant and soil tell you when to water. Watering is not a calendar event, it should be solely based upon a plant's requirements.

There are many ways to determine when to water. The easiest is when footprints and mower wheel tracks don't bounce back and the grass blades stay flat on the ground. Another way is the telltale grayish-blue spots of actual wilt. My personal favorite is actually pulling out soil with a soil sampler and inspecting the actual soil moisture.

It's beneficial to maintain adequate moisture levels, but satura-

tion is not desired because the extra water will replace the soil oxygen.

Mowing can be one of the single most beneficial cultural practices performed. It has the ability to promote new root growth and shoot growth in addition to culturally controlling some weeds.

It's important to maintain the highest possible cutting height recommended to promote a deeper and stronger root mass. No matter what the height requirement, it's essential that no more than 1/3 of the leaf blade is removed at any one time. This will prevent shocking the turf.

Topdressing, when used in conjunction with aeration, can improve turf in three ways. First, it can fill in any voids caused by wear and help re-establish the desired grade. Second, it can help control thatch buildup and third, it can provide a desired soil structure for incorporation into the present soil profile.

An athletic field is only as good as the root zone mixture in which it grows. As a result, take the time

to find out what topdressing is needed to properly amend your soils, making sure it's blended under strict quality assurances. Your turf, and maybe even your job is depending upon it.

PLAYING TIME. A field of this superior quality design should not receive more than 12 to 15 hours of actual use during a week. Any fields of lower standards should receive less hours. A clayey-based soil should have no more than four to six hours of use per week.

Deciding upon the use of a field after inclement weather should be the decision of the grounds manager. It's his or her responsibility to provide a safe and playable surface while protecting the management's property.

The grounds manager should work hand-in-hand with the team coach. Together they should devise a game plan to alternate the practice areas on a field. The drill doesn't have to occur on the same spot. Moving these around can triple the quality of turf.

Bands are a turfgrass manager's

nightmare. Step, step, step all in a row on designed formation destroys the turf and soil structure. The painting of a football field on a parking lot can enable the band to practice on a measured area.

Control also means controlling the sports to be played on a field. All too often the varsity football field becomes the junior varsity football field, then the soccer team and so on.

The growth of sports programs is inevitable. Thus the growth of needed facilities is essential for maintaining the quality and safety that we as a society demand.

Developing and improving wear tolerance is something which starts with proper construction standards. But unfortunately most fields were not constructed to these standards. It's simple if you fall back to the basics and build your turf care program from the ground up. — *Sam Stimmel*

The author is support turf division manager of Kurtz Bros. Inc., Independence, Ohio.

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New Broad-Spectrum Fungicides Sought for Turf

NEARLY \$120 MILLION of fungicides are sold each year by the Ciba-Geigy Corp. of Greensboro, N.C. But according to product manager Owen Towne, lawn and landscape maintenance operators account for less than \$10 million of these annual sales.

"Right now, lawn and landscape is only a small part of the fungicide market," admitted Towne, "but I believe maintenance operators represent perhaps the best growth market we have."

Those sentiments are shared by Dan Meek, marketing manager for turf and ornamental pesticides at Mobay Corp., Kansas City, Mo. "Fungicide use by maintenance operators has been traditionally low," he said. "The vast majority of our sales go to highly managed turfs — such as golf courses — that see fungicides as necessities rather than extra services."

But that may be changing, according to Meek, because today's commercial and residential customers have higher expectations. For that reason, maintenance operators must identify new services that give them both a competitive market edge and an added source of revenue.

"Disease control programs can certainly be a marketable, premium-type service," he said.

Maintenance operators, however, face unique difficulties in educating customers about turf diseases, said Thomas Vrabel, product development program coordinator for Chipco Specialty Products, a division of Rhone-Poulenc Ag Co., Research Triangle Park, N.C.

"Homeowners know about



Diseases don't occur annually unless the conditions are right. Photo: DowElanco.

weeds and insects because those problems pretty much occur every year," Vrabel explained, "but turf disease may not happen for several years, until the climatic conditions are right. And even then, homeowners often attribute diseases like brown patch to dry weather rather than fungus."

Paul Grosh, division sales manager for Lebanon Turf Products, Lebanon, Pa., said logistical considerations contribute to the infrequent use of fungicides by maintenance operators.

"Usually they don't carry around with them the required tools, and they don't have fungicides in their truck spray tanks," he said.

Furthermore, operator's businesses are not always structured

to effectively deal with turf diseases. "Potential or actual outbreaks must be addressed immediately," Grosh said. "But because LCOs have so many accounts, it's hard getting to everyone in time."

Logistics are, of course, one of many considerations in choosing the types and forms of fungicides you need, Grosh added. For example, he suggested that granular products can help solve the problem of keeping fungicides available when needed.

Instead of keeping fungicide sprays in the tanks, operators can carry a couple of bags on the truck, he said.

As for timing problems when servicing multiple customers, Meek said, that's why mainte-

nance operators need to select fungicides that offer broad-spectrum control and long residual action.

"LCO's must lengthen, as much as possible, the window of time available to service their client's disease problems," he said.

EDUCATE THYSELF. Before educating their customers, operators need to educate themselves about turf diseases and the fungicides available to control them, according to Vrabel.

Turf pathologists generally divide diseases into two major classifications: leaf spot and pythium diseases.

Leaf spot diseases are more advanced because fungi are better adapted for survival in some drier conditions, Vrabel said. There are 10 to 12 diseases in this category such as dollar spot, rhizoctonia blight, pink snow mold and gray snow mold. Most fungicides are

generally used in controlling these diseases.

Pythium diseases, such as water molds, are less adaptable to dryness, and generally require free water to thrive. As a result, maintenance operators should consider watering turf in the early morning rather than evening, so leaf surfaces won't be wet all night, he said.

"In addition, maintenance operators might want to avoid deep waterings that leave the soil drenched for several days," Vrabel said.

It's important for maintenance operators to scout when diseases may be starting to occur. "Farmers don't worry so much about fungus because it has to reach a

(continued on page 34)

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certain level, say 20 percent, before crop yields are affected," he said. "In caring for turfgrass, however, the goal is a pristine appearance."

But perhaps more important is recognizing when climatic and environmental conditions are right for various diseases to occur so preventive action can be taken.

"Many diseases can lie dormant in thatch or dead matter, and hang on until temperature and humidity conditions are favorable for an outbreak," Vrabel said. "Other fungi produce billions of spores that can travel and lie dormant, waiting to grow."

Vrabel encourages maintenance operators to get information from state agencies and county extension services, or from trade magazines and journals. Then become familiar with the various diseases common to your region, and the qualities of fungicides available to control them.

Strategies for fungicide applications depend upon the type of disease, the environmental factors and your geographic location, according to Towne. "They're not so much like herbicides or insecticides, where you can generalize somewhat about seasonal application times."

Fungicide products can be placed in two basic groups: contact and systemic fungicides.

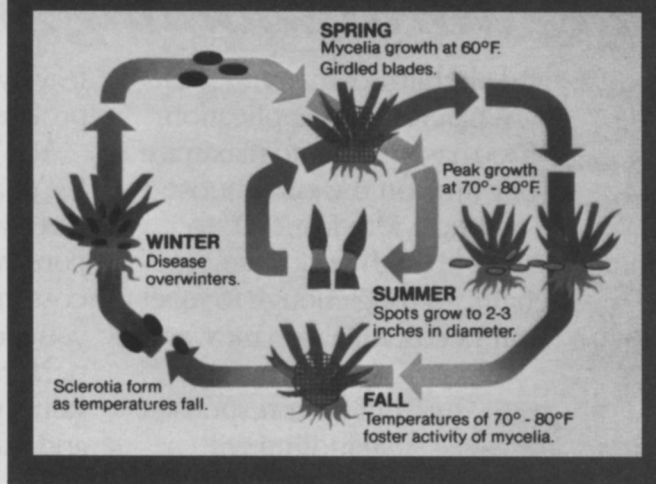
"Contact products work on the exterior of plants, and are used primarily when disease outbreaks have already occurred," he said. "They cost less than systemics but don't last as long, perhaps seven to 10 days. That coverage can be even further reduced, if the turf is mowed or rained upon."

By contrast, systemic fungicides work in the plant's interior.

"These products cost more than contact fungicides, but have a residual of 10 to 21 days — and sometimes even more than 28 or more days," he said. "Systemic fungicides cost less to use for each day of control, and give operators more flexibility in servicing multiple customers."

Hal Dickey, advertising director of the Kansas City, Mo.-based PBI Gordon Corp., said systemic fungicides are best for preventive applications because, for example, rain doesn't wash them away.

DOLLAR SPOT



But Dickey, whose company supplies two contact products, said he believes when infection hits, contact fungicides are faster acting than systemics. Also, systemics can sometimes stunt turfgrass growth rates.

As a rule, best results for systemic products are obtained when applied to fully established, vigorously growing turf as part of a balanced program of fertilization, irrigation and soil management practices, according to Tim Birthisel, technical manager of The Andersons, Maumee, Ohio.

asked whether turf disease was more or less of a lawn maintenance problem than weeds and insects, all agreed with Towne who said, "Fungus is the lesser of the three problems, because its occurrence on home lawns is more scattered."

But Meek warned, "Even so, turf disease is more of a problem than is commonly perceived."

Furthermore, Dickey pointed out that fungus can attack even the best managed lawns because turf that is highly watered can have increased vulnerability to fungus

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Today's commercial and residential customers have higher expectations and operators must identify new services in order to gain a competitive edge and an added source of revenue.

Birthisel also suggested that systemic fungicides be applied when turf is dry and after mowing. Rainfall or irrigation soon after assures rapid uptake of the active ingredients into the grass plants.

Contact fungicides also work best as part of a comprehensive turf management program. "But because the action of the products is foliar (by leaf contact), the lawn should be moist when making the application," he said.

MARKETING CHANCES. When

growth. And though its occurrence is spotty, once fungus hits it can be devastating.

Since fungus is a problem of comparatively lesser magnitude, Grosh said, maintenance operators would be dreaming to think they could sell fungicide programs on their own. As an add-on option for the premium buyer, however, disease control could complement the maintenance operator's existing service mix.

According to Vrabel, a special opportunity exists to market disease control as an extended ser-

vice for woody ornamentals, such as azaleas.

"When these ornamentals die, it's usually because of disease," he said. "And in about 95 percent of the regions where woody ornamentals grow, the conditions for fungus growth can occur."

Office parks and homeowners may spend tremendous amounts of money for ornamental landscaping, he added. "So tell them, 'For just a few dollars more a month we can control diseases, help your ornamentals thrive and protect your investment.' That could be a very effective sales pitch."

Once maintenance operators can sell customers on disease control for ornamentals, they've got a foot in the door, and fungicide programs for lawns could be next.

He said maintenance operators should educate clients by obtaining and then showing them photographs of diseased turf.

Hand-held diagnostic kits have also been developed by Agri-Diagnostics Associates, a New Jersey firm, according to Towne.

"You can grind up some grass and, in as little as 10 minutes, have a positive or negative disease reading. Obviously, that's a great way to sell any disease control services that may be needed," he said.

Towne's own company, Ciba-Geigy, distributes the kits as bonuses to maintenance professionals who purchase a minimum amount of Ciba-Geigy products. Kits are available for detecting pythium blight, brown patch or dollar spot. Agri-Diagnostics has also developed a portable reflectometer able to measure the amount of disease present, plus a hand-held turf microscope.

THE BIG SIX? Manufacturers and suppliers are understandably interested in promoting increased fungicide use among maintenance operators.

"There are more fungicide products on the market than ever before," Grosh said. "And that's good, because we don't see turf diseases building up resistance against fungicides. But in the fungicide market, there is real competition among a limited number of key players."

There aren't many classes of fungicides, but many products within each class, Meek said.

While the automotive industry has its Big Three, he said, in fungicides there's probably a Big Five or Big Six.

"Competition is not due so much to the number of manufacturers in the market, but because the competitors are all very strong corporations," he said.

Manufacturers must be financially and organizationally strong because it takes seven to 10 years and \$20 million to \$30 million, to put a fungicide product on the market, Meek said. "There are just so many government regulations. At Mobay, research takes about 15 percent of our gross income."

Towne said Ciba-Geigy also estimates the same amount of time and money for new product development. "But today," he said, "it costs almost as much money to re-register existing fungicides."

The time and dollar figures are considered to be industry standard by manufacturers.

Vrabel described the development process as beginning with lab cultures, then moving to

greenhouse experiments and then to the company's research farm.

At that time, safety and toxicity tests begin, and if the fungicide continues to show promise, the manufacturer contracts for university research. Next, the com-

.....

Logistics are one of many considerations when choosing a fungicide. Granulars can help solve the problem of keeping fungicides available when needed.

pany may apply for an experimental use permit, all the while continuing safety and environmental tests required to satisfy government requirements.

Because of costs, manufacturers cannot afford to register a new product all at once for its possible uses. "The company registers the fungicide for its best use first," Vrabel said, "and so it's not unusual for a manufacturer to keep registering new uses for an

existing product for another 15 years."

If lawns and landscaping account for a small fraction of sales, and manufacturers must work quickly to cover their large up-front investments, are mainte-

nance operators being ignored?

"No, we're very conscious about getting LCOs needs and in puts," Meek said, though Ciba-Geigy sells less than one-tenth of its fungicides to operators.

Recently the company has developed a broad-spectrum fungicide that should appeal to maintenance operators, Meek said.

"Each year we survey more than 800 maintenance operators,

and also set up focus groups," he said. "We interview our distributors to see what LCOs are saying. And the company maintains a dedicated turf and ornamental group."

Meek reported that Mobay also conducts surveys and focus groups with maintenance operators. "Our firm sees them as a true growth market," he said, "So Mobay — as are our competitors — is trying to come up with fungicides that offer improved broad-spectrum control, longer residual action, lower cost, more flexibility and other features important to LCOs."

Golf courses, nurseries, sod farms and other highly managed turfs are a more mature market for fungicides, Towne said. "So when we look at the percentage of fungicides used to the area LCOs cover, manufacturers and distributors see maintenance operators as a market with tremendous opportunities." — *Mark Ward* ■

The author is a free-lance writer based in Schroon Lake, N.Y.

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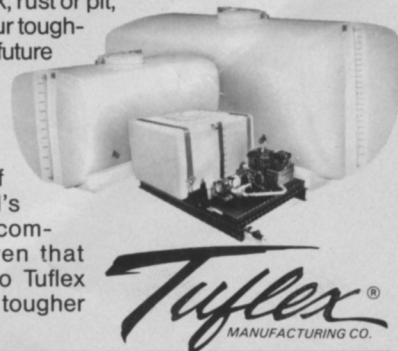
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Widespread Injury Leads to Reduced Turf Quality

WARM-SEASON TURF-grasses, like their cool-season cousins, have their fair share of diseases, one or more of which occurs widely on bermudagrass, zoysiagrass, centipedegrass and St. Augustinegrass.

Tall fescue, widely used in the mid and upper South, is also the target of several diseases.

Fungi are the most common and damaging disease agents, however, some nematodes may also cause widespread injury to warm-season turfgrasses. Injury associated with turf diseases and nematode pests is unsightly, and



Gray leaf spot damage on St. Augustinegrass.

serious reductions in turf quality and stand density often occur.

Selecting the right maintenance practices or chemical treatment for any disease and nematode pest starts with accurate problem diagnosis. However, symptoms of several common diseases are so similar at first glance that it's difficult to distinguish between them.

Further confusion comes from trying to distinguish between symptoms of patch-type diseases, nematode injury and those associated with poor site adaptation, low soil fertility, soil compaction, winter injury and other causes of turf decline.

Turf managers should always review available maintenance and weather records and examine affected turf and its surroundings to eliminate as many potential causal agents before arriving at a diagnosis.

A small reference library and file of articles from trade publications are invaluable sources of

information on the diagnosis and control of common turf diseases and other disorders. Diagnostic assistance is offered by the plant laboratory located at the land-grant university in your state.

Numerous disease and nematode pests have been described on commonly grown warm-season turfgrasses; however, only a few are of real importance. Diseases and nematodes which have a detrimental effect on the beauty and health of lawns and recreational turfs across the South and their controls are discussed below.

BROWN PATCH is a common and often damaging disease of well-managed zoysiagrass, St. Augustinegrass, tall fescue and centipedegrass lawns. Occurrence of brown patch on bermudagrass is sporadic compared with levels seen on other warm-season turfgrasses and tall fescue.

Several days of overcast, wet weather are usually needed for disease development. Although

brown patch outbreaks may occur whenever the weather is favorable, this disease is usually seen on warm-season turfgrasses in mid to late spring and again in late fall.

In the lower South, brown patch is often reported in the winter months during wet, mild weather on St. Augustinegrass and centipedegrass lawns. During the hot, humid summer months, tall fescue is the main target of brown patch, but disease outbreaks on St. Augustinegrass and zoysiagrass are not uncommon. Excessive nitrogen and a buildup of thatch are usually associated with brown patch.

Symptoms first appear as tan to brown circular patches a foot or so in diameter. With good moisture, the patches can double or triple in a single area almost overnight. Blighted shoots and leaves are first a water-soaked gray-green color, then turn tan to light brown as they dry.

Distinct straw-colored spots may be seen on the leaves of broad-bladed, warm-season turfgrasses and tall fescue. On severely damaged lawns the brown, blighted patches of turf coalesce to form large irregular areas. Patches appear sunken on turfs maintained at high cutting heights.

Although brown patch-damaged turfs are often badly thinned, some scattered green shoots almost always survive within the blighted areas. On some lawns, a light thinning of the turf canopy across a wide area may be the only visible symptom.

Recovery of the damaged areas, particularly those on zoysiagrass lawns, may be slow. Fall and winter brown patch damage, which often persists well into the spring, may easily be confused with spring dead spot or winter injury. With favorable weather condi-



Zoysiagrass and other warm-season grasses are susceptible to a number of diseases.

DISEASE CALENDAR FOR WARM-SEASON TURFGRASSES

Disease	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.
Dollar Spot												
Brown Patch												
Leaf Spot and Crown Rot												
Zoysiagrass Rust												
Gray Leaf Spot												
SDS												
Nematodes												

Symptoms Seen
 Common Treatment Period

tions, this disease tends to reappear in the same area of a lawn year after year.

Lush, succulent top growth of heavily fertilized turf is extremely susceptible to attack by the brown patch fungus. The risk of disease may be reduced by making frequent, light applications of nitrogen or using a slow release nitrogen fertilizer.

Avoid early spring and late fall nitrogen applications. Maintain soil pH, phosphorus and potash levels according to soil test recommendations. Water turf at midday or overnight to minimize the time the foliage remains wet. Yearly dethatching and topdressing of intensively managed turf is also suggested. Collect and discard the clippings from brown patch damaged turf.

Brown patch occurs too sporadically on most lawns to justify preventive fungicides. On intensively managed turfs, however, apply fungicides to those areas previously damaged by the disease only when weather conditions favor disease.

Mow the turf before applying any fungicide and let the treated foliage dry before watering. Recording the location of disease-prone areas is a valuable guide for targeting future fungicide treatments.

DOLLAR SPOT is an annual problem on numerous bermudagrass, bahiagrass, centipedegrass and zoysiagrass lawns. Low nitrogen fertility and drought stress greatly increase turf susceptibility to this disease. Although symptoms may appear in April, the heaviest damage is usually seen from July through September.

On low cut, fine-leaved zoysiagrass and bermudagrass lawns, the bleached to tan colored spots are about one to two inches in diameter. Spots on the coarse-bladed bahiagrass and centipedegrass are much larger, usually six inches or more in diameter. Left unchecked, the spots merge together, forming large areas of unsightly, blighted turf.

After a heavy dew, the cottony, white growth of the dollar spot fungus may be seen suspended between diseased leaves. Light tan lesions with a dark brown margin develop along the leaf margins and expand across the leaf blade in a broad band, often girdling the leaf.

Several light applications of a nitrogen fertilizer over the growing season will suppress this disease without increasing the risk of brown patch.

Maintenance practices which reduce turf stress, such as thorough but infrequent watering

and higher cutting heights during hot, dry weather, will also help fight this disease.

Limit fungicide use to high visibility turfs where any dollar spot damage is not tolerated.

HELMINTHOSPORIUM LEAF AND CROWN ROT are commonly found on bermudagrass, and less frequently zoysiagrass. A similar disease called **net blotch** may also be seen on tall fescue. Like dollar spot, leaf spot and crown rot are most damaging to low maintenance bermudagrass and sometimes zoysiagrass turfs.

The worst disease outbreaks typically are seen in late summer to early fall on bermudagrass roadsides and pastures. A potash deficiency has often been associated with severe leaf spot and crown rot injury on bermudagrass. Common bermudagrass is much more susceptible to leaf spot and crown rot than hybrid bermudagrass varieties.

Small purple to brown leaf spots, sometimes with tan centers, develop on the older leaves and leaf sheaths. Heavily spotted leaves turn yellow, wither and die. Stands of common bermudagrass often are badly thinned by leaf spot and crown rot.

Establishment of an improved bermudagrass cultivar such as

"Tifway" bermudagrass is the best control for leaf spot and crown rot. A balanced soil fertility program along with thatch control and timely watering should generally keep leaf spot and crown rot in check. Removal of grass clippings when symptoms are seen is recommended.

Fungicides will give good control of leaf spot and crown rot. Begin preventive fungicide applications in those areas previously damaged by the disease shortly before symptoms reappear.

RUST commonly occurs on zoysiagrass but is seen less often on bermudagrass and St. Augustinegrass. Among commonly grown zoysiagrass cultivars, "Emerald" and "Meyer" zoysiagrasses are most susceptible to rust. Mild, humid weather in the spring and early summer favors development on zoysiagrass. Rust often peaks on zoysiagrass in May and again in July.

Small yellow flecks on the leaves are the first symptoms of rust. Later, bright orange-yellow raised pustules appear. The powdery, orange spore mass will stick to fingers when rubbed. Leaves covered with numerous pustules often turn yellow, wither and die. Rust-damaged turf often has a yellow to orange cast. Stand thin-

ning may be particularly severe on shaded zoysiagrass turf.

Maintain soil fertility and pH levels needed for steady turf growth. Mow rust-damaged turf every four to seven days and discard the clippings until symptoms disappear. Water infrequently but thoroughly. Disease may also be reduced by pruning overhanging limbs on trees and shrubs to increase sunlight penetration to the turf.

"Matrella" zoysiagrass may be a better choice for shaded sites than "Meyer" or "Emerald" zoysiagrasses. Fungicides may be used when maintenance practices fail to give effective disease control.

SPRING DEAD SPOT occurs widely on bermudagrass and to a lesser extent zoysiagrass turfs in the mid and upper South. A related disease called **bermudagrass decline** is found in Florida and possibly other surrounding southern states. Generally, SDS is found on three- to six-year-old, heavily fertilized turf, particularly in areas where bermudagrass adaptation is marginal. The worst damage is usually seen after cold winters, but some turf loss will often occur following a mild winter. Hybrid bermudagrass cultivars are far more likely to be damaged by SDS than common bermudagrass.

Bleached-colored oval to circular patches, several feet in diameter, appear as the turf breaks dormancy in the early spring. Usually a few, scattered shoots will survive in the patches of dead turf. A "frog eye" pattern consisting of a tuft of healthy turf surrounded by a ring of dead turf may also be seen.

Regrowth of the turf over the damaged areas is slow, particularly in the upper South. Damage often appears in the same area of a lawn year after year.

SDS may be prevented by not pushing newly established lawns with too much nitrogen. Apply enough nitrogen to maintain good turf growth through the growing season. Supplemental fall potash applications and yearly dethatching will also help reduce the risk of SDS in intensively managed turfs. Avoid fall applications of nitrogen fertilizers on SDS-damaged bermudagrass.

GRAY LEAF SPOT occurs pri-



Spring deadspot is often found on bermudagrass.

marily on St. Augustinegrass. This disease is favored by frequent showers, high temperatures and the overuse of nitrogen. Gray leaf spot is most troublesome on St. Augustinegrass in June to August.

Small gray-brown water-soaked spots on the leaves and leaf sheaths spread to large tan to gray centers with a dark brown margin. A yellow halo may sometimes be seen around some leaf spots. Heavily spotted leaves wither and die. The turf canopy may be badly thinned by gray leaf spot. Damaged turf often has a scorched appearance due to numerous yellow, dying leaves.

Light, frequent fertilizer applications along with watering at midday will help control gray leaf spot. "Common" and "Floratum" St. Augustinegrass have good gray leaf spot resistance while "Raleigh" is intermediate in reaction to gray leaf spot. "Bitterblue" cultivars are highly susceptible to gray leaf spot, but fungicides will provide effective protection from gray leaf spot. Limit fungicide applications to turfs highly susceptible to injury when weather conditions favor the disease.



Brown patch is usually seen in mid to late spring and again in the fall.

STING AND LANCE NEMATODES are major pests on all warm-season turfgrasses. Ring nematode has been reported in several states to cause a decline of centipedegrass. Although nematode injury is seen most often on golf courses, some problems with these pests are also seen in home and commercial landscapes.

Damaging populations of these nematodes occur primarily on light, sandy soils. Nematodes may be introduced into new turf plantings in sod or plugs. Once established, nematodes are impossible to eradicate.

Yellowing of the turf, thinning of the turf canopy, poor vigor, rapid wilting and stand loss are typical symptoms of nematode injury. Damaged areas vary considerably in shape and size. Symptoms of nematode injury are most apparent during periods of drought and heat stress.

Weeds often invade turf thinned and weakened by nematodes. Nematode-damaged turf generally doesn't respond to additional management or pest control inputs. Similarities in nematode injury with symptoms of low fertility, root-feeding insects, com-

paction and other stress factors makes diagnosis on the basis of symptoms difficult.

An analysis of soil samples for both nematodes and soil fertility is often needed for accurate diagnosis.

Nematode-damaged turfgrasses must be carefully managed to maintain turf coverage. Cultural practices that encourage root development and elongation including deep watering, aeration and balanced fertility, will often help offset nematode injury.

Overfertilization with nitrogen, which favors top growth over root growth, may result in turf loss. Most available nematicides are restricted use pesticides and may only be applied by certified applicators. The number of nematicides cleared for use on home lawns is limited.

On heavily nematode infested turf, a spring and midsummer application of a nematicide may be needed to maintain turf quality. Clandosan 618, a recently introduced bionematicide, apparently is ineffective against nematodes on established turfgrasses, and may be highly phytotoxic when improperly applied.

Disease and nematode control on turf involves more than just applying pesticides. An array of cultural and maintenance practices including nitrogen and potash fertility, irrigation, aeration, adjusting mowing heights and thatch removal, will often provide disease control acceptable to all but the most discriminating client.

Clientele, who are overly sensitive to pesticide use, may appreciate efforts to manage diseases and nematode pests rather than resorting to chemical controls. Some situations will, however, arise where fungicides or nematicides will be needed to maintain turf health.

Specific information on the selection and use of fungicides and nematicides in your area are available from your local county extension office or extension plant pathologist.

Distributing information to your clients on proper lawn maintenance may prove helpful in controlling some diseases as well as being a good public relations tool. — Austin Hagan ■

The author is an extension plant pathologist at Auburn University, Ala.



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Non-Phenoxyes Meeting Success in Postemergent Control

FOR SEVERAL DECADES, turf managers have had a variety of effective post-emergence selective herbicides for the control of dicotyledonous weed species in lawns. Perennial weeds like dandelion and plantain, nearly impossible to control before the discovery of these materials, have been minor concerns since their development.

The primary products used for broadleaf weed control in lawns fall into the phenoxy group (Table 1). These herbicides are ideally suited for this type of use. They are effective on a wide variety of broadleaf weeds,

and most of the common turf species are quite tolerant of them.

2,4-D is the most widely used phenoxy herbicide on turf in the

United States. It's relatively inexpensive, it can be easily formulated for both granular and liquid application and it's effective on many of the common broadleaf weeds found in lawns.

Its primary disadvantage is that it's not completely effective on some of the more difficult to control broadleaves such as clover, violets, ground ivy and buckhorn plantain.

Another phenoxy herbicide that has proven effective for broadleaf weed control in lawns is MCP (Mecoprop). This herbicide is similar to 2,4-D in both structure and activity, but it controls some weed species on which 2,4-D is less effective.

Clover, for instance, shows some tolerance to 2,4-D, but is controlled by MCP. The cost of MCP is generally higher than 2,4-D and it's often used in combination with other herbicides. MCP has been particularly pop-

ular in the golf course industry, where it has been found to be safer than 2,4-D for use on creeping bentgrass.

MCPA and 2,4-DP (Dichloroprop) are two other phenoxy herbicides that have grown in use over the last few years. As with MCP, these phenoxyes increase the spectrum of weeds controlled when they are combined with 2,4-D.

Silvex, once popular as a phenoxy herbicide, is not included in Table 1 because it was removed from the market in the late 1970s. Silvex was an excellent herbicide for use on turf. Its weed spectrum was broader than any of the other phenoxy herbicides and it was widely used during the early days of the professional lawn maintenance industry in the late 1960s and 1970s.

Silvex was withdrawn from the market because of concern over possible contamination with dioxin, a highly toxic byproduct of some chemical reactions.

Following the loss of Silvex, a number of combination products were released in the turf market to fill the void that it left. One of the most popular and effective of these materials is a three-way combination of 2,4-D, MCP and Dicamba.

Dicamba is a member of another chemical group known as the benzoic acids. This herbicide has a different chemical structure than the phenoxy herbicides, but its activity on broadleaf weeds is similar.

It's an excellent control for many of the hard-to-kill weeds, particularly thistles. Dicamba also has some disadvantages: It can be quite volatile, and special care must be taken to prevent damage to non-target plants in the landscape.

It's also considered to carry a

.....

The 2,4-D controversy led to a flurry of activity to find non-phenoxy substitutes should they be needed.

HERBICIDES USED FOR THE SELECTIVE, POSTEMERGENCE CONTROL OF BROADLEAF WEEDS IN COOL-SEASON TURFGRASSES

PHENOXY

2,4-D	2,4-dichlorophenoxyacetic acid
MCP	2-(4-chloro-2-methylphenoxy) propionic acid
MCPA	(4-chloro-2-methylphenoxy) acetic acid
2,4-DP	2-(2,4-dichlorophenoxy) propionic acid

BENZOIC ACID

DICAMBA	2-Methoxy-3,6-dichlorobenzoic acid
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MORPHACTIN

CHLOROFLURENOL	Methyl-2-chloro-9-hydroxyfluorene-9-carboxylate
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PYRIDINE

TRICLOPYR	3,5,6-trichloro-2-pyridinyloxyacetic acid
CLOPYRALID	3,6-dichloro-2-pyridine carboxylic acid

Table 1.

greater risk of soil movement to the root system of trees and shrubs than the phenoxy herbicides. Dicamba is usually mixed in much smaller quantities than 2,4-D and MCPP in the combination products.

The proper combination of these three herbicides is believed to form a synergistic relationship, meaning that the combined materials have a greater capability for controlling weeds than do each of the materials applied alone at the same rates.

These three-way combination products have proven to provide excellent broadleaf control for a broad spectrum of turf weeds. They are generally used as standards in turf weed control research against which new products are compared.

PHENOXY SUBSTITUTES. In the mid-1980s, public concern about potential human health effects of pesticides began to gain considerable attention. The turf herbicide that raised the most concern was 2,4-D because of some preliminary studies that linked it to various human health problems.

The validity of the studies linking 2,4-D, and by association other phenoxy herbicides, to human health concerns will be the subject of debate for years to come. However, the controversy did lead to a flurry of activity in the herbicide industry to find non-phenoxy substitutes to take the place of this group of materials should they be removed from the market.

The first of these possible phenoxy substitutes to reach the turf market was chlorflurenol, which is marketed under the trade name BreakThru by The Anderson's, Maumee, Ohio.

Chlorflurenol is a member of

the Morphactin group of chemicals, which were originally developed as plant growth regulators. It's marketed for use as an inhibitor of tree growth and for certain growth regulating purposes in vegetable production. Chlorflurenol can also provide some selective control of broadleaf weeds in turf.

Its effects are quite slow to develop on target weeds, and its spectrum of weed control is not as great as that of the phenoxy herbicides. As a result, chlorflurenol is usually combined with dicamba to enhance weed control.

It has been available for several seasons as a non-phenoxy substitute for use by the lawn maintenance industry. It was widely used during the peak years of concern over the use of phenoxy herbicides in the late 1980s.

Some of the early concerns over the health effects from phenoxy herbicides have subsided, although the controversy is by no means over. The phenoxy herbicides haven't been banned from use on lawns, and they are still popular with most of the public and with the professional lawn maintenance industry.

More complete studies of the health effects of these herbicides will be conducted and their future will not be certain for several years.

FURTHER ANALYSIS. Research to find satisfactory substitutes for phenoxy herbicides has not ended. Several materials are under consideration for use as broadleaf weed controls for lawns. Among the most effective of these experimental materials are members of a class of compounds known as the pyridines, and two of these materials have recently been released for sale in the turf market.

The pyridines have a similar



Dandelions and other broadleaf weeds quickly become established in lawns that have not been treated with a broadleaf weed control. (above) Weed-infested lawns often contain trees and shrubs that are also susceptible to the postemergence herbicides, and care must be taken to see that these non-target plants are not damaged. (below) Photos by Mike Agnew, Iowa State University.



mode of action as the phenoxy herbicides. They are quite deadly to most dicotyledonous species and are generally safe for use on cool-season grasses.

The first of the pyridines to reach the turf market was triclopyr. Before its release, initial research trials with triclopyr showed it to be an excellent control of clover and some other weeds that 2,4-D doesn't control well.

Triclopyr was first released by Dow-Elanco in an ester formulation as a two-way combination product with 2,4-D.

The combined herbicides were marketed beginning in 1985 under the trade name Turflon-D. An amine formulation with lower volatility of this product called Turflon II Amine was released in 1987.

The amine formulation contains 34.2 percent 2,4-D and 15.2 percent triclopyr. This material has been popular with the professional lawn maintenance industry in the cool-season grass region

.....
Phenoxies haven't been banned from use on lawns and are still popular with most of the public and professionals alike.

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because of its effectiveness on many of the more difficult to control lawn weeds like violets, clover and Oxalis.

Clopyralid is another of the pyridine materials that has just recently reached the turf market. DowElanco began marketing it in 1990 under the trade name Confront as a non-phenoxy substitute for broadleaf weed control in lawns in a two-way combination product with triclopyr.

It's marketed as an amine salt

Another pyridine herbicide known as fluroxypur is currently under evaluation. Initial results with this material are positive. Following toxicology tests and other evaluation by the Environmental Protection Agency over the next few years, it too should find its way to the turf market.

A LOOK TO THE FUTURE.

What the future will hold for the lawn maintenance industry is difficult to determine at this point

.....
No one has more to lose from the use of an unsafe material than the applicator who comes in contact with it on a regular basis.

containing 33 percent triclopyr and 12.1 percent clopyralid. Confront has been shown to be an effective broadleaf herbicide in several university research trials and should prove to be a useful tool for those companies that desire a non-phenoxy substitute for their lawn weed control program.

in time. Consumer demand for a well maintained lawn should remain high, regardless of the efforts by some groups to convince homeowners that "weeds are really beautiful."

A greater threat to the industry is the potential for the ban of pesticide use that has been con-

sidered in many parts of the country, often based on little factual information. We as an industry must be sensitive to the issue of pesticide safety and we should fully support every effort to adequately study the health effect of the materials that we use.

No one has more to lose from the use of an unsafe material than the applicator who comes in contact with it on a regular basis. However, we must also be careful that emotionalism and half-truths are not used as the basis for pesticide regulation.

In the future, becoming actively involved in the decision making process concerning pesticide regulation will be important for all professionals involved in the turf industry.

It's also critical that we use pesticides as responsibly as possible. One damaged tree, or one garden with curled tomato plants can do a lot of damage to the credibility of the industry and can easily be used as ammunition for groups that would totally ban the use of pesticides.

Spraying in windy conditions which spreads the odor, if not the

active component, of pesticides to neighboring properties is another serious problem for those who apply pesticides in urban areas.

The temptation is always there to spray when the wind speed is a little higher than it should be, particularly after several days of downtime because of weather or equipment problems.

But given the current scrutiny that the industry has come under, this should be avoided at all costs.

The flexibility to make granular applications, when necessary, to avoid chemical drift may be one way to deal with the problem.

The future is sure to bring more regulation and greater scrutiny of the lawn maintenance industry. It will be up to everyone involved in this profession to see that the public is made aware of the industry's efforts to use these materials responsibly. — Nick Christians ■

The author is a professor of horticulture at Iowa State University, Ames, Iowa.

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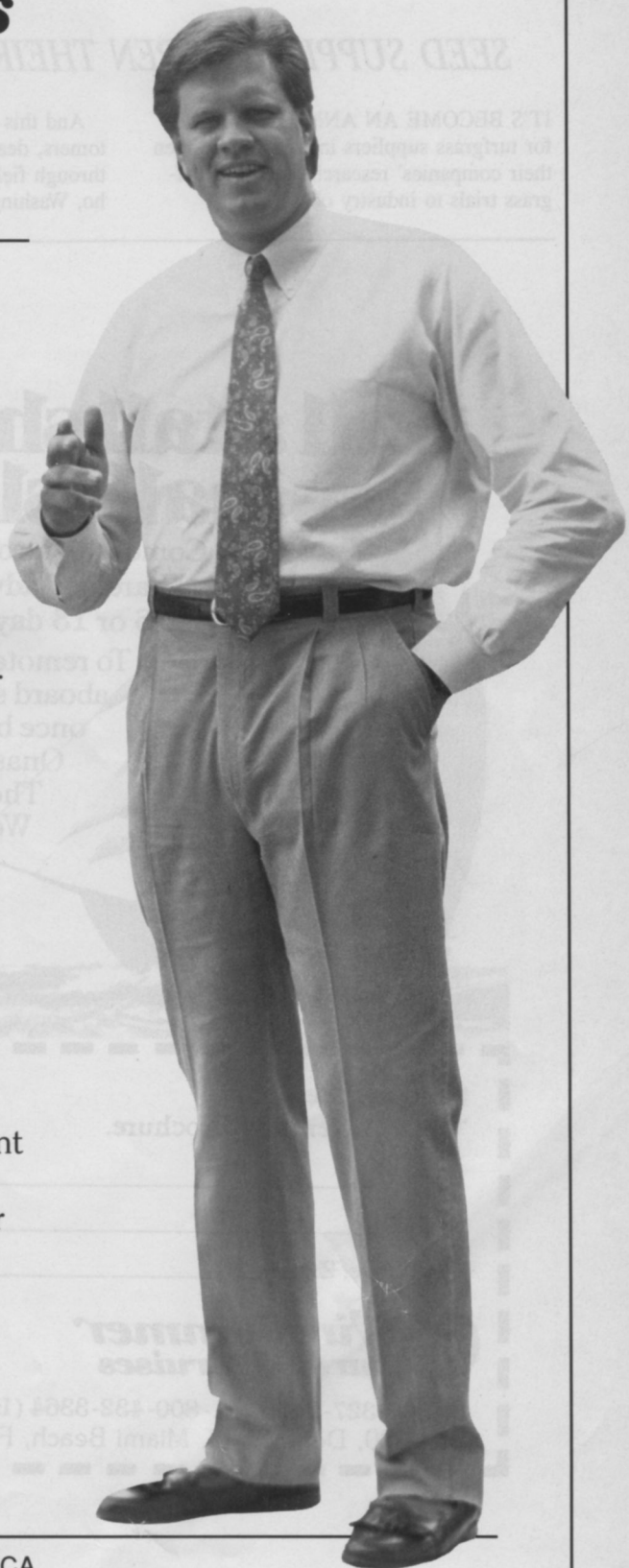
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SEED SUPPLIERS OPEN THEIR DOORS FOR ANNUAL INDUSTRY TOURS

IT'S BECOME AN ANNUAL EVENT for turfgrass suppliers in the West to open their companies' research plots and turfgrass trials to industry observers.

And this year was no different, as customers, dealers and distributors traipsed through fields and research plots in Idaho, Washington and Oregon.

Visitors received tours of national turfgrass trials including wildflower and shade tree trials, production facilities and greenhouse tours.

While the weather was ideal for the tours, that wasn't the case for most of the spring in the Northwest. Jacklin Seed Co. of Post Falls, Idaho, reported a tremendous amount of spring rain; so much so that they turned their irrigation system off for more than a month.

Excessive wetness can result in thin fields, leading to retarded or stunted conditions. Nevertheless, a good harvest is predicted this year.

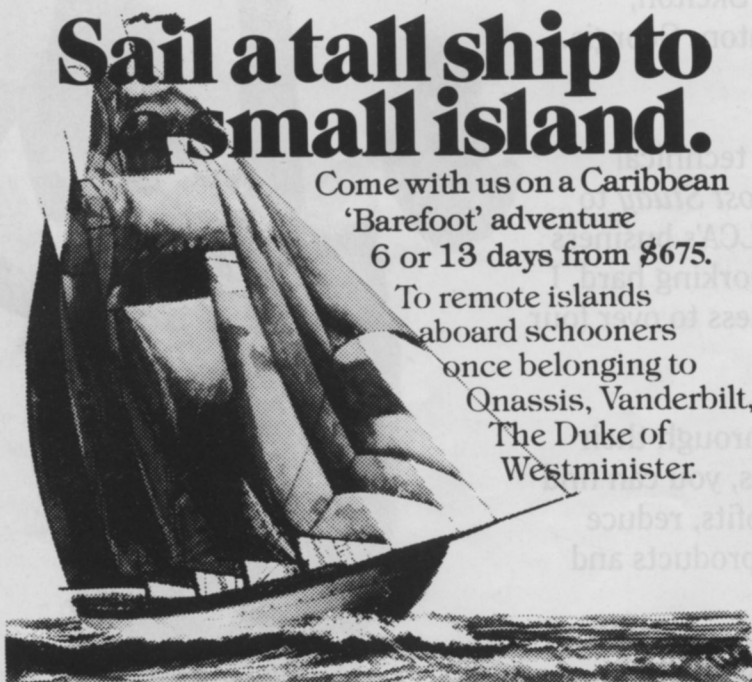
Jacklin has 65,000 acres under contract in Oregon, Washington, Idaho, Nevada and Arizona.

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A tall fescue test variety from Jacklin Seed.

Kentucky bluegrass seed yield trials and breeder seed fields are also located at the Idaho Ranch.

One of the nurseries is used for evaluating the cold tolerance of warm-season bermudagrass and zoysiagrass. Most of the varieties are in Arizona, but the ones here are tested for their relative winter hardiness.

Other studies done at Jacklin's include sod webworm control, preemergence herbicide trials, growth and yield enhancing studies and crossing blocks for new variety development.

Turf-Seed and Pure Seed Testing held its eighth annual field day on 110 research acres in Hubbard, Ore.

Pure Seed Testing has been conducting grass breeding and evaluations here for 16 years. Because of dry weather in the fall

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Turf Merchants opened their test plots to the industry.

and a mild winter, most of the nurseries and new turf trials are more fully developed than normal. Rust diseases are more severe than in past years.

Garrick Latch, director of the DSIR Grasslands Research Division in Palmerston North, New Zealand, has been studying endophytes in grasses since 1981. As Turf-Seed's guest speaker, Latch discussed the origins of endophyte and the effects they have on grasses.

Strains of ryegrass and tall fescue endophytes have been selected and are currently used by New Zealand grass breeders. Because of the enhanced performance in turf-type grasses with the endophyte, cross-breeding programs are continuing to develop varieties containing endophyte.

Steve Tubbs of Turf Merchants, Tangent, Ore., predicts that after a few years of fine-tuning, this will be a good year for dwarf fescues.

Questions still remain over what's considered a true dwarf type mature plant, since some grow as high as a knee cap while others can reach the belt buckle.

While many end-users are still wondering what to do with their grass clippings, Fred Ledebor from Turf Merchants, said he thinks the turf is much better off if its left on the turf because that is where the most nutrients are. The nutrients are more important than worrying about the unsightliness.

Nearly all seed suppliers are planting fields to evaluate the effects of burning on different varieties. Oregon State University is looking at mechanical methods to reduce residue but to date, all methods are considered costly.

Studies suggest that suppliers might be able to get away with mechanical methods for some of the fields, but it's not known yet how long a field can remain good without burning.

What's being proposed is to cut the number of acres burned to 150,000 in 1991 and 1992; to 125,000 in 1993 and 1994; and 50,000 in 1995 and thereafter. The proposal affects both field and propane burning.

About 314,788 acres were burned over

33 days in 1989.

Total hours of smoke impact and the number of smoke intrusions were significantly lower than in previous years on both an absolute and a per acre basis. In 1989, 30 hours of smoke impacted valley communities vs. 42 hours in 1988.

Complaints totaling 2,118 in 1989 were down from 3,783 recorded in 1988, but still higher than the 855 average from 1980-87.

Look for more information on the 1990 harvest and yields of your favorite variety in the September issue of *Lawn and Landscape Maintenance* magazine. ■

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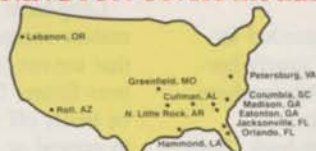
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GENERATING VENTURE CAPITAL — THE SMART WAY

IF SOMEONE WERE TO OFFER THE average maintenance operator a gift of \$10,000 with the choice of having it now or next year, most would elect now without realizing why they were making the right decision.

To phrase the question differently, if the same operator knows that he will need \$10,000 next year, how much should he invest today? The answer depends on the return on investment rate that the maintenance professional can command. If he can get 10 percent, then investing \$9,090 now will yield \$10,000 next year.

In a nutshell, that's discounting cash. Having \$9,090, the operator can invest it at 10 percent for a year which is the same as having \$10,000 a year from now.

Conversely, borrowing that same \$10,000 now means paying back \$11,000 next year. Naturally, if that \$10,000 is needed to make the payroll or to keep the operation afloat, no cost is too much. But under normal circumstances, can your lawn and landscape maintenance business afford to pay back \$11,000 next year? Or, will the \$10,000 invested in your business produce a profit of 10 percent or more?

If you're showing a return of 5 percent of income, you'll have to increase that income by \$20,000 — just to pay the 10 percent interest on a \$10,000 loan. Will investing that borrowed \$10,000 increase your landscaping operation's income enough to repay that debt?

If the borrowed money is needed for survival or if the return will justify borrowing it, the obvious question is where to borrow those needed funds.

The first step is usually the bank. But, remember, arranging the wrong type of loan for your business can make life a hassle. While short-term loans fit a banker's normal way of thinking, they are not always in the borrower's best interest, not taking into consideration intermediate or long-term repayment plans — even alternative types of financing.

Frequently, business increases faster than profits and/or retained earnings. If the sales spurt is temporary — such as with seasonal demands — then a short-term loan is needed. If the rapid growth is expected to continue for a long time, an expanding line of credit is needed.

Normally a move into a new market does not yield short-term repayments.

When it comes to new equipment, if it

TWO DIRECTORIES AVAILABLE TO HELP YOU LOCATE STATE PROGRAMS:

The States and Small Business: A Directory of Programs and Activities, 1989. A 411-page directory of state listings available from the Small Business Administration, \$12.

Directory of Federal and State Business Assistance, 1988-89: A Guide For New And Growing Companies [NTIS Order NO.PB88-101977]. A 170-page directory published by the U.S. National Technical Information Service, \$29 plus \$3 handling.

will reduce the current overhead of the business, then repayment can be tied to current profits plus the projected reductions of overhead. Ordinarily, the banker will limit the term of the loan to just less than the expected life of the equipment. The answer is to match the repayment to the anticipated change in cash flow.

Even though most professionals can arrange a long-term loan — over seven years — based on the long-term value of real estate and buildings, it's not a good reason for borrowing long-term. If the operation is growing fast, it may not be wise to tie up money in a building that may soon be outgrown.

Long-term loans should be for stable, mature companies with steady earnings that are not likely to expand again in the near future. Otherwise, a business may be better off leasing space with an option to expand or move, keeping cash for growing inventory and accounts receivable and the like.

As a general rule, bankers do not like to loan new money to any company in trouble. However, if the business already owes them money, they may be receptive to providing more, so long as the operator knows what the problem is and is doing something to correct it.

Next to banks, private investors of one sort or another are the major source of long-term financing for small businesses. Often a private investor sets its priorities differently from a bank. A deal that has no attraction at all for a bank can look good for a private investor.

Some private investors can be good partners and some of them are nothing

but trouble. It's important to know whom you are dealing with and what their motives are before any deal is made. There are some types of investors that are too expensive no matter how badly the money is needed.

Finding a private investor can be easy. Many professionals advertise in newspaper classified ads or the financial section. Some are listed in the phone book. Others will be known within the business community. An operator can expect to pay at least prime rate to a private lender and

sometimes a good bit more.

If all else fails, the U.S. government offers money for investment purposes from the state government up to many federal agencies, the best-known of which is the Small Business Administration.

According to the Washington, D.C.-based Corporation for Enterprise Development, all but four states now provide some type of small-company financing; 28 offer publicly funded venture or seed capital; 25 states fund new business incubators designed to help start-ups through the difficult early stages; 46 states have Small Business Development Centers to provide management assistance and 30 award grants for state of the art research and development.

In addition, more than half of the states now have small business offices, toll-free hotlines or small business advocates. If your state doesn't, call its Department of Commerce or Economic Development.

But, one word of warning: many landscapers feel buried under a mountain of debt. Few of them, however, can actually say whether they are making or losing money on the funds they borrow.

In addition to worrying about getting that money, an astute professional is aware just how much that borrowed money will cost him, how much income must be increased to pay for those borrowed funds and how much those borrowed funds will earn. Failure to know anything less can mean a money losing business awash in debt that can't be repaid. — Mark Battersby ■

The author is a tax and financial consultant from Ardmore, Pa.

PEOPLE



Pound



Tegeler

HENRY INDYK, INTERNATIONALLY Noted turfgrass specialist, has recently joined Turfcon, a newly created division of GSI Consultants Inc.

As chief agronomist, the 30-year Rutgers University veteran will continue to support his international reputation as an authority in the construction, renovation and maintenance of athletic fields.

New to the ranks of Champion Irrigation Products is **Thomas Kent Pound** in the new position of regional direct sales representative. Pound will represent the

company to customers in Utah, Colorado, Montana, Wyoming, Iowa, west Kansas, west Nebraska, South Dakota, North Dakota and Arizona.

Pound joined Champion from Garden America Corp. Before that he was a sales representative for several landscape manufacturers and distributors.

Performing the duties of regional sales manager for the Eastern United States at Promark Products Inc. is **Ron Pettifer**. His duties include new dealer development and assisting Promark dealers with their sales efforts.

Pettifer has previous experience with John Deere and Jacobsen among others.

Ciba-Geigy announced that **Bernd Druebbisch** is its new product manager for the Turf and Ornamental Products group.

He'll concentrate on Pennant,[®] the company's herbicide. Previously he had been a product manager for the company's Ridomil[®] agricultural herbicide.

Kubota Tractor Corp. has a new Northern district manager in **Art Shepherd** who was promoted from within the company.

He served as regional sales manager in Colorado and New Mexico for the past three years.

At BlueBird International, **Wayne Tegeler** is director of sales and marketing.

With a strong sales and marketing background, he is involved in strategic corporate planning, concentrating on expanding sales of existing products, helping develop new products and markets and conducting market research.

Before joining BlueBird, Tegeler was vice president of sales and marketing for Evans BioControl Inc.

The new development engineer at Lyntone Engineering Inc., engineering consultants to Rain Bird Sprinkler Corp., is **Mark Koontz**.

His duties involve research, development and design support for turf products with an emphasis on special projects. ■

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Discover Fast, Competitive, Profitable Mowing



Most commercial mowing operations are using walk-behind mowers because they have concluded no rider mower is compact or maneuverable enough to mow landscaped areas. Now maintenance operators all across the country are discovering the compact, maneuverable *Mid-Size Walker Mower* fits their job and saves labor (usually cuts labor 1/2). The labor saving *Walker* looks good whether your business is trying to produce profit or is operating on a budget. Write or call for a free brochure. Ask for a demonstration.

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PRODUCTS

GRACE-SIERRA HORTICULTURAL

Products has introduced Vorlan® Flo and Fungo Flo® systemic turf fungicides in a convenient liquid form. These liquids provide excellent control of key ornamental and turf diseases and also eliminates the risk of dust inhalation associated with powder pesticides.

Vorlan is safe on all turfgrasses. Its chemical makeup allows it to be both a preventive and curative. It provides long lasting control of dollar spot, leaf spot, red thread and pink snow mold. It's available in 4- by 1-gallon jugs per case.

Fungo provides protection against most major turf diseases, including brown patch and fusarium blight. Its systemic action provides effective disease control for up to 14 days. It's available in 2- by 2 1/2-gallon and 4- by 1-gallon jugs per case. **Circle 127 on reader service card**

TO MEET THE DEMAND OF PRO-

(continued on page 52)

PRODUCT SPOTLIGHT

THE FIRST ALL-HYDRAULIC MODULARMATIC TRENCHER/PLOW HAS been introduced by **Ditch Witch**. The 50-h.p. class Model 5020 represents a new generation of machines to have hydraulic digging chain/vibratory plow drive.

The 5020 is available with a full complement of Modularmatic work modules including utility backhoe, vibratory plow and combination attachments.

The 5020's digging attachments use power-efficient hydraulic components that maximize torque for greater productivity. The 5020 has easy-to-use operator controls and a work station that allows the operator to swivel his seat to easily view the work being done.

The digging module drive uses a Ditch Witch-designed double reduction gearbox. It's available in three speed options for hard, standard or easy digging conditions.

The vibratory plow module requires no daily maintenance because of its dry rotating eccentric weights. The plow is designed to "float" in most soil conditions, with down force being applied for occasional hard soil spots.

A hydraulic plow swing gives added control when working on slopes. The plow is secured in its stowed position with a mechanical lock actuated from the operator station.

Circle 126 on reader service card

BRON BULLET

A new lightweight-high performance walk-behind vibratory plow.

FOR UTILITIES AND IRRIGATION.

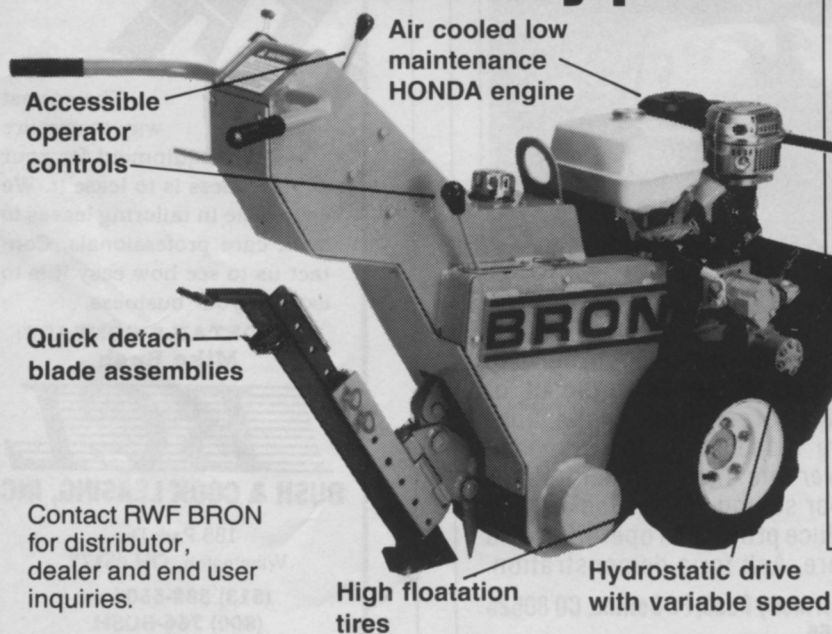
The new BRON BULLET. A high performance, multi-featured vibratory plow, is the perfect one-man machine for the installation of sub-surface cable and irrigation pipe.

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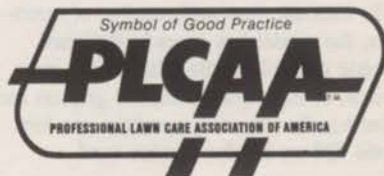
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THREE GREAT ASSOCIATIONS...

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TWO GREAT CONFERENCES...

Green Industry Expo/90 offers TWO separate conferences and educational programs to choose from. Register and attend the program that targets the specific needs of your business:

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The 11th Annual PLCAA Education Conference will have a wide variety of topics including: Business Problems-Solving, Customer Satisfaction, Employee Retention, Health & Technology, Ground Water Issues, Management Techniques, Effective Pest Control Programs, Landscape Services, and Business to Business Roundtables.

Keynote Speaker Michael LeBoeuf talks on 'Winning Customers and Keeping Them for Life.' Mail the coupon below today for details and registration information.

Landscape and Grounds Management Conference

This year's ALCA/PGMS Landscape and Grounds Management Conference features the latest information on a multitude of topics including: Training for the '90s, Customer Service, Plant Material That Warrants Attention, Maintenance and Cost of Utilizing Wild Flowers, Sports Turf and Strategies to Increase Your Bottom Line. The Keynote speaker, Allan Cimberg, will give a presentation, 'How to Sell in Tough Times to Difficult People.' Mail the coupon below for more details and registration information.

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Clip and mail to: GREEN INDUSTRY EXPO/90
1000 JOHNSON FERRY RD., NE, SUITE C135, MARIETTA, GA 30068-2112
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GREEN INDUSTRY EXPO/90

IN CONJUNCTION WITH PLCAA EDUCATIONAL CONFERENCE AND ALCA/PGMS LANDSCAPE & GROUNDS MANAGEMENT CONFERENCE

Products

(continued from page 50)

professionals for a powerful and lightweight hedge clipper, **Echo** has introduced its HC-2100.

Weighing only 12.7 pounds, it's powered by an air-cooled 2-cycle engine that features diaphragm carburetor for optimum fuel-air mixture at any operating angle. The new model also features a 16.9-ounce fuel tank for extended running time.

To increase ease and comfort of operation, the model has a newly designed throttle control handle with a slide stop switch. A high quality rubber grip on the front handle improves operator comfort.

Circle 128 on reader service card

THE GREEN MACHINE'S LAND-scaper Model 2800 Expand-It® System is designed for landscape and grounds maintenance professionals. It features a 57 1/2-inch heavy duty straight shaft for greater reach and comfort and a 24 lcc, 1.4-h.p. 2-cycle engine.

It comes with a 4-inch Tap-For-Cord™ trimmer head with brush blade capability and can be interchanged with a



variety of attachment tools safely and simply with the twist of a single knob on the shaft coupling.

Available tools include a weeder/cultivator, edger, power blower, snow thrower and an optional 8-point blade and 9-inch saw blade fixed line head for heavy duty cutting.

Circle 129 on reader service card

THE W5021-PCC WALK-BEHIND mower from **Kubota** is designed to bring better power and durability to commercial mowing operations.

The 5-h.p., 8.91-cubic-inch overhead valve engine delivers high torque at low speeds so it easily handles a variety of terrains.

The large capacity fuel tank minimizes the need for refueling. The high-suction turbo fan produces Turbo-Suction, inhaling grass, leaves and twigs while sweeping up debris and leaving behind a well maintained lawn.

Circle 130 on reader service card

BLACKBURN MANUFACTURING offers a new large-format 5-inch by 6-inch marking flag for use by lawn care companies and other marking needs.

The larger flag was designed to meet pesticide posting regulations in many states. The flag comes on a 27-inch PVC staff and is available in nine colors: red, blue, yellow, orange, white, green, fluorescent lime, fluorescent pink and fluorescent red.

The flag is available in both regular and banner style. With the banner style, the staff is bent at a 90 degree angle so the flag hangs vertically for easier reading.

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All purpose thatcher that can seed simultaneously. 5 HP unit with 21" swath. Seeder is ground powered with 1/2" centers. Adjustable depth handle and depth sight gauge.

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**Fast
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3 HP, self-propelled aerator covers 19,000 sq. ft. per hour. 30 coring tines enter the soil every 3/4" across a 21" swath.

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Slit Seeder**



Over 2,000 units in the field providing precision slit seeding with 18 HP engine, Olathe "Shatter Blades" for less power requirements & longer wear, remote seed shutoff & Olathe dependability! Call Your Nearby Olathe/Toro Dist. For Demo!

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Industrial Airport, KS 66031
800-255-6438
913-782-4396

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AUG. 24-26

Farwest Show and Ornamentals Northwest Seminars, Portland Memorial Coliseum, Portland, Ore. Contact: Farwest Show, c/o OAN, 2780 S.E. Harrison, Suite 102, Milwaukie, Ore. 97222; 503/653-8733.

SEPT. 18-19

Virginia Tech Turfgrass Research Field Days, Virginia Tech Turfgrass Research Center, Blacksburg, Va. Contact: J.R. Hall III, Department of Crop and Soil Environmental Sciences, 424 Smyth Hall, Blacksburg, Va. 24061-0403; 703/231-9736.

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.

OCT. 21-24

Interior Plantscape Division of the Associated Landscape Contractors of America Annual Conference and Trade Show, Radisson Hotel, Denver, Colo. Contact: ALCA, 405 N. Washington St., Falls Church, Va. 22046; 703/241-4004.

OCT. 28-NOV. 1

Irrigation Association Annual Conference and Show, Convention Center, Phoenix, Ariz. Contact: R.C. Sears, 1911 N. Fort Myer Dr., Suite 1009, Arlington, Va. 22209-1630; 703/525-1200.

OCT. 29-31

Tree Care Industry Exposition, Richmond Convention Centre, Richmond, Va., sponsored by the National Arborist Association and the International Society of Arboriculture. Contact: NAA, The Meeting Place Mall Route 101, P.O. Box 1094, Amherst, N.H. 03031-9967; 603/673-3311. ■

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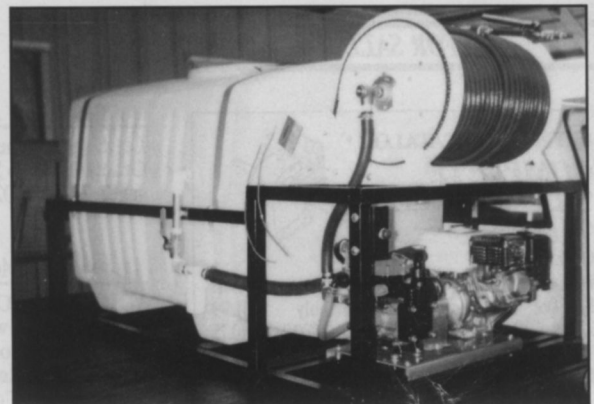
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Call for Quote



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TL-0803pt	Trimmer Line 3 lbs .080 dia.	18.50
JT-129pt	Bobcat Trans Kit	99.95

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1-800/634-5463

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Hannay reels new in-the-box, E1526s, E1530s, \$359; lawn spray hose, 275 psi and 600 psi, all sizes; original Imler measuring wheels, \$49.95; glycerin-filled gauges, 0-60 psi to 0-1,000 psi, \$19.95; ChemLawn guns, \$78.95; lawn spray boots, \$16.95; lawn spray gloves, \$1.75/pair. Call Hersch's Chemical Inc.

800/843-LAWN — outside of Michigan
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Intermediate mower maintenance field and shop repair; efficient/profitable mowing techniques; professional shrub trimming, plant installation, basic landscape plan drawing, etc. ENGLISH AND SPANISH. Write for free brochure: C.D. Anderson Landscape Videos, 515 Ogden Ave., Downers Grove, Ill. 60515; 800/937-0399.

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PIPE LOCATOR

INEXPENSIVE. Locates, traces underground drain, water pipelines of clay, PVC, ABS, steel and cement. Bloch, Box 18058, Cleveland, Ohio 44118. 216/371-0979.

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ADD PROFITS TO YOUR CUSTOMER BASE. Realistically make \$500 to \$700 a day with a lawn aerator and a truck. Robin Pedrotti, a recent SDSU graduate, explains step-by-step how he turned his weekend summer job into a full business, using the latest technology in aeration equipment, effective advertising and promotions and added soil conditioner sales. My illustrated manual will show you how to make \$40 to \$90 an hour plus with your truck and a \$6,500 investment. Regular manual price \$89.99. Special offer to industry professionals at \$39.99 plus \$3 P&H. Make checks payable to Robin Pedrotti, 3403 Dorchester Drive, San Diego, Calif. 92123. Visa/MC. 619/571-2884. Offer ends September 7.

LAWN CARE EQUIPMENT

Ryan Mataway Overseeder Model-544873. Mint condition. Used four times. \$2,500. Larry Keith 304/525-4994.

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TECHNICAL/TRAINING PERSON



Environmental Care Inc

CAREER OPPORTUNITY

Technical / Training person wanted to do field research and training with large maintenance contracting firm. Knowledge of landscape maintenance practices in western states desirable. Ability to work with others and problem solve is essential.

Please send confidential resume to:

Manager of Technical Services
Environmental Care, Inc.
825 Mabury Road
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Top firm needs foreman. Quality conscious Texas-based landscape management firm has immediate opening for detail-oriented landscape maintenance foreman. If you have outstanding professional and horticultural skills and are not afraid of hard and healthy teamwork, then you could qualify for a top position with the finest landscape firm in the Southwest. Outstanding compensation and opportunity. Reply today to: *Lawn and Landscape Maintenance*, Box 325, 4012 Bridge Ave., Cleveland, Ohio 44113. ■

Monumental Performance.

Highly rated since 1984 in the U.S.D.A. National Turfgrass Evaluation Program, Arid's a leader in turf quality, shade tolerance and insect and disease resistance, including brown patch. Its deep roots withstand Sahara-like summers and even humid transition zones. And with less thatch because of slower vertical growth, you save maintenance costs.

Mean Turfgrass Quality Ratings of Tall Fescue Cultivars At Four Shade Locations in the United States

Quality Ratings 1-9		9 = Ideal Turf	
Name	Mean	Name	Mean
Arid	6.0	Jaguar	4.9
Finelawn I	5.6	Bonanza	4.8
Trident	5.4	Olympic	4.8
Pacer	5.3	Maverick	4.7
Mustang	5.3	Willamette	4.6
Apache	5.2	Rebel	4.5
Tempo	5.1	Clemfine	4.4
KY-31	5.0	Brookston	4.4
Falcon	5.0	Johnstone	4.0
Hounddog	5.0	Kenhy	3.4
Adventure	4.9		

Data from USDA National Turfgrass Evaluation Program

So, even in the toughest locations, you can have a turf of monumental quality. Be sure to order Arid from your seed or sod distributor.

Brown Patch Ratings of Tall Fescue Cultivars

Brown Patch Ratings 1-9		9 = No Disease	
Name	Mean	Name	Mean
Arid	6.3	Chesapeake	5.5
Adventure	6.2	Finelawn 5GL	5.5
Jaguar	6.1	KY-31	5.5
Rebel	6.0	Mustang	5.5
Pacer	5.9	Bonanza	5.5
Maverick	5.8	Trident	5.5
Falcon	5.8	Johnstone	5.5
Clemfine	5.7	Finelawn I	5.3
Apache	5.6	Kenhy	5.0
Tempo	5.6	Willamette	4.9
Olympic	5.6	Brookston	4.3
Hounddog	5.6		

Data from USDA National Turfgrass Evaluation Program

Arid



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