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JUNE 1988
VOLUME 9, NUMBER 6

TABLE OF CONTENTS

BUSINESS FEATURES

Acquisitions

In the past year, the lawn maintenance industry has undergone some dramatic changes — changes which have had an impact in one way or another on nearly everyone in the industry **16**

Seed Research and Development

Plant breeders have made significant improvements in enhancing turfgrass varieties. For an update turn to page **22**

Sports Injuries and Turf — Is There a Correlation?

Improperly maintained athletic fields are being fingered as a leading culprit in the increasing number of sports injuries **36**

Making Strides

Lawn care professionals from all sectors of the industry are recognizing the value of well-groomed playing fields **38**

TECHNICAL FEATURES

Lawn Care Technology for Sports Turf

Five critical areas are considered in this special report on common maintenance problems of playing surfaces **28**

Control of Soil-Bound Herbicides

Techniques by which applicators can extend post-application control over soil-bound herbicides can be a valuable plant care asset for LCOs **32**

DEPARTMENTS

Advertiser's Index	46	News in Brief	6
Calendar	5	PLCAA Update	12
Classifieds	46	Products	39
Clippings	14	Views Across the Industry	5
Inside Story	4		



COVER

This month's cover story examines recent equipment and chemical acquisitions in the lawn care industry. Find out how the industry is changing and who is trying to grab a bigger share of the marketplace. (Illustration by free-lance artist Milan Kecman of Cleveland, Ohio.)

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INSIDE STORY

Turfseed market research is a topic which never grows old. Year after year researchers strive to come up with just the right seed to satisfy industry demands for perfect turf.

Perfect's a little hard to come by, but seed researchers feel they're coming a step closer every year.

Like last year, ALA is bringing you our seed research and development report this month. We'll then bring you our turfseed market report in September.

Endophyte enhancement and dwarfism lower the maintenance needs of turf and are just a few methods researchers are experimenting with to improve overall seed quality. Relatively new, researchers are taking advantage of endophyte, a natural insect repellent found in the perennial ryegrass and tall fescue plants, by backcrossing it into more varieties.

According to seed researchers, endophyte reduces the need for pesticide applications. However, at least one seed researcher said endophyte use may have limitations such as a short shelf life.

For more on this and other developments,



turn to our special report on seed research and development.

In addition to seed, we've included several articles on the maintenance of sports fields, and how the quality may or may not relate to sports injuries.

There's no question that the maintenance of sports fields is taking on new notoriety. Studies comparing the quality of natural

turf to the number of athletic injuries are being conducted with some alarming findings.

In a recent study of high school practice and game fields in Pennsylvania, it was found that 21 percent of the injuries reported over one football season may have been caused by poor field conditions. The majority of injuries reported were to the knees, ankles and feet.

Standing alone, the percentage may not seem high, but when it's combined with numbers from across the country its significance increases.

In this month's cover story, you'll find an overview of acquisitions made in the lawn maintenance industry in the last year. Find out how consolidation has affected the industry and how service industry giants Waste Management and Ecolab have made aggressive entries into the lawn care market. ■

Cindy Code

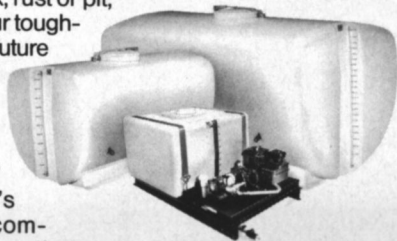
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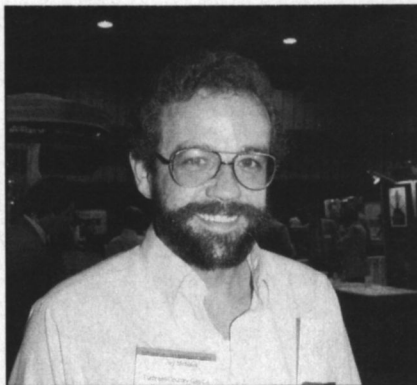


VIEWS ACROSS THE INDUSTRY

HAVE YOU EVER SERVICED SPORTS TURF?



"The football fields I've worked on haven't had enough sand or been core aerated enough. One field had too much clay. We've helped a couple schools resod and made sure they got the starter fertilizer underneath first. We once found by double measuring that a high school football field was about 2½ feet too short. At another school's baseball diamond, the pitcher's mound was about 16 or 18 inches off." *Norm Monska, Commercial Lawn Care, Dublin, Ohio*



"We are currently spraying Little League baseball diamonds for free. The Little League Association asked if we wouldn't mind doing this in return for an advertisement on the backstop. We don't deviate from our normal fertilizer and herbicide application program for the sports turf. It's just a PR thing for the community, we're not swamped with customers because of it." — *Jay McNalis, Turfreet Division of Country Gas Company, Crystal Lake, Illinois.*



"We are currently servicing professionally installed soccer fields at a regional college. The program is very similar to the program that we run for residential accounts because on this site it was necessary to have just as much management. We also maintain fields for Little League operations and a number of school systems. A lot of what we do has a great deal to do with the budget." — *Frank Reynolds, Reynolds Lawn Care Inc., North Branford, Connecticut.*

CALENDAR

June 17

Pesticides and Practical Applications, sponsored by the Associated Landscape Contractors of America, Ramada Inn Airport North, Phoenix, Ariz. Contact: Martha Lindauer, ALCA, 405 N. Washington St., Falls Church, Va. 22046; 703/241-4004.

June 23

University of Massachusetts Turfgrass Research Field Day, University of Massachusetts Turfgrass Research Center, South Deerfield, Mass. Contact: Dr. Richard J. Cooper, Dept. of Plant and Soil Sciences, University of Massachusetts, Amherst, Mass. 01003; 413/545-2353.

July 10-12

Mid-Atlantic Nurserymen's Summer Trade Show, Virginia Beach, Va. Contact: Mid-Atlantic Nurserymen's Trade Show Inc., P.O. Box 314, Perry Hall, Md. 21128; 301/256-6474.

July 12

Sports Turf Seminar and Field Day, co-

sponsored by the PGMS and the Sports Turf Managers Association, College of the Holy Cross, Worcester, Mass. Contact: PGMS, 12 Galloway Ave., Ste. 1E, Cockeysville, Md. 21030; 301/667-1833.

July 19-20

Athletic Facilities Maintenance Management Seminar, co-sponsored by the city of Lenoir, N.C. and Porter Brothers Inc., Mulberry Street Recreation Center, Lenoir, N.C. Contact: Professional Grounds Management Society, 12 Galloway Ave., Suite 1E, Cockeysville, Md. 21030; 301/667-1833.

July 25-27

EXPO 88, Louisville, Ky. Contact: Mary Jane Reynolds, sales director, International Lawn Garden & Power Equipment Expo, P.O. Box 70465, Louisville, Ky. 40270; 800/558-8767.

July 26-28

1988 Midyear Dealer Conference (Roundup), Indianapolis, Ind. Contact: Lisa Scott, National Fertilizer Solutions

Association, 10777 Sunset Office Dr., Ste. 10, St. Louis, Mo. 63127; 314/821-0340.

Aug. 12-15

1988 TAN-MISSLARK Regional Nursery and Garden Supply Show, Astrohall, Houston, Texas. Contact: TAN-MISSLARK, 7730 South IH-35, Austin, Texas 78745-6621; 512/280-5182.

Sept. 14-16

New Jersey Nursery & Landscape Show, sponsored by the New Jersey Association of Nurserymen, Atlantic City, N.J. Contact: New Jersey Association of Nurserymen, Bldg. A, Ste. 3, 65 S. Main St., Pennington, N.J. 08534; 609/737-0890.

Oct. 22-24

Third Annual Landscape Exposition, Nashville Convention Center, Nashville, Tenn. Contact: Becky Lerew, show manager or Mary Sue Christoffers, sales manager at 203/853-0400; or send inquiries to Landscape Exposition, c/o Edgell Expositions, 50 Washington St., Norwalk, Conn. 06854. ■

NEWS IN BRIEF

FACTORY-MANUFACTURED GRASS DEBUTS IN THE UNITED STATES

After eight years of testing in Europe, Fast Grass™ is making its American debut.

In the country just over three months, Fast Grass is sprouting up all over making sod farmers and landscape contractors, in particular, take notice, according to Evan Melby, co-owner of the newly formed company which goes by the name of its product.

The concept behind Fast Grass is simple. Just take a roll of the product — made of jute, hemp, flax, a thin layer of biodegradable plastic and seed — roll it out on a temporary planting spot and add water. Irrigation creates a nutritive solution allowing germination and growth of the seeds, Melby said. Usually within 30 days it can be rolled up and transferred to a permanent planting area.

Fast Grass contains about one pound of seed per 100 feet and costs approximately 17 cents to 20 cents per foot.

The product made its U.S. debut at the California Landscape Contractor Association's recent trade show in Long Beach. Melby and co-owner Doug Cowle bought the U.S. rights to the patented growing system from Germany.

Just before the grass is ready to be transplanted, the sod is rolled up — roots and all, according to Melby. Within two to three days of replanting, the root system of the sod begins to adhere to the ground, and within one week it can't be pulled up, he said. "All you do is water, and once it's grown you roll it up again and sell it."

Melby predicted that sod farmers who once yielded only two crops per season can now increase their yield to 10 crops a year.

The product is factory-manufactured and seeded just before the mat is completed, Cowle said. The product then runs through a puncher which perforates it with millions of holes through which the grass roots can grow. Weeds, however, cannot penetrate the plastic layer.

As the roots mature and grow, the plastic material is broken up and disintegrates. Melby said the grass remains virtually weed free for more than a year.

Melby and Cowle are currently working with U.S. seed companies to provide seed for their product. However, Fast Grass even-



Evan Melby, co-owner of Fast Grass, holds a roll of his Fast Grass product as it looks before watering.



Within 30 days, the Fast Grass mat turns into sod ready for replanting. Melby and co-owner Doug Cowle bought the U.S. rights to the patented growing system from Germany.

tually will market its own blend of fescue which will maintain its consistency no matter where the product originates, Cowle said. Variations will be available for different areas of country.

Fast Grass comes in rolls four feet to 12 feet wide and 12 feet to 100 feet long. For football fields and soccer fields in particular, Fast Grass contains few seams per roll, Melby said.

Although U.S. sports arenas have not yet tried Fast Grass, golf courses and soccer fields in Europe and the Middle East are made from the new product.

Melby and Cowle maintain Fast Grass headquarters in Oxnard, Calif., but will soon open branch offices throughout the country.

The innovation can also be used for erosion control and to avoid flooding on slopes.

LIQUI-LAND GOES OUT OF BUSINESS

After 14 years in the fertilizer industry, Liqui-Land Corp. quietly closed its doors and went out of business.

The Niles, Mich.-based company was a regional manufacturer of liquid fertilizers at the wholesale level in Michigan, Indiana and portions of Ohio. The company was also a distributor of N-Sure,™ an Arcadian Corporation product.

Sandy Nelson, owner of the now defunct company, said several things led to the closing of Liqui-Land, including one customer's cancellation of 70 percent of its business with Liqui-Land two days before it was to be shipped. Nelson declined to name the company.

And rumors that some LCOs in the Michigan area were changing to dry fertilizer caused her further concern. So in fairness to her other customers and while the going was still good, Nelson made the decision to close Liqui-Land.

"It was a business decision. I could have gambled, but it's tough being in business today, especially for a small company," she said. "I had to decide if it was worth it anymore."

Along with Liqui-Land, Nelson also closed the door on her transportation company which, in conjunction with Liqui-Land, transported chemical shipments. Equipment and other physical assets of the two companies were sold at a recent auction. Nelson then sold the real estate to a local Niles businessman. Nelson's 12-year-old lawn spray company, Liqui-Lawn, was sold to a Spring Green franchise.

(continued on page 10)



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NEWS

(continued from page 6)

In season, the three companies employed a total of 10 people. Although some have been fortunate enough to find other jobs, some are still searching, she said.

Remaining Liqui-Land accounts were split up among area competitors, Nelson said. "They'll all be taken care of. I tried to lead my customers in the best direction whenever possible."

Nelson said she had no regrets about closing Liqui-Land. In fact, she'll probably return to the industry in the near future.

"I have no bad feelings and look forward to a new challenge," she said. "I'll take a breather and then examine my options. I've had a couple of offers, so I'll probably stay in the fertilizer industry."

CONTRACTORS FORCE CHANGE IN HAZARD COMMUNICATION LAW

Shortly before the federal government's expanded Hazard Communication Standard went into effect May 23, several provisions were indefinitely deleted from the law. The last-minute changes stem from objections raised by landscape contractors.

As a result, the following three provisions

of the standard are not currently in effect or enforceable for non-manufacturing companies recently covered by the standard: the requirement that Material Safety Data Sheets be provided on multi-employer worksites, coverage of any consumer product excluded from the definition of "hazardous chemical" under the Superfund Amendments and Reauthorization Act of 1986 and coverage of any drugs regulated by the Food and Drug Administration in the non-manufacturing sector.

Under the jurisdiction of the Occupational Safety and Health Administration, the expanded hazard communication standard will apply to 18.4 million non-manufacturing employees and, among other things, is designed to provide employees with information about the potential hazards of chemicals to which they may be exposed on the job.

The changes were in part the result of urging by the Associated Landscape Contractors of America. ALCA and a coalition of other construction trade associations, urged OSHA to extend the implementation date of the hazard communication law because it was imposing unreasonable and unfeasible obligations upon construction industry employers.

In particular, a requirement that all writ-

ten hazard communication programs include the method employers will use to provide other on-site employers with MSDS was an area of concern.

According to ALCA, OSHA's approach to the law failed to recognize, "certain basic realities of the construction industry including the sheer number of contractors at many sites, the number of covered substances in use on the site, the fact that contractors come and go at random times during the construction process and the fact that oftentimes the general contractor is not even present when work is in progress."

As a compromise, ALCA recommended that the agency satisfy the requirement by simply requiring contractors to have their MSDS available on some reasonable basis, i.e. either in their truck or at a local office where they can be obtained on short notice, or by having contractors post copies in a central place on site.

A final decision by OSHA has not yet been made; however, the major elements of plans for compliance will probably not be available until summer, according to a spokesman from the Office of Management and Budget.

Other provisions of the standard require chemical manufacturers and importers to evaluate the hazards of chemicals they pro-

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duce or import, to develop the technical hazard information for MSDS and labels for hazardous substances and to transmit the MSDS and labels downstream to users of these substances.

TWO CIBA-GEIGY PRODUCTS RECEIVE EPA LABEL APPROVAL

Subdue® 2 percent granular fungicide and Pennant® liquid herbicide recently received label approval from the Environmental Protection Agency.

The 2 percent granular formulation has been in the works for more than two years and will eventually replace the Subdue 5 percent granular formulation, on the market since 1985, according to Joe Prochaska, Ciba-Geigy product manager. The new granular was not designed, however, to replace Subdue liquid.

These are just two of the products Ciba-Geigy expects EPA labels on this year. Pace, a turf fungicide, is expected to receive its label and trial usage sometime this year, Prochaska said. And it was less than a year ago that Triumph and Banner were introduced by the company.

Subdue 2G received a broad label approval and is labeled for turf and ornamentals. In particular, the product is labeled

for control of Pythium and Phytophthora disease for ornamentals. The fungicide can be used on a variety of ornamentals grown for indoor and outdoor landscaping, or on container, bench or bed-grown ornamentals in greenhouses or outdoor nurseries.

The fungicide label also allows for testing of Subdue on a plant variety not specifically named on the label. If no injury occurs, then it's safe to use it, Prochaska said. Subdue is available only in 25-pound bags.

Since Ciba-Geigy knew the Subdue 2G would eventually replace the 5G product, the granule size of the fungicide was developed large enough for calibration, he said. The fungicide also dissolves quickly. Within one irrigation, Subdue will dissolve into the soil.

Subdue 5G will be phased out this year. Pennant liquid herbicide, already available in granular form, offers professionals another option in application. The new formulation can be mixed with other products and easily sprayed on field-grown ornamentals.

Pennant is good for control of rapidly creeping nutsedge, tough annual grasses including crabgrass, barnyardgrass (watergrass), galinsoga and some broadleaves.

"Both landscape and nursery professionals like Pennant because its shoot ac-

tivity makes it safe for the surrounding turf and ornamentals," Prochaska said.


He added that Pennant is absorbed into weeds through the shoots just above the seed, not through the roots.

SNAPPER OFFERS TWO COMMERCIAL LEASE OPTIONS

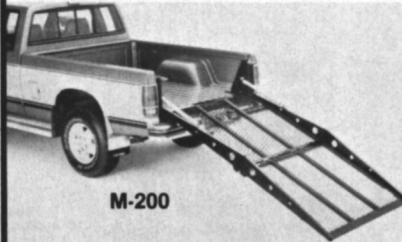
Snapper Power Equipment's lease program features several lease terms to meet the needs of its commercial customers. The whole commercial equipment line of mowers, core aerators and power rakes has the potential to be leased under one of two options.

The regular program offers a 12-, 24- or 36- month lease period. The Six Plus Six program allows the scheduling of low monthly payments during the months of October through March when revenues are generally lower.

With changes in federal tax laws, Snapper officials said they've seen leasing become one of the fastest growing segments in the financial market. In addition, leasing allows commercial operators to conserve working capital, keep open a bank line of credit for other purchases and avoid fluctuating interest rates through fixed contracts. ■



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PLCAA UPDATE

*"The service was unauthorized."
"I wasn't home when you made the application."
"You only sprayed part of the yard."
"A technician told me I don't have to pay."
"You killed my (grass, flowers, trees.)"
"You serviced the wrong lawn."*

Customers can come up with a variety of inventive excuses to avoid paying for lawn care services.

About five years ago, a few PLCAA board members were experiencing collection problems of their own, resulting in the start of a credit association to help the membership manage its delinquent accounts.

Under the Professional Lawn Care Credit Association of America (PLCCAA), member firms currently receive 60 cents for each dollar that is collected on overdue accounts. Twenty cents covers the collection effort and the remaining 20 cents funds PLCAA membership benefits such as training manuals, regional meetings and speaker fees. (An annual contribution totaling more than \$10,000.)

In a recent development, the board



Martin

authorized a discount on the service for members who have already contributed above a certain dollar amount in fees to the PLCAA.

L. James Martin, PLCCAA executive director, said that once an individual has contributed more than \$2,500 toward association benefits, this portion of the rate would drop from 20 percent to 10 percent. After someone has contributed more than \$5,000, the rate drops to zero percent and the member pays only 20 percent for the collection service.

According to Martin, the change is an incentive to promote extensive use of the service. Under the new format, it will be possible for a member to net collections as high as 80 percent.

The PLCCAA collects on overdue accounts by sending a series of collection letters to clients, urging them to pay their bills or inform the association why they haven't. "I take advantage of whatever input we get from the clients," Martin said. "We either try to rectify a problem or settle a claim as the case may be."

Whether or not results are favorable depends on both the size and age of the account, he said. In other words, it's easier to collect on an account that's 90 days past due rather than six-months-old "because attitudes have hardened."

The PLCCAA is also more apt to get payment on smaller bills than larger ones, where typically some disagreement or dispute has occurred between the parties.

Martin said that on average, the PLCCAA collects better than 40 to 50 percent of overdue accounts. "I would say that we're pretty darn successful."

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*Wheelbase is the distance between the front and rear axle. "Toro" and "Groundsmaster" are registered trademarks of the Toro Company. ©1988 The Toro Company

CLIPPINGS

Rosy picture. The rose is America's most popular flower according to a new garden survey conducted by the Gallup Organization. Results show that there are 23 million rose-growing households in the U.S. — nearly 26.9 percent of the nation's total. Americans spent about \$400 million in 1987 for the pleasure of growing roses.

The national survey was conducted for All-America Rose Selections, a non-profit group dedicated to producing roses of superior quality.

The typical rose grower, according to the survey, is a well-educated married woman, 30 years old or more, living in a high income suburban home.

The survey showed, however, that rose bush purchases in 1987 were almost equally divided between men and women. Fifty-one percent were female; 49 percent male. Thirty-seven percent of the consumers were professional or business people, but 18 percent were retirees. Ninety-four percent had a high school education or more.

Another finding was that people who have rose bushes are apt to buy more roses than non-growers. Almost one out of every two households with rose bushes (46 per-



cent) made rose bush purchases in 1987. The average purchase, generally made in a garden center or retail nursery, cost \$36.64.

Eight of 10 people who grow roses don't find them to be "too much work," contrary to what some believe. And almost no one finds the rose unattractive. Only 1 percent of those who don't grow roses, and a like

percentage of those who do, cited unattractiveness as a reason for not growing roses or growing more roses.

On the air. New developments and benefits of bio-organic lawn and garden care were recently described to listeners of the popular Bob Flagg Garden Show in the Houston area when Rob Ringer, national training director of the Ringer Corporation, was the show's guest expert.

During the discussion, Ringer explained the advantages of applying natural ingredients, such as microorganisms, enzymes and high-protein materials, to produce thick, vigorous turf which also resists lawn disease and drought problems.

He cited the company's development of Lawn Restore and other Restore products as a major contribution to the current trend toward all-natural, environmentally safe and more effective turf treatment.

Ringer Corporation, a Minneapolis-based company, was founded more than 25 years ago to develop, manufacture and market all-natural, bio-organic lawn and garden products. ■



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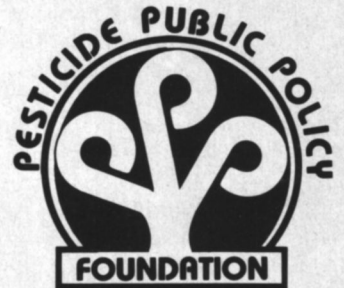
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and their trade associations in the lawn, tree, PCO, golf course, right-of-way, and landscape industries. 3PF is an organization of people like yourself -- people committed to a reasoned pesticide public policy.

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SHUFFLING THE DECK

1987 was a year for acquisitions in the lawn maintenance industry resulting in some dramatic changes. Nevertheless, many feel the industry has responded positively to this upheaval, which will be reflected in continued growth and company competitiveness.

"Lawn care companies of all sizes in U.S. and Canada being sought by national corporation. Complete buy out or stay and grow with us."

That and other ads are appearing at an increasing rate in newspapers and trade magazines everywhere. Try keeping track of which company owns another and you'll find yourself straining to remember.

In the past year, the lawn maintenance industry has undergone some dramatic changes — changes which have had an impact in one way or another on nearly everyone in the industry.

Ecolab buys ChemLawn, Waste Management buys Tru Green, Snapper buys F.D. Kees — each acquisition has its own story, and each management team plans to grab a growing share of the marketplace.

Although these acquisitions represent a major shake-up in the lawn care industry, many say it's a positive reflection on the growth and ability to make a profit in lawn care. Others say a big company presence in the industry gives them the competitive edge they need to capture a larger customer base through increased service and name recognition.

"Competition is becoming more and more difficult. There's a growing awareness of the commercial market, and some of the larger companies are seeing that there is a potential in this market. As they do, I think some of the smaller companies are becoming a little more aggressive," said David Fondrie, vice president of finance for Ransomes Inc.

No one is predicting the elimination of small companies, however, because many agree there will always be a place for the small entrepreneur and those who make a specialized piece of equipment.

An important acquisition indicator not to be overlooked is the fact that large companies like Waste Management and Ecolab — companies which have had no prior lawn care experience — have jumped into the marketplace.

Ecolab Inc., based in St. Paul, Minn., is a leading developer and marketer of premium cleaning, sanitizing and maintenance services for the hospitality and institutional markets. Waste Management is the leading waste disposal company in the country.

At the time of the ChemLawn acquisition, Ecolab had been planning to buy into the residential services area, but management officials weren't necessarily looking to enter the lawn care market, according to John Gunseth,

vice president of public affairs. Ecolab, however, was convinced to buy when it saw ChemLawn's tremendous growth potential.

"We saw good growth (in lawn care) with today's demographics. In a double wage earner family situation, people have more disposable income and less time," Gunseth said.

Ecolab saw ChemLawn as a "solid company" that had enjoyed extensive growth, but more recently had gone through a slow growth period, according to Gunseth.

"The potential to resume that growth is clearly there. We looked very closely at the costs of the operation and have gone through some overhead reduction. We (Ecolab) operate on a lean and mean philosophy and it's important that that philosophy be extended to ChemLawn," he said.

The ChemLawn acquisition was one of about a dozen Ecolab made in 1987, but was "by far and away the largest," according to Gunseth.

The Columbus, Ohio-based ChemLawn served 1.8 million lawn, tree and shrub care customers in 1987, with revenues of \$353 million. It is considered the leader in professional lawn care in North America. With the ChemLawn acquisition, Ecolab will approach nearly \$1.2 billion in sales, Gunseth said.

Customer retention and cross-marketing will pay a large role in Ecolab's march toward billion dollar sales figures.

"Our number one issue right off the bat is customer retention. We have to keep our good customers and build from there," he said. "So a great deal of emphasis has been placed in that particular area and in upgrading customer services.

"We're looking at all kinds of ways of having our businesses support each other. For example, in the institutional field, we have about an 80 percent market share with big chain accounts like Marriott and Holiday Inn. We've looked at using our national accounts people in the lawn care area to help ChemLawn achieve a stronger commercial business with those chains," Gunseth said.

"My hunch is that the industry will continue to seek consolidation not necessarily on the national level, but you'll also see more and more local and regional consolidation," he said.

Although less than a third the size of ChemLawn, Waste Management is making tracks in the lawn care industry — just as it did on its way to becoming the leading waste services company in the United States.

The Oak-Brook, Ill.-based waste disposal firm posted more than \$2.7 billion in revenues in 1987, placing the

company 47th on *Business Week's* list of top 1,000 U.S. companies ranked by stock-market value. Last year, Waste Management significantly expanded its waste services businesses while adding substantially to its growing number of related urban services.

In just three years, the company revenues have more than doubled. And while Waste Management officials expect another excellent growth year in 1988, company officials are hesitant to discuss specific plans for the year.

Jerry Seegers, president of Waste Management's services unit, said there is a "capital budget" set aside for acquisitions in 1988, but would not reveal more than that.

"We're a growing company and we're always looking at other service types of businesses," he said. "We always felt the customer base of a company is an important asset and one worth spending money for. There's two ways of going into a new market — one by acquisitions and the other by starting from scratch. We feel it's more economical in a lot of cases to acquire."

Before the Tru Green acquisition, Waste Management failed in an attempted leveraged buy out of ChemLawn.

Top officials at Tru Green are no strangers to acquisitions. In the last 18 months, Tru Green has acquired four companies: Lawn Groomer Inc. of Bloomington, Ill.; Keystone Lawn Spray, formerly a division of Keystone Conservation Service, Philadelphia, Pa.; Excelawn Corp., Crestwood, Ky.; and Old Fox Lawn Care, Providence R.I. Tru Green maintains headquarters in Alpharetta, Ga.

Although ownership has switched from Tru Green to Waste Management, the immediate acquisition process remains in the hands of Tru Green officials. Seegers, however, is constantly informed of potential candidates for acquisition.

Tru Green was experiencing growth prior to the Waste Management buy out, but Tru Green President John Hayes said Waste Management was needed to help them

AN OVERVIEW OF RECENT ACQUISITIONS

Buyer	Seller	Date of Sale
Ecolab ECOLAB™	ChemLawn	May 4, 1987
ICI Americas  ICI Americas Inc.	Stauffer Chemical	July 23, 1987
Lawn-Boy LAWN-BOY	Gilson Brothers	Sept. 4, 1987
Lawnmark Lawnmark®	Spray-A-Lawn Greenworld	June 1987 March 1988
Ransomes RANSOMES	Steiner	Jan. 18, 1988
Rollins  ROLLINS	New England Green	May 1, 1987
Sierra Chemical Sierra	Mallinckrodt**	Aug. 4, 1987
Snapper SNAPPER	F.D. Kees	June 15, 1987
Waste Management  Waste Management, Inc.	Tru Green	Aug. 31, 1987

**Specialty agricultural products division only

accomplish more. "We needed them to help implement the strategy course we're on. It would have been difficult for us to grow as rapidly," he said.

Hayes was recently named president of the company following the retirement of Howard Evers. He's been with Tru Green since 1975 and most recently served as executive vice president.

Hayes said Tru Green is interested in acquiring well-run companies, anywhere in the country. Revenues are expected to reach the \$100 million mark in 1988.

Another billion dollar sales company which is acquiring companies at a relatively fast pace is Ever-Green Lawns of St. Louis, Mo. The company is a division of ADT Limited which is an international service company doing in excess of a billion dollars in sales annually. Officials of the company were hesitant to release any information because they want to keep a low profile where acquisitions are concerned. Ever-Green itself, however,

recently experienced an ownership change. Prior to ADT it was a division of the Hawley Group Ltd.

Other major industry acquisitions and mergers include the following:

ICI AMERICAS INC. On July 23, 1987, ICI Americas, Wilmington, Del., acquired Stauffer Chemical Company of Westport, Conn. for \$1.69 billion. The buy out included the research, manufacturing and marketing interests of Stauffer.

With the buy out, ICI obtained the marketing rights to all Stauffer products in the professional and residential turf, nursery and home garden markets including such well-known products as Betasan® herbicide, Devrinol® herbicide and Imidan® insecticide.

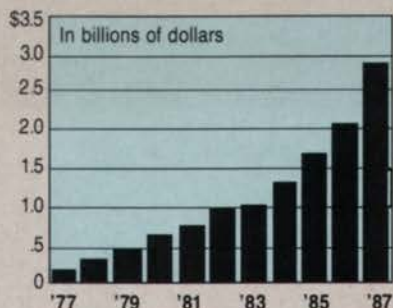
A month after the acquisition, ICI sold the speciality chemicals business (high performance lubricants and flame retardants) to Akzo America Inc. for \$625 million and the basic chemicals business (sulphur-based products) to Rhone-Poulenc for \$522 million.

ICI had plans to keep only the agricultural chemicals division because it fit into company plans to secure a wider worldwide position in that area.

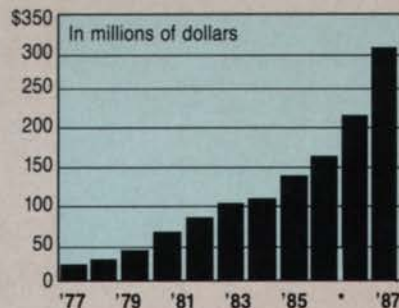
According to ICI, the acquisition of the Stauffer agricultural chemicals business will sharply advance ICI's position in the U.S.

WASTE MANAGEMENT FINANCIAL PERFORMANCE

Revenue



Net Income



*Excludes gain from Chem Waste sale and losses on nonrecurring items in 1986.
Source: Chicago Tribune (from company reports)

agricultural market from 11th to 4th and in the world agricultural market from 6th to 3rd. ICI's total sales in the United States, which reached nearly \$3 billion in 1986, will rise to more than \$4 billion.

In 1986, Stauffer registered sales of more than \$1.3 billion.

"We always look forward to growth. There's new challenges when you move into a new field or market," said Charles Stainback, advertising manager for ICI. "We are in the business to stay and in-

end to be a dominant force."

Although ICI is new in the lawn care market, it has a strong identity in the pest control field — an identity ICI hopes to use to its advantage in lawn care.

LAWN-BOY INC. On Sept. 4, 1987, Lawn-Boy, a division of the Outboard Marine Corporation, bought certain assets of Gilson including the headquarters and factory in Plymouth, Wisc.

The Gilson acquisition gives Lawn-Boy
(continued on page 20)

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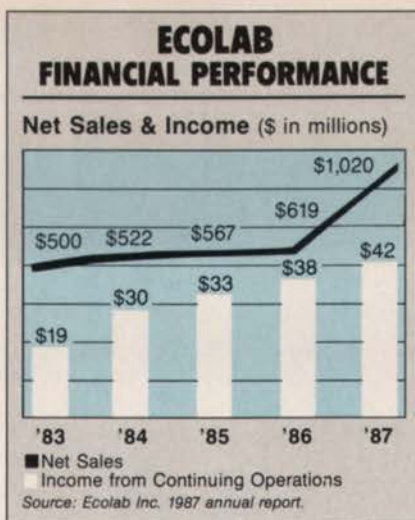
SHUFFLING THE DECK
(continued from page 18)

a complete line of commercial garden tractors, lawn tractors and snow throwers, making it one of the most complete lines of outdoor power equipment in the industry, according to Jerome Stumbras, general manager of the Lawn-Boy division and vice president of Outboard Marine Corporation.

"Lawn-Boy is the strongest brand name in the industry, but historically has been a single line company — that being walk-behind lawn mowers," he said. "This puts us on an equal footing with some of our major competitors like Toro, Snapper and Deere — all of whom have complete lines. Our franchise has obviously expanded fivefold. It gives us a chance to take advantage of the equity we have in our brand name."

In 1987, Lawn-Boy registered \$118 million in revenues. Stumbras expects the company to expand nearly 50 percent in the first year following the acquisition.

"There's great opportunities. The acquisition gives us the opportunity to balance our line over a broader line of equipment," he said. "I think what we're seeing in our industry is not unlike what we're seeing in other industries. Lawn-Boy is committed to expanding and grow-



ing in both the commercial and consumer lawn care markets."

In conjunction with the buy out, Lawn-Boy moved its national headquarters from Memphis, Tenn., to Plymouth, Wisc., where the Gilson offices had been headquartered.

LAWNMARK. Within the last year, Martin Erbaugh, president of this Akron, Ohio-based company, bought out Spray-A-Lawn Inc. of Orville, Ohio, in June 1987 and Greenworld Inc. of Dover,

Ohio, in March 1988.

Spray-A-Lawn, Lawnmark and affiliates comprise one of the largest regional lawn care firms in the United States with more than 40,000 customers in Ohio, New York, Pennsylvania and Virginia.

Spray-A-Lawn is operated independently of Lawnmark, retaining its own name and identity. Greenworld accounts will be intergrated into the Spray-A-Lawn business.

Both Lawnmark and Spray-A-Lawn specialize in program lawn care applications and service to residential and commercial customers. Although Greenworld is a full-service landscape maintenance firm, only the chemical lawn service business of Greenworld was acquired.

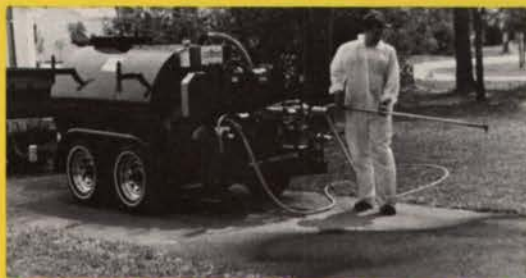
But that's just a beginning for Erbaugh's companies. In five years he expects to reach \$15 to \$20 million dollars in sales — more than twice the size of his current business. Sales are expected to exceed \$8 million in 1988. Erbaugh plans to accomplish this task through internal growth as well as acquisitions.

"I think we'll continue to see consolidation occurring in the industry. There's no question it's a trend. Right now it seems like there's a number of very large companies attempting to acquire others," Erbaugh said. "There's no question larger companies have faster access to infor-

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mation, but that can be an advantage to the larger companies as well as the little guy. Mom-and-pop-type operations are here to stay. If they have a solid customer base and provide an excellent service, their customers are loyal."

RANSOMES. On Jan. 18, 1988, Ransomes Inc., Johnson Creek, Wisc., bought the turf-related assets of The Steiner Corporation. Steiner of Orrville, Ohio, retains the assets of its agricultural division.

Ransomes is primarily a manufacturer of rotary mower products for the landscape contractor, as well as a manufacturer of large tractors for municipal use.

The Steiner acquisition complements Ransomes by adding to its product line a four-wheel drive versatile mowing machine, said David Fondrie, vice president of finance for Ransomes.

"Steiner's multi-use equipment broadens our product line and gives us a four-wheel drive vehicle and an outfront rotary mower we didn't have before," he said.

Ransomes is a privately held company and would not release its sales figures.

The Steiner products will continue to be marketed under the Steiner name in the United States and Canada, but will fall under the Ransomes name in Europe, Fondrie said. The Steiner name is not established in overseas distribution.

Although Fondrie readily admits he's in favor of acquisitions, he remains cautious about such undertakings.

"Something we're very concerned about, and have to be careful about, is that you don't want to take the entrepreneurial spirit away from someone like Steiner," he said. "They started the company, got it off the ground and developed a good product. You don't want to take away the momentum or in any way stifle their innovativeness. There's still room for mom-and-pop-type operations, but it becomes more difficult because of their access to distribution channels."

Ransomes parent company, Ransomes, Sims & Jefferies, is a leading lawn care company headquartered in England.

ROLLINS INC. On May 1, 1987, Rollins acquired New England Green Inc., making its Orkin Lawn Care division one of the top five largest lawn care operations in the country.

Rollins is a structural pest control/security systems company headquartered in Atlanta, Ga., but more recently has been busy acquiring lawn care companies. Two recent buy outs include Village Green Inc., which operates in Connecticut and New York, and Easy Lawn, which operates in South Carolina.

In acquiring New England Green, Rol-

lins actually bought out Amcare, which was the holding company that owned Turf Pro Industries Inc. of Plymouth, Mich. and New England Green Inc. of Springfield, Mass. The two companies merged in early 1987 under the name New England Green. New England Green now operates under the Orkin name.

For a company as young as Orkin Lawn Care — only five years old — the buy out of New England Green was a major financial achievement. Rollins Assistant Treasurer Charles Roberts said the acquisition added revenues of close to \$13 million to the company.

In 1987, Orkin had revenues of \$294,339 million. That number, however, represents sales figures from Orkin's lawn care service as well as its termite and pest control operation, according to Roberts. Figures are not reported separately for the two divisions. About 80 percent of the revenues can be attributed to the pest control operation. That dominance comes from 80 years in the pest control market versus five years in lawn care.

Those numbers may soon change, however. In the last year, Orkin Lawn Care has grown from 19 branches to 59 branches, according to Roberts. Orkin originally operated its 19 branches in the

(continued on page 43)

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SEED RESEARCH AND DEVELOPMENT

Each year plant breeders strive to come up with the perfect turf, seeking to please both sod growers and lawn service professionals. Here's a review of some of their latest work.

What are they up to in the Willamette Valley these days? Turfseed producers are keeping their fingers crossed for a good crop next season, but that will depend a lot on Mother Nature. Beyond that, researchers are busy breeding for improved seed yields and excellent quality turf. Typically, these two don't go hand in hand. With the best seed yield, you only get moderate turf.

Endophyte enhancement has been popular the last few years. Endophyte, a natural insect repellent found in the perennial ryegrass and tall fescue plants themselves, is being backcrossed into more and more varieties nowadays. Though its presence in turf reduces the need for pesticide application, endophyte is not without drawbacks. A limited shelf life is one disadvantage. Endophyte can only be stored in dormant seed for a short period of time because it's dependent upon live plant material. Suppliers must move these products quickly. In addition, one breeder serving the forage industry stays away from endophyte altogether as it can cause health problems in cattle.

Another recent trend is toward dwarfism, breeding for lower growing plants. The advantage here is that when the plant grows smaller, the lawn doesn't need as much cutting. Much of the germ plasm for this type of work is coming from overseas. An inherent problem is that material of foreign origin is susceptible to diseases unique to the United States.

Some breeders argue semantics, saying there are no true dwarfs on the market. They admit that certain plants grow a little lower than others. But, they ask, how well do the so-called *double dwarfs* actually yield seed and perform in lawns? As you shorten the leaves, you also shorten the root system. If you shorten roots too much, you're left with a plant that's not as drought tolerant or heat and disease resistant.

Perhaps the overall trend in the seed industry this year is toward producing low maintenance turf. There is certainly a demand for lower growing, darker green varieties which require less fertilizer, water and mowing and, in turn, reduce operating costs.

Huge leaps are being made when it comes to improvement in turfgrass. Though a particular variety may rank number one in the national turf trials one year, it can easily fall several notches the next. With all the refinements, the competition is that much stiffer.

In the following paragraphs breeders and marketers report on these happenings.

E.F. BURLINGHAM & SONS. Research and Development Director Mike McCarthy reported that E.F. Burlingham & Sons, Forest Grove, Ore., won't have anything new this fall, but will debut some turf-type perennial ryegrass and tall fescue varieties in 1989.

The company is currently marketing Falcon Tall Fescue and will release Hawk Tall Fescue next year. By comparison, Hawk is a little more hardy, darker green in color and has some dwarf characteristics. According to McCarthy, it's been bred for disease resistance, hardiness and drought tolerance.

In 1989, the company will also release a new fine-leaved, turf-type perennial ryegrass called Competitor. McCarthy said this variety will be strong in the overseeding market. It has increased vigor, is fairly low growing and will take close mowings, if needed. In addition, Competitor has good color and resistance to many foliar diseases.

E.F. Burlingham & Sons has been doing a lot of research on drought tolerance. McCarthy expects water management to become a fairly important matter in the industry, and he's not certain drought tolerance can be attained in dwarf varieties. "When you shorten the top of the plant, you shorten some of the bottom of the plant too," McCarthy said. "That doesn't help drought tolerance."

Nevertheless, he foresees a lot of good dwarf material coming out. "It may be 10 years from now before we find those that will do everything that we want them to do."

Like other seed producers, E.F. Burlingham & Sons is searching for germ plasm from around the world. "The broader your genetic base, the better off you're going to be for stability and overall resistance. We're looking at material that's coming in from Europe, Australia and Japan," he said.

Though there is some good material to be had, McCarthy is cautious. "We have to be careful because their situations (overseas) are much different than ours. It's a real screening process."

INTERNATIONAL SEEDS INC. Research Director Craig Edminster reported that International Seeds Inc., Tangent, Ore.





(Left) International Seed's semi-dwarf Pacer Turf-type Tall Fescue vs. Martin Forage-type Tall Fescue. (Right) Judy Brede, warm-season grass breeder at Jacklin, inspecting new cold tolerant seeded Bermudagrass to debut in 1989.



will market a number of new products in the fall.

One new turf-type perennial ryegrass called Lindsay is a dark green, fine-leaved high quality grass with a dwarf growth habit. It demonstrates unusually good seedling vigor and quickly develops a strong root system. With endophyte levels of about 25 percent, the material has excellent resistance to various diseases including leaf and dollar spot, and seedling blight. Lindsay also has good resistance to large brown patch. It's a good choice for moderate climates on the Atlantic Coast, as well as an overseed in the Southwest.

International Seeds will also offer Troubadour Turf-type Perennial Ryegrass. A cross between Elka and Manhattan, this variety provides better disease resistance for turf production on the Atlantic Coast. Fine-leaved, low and slow-growing, Troubadour requires less mowing than standard ryegrasses. It produces extremely dense turf and has shown good resistance to crown rust and *Helminthosporium*.

This fall, International Seeds will also be offering Cobra Creeping Bentgrass, which it co-produced with the New Jersey Agricultural Experiment Station. Under normal conditions, this dark green variety requires less mowing, verticutting and brushing and produces little thatch. It also provides a good combination of heat and drought tolerance, as well as winter-hardiness.

Edminster said there should be ample supply this fall of Cindy Creeping Red Fescue. Developed by Cebeco-Handelsraad, the company's Dutch farmer cooperative, Cindy was bred to have the high quality look of a chewing fescue. It was in limited supply this year.

Enjoy Chewing-type Red Fescue will eventually replace the company's Ensvla Creeping Red Fescue. Enjoy is a new low-maintenance plant which is dark green and very fine-leaved. It does well in partial to full shade. Unlike some varieties of fine fescue, it has excellent resistance to

red thread, *Fusarium blight* and leaf spot.

Pacer, a semi-dwarf turf-type tall fescue, will also be marketed this fall. This variety was bred primarily for dark color and better seed production than its predecessor Hounddog. Hounddog Turf-type Tall Fescue, however, will continue to be offered.

According to Edminster, the company has recently concentrated on developing higher seed yield while maintaining quality turf. "That is a very difficult thing to do because they seem to be negatively correlated," he said.

Also under study is tall fescue seedling vigor. "We have a greenhouse screening technique and are looking for progeny that germinate more rapidly under both poor and excellent growing conditions," he said.

J&L ADIKES INC. This fall the Jamaica, N.Y.-based seed company will continue to supply Adelphi Kentucky Bluegrass and All Star Perennial Ryegrass. According to President Bob Russell, a few new bluegrasses are on the horizon, but are presently unnamed and will be available only as experimental seed.

JACKLIN SEED CO. Though it's been commercially available for about five years now, Arid Tall Fescue is still a success in the Rutgers University national turfgrass trials, said Dr. Douglas Brede, director of research at Jacklin Seed Co., Post Falls, Idaho. Arid continues to perform very well, especially in the transition zone, maintaining a high shoot density and good disease tolerance.

Nevertheless, the trials indicate that a few of Jacklin's newest varieties — Wrangler (a joint release with LESCO Inc.) and Mesa — just might be an improvement over Arid. Bred with a dwarf growth habit, Wrangler can be mixed

(continued on page 26)

EXTRA!

VOL. CXXXVI

The Daily Sun

GREENSBORO, WEDNESDAY, NOVEMBER 1, 1987

NEW INSECTICIDE STOPS GRUBS IN 3 DAYS!

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by THOMAS BAGOT

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SEED RESEARCH

(continued from page 23)

with some of the finer textured grasses. Mesa was developed as a dark green, dense plant and retains the stoutness of Arid. Both are scheduled for release this fall.

In the trials, both varieties have surpassed Arid by a few percentage points. "We're looking forward to great things with those," said Brede. "They were (available) in very small quantities this past fall but should be available in commercial quantities this summer."

While some Willamette Valley firms have been busy crossing tall fescues primarily for extreme dwarfism, Brede has preferred to hold onto a deeper root system and breed for disease resistance and high shoot density.

This fall, Jacklin will also be supplying Huntsville Bluegrass. Disease and stress tolerance are the special qualities of this new offering. According to Brede, this Southern-adapted variety represents the first of a series of new grasses Jacklin will debut this summer. The lineup includes Destiny, Liberty, Dawn, Suffolk and Freedom. Most of these grasses have very high levels of disease tolerance. All are dark green and have been adapted for areas where bluegrass has traditionally been affected by disease or heat stress.

Jacklin expects to have some bentgrass and Bermudagrass production in 1989.

JONATHAN GREEN INC. Barry Green, Jr., vice president/sales at Jonathan Green Inc., Farmingdale, N.J., reported that the company's standout material this year is Sherwood Perennial Ryegrass.

Developed at Rutgers University by Dr. C. Reed Funk, Sherwood is a dark green, low growing plant that is extremely high in endophyte. The fact that it's higher in endophyte than any other ryegrass on the market, makes it a real selling point, according to Green.

Green described Sherwood as "a real hodgepodge" since it was created from nearly 100 different ryegrasses. This broad genetic base ensures the plant will hold up against a wide variety of turf diseases and insects.

Sherwood is a leafy, persistent ryegrass that is extremely rust resistant. In the Rutgers University trials, it took fourth overall from among 125 entries.

Jonathan Green will also have a limited supply of Pinnacle Perennial Ryegrass. The company shares marketing rights with Normark Inc. on this variety.

The company's Mesa Turf-type Tall Fescue was listed as number one in the trials. A moderately growing plant that's dark green in color, Mesa has shown better-than-

average resistance to brown patch disease, according to Green.

In addition, Destiny Kentucky Bluegrass will have its first big harvest this year, Green said. Though it wasn't number one at the trials, Destiny still ranked among the top 20 bluegrasses. According to Green, it's been bred for seed yield versus best possible quality so that a decent harvest is on hand for sod growers each year.

Enmundi Kentucky Bluegrass will also be offered.

Jonathan Green will also debut Richmond Turf-type Tall Fescue this year. Green said this plant should be particularly interesting to Southern sod growers and lawn services as it has a very deep root system and is extremely heat tolerant.

The company's research is being undertaken by Irv Jacob at Cascade Seed International, Salem, Ore., and Dr. Kevin McVeigh of the Willamette Valley Plant Breeders, Brownsville, Ore.

Within the next two years, nine new varieties, including bluegrasses, turf-type tall fescues, ryegrasses, hard fescues and a chewing fescue will be released.

LESCO INC. This fall LESCO is releasing a new turf-type perennial ryegrass called Signature. An extremely fine-textured, dense, dark green variety, Signature can be used for permanent turfgrass in the North

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as well as for overseeding in the South.

Art Wick, vice president of research and development, reported that the Rocky River, Ohio-based company will also be jointly releasing new varieties with two other seed companies.

Shademaster Creeping Red Fescue is being marketed by both LESCO and Turf Seed Inc. A dense turf forming grass, Shademaster is a rich blue-green variety of creeping red fescue.

Along with the Jacklin Seed Co., LESCO is releasing Wrangler Turf-type Tall Fescue. Wrangler is a semi-dwarf, dark green, fine-textured turf-type tall fescue.

In addition, LESCO has significantly increased its acreage of Trailblazer Turf-type Tall Fescue. Though Trailblazer was in limited supply last fall, it will be the most readily available dwarf on the market this fall, according to Wick.

LOFTS SEED INC. Bob Cook, general manager at Great Western, Albany, Ore., described the research situation for Lofts Seed Inc. of Bound Brook, N.J. Cook said the newest addition to the marketplace is Lazer Poa Trivialis, which is slated for use in the southern market.

The primary improvement here is increased disease resistance, but the color is also considerably darker green than other varieties, he said.

NORMARK INC. This Tangent, Ore.-based company is marketing a new variety called Pinnacle Perennial Ryegrass that was rated number one at the Rutgers University trials. President Joe Jacob describes the plant as low-growing, deep green and very aggressive tillering.

Normark will also continue to market its top-rated Premier Turf-type Perennial Ryegrass and Tempo Turf-type Tall Fescue.

O.M. SCOTT & SONS. Abbey Kentucky bluegrass and Coventry Kentucky bluegrass are both available in limited supply this year, but will be offered in ample quantities in 1989.

According to Eugene Mayer, research/marketing director, O.M. Scott & Sons, Marysville, Ohio, the company is now actively breeding all its cool-season grasses which includes Kentucky bluegrasses, perennial ryegrasses and tall fescues.

In the warm-season area, O.M. Scott & Sons is doing some work with St. Augustine and Bermudagrass varieties.

TURF MERCHANTS INTERNATIONAL. This fall Turf Merchants International, Tangent, Ore., will market a new fine-textured turf-type perennial ryegrass called Aquarius. A dwarf perennial, Aquarius is a significant improvement in terms of color and texture, and is ranking in the top of the Rutgers University trials.

Turf Merchants International is also excited about a new offering called Bonzai, a double dwarf which looks like bluegrass but has the characteristics of tall fescue. Bonzai is blue-green and fine-bladed, and exhibits a reduced vertical growth rate. This new variety should be attractive to sod farmers who won't need to mow as often, or fertilize as often to hold the color. A limited basis amount will be released this fall, but a commercial supply will be on hand in 1989.

This fall, the company will also be co-marketing Wrangler Tall Fescue with Jacklin Seed.

When it comes to breeding turfgrass for

improvements, said Steve Tubbs, president/general manager, Turf Merchants, the industry is getting to the point where the beauty contest is almost over. "The grasses are so dark and fine and beautiful that now we're starting to look at disease resistance and drought tolerance to a much a greater degree."

Most of the research in turf-type tall fescue and perennial ryegrass is geared toward lowering maintenance needs for fertilizer, water and mowing, he said.

TURF SEED INC. Like other manufacturers, Dr. Bill Meyer, vice president and research

(continued on page 45)

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LAWN CARE TECHNOLOGY FOR SPORTS TURF

Sports turf liability is becoming a fact of life as technical information for field improvement is becoming more readily available.

The success of professional lawn care across the country indicates that technical expertise is available for application to sports turf management. And, there is no question about the need to improve the safety of playing surfaces, particularly for young athletes just getting started. Often school boards and municipal recreation leaders fail to improve sports turf quality because of not knowing where to start.

This article is intended to provide you with some insight regarding sports turf maintenance problems and related technology for solving these problems. In order to know what we're dealing with, it's necessary to discuss use characteristics of sports turf before considering five management areas of critical importance: soils, irrigation, grasses, pest control and grooming.

USE CHARACTERISTICS. Of all turfgrass, sports turf is presented with the most difficult and stressful conditions for growth. First of all, game play causes wear that is physically abusive to turfgrass plants. They are cut and torn from the sod as a natural consequence of foot traffic and player impact. Second, game play causes soil compaction that weakens grass roots and limits recuperative potential of individual plants. Third, game schedules and field use are such that the recovery time needed for turf revitalization is severely limited. Field renovation must be looked at as a continuing practice throughout the entire play period, thus taking advantage of any and every opportunity to make repairs and to improve growth conditions for the grass.

In addition, it is not always easy to identify who the decision makers are. Time wasted in obtaining approval for essential maintenance results in lost opportunities and a continuation of turf deterioration at a time when the safety of young athletes may well be in jeopardy. Sports turf liability is becoming more and more a fact of life as technical information for field improvement becomes more readily available. There is no longer an excuse for negligence in the culture of natural grass for sports playing surfaces. grass for sports playing surfaces.

Further, a wide range of cultural practices can be scheduled for field improvement. Costs will vary considerably from location to location and depending on the nature of the work to be accomplished. However, economics of sports turf construction, maintenance and renovation is more favorable than the economics of compensation for injuries to young athletes.

Finally, before attempting to make a poor field better, determine, if in fact there is a good chance that you can be successful.

Now that you've considered the use characteristics of sports turf and have determined who the sports turf decision makers are, it's time to check on how soils, irrigation, grasses, pest control and grooming can work to enhance your sports grounds management program.

SOILS. Soil condition on sports fields can make or break you. In order for grasses to grow well, soil must be graded so that surface drainage moves water away from intensive play areas toward the sidelines. Water that collects in depressions anywhere on a field will weaken grass in that area and ultimately result in turf failure. From 12 to 18 inches of crown in the center of a football field is about right. For other types of play areas, an equivalent slope is desirable for movement of excess surface water.

Then, the soil must have a sufficiently porous texture to allow water to drain down through the profile. A good sandy loam soil is ideal. Unfortunately, it's not a simple matter to add sand to a heavy or fine textured soil and make it function like a natural sandy loam. Tons of sand is required, and the mixing with existing soil is labor intensive as several three- to four-inch layers must be rototilled in one at a time. The alternative is removal of existing soil and replacement with an artificial root zone mixture prepared off-site.

Heavy soils are often more effectively modified with organic matter than with sand. Once turf is established on these soils, the continuation of root growth and decomposition year in and year out helps to maintain as many favorable soil conditions as are possible. Any cause of turf failure disrupts this process and re-establishment is generally difficult.

A word about topdressing. Sports turf is in need of frequent topdressing to level the field and heal scars from heavy use. *Always* use a topdressing that is the same as that in the root zone or one that is more sandy. Never use a topdressing that has more silt and clay than is present in the root zone soil. Water will move from a more sandy soil with large pore spaces into a less sandy soil with smaller pore spaces, but it will not move readily from a heavier finer textured soil into a lighter coarse textured soil. Improperly topdressed lawns and sports fields are wet near the surface and shallow rooted. These conditions are disastrous for playing field surfaces.



(Above) The effect of soil compaction is often evident in the poor turf appearance on the field in comparison with the area behind the goal posts. This field, supposedly ready for fall play, is hard and unfit. (Inset) When in doubt about the hardness of a sports field, insert a soil sampling tube. This soil is so dry and compact that the tube fails to penetrate more than an inch.



Since use of play fields compacts the soil so that pore spaces are smaller and internal drainage of water slowed along with exchange of fresh air into the soil, core cultivation, slicing and spiking are desirable practices. Schedule these mechanical operations whenever growth conditions favor root development (cool, moist conditions in the North and warm, moist conditions in the South). Use all three procedures. Core cultivation opens up holes and removes plugs; these may be broken up and returned as top-dressing. Slicing develops slits or grooves in the turf and soil that intercept water and allow for deeper penetration of air and water. Spiking breaks up surface compaction that otherwise seals off the soil and slows down infiltration of water, air and nutrients. Generally, it is difficult to find time to overdo these three practices.

The soil is a dynamic living entity that provides support, moisture and nutrients for the turf. In order to get the most from the soil at hand, know both physical and chemical properties. Maintain soil test information files and use this information in prescribing lime and fertilizer applications. It's important to make growth conditions favorable for turfgrasses, and also for the billions of soil organisms that live within the root zone and work to create an environment that has active biodegradation properties.

Such soils are necessary in the safe and effective use of all pesticides.

Up to this point, we have assumed that the field has been well-constructed with suitable soil or sand root zone, and that drainage tile have been placed properly with catch basins and outlets that remove excess water at acceptable rates. This may not be the case, and if so, there is little that can be done in field maintenance that will overcome the liabilities of poor or inadequate construction. Your field management efforts are not likely to yield satisfactory results.

However, one renovation practice sometimes helps. Try constructing narrow trenches 3 to 4 inches wide and 3 to 4 feet deep from goal line to goal line. Position these from 5 to 10 feet apart and connect the ends with tile lines along the bottom so that drainage water is carried away from the play area. Fill the trenches with coarse sand and leave them open at the top. Grass will spread over the sand so that it will not be visible. Do not add soil to the top of the trenches — this will seal them off so they will not function.

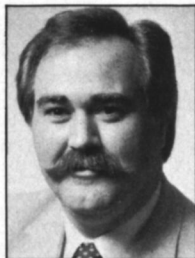
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Dr. **John Street** is an associate professor in the agronomy department at The Ohio State University. Dr. **William Meyer** is president of Pure-Seed Testing Inc., Hubbard, Oregon. Dr. **Des Rice** is president of The Weed Man Ltd., Mississauga, Ontario, Canada. Dr. **Al Turgeon** is professor and head of the department of agronomy, Pennsylvania State University. Dr. **Joseph Vargas** is professor of botany and plant pathology, Michigan State University, East Lansing, Michigan. Dr. **Patricia Vittum** is associate professor of entomology, University of Massachusetts, Waltham, Massachusetts.

IRRIGATION. Sports turf that must rely on natural rainfall for water is likely to be poor in quality most of the time. Sports turf that is overwatered because of the improper use of an irrigation system will be poor in quality all of the time. Needed for excellent quality sports turf is a well-designed manual or automatic system that is used as needed and as determined by an experienced lawn care professional. Many sports fields have limited prospects for improvement because of the lack of irrigation water. Fertilizers, pest control chemicals and other cultural practices have little chance of working if water is the limiting factor. The use of just enough water at the proper time will enhance the effectiveness of all other practices used in turf management.

GRASSES. Sports turf can never be made better than the potential for excellence provided by the grass or grasses present in the field. In the North, the basic turfgrass should be either Kentucky bluegrass or turf-type tall fescue. Use one or more of the new named varieties that feature improved vigor and better resistance to diseases and insects. With Kentucky bluegrass, the new named varieties of fine fescue and perennial ryegrass may also be used. Generally, turf-type tall fescues are seeded by themselves without other grasses. Avoid use of bentgrasses that spread by above ground stolons and tend to tear out as large divots under heavy traffic.

In the South, Bermudagrasses are used most for sports fields. New improved cultivars are propagated mostly by vegetative means. New improved seeded bermudagrasses are now under development and will be available within a year or two. Since all warm season grasses go dormant in the fall and remain in that state throughout the winter and early spring, they must be overseeded in the fall with cool season grasses in order to provide a good stable playing surface. Annual and perennial ryegrasses are used as well as blends of perennial ryegrasses and mixtures of perennial ryegrasses and other grasses.

Overseeding techniques have been standardized for use with both cool and warm season turf. Where turf is thin because of intensive use, pregerminated seed mixed with topdressing can be applied directly, watered and even clefted in by practice or game play. Any plants that can be established will improve playing conditions. Where large areas are thin, slit seeding with mechanical devices that enhance seed to soil contact are recommended. There are several types of vertical slicing machines that can be used for this purpose. Familiarity with them is essential for good results. Contact your local turfgrass supply and equipment distributor.

For lawn care professionals that are regularly involved in sports turf maintenance, the preparation of pregerminated seed is desirable on a continuing basis. Just follow these steps:

- Select an inside area with sloping floor equipped with drain, or construct such a platform. Provide screen around drain so that seed will not be lost. The area should be heated with a thermostat set at 70 degrees Fahrenheit.
- Measure out amount of seed to be pregerminated and mix well with an equal volume of fine vermiculite.
- Soak seed and vermiculite mixture well with water and allow excess to drain off. Cover with a tarp.
- Mix up the pile each morning at the start of the work day and each evening at quitting time.
- Add water as needed to keep mixture moist and keep pile covered to prevent loss of moisture.
- Check seed each day and note the amount of seed sprouted. When about 50 percent of the seed has a sprout, it is ready to be planted.
- Mix sufficient Milorganite or other drying agent (sawdust, vermiculite, etc.) to condition seed for spreading.
- Seed at once and keep moist after placement in the field. Use of pregerminated seed is the most effective method.

(continued on page 45)

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SOIL-BOUND HERBICIDES

(continued from page 32)

zation of herbicidal products plus a variety of natural and induced gases which might exist in soils. Furthermore, accelerated seed germination following adsorbent application has been reported by some applicators. These benefits alone, should generate interest in this technology and its applications for lawn renovation.

LUCRATIVE MARKETS. Do-it-yourself plant care and landscape management is no doubt here to stay, and never before has there been such a staggering selection of preemergent products from which the enthusiast can choose. Likewise, the degree of technical insight needed to properly select and use today's over-the-counter products is just as staggering. Therefore, more soil sterilants are finding their way into ornamental plantings and more lawn preemergents are being applied at quadruple the labeled rate.

There are also legitimate instances whereby the desire to reseed merely supercedes the fact that a preemergent has been previously applied. Add to this the many herbicide misapplications made by unscrupulous applicators or "concerned" neighbors, and the square footage of herbicide-tainted soil throughout the nation becomes considerable.

In this respect, the decontamination of applied preemergents can become a profitable add-on service for plant care services in practically any part of the country. Besides providing services to individuals, applicators should consider exploring markets through insurance carriers and claims adjusters.

DEFINING THE PROBLEM. Once a problem with a preemergent application is recognized or suspected, applicators should first determine the need for extraordinary measures aimed at expediting the disappearance of herbicide from a soil. No preemergent — including the non-selective soil sterilants — is permanent, and for each herbicide there exists a declination curve to indicate the relative soil persistence under known conditions.

Product residual can range from a few hours up to several years, depending on the inherent nature of the product and the environment under which it is subjected. The soil persistence of most preemergent herbicides is controlled by a combination of the following factors:

- temperature
- humidity
- soil texture
- organic matter content
- soil pH
- water solubility of herbicide
- irrigation rates
- microbial activity
- application rate

Once the residual time of a given herbicide under the prevailing conditions can be projected, the sensitivity of endangered plant to the herbicide in question should be evaluated. The best place to start is with the herbicide label itself. However, never hesitate to contact the product representative for more specific data.

The risk to desirable plants can also be identified by their proximity to the site of treatment. For example, root systems of distant specimens can extend into the treatment zone and herbicides can move laterally or vertically to eventually contact the roots of desirable plants.

The specific risk from preemergents should be calculated based on combining all sources of information. For example,

Accelerated seed germination following adsorbent application has been reported by some applicators. This benefit and its applications for lawn renovation should generate interest in this technology.

determine if natural degradation time will exceed the rate of herbicide movement into "sensitive" root zones, or if herbicides will leach below germination depths before the estimated window for seeding time has passed.

In many situations, herbicides can be encouraged to dissipate more quickly by merely increasing irrigations and hence the leaching rate. Other possibilities include installing physical barriers able to isolate sensitive plants from herbicide, or at least the partial removal of soils in a buffer strip.

However, in those cases that do not lend themselves so readily to superficial methods, purification of the tainted soil may yet remain a feasible option, short of total soil replacement.

DETOX BASICS. The phenomenon of adsorption is central to understanding the persistence of preemergent herbicides and their removal from the soil. As residual herbicides penetrate the soil, they physically move downward in a water suspension or perhaps in solution. As fluid penetrates, herbicide molecules adhere to individual soil particles by the process of adsorption. Certainly, without this adherence, preemergents would cease to be residual and would thus become short-lived soil additions behaving much like soluble nitrate.

Adsorption increases with the amount of clay and organic matter present in the

soil due to the net negative charges inherent to these particles (as indexed by Cation Exchange Capacity). Also affecting the ability of soil to compete for herbicide molecules are other positively charged soil constituents such as calcium, magnesium, sodium, iron and hydrogen, which in combination determine the soil pH.

On higher pH soils, the addition of acidifiers (e.g. sulfate containing compounds) can introduce cationic elements able to displace the herbicide molecule on the soil and facilitate greater product leaching per irrigation.

But by far the most positive method of soil decontamination results when a highly adsorbent material is placed into intimate contact with the herbicide-laden soil. In essence, the addition of a finely dispersed, adsorbent material (such as activated charcoal) provides an almost immediate suspension of organic herbicide activity. (Practically all modern pesticides are organic by nature.) By virtue of inundating the soil with massive numbers of these introduced adsorption sites, herbicide is immobilized until natural processes ultimately cause its degradation.

In fact, an identical methodology has for years been at the heart of clean-up procedures involving spills of pesticides and other organic compounds. Likewise, respirator filters and refrigerator fresheners trap certain gases and vaporous organic molecules according to this same adsorption principle.

Perhaps the greatest challenge facing a would-be soil amendment operation involves positive positioning of the adsorbent in herbicide laden zones. Since most available products sold are colloidal suspensions or fine powders, surface applications of adsorbents might not produce timely results (except perhaps for shallow seeding applications or on extremely sandy soil).

Therefore, applicators should be prepared to procure the equipment and labor needed to physically place adsorbent materials deep within the zones of herbicide penetration. Equipment needs could include anything from hand-held spades, to rototillers, to even a backhoe for situations requiring trench-exclusion for larger trees and runoff barriers.

CONCLUSION. Preemergent herbicides are central to many plant care operations. Without these essential products, the degree and quality of plant care we've come to expect would suffer. So that applicators become better custodians of preemergent herbicides, the ability to limit a herbicide's activity in the soil, or to contain an inappropriate herbicide application, would seem most consistent with modern plant care activities. — James Ware ■

The author is a lawn care consultant residing in Hobbs, New Mexico. He is a regular contributor to ALA magazine.

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SPORTS INJURIES AND TURF— IS THERE A CORRELATION?

As athletes — professional and amateur — continue to receive substantial media exposure, so do the fields they play on.

Gone are the days when sports injuries were shrugged off as mishaps. Instead, the spotlight now focuses on sports turf and field maintenance as a leading factor in injury.

Professional athletes generally have the opportunity to play on properly maintained fields, but high school and college athletes remain more susceptible to injury as play continues on fields which are poorly maintained. Oftentimes the situation can be improved, but many educational institutions think they cannot afford, nor need, to spend money on athletic fields.

At the collegiate level, comparisons between natural turf and artificial turf in connection with football injuries have been drawn, but differences in the quality of the turf on natural grass fields has received only minor attention, according to John Harper, professor of agronomy at The Pennsylvania State University.

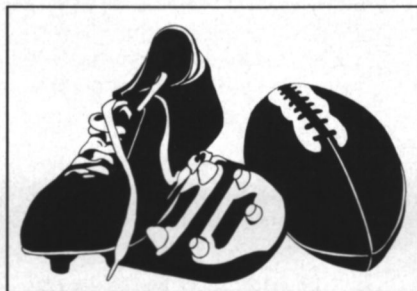
As a result, Harper and three Penn State associates — Chauncey Morehouse, professor of physical education; Donald Waddington, professor of soil sciences; and William Buckley, instructor in health education — set out to investigate how turf quality affects injuries.

Their study, conducted several years ago, consisted of 12 schools active in the Pennsylvania Athletic Trainers Association. The participants came from various locations across the state and provided 24 fields — 12 game fields and 12 practice fields — for evaluation. Because two schools didn't provide a complete record of injuries, the results and correlations involving injuries are based on data from 10 schools, Harper said.

All injuries to football players in the sample schools were reported through the National Athletic Injury/Illness Reporting System (NAIRS), established by Penn State in 1974. NAIRS receives weekly reports from team trainers or physicians of injuries and illnesses sustained by members of an athletic team during practice or competition.

In this study, injuries and illnesses were classified by NAIRS into four categories:

1. *Minor* — any reportable injury/illness (other than dental or head injuries) that didn't prevent an athlete from returning to practice or competition for longer than seven days following the injury or illness.



2. *Significant* — all head and dental injuries regardless of time lost from play or practice, and any injury/illness that kept an athlete from returning to play or practice for longer than seven days.

3. *Major* — any significant injury/illness that prevented a player's return to practice or competition for 21 days or longer.

4. *Severe* — any permanently disabling injury, such as paraplegia.

Game and practice fields were evaluated both before and after the football season. Information ranging from the kinds and amounts of turfgrasses to the total weed coverage were evaluated.

Information collected on the maintenance of game and practice fields showed considerable variation between fields at an individual school as well as among fields of different schools. Although practice fields were more intensively used than game fields, they received less care — a fact which disturbed Harper.

"If they spend money at all they do it on the game fields rather than the practice fields," he said. "It's unfortunate because the practice fields are where the kids spend probably 95 percent of their time, yet they're (practice fields) the ones they do absolutely nothing to."

According to the study, mowing heights were similar on game and practice fields, but game fields received more nitrogen fertilization and more aeration than practice fields. Herbicides were used for weed control on 25 percent of the game fields, however, none of the schools reported use of weed control on practice fields. The fields which did receive some weed control were treated with a preemergence crabgrass herbicide and a combination herbicide for broadleaf weed control.

About 83 percent of the 24 fields involved in the study were overseeded — with $\frac{2}{3}$ being overseeded in the spring. In addition, 83 percent of the fields were fertilized at least once a season.

Only 75 percent of the 12 playing fields

and 25 percent of the 12 practice fields were aerated.

About 75 percent aerated game fields once a season and 33 percent aerated more than once, but only 16 percent aerated with more than three passes.

Harper said he normally recommends at least three aerations per year, per field. In early spring, he suggests a fairly heavy aeration with six or seven passes. A second, lighter aeration is recommended in late August, just before the game season begins. Another heavy aeration should be done at the end of the season.

After field maintenance evaluations were complete, the focus of the study turned toward injuries. Approximately 210 injuries were reported by the 10 schools. A further breakdown shows that 96 of these injuries occurred in regular season games, four in practice games and 110 during scheduled practices. About 152 of the injuries were classified as minor and 58 were significant. No severe injuries were reported.

Of the 210 injuries reported, 5.7 percent were definitely field-related, 15.2 percent were considered possibly field-related and 76.7 percent were definitely not field-related. The types of injuries varied among body parts, but showed up most often in the knees, ankles and feet.

Harper combined the definitely field-related and possibly field-related together to conclude that 21 percent of the injuries *may* have been caused by poor field conditions — injuries which might have been prevented.

"I can't say if (the number of injuries) it's high or low because there's nothing to compare it with. Nobody has really done much along these lines," Harper said. "A lot of people felt it wasn't significant, but if you stop and think how many injuries there are across the country...if you can reduce that by a fifth, it's going to make a big difference."

Following the second field evaluation, suggestions for maintenance and renovation programs were sent to each school.

"Probably half of them followed our recommendations. The rest said they didn't have the people or the interest," he said. "They're more conscious of the importance of the situation in professional sports, but the interest is really starting to increase (at all levels) with the liability suits that are occurring." — *Cindy Code*

The author is Editor of ALA magazine.

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MAKING STRIDES

More and more groundskeepers of professional sports stadiums are beginning to realize the value of a well-kept playing field. But they're not the only ones. Parents of today's high school athletes not only root for a winning home team, they also seek to reduce the number of injuries their youngsters suffer. Colleges, universities and recreation departments are all paying closer attention to the quality of playing surfaces. Recently, certain outdoor sports, such as soccer and lacrosse, have enjoyed a rapid growth in popularity in some areas of the country. Americans also have more leisure time on their hands and are participating more in recreational sports at neighborhood parks. These changes make for an increased demand for quality playing surfaces. Several trade associations are now geared toward improving athletic fields. Below are three major groups that offer slightly different services, though each has a portion of membership sharing a common goal.

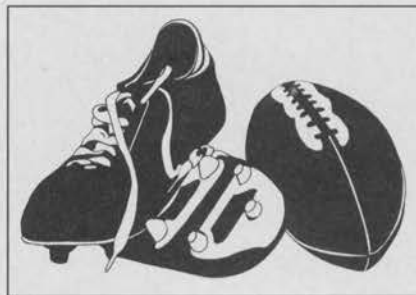
PROFESSIONAL GROUNDS MANAGEMENT SOCIETY.

Founded in 1905 (incorporated in 1911), this group got its start as the National Association of Gardeners. Though this organization of estate gardeners was primarily social, it was around for many years until the number of estates began to dwindle. In the early 1970s, with fewer than 400 members, the organization was revamped, focusing its energies on maintaining the grounds of schools, universities and parks.

Now known as the Professional Grounds Management Society, the organization boasts about 1,400 members. According to Executive Director Allan Shulder, the largest body of membership is still the private maintenance contractor. The next largest group falls into the parks and recreation area. The remainder maintain varied grounds including resorts, shopping centers, zoos and arboreta. A growing portion (about 40 percent) of the total membership is involved in sports turf maintenance. Today the group is mainly an educational association, with an objective of upgrading the industry by demonstrating the importance of proper maintenance.

PGMS answers inquiries on sports turf technology or directs people to the right source, when needed. The organization also publishes a monthly newsletter and has three training guides. Its various educational materials are offered at a discount to members.

Additionally, the society offers an annual educational conference and is plan-



ning a series of regional seminars that will kick off in July.

Shulder said there's no question that there's been a big need for improved sports turf in recent years. "Some of these poor fields are literally played to death," he said. "The demand on parks has really been tremendous because people have more time for recreation."

Membership is \$85 a year. For more information, contact: Professional Grounds Management Society, 12 Gallows Ave., Suite 1E, Cockeysville, Maryland 21030; 301/667-1833.

NATIONAL SPORTS TURF COUNCIL. Until last February, this two-year-old organization was associated with the Musser International Turfgrass Foundation, whose goal is to train graduate students in turfgrass science. Today, the National Sports Turf Council is an independent group coordinating the efforts of national experts to help develop top quality sports turf.

According to Fred V. Grau, co-chairman of the NSTC, competitive athletes go all-out to perform and deserve turf that equals their determination. "What we have given them is mediocrity in perpetuity," he said. "At most high school athletic fields they tease the grass with light applications of soluble fertilizer to make it look nice for a game, but it doesn't stand up under the abuse and overuse."

To counteract this situation, the council plans to serve as a clearinghouse for existing research. It will coordinate the efforts of various extension specialists, universities, consultants and trade organizations so that members have easy access to this information. "We're going to use every effort to provide the all-out athletes with the kind of turf that will give them an all-out performance," Grau said.

Membership is steadily growing, and today the council's 200 members include seed growers and manufacturers of equipment and fertilizer, as well as those involved in other facets of maintaining sports turf. "This coordinating agency has been badly needed for many years," Grau said.

Membership fees are based on a sliding scale. The cost ranges from \$500 down to \$25. For more information, contact: Fred V. Grau, National Sports Turf Council, P.O. Box AA, College Park, Md. 20740-1014; 301/864-0090.

SPORTS TURF MANAGERS ASSOCIATION.

This organization was conceived in 1981 by three major league sports turf managers: Harry Gill, George Toma and Dick Ericson, along with Dr. William H. Daniel, professor emeritus, Purdue University. The executive director is Dr. Kent W. Kurtz.

Members include superintendents of schools, parks, colleges, universities and professional stadiums, as well as contractors and commercial affiliates. The type of playing fields these individuals maintain are used for football, soccer, baseball, softball, race racing, polo, lawn tennis, lawn bowling, rugby, lacrosse, cricket, boccie, field hockey and golf. Managers range from high school custodians on up through the major leagues.

According to Operations Assistant Melissa Merritt, STMA members work together combining the science of growing grass with the art of maintaining sports turf to produce aesthetically pleasing and safe playing areas.

In 1986, membership increased fourfold, providing STMA with more than 300 members. Also that year, the association held its first national conference in San Francisco, Calif., in conjunction with the Golf Course Superintendents Association of America.

Today membership totals 706. It had doubled by the time STMA held its second national conference February 1987 in Phoenix, Ariz.

Merritt attributes the association's rapid growth to increased exposure in the industry. "People are also getting brave about asking how to do things. They're becoming more aware, with all the injuries, that something can be done," she said.

Membership cost falls under different categories including: professional sports turf facility manager, \$50; educators, parks and schools, \$30; students, \$10; commercial affiliates, \$100; second company members, \$25; and persons outside the United States, \$45.

To obtain a membership application, contact: Sports Turf Managers Association, 400 N. Mountain Ave., Suite 301, Upland, Calif. 91786; 714/981-9199. — Julie November

The author is Assistant Editor of ALA magazine.

PRODUCTS

New England Business Service has developed an invoice especially for chemical lawn care firms. The three-part document reduces a technician's paperwork by offering boxes (spaces) to check for the services performed. To help meet local regulations, boxes are also available to mark wind conditions. Additional space is provided for chemical descriptions, if necessary.

According to the company, the list of lawn treatments not only saves time, it also advertises all of a company's most common services, regardless of how many an individual homeowner receives. Also, by detailing each part of the customer's lawn treatment, the invoice fully explains the total fee. In addition, there is room to list services distinctive to one landowner and lawn care tips, if these are required. When completed, the invoice can be left at the site or mailed in a double window envelope.

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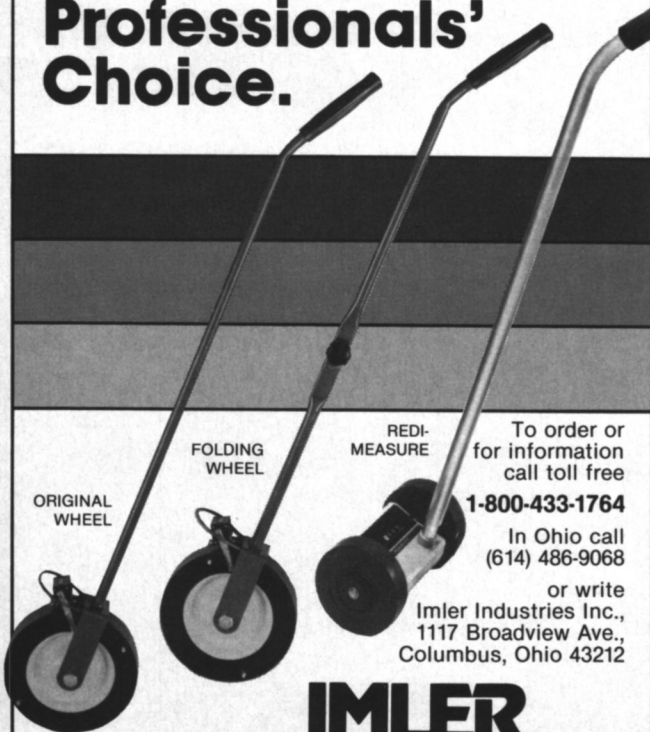
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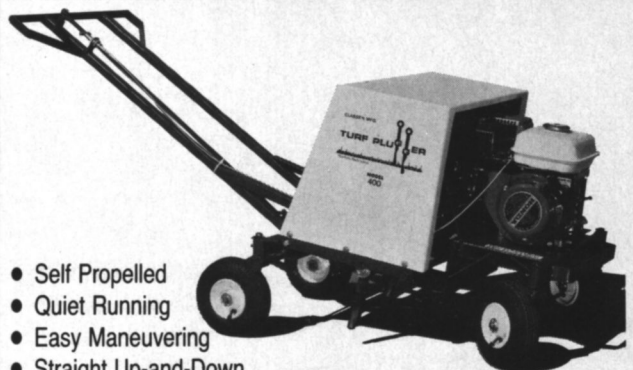
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ALA / JUNE 1988 39

Land Pride, a division of Great Plains Manufacturing, offers the Land Pride Solid Stand Seeder for accurate interseeding and new seeding of grasses. According to Land Pride, the three-way soil-to-seed contact system provides greater germination and emergence with the advantages of a full-width seeding pattern.

During operation, PTO driven knives slice into the ground creating slots to receive the seed. The fluted seed cups then meter the desired amount of seed in a broadcast pattern. Adjustable double torsion tickler tines agitate the seeding surface to help promote contact. Finally, rollers or packer wheels finish the job by pressing and firmly packing seed for proper germination, eliminating air pockets.

The seeder offers welded heavy gauge steel boxes and a heavy-duty profile stamped A-frame. Features include: variable knife spacing, ground driven seed metering, working depth adjustable from 0 to 1½ inches, heavy-duty PTO with slip-clutch safety, clear seed tubes and a removable gauge wheel for seeding in tight areas.

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Spectrum Technologies Inc. offers a non-toxic, biodegradable stain remover specifically designed for the removal of pesticide stains.

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SHUFFLING THE DECK
(continued from page 21)

Southeast, but now the company operates in 17 states in the West, Midwest, South and East.

Roberts said the potential is there to continue building the lawn care division. "We didn't really grow the business until the last two years when we started actively pursuing acquisitions and opening new branches internally," he said.

Orkin Lawn Care, a chemically oriented lawn maintenance company, has plans to expand into related services including seeding and aeration, sod plugging, flea and tick control, as well as deep root feeding of trees and shrubs.

The lawn care division also takes advantage of the success of the pest control division by continuously cross-marketing customers from both divisions.

"The Orkin pest control name is already known in all the states. Now the Orkin Lawn Care name is becoming more widely known," said Gordon Crenshaw, head of the Orkin Lawn Care division. "We feel like we're trying to grow twice the industry rate through expansion and our market position. We have pest control branches in almost every state of the Union and we can essentially go into any

desired market that we want to and set up in our own shop and start to expand. We intend to keep doing it because we feel that the lawn care industry, or potential out there, is twice as big as the pest control potential."

SIERRA CHEMICAL COMPANY. On Aug. 4, 1987, Sierra Chemical Company of Milpitas, Calif., acquired the Speciality Agricultural Products division of Mallinckrodt Inc. of St. Louis, Mo.

The acquisition adds a full line of pesticides to Sierra's line of controlled-release fertilizers, according to William S. Floyd, chief financial officer.

"This is our first acquisition and it will provide growers with a wide range of proven products and the highest level of customer service. Customers are looking for ways to solve a variety of problems. Sierra will now offer a much wider range of solutions," said Robert Severns, president of Sierra.

Sierra is a privately held company and would not release sales figures.

"It was very positive for us," Floyd said. "(The acquisition) makes us more competitive and allows us to meet more of our customers' needs."

SNAPPER. On June 15, 1987, A.A. Mali-

zia, chairman of the board of Snapper Power Equipment, bought F.D. Kees Manufacturing Company. The acquisition brought a line of commercial lawn and turf equipment to Snapper's mostly residential line of equipment.

"We bought it on the basis that we're going to develop it and give it the financial support that they need to expand, Malizia said.

Prior to the acquisition, Snapper marketed only two small commercial mowers. However, the company now has plans to expand into the commercial market, not only through Kees, but with its plans to develop new products, he said.

Snapper's 1987 revenues were close to \$285 million, according to Malizia. He didn't have sales figures for Kees, but called it a much smaller company than Snapper.

Since the acquisition, the number of employees at the Kees headquarters (now under the Snapper name) in Beatrice, Neb., has increased by about 40 percent, he said. Snapper's headquarters remain in Georgia.

As far as future acquisitions go, Malizia said, it's going to be necessary to continue broadening Snapper's line of equipment.

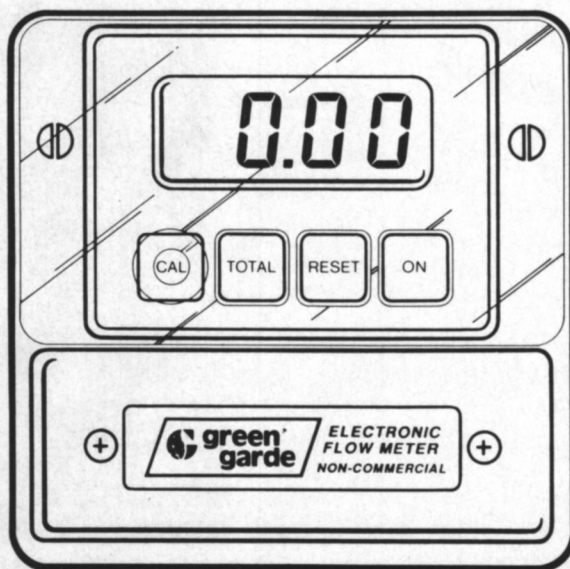
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We just needed to expand our line into the commercial field," he said. "Acquisitions are going to be necessary in the industry because you know the market itself is not growing that much. There are more people who have gotten into it and it's getting difficult to share business these days. To an extent, it's more or less survival."

In addition to the number of mergers and acquisitions taking place, a few individuals have left successful companies to go out on their own, or in one instance, have taken expertise from established companies in the development of a new company.

On April 12, Chevron Chemical Company, a subsidiary of Chevron Corporation, and Sumitomo Chemical Company Ltd. of Japan, created a new company to develop and market agricultural chemical products in the United States.

The new company, Valent U.S.A. Corporation, will be headquartered in Walnut Creek, Calif. Chevron, based in Fresno, Calif., and Sumitomo are equal partners in the new company.

The company will employ about 250 people who will be on loan from the two parent companies.

Chevron President R.W. Davis said Valent grew out of several years of close

ties between the two companies during Chevron's development of several Sumitomo compounds for the U.S. market. The U.S. marketing rights to these compounds and future Sumitomo compounds will belong to the new company.

Valent will also have exclusive rights to market current and future Chevron agricultural chemical products in the United States.

Another newcomer to the lawn care market is AllGreen Corporation.

Feeling the need to run his own business, Paul Anderegg left seven years at Tru Green behind to form his own company with partner Ed Barent — the founder of Tru Green.

The two now run AllGreen Corp. whose headquarters are based in Atlanta, Ga. After a year in business, the company operates 10 branches west of the Mississippi River.

Anderegg, former vice president of sales and marketing at Tru Green, said he had no qualms about leaving the security of Tru Green behind to set out on his own.

"I don't think this industry is saturated or reached its real maturity stage yet. There's still a lot of room for good companies," he said. "I think it will be more difficult in the future for just anybody to pick up and go into the business. But I'm

not afraid to compete. I anticipate it, I expect it and I wouldn't be here if I didn't think I'd be in the same markets with all of them."

A one-year, non-compete agreement was established between AllGreen and Tru Green, leaving AllGreen most of the western markets in which to develop. At the time of his departure, Tru Green had not yet been bought by Waste Management.

In the next five years, Anderegg and Barent hope to build a \$20 million company through hard work and more branch openings.

"I think it will be more competitive for the next few years. I don't think the level of competition is going to lessen and I don't think the competition will exceed the demand for service," Anderegg said. "I still think there's room for a lot of people yet."

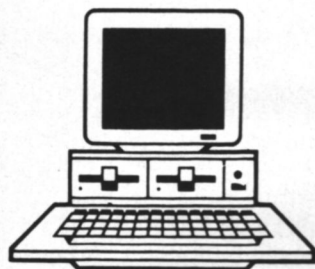
If acquisitions continue at the same pace, Anderegg predicts three or four major national companies will dominate the metropolitan markets followed by two or three good regional companies.

In addition, a number of small companies in each market will be visible. — *Cindy Code*

The author is Editor of ALA magazine.

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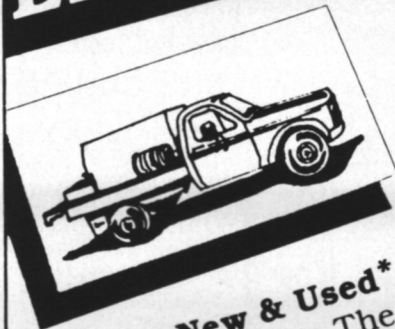
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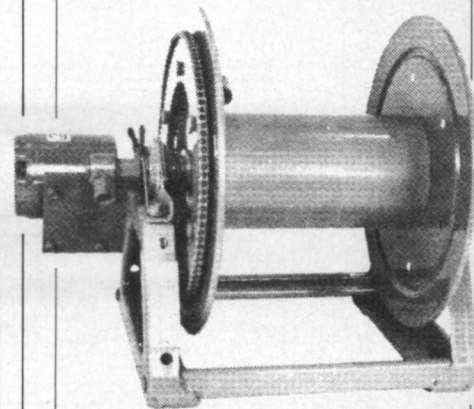
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SPORTS TURF

(continued from page 30)

introducing the best turfgrasses into an existing stand of sports turf.

PEST CONTROL. Sports turf, because of the stressful conditions under which it is grown, and the weakening effect of these conditions, requires frequent use of pesticides. The lawn care professional is in an excellent position to monitor the likelihood of disease infections and insect infestations. Proper timing of treatments and use of most effective pesticides for local conditions is important.

With at least one weed seed ready to germinate for each square inch of soil throughout the growing season, the potential for weed encroachment is almost overwhelming. The necessity for monitoring weed development and scheduling pre and post-emergence applications of herbicides is a fact of life. Seldom are sports turfgrasses sufficiently vigorous to crowd out weeds without the help of herbicides.

The same chemical formulations that work well on local lawns will also be effective on sports turf. In use of these pesticides, follow the same precautions necessary for lawn care operations.

GROOMING. Sports turf requires mechanical mowing and grooming, not only to produce as healthy a turf as possible, but also to provide aesthetic appeal for spectators. Mowing height and frequency are determined by the type of grass and the use of the turf on the field. Cool season grasses are generally cut from 1½ to 2 inches. Warm season grasses are closer cut — ¾ to 1 inch. Grass should be cut frequently and clippings may be removed or left on the field, depending on how well the field is groomed.

In addition to mowing, fields may be combed, raked, dragged or thinned in order to maintain the degree of vigor and growth compatible with development of highest quality ground cover.

SUMMARY. The lawn care professional has an excellent opportunity to be of service in the management of sports turf. This opportunity is perhaps better in some parts of the country than in others. An appreciation for the value of fine turf and its use in the enhancement of playground and sports field safety is important. As an entry into this area of specialized turf management, get to know the condition of the grounds you are interested in. Learn who the decision makers are and what it will take to initiate a successful program. In doing this, use technical information available to you from a wide variety of sources. — *Eliot C. Roberts* ■

The author is executive director of The Lawn Institute in Pleasant Hill, Tenn.

SEED RESEARCH

(continued from page 27)

director, Turf Seed Inc., Hubbard, Ore., sees a trend toward darker color and dwarfism in tall fescues.

This fall Turf Seed will release Monarch Tall Fescue and increase supply of both Silverado and Elderado — the lowest growing, darkest tall fescue the company produces.

In bluegrasses, the big thrust has been in increasing composite Kentucky bluegrass varieties, explained Meyer. These grasses consist of an increased genetic base. Turf Seed Inc. has yet to name a material

now called CBI, which is an example of this type of variety.

In the ryegrass category, the company has been putting more sources of stem rust resistance into production.

According to Meyer, the company's dwarf turf-type perennial ryegrass, 2DD, will also be on the market.

In fine fescues, work has been done in backcrossing endophyte into the varieties Shadow Chewings Fescue, Aurora Hard Fescue, Shademaster Creeping Fescue and Bighorn Sheeps Fescue. — *Julie November*

The author is Assistant Editor of ALA magazine

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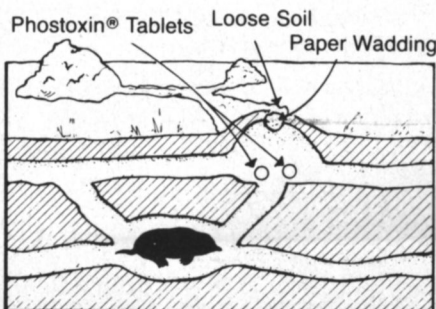
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AD INDEX

Bush & Cook Leasing	44
Ciba-Geigy	24,25
Classen	39
Encap	43
Fumigation Service & Supply ..	46
Hahn	18
Hawkeye Chemical	12
Hersch's Chemical	44
Imler & Assoc	39
Jevco	11
Jonathan Green*	31
KB Manuf	40
Kinduell Screen	26
LESCO	48
Lebanon*	30
Mobay	19
Monsanto	9
Moyer & Son*	27
NSTA*	31
Nor-Am	47
PC Supply	26
PLCAA*	35
3PF*	15
PaveMan	20
Power Spray Technology	14
Practical Solutions	10
Real Green	44
Redi Ramp	11
Rhone Poulenc*	2,35
Ryan	21
Salsco	45
Strong	21
Terracare	40
Toro	13
Trebort	10
Tuflex	4
Turf Merchants	37
Tyler*	15
W.A. Cleary Chemical	33

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