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SEPTEMBER 1986/\$2.50

WEEDS TREES & TURF

The Magazine of Landscape and Golf Course Management Since 1962

SIDELINED

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or treacherous turf?





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WEEDS TREES & TURF

The Magazine of Landscape and Golf Course Management Since 1962



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Cover photo of model Chuck Rezek by Bill Barker, Iann-Hutchins Studio, Cleveland.

WEEDS TREES & TURF (ISSN 0043-1753) is published monthly by Harcourt Brace Jovanovich Publications. Corporate and Editorial offices: 7500 Old Oak Boulevard, Cleveland, Ohio 44130. Advertising Offices: 7500 Old Oak Boulevard, Cleveland, Ohio 44130, 111 East Wacker Drive, Chicago, Illinois 60601 and 455 East Paces, Ferry Road, Suite 324, Atlanta, Georgia 30305. Accounting, Advertising Production and Circulation offices: 1 East First Street, Duluth, Minnesota 55802. Subscription rates: \$25 per year in the United States; \$35 per year in Canada. All other countries: \$70 per year. Single copies (pre-paid only): \$2.50 in the U.S.; \$4.50 in Canada; elsewhere \$8.00; add \$3.00 for shipping and handling per order. Second class postage paid at Duluth, Minnesota 55806 and additional mailing offices. Copyright © 1986 by Harcourt Brace Jovanovich, Inc. All rights reserved. No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical including photocopy, recording, or any information storage and retrieval system, without permission in writing from the publisher.

POSTMASTER: Send address changes to WEEDS TREES & TURF, P.O. Box 6198, Duluth, Minnesota 55806-9898.

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Groundsmaster 117

TORO

The professionals
that keep you cutting.

Good planning can make budget fight easier

■ The problem with many athletic turf managers is they don't do a good enough job selling themselves and, consequently, they aren't taken seriously when they place their supply orders on their superior's desk.

The reason they aren't taken seriously? Poor planning, according to Bill Bedrossian of Servicemaster Industries in Downers Grove, Ill. Bedrossian told his audience of athletic turf managers at the Midwest Sports Turf Institute they must "plan, execute, and review."

An athletic turf manager must document items such as manpower (total hours available versus total hours needed, scheduling, seasonal fluctuations), equipment (purchase date, condition, scheduled replacement, replacement cost), supplies (on hand, annual needs, cost effectiveness), and grounds (turf areas, paved surfaces, irrigation systems, trees and shrubs, bleachers).

An effective sports turf manager, says Bedrossian, has a planning calendar that includes items such as routine seasonal requirements, and regular annual events such as graduations, town fairs, and special sporting events. He also keeps a long-term calendar, perhaps a year in advance, of projects in the works.

Credibility is most important, he says, noting that written and photographed documentation is a must. "Show the superiors the condition of the fields when you started versus the condition they are in today," Bedrossian says.

And finally he says you must follow through by establishing expectations, providing inspections and documentations, making revisions when necessary, being flexible, and promoting yourself. Bedrossian says if you don't let anyone know you're doing a good job, your work will go unnoticed. And your budgeting battles will be losing ones.

Low-maintenance California grass on horizon

■ El Toro—not the tequila, but a low maintenance zoysiagrass expected to prosper in the warm California climate—should be available for home lawn, park, and other uses within two years, according to Dr. Vic Gibeault, cooperative extension turfgrass specialist at the University of California-Riverside.

El Toro, says Gibeault, is heat and salt tolerant, requires less water and nitrogen fertilizer than other turfgrasses, has few insect or disease problems, has good density and resistance to foot traffic, and grows in light to moderate shade.

It shows good cool season color but goes dormant during the cooler winter months, says Gibeault. He notes it produces less thatch than other zoysiagrasses.

El Toro is a UC-patented selection developed from the breeding program of the late UC-R professor Dr. Victor B. Younger.

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Jack Nicklaus

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TECHNOLOGY

Robot lawnmower: just around the corner?

Dr. Ernest Hall spent years calling equipment companies trying to convince them to manufacture his robot lawn mower. This year, companies are calling him.

Hall, director of the Center for Robotics Research at the University of Cincinnati, has turned an 11-hp Snapper riding mower into a robot mower. Now, Snapper is among several companies vying to manufacture the space age mower.

"I'm negotiating with six companies," Hall says. "Snapper is the one I've talked to the longest and in the most detail."

But Hall also mentions Honda as a possible manufacturer. "It's a product that's been developed in America, but the Japanese may be more interested in manufacturing it," he says.

Hall describes another company looking into the mower as "a major corporation in the United States which works with race cars and challenging technological things."

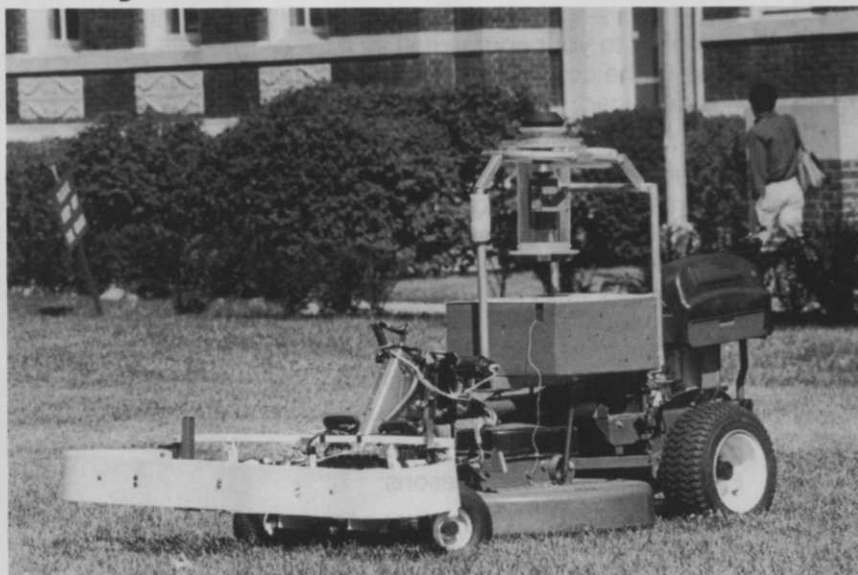
The mower could be ready to market in two or three years. "But the possible manufacturers have a lot of questions."

One new question, which seems to be choking many industries, is liability. Although, Hall says, the robot lawn mower is potentially safer than today's mowers, the issue cannot be ignored.

Already, people have won cases against mower manufacturers despite the fact that the consumer was misusing the product. In one case, someone was using a push mower as a hedge trimmer. In another, a man died of a heart attack trying to start a mower with a clogged system.

"If you were worried all the time, nobody would do anything," Hall says.

The mower is safer, primarily because it decreases human contact with the machine. Lawn mower acci-



The robot mower: a niche in the Green Industry's future?

dents hurt more than 50,000 Americans annually.

It works in one of three ways: remote control (a human would watch the mower and guide it); trainable mode (a computer program would teach the mower boundaries of a lawn); fully automatic mode (the mower would be able to detect boundaries, flower beds, trees).

For added safety, the mower features a warning light and safety bumper which stops when the machine encounters an object; sonar detectors which locate and avoid stationary and moving objects; and an omni-directional vision system which allows the robot to avoid obstacles and monitor progress while cutting the lawn.

Studies have shown the robot mower to be economical for either domestic or professional use. It is ideal for an older or handicapped consumer who can't do strenuous work. With homeowner use, the mower pays for

itself in three years.

A lawn care company which mows less than 100 acres weekly will pay for it in a year and a half. And, in large commercial use such as a municipal airport or highway, it can be paid off in less than a year.

Lawn care employees shouldn't be threatened by the robot. Hall says the machine will free up people to work on other areas of the landscape. Besides that, it will create a cottage industry for people to program or repair the robots.

The robot lawnmower is only the beginning. "I see people having not only the robot lawnmower, but indoor robots such as a vacuum cleaner," Hall says. The vision is reminiscent of the old Jetsons cartoon.

The first step is for Hall to secure a deal with a manufacturer who can make the product economically. "As Henry Ford once said: 'If I can make it cheap enough for people to afford, I'll make a fortune.'"

SURVEY

Water management a problem out west

Although water usage is not considered the primary problem faced by landscape managers in Southern California, it rates as "very important."

According to Janet Hartin, Cooperative Extension agent at the Univer-

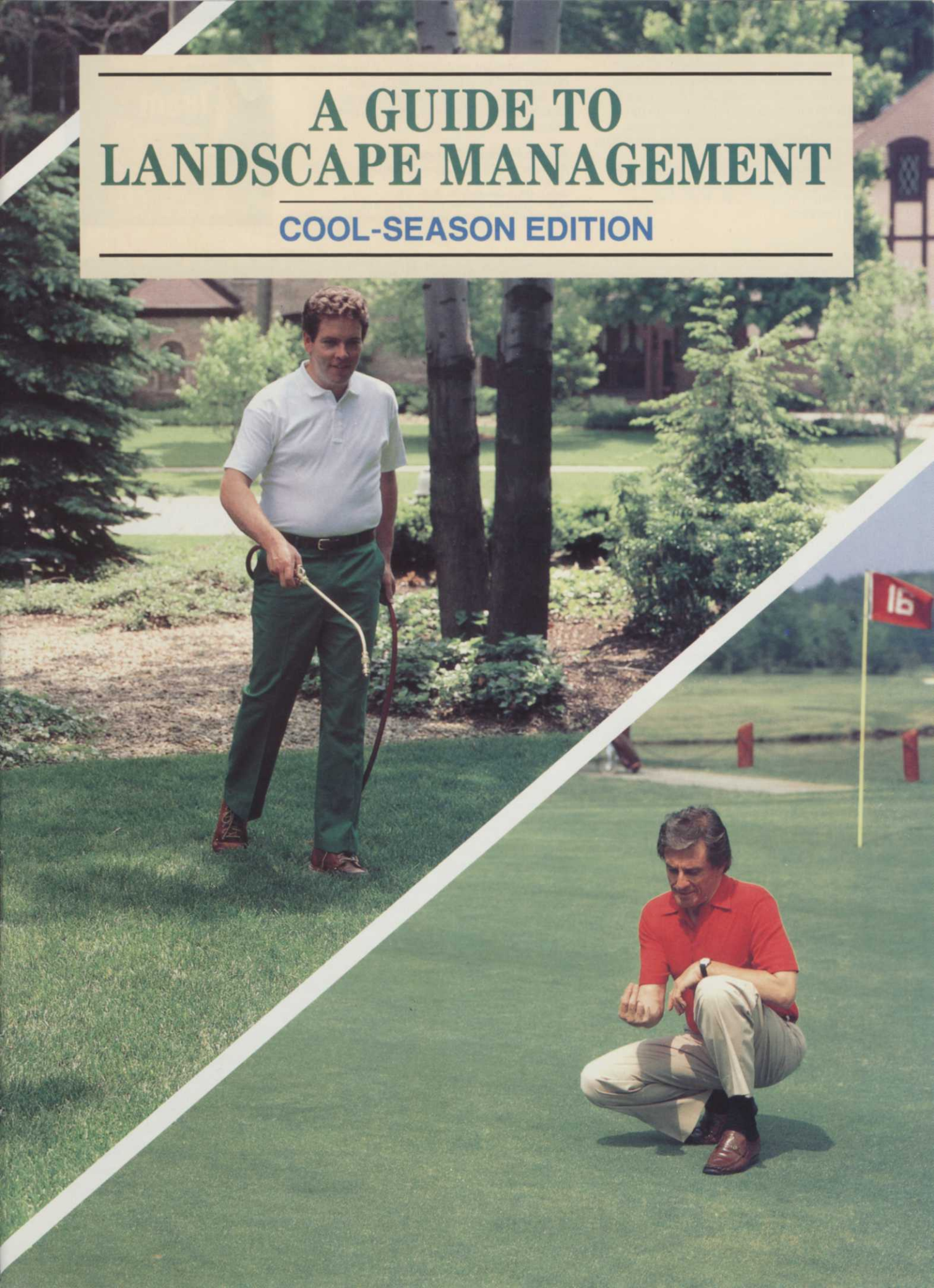
sity of California, a survey taken at a horticultural short course noted that over-watering was most often cited as the major water-related problem.

"Water management, water quality programs and irrigation system de-

sign problems were frequently cited second water-related problems," says Hartin. "And almost all respondents said there was not sufficient information on water conservation available."

A GUIDE TO LANDSCAPE MANAGEMENT

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A GUIDE TO LANDSCAPE MANAGEMENT

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Innovations have always been part of the landscape management industry, but particularly in the last 10 years.

Landscape managers continue to be more educated and better trained than their predecessors. Our universities have seen to that.

People, too, expect their lawns and landscapes to appear more attractive. This has evolved through a well-planned, overt program of public education by the farsighted green industry itself.

Therefore, better tools have become not a luxury but a necessity. And industry suppliers like Elanco are providing these tools for more intensive maintenance.

Significant improvements in equipment and chemicals have allowed the landscape manager to produce a higher quality landscape, more efficiently and effectively. Proper use of these new products requires continual learning and training.

New chemicals have been introduced which yield better control at a better value. But these improved products require, by definition, more care in practical use.

This new generation of landscape manager needs a thorough understanding of all the tools available, and a dedication to properly use chemicals in particular. To keep chemicals as a part of the effective overall landscape program, proper stewardship will continue to be needed and expanded.

We at Elanco are doing everything in our power to help you learn and understand how to use chemicals safely and effectively.

This year's "Guide to Landscape Management" is part of our service to you.



William H. Culpepper
Director, Specialty Products
Elanco Products Co.
Indianapolis, IN



Weed and disease control of tees and greens

Golf course tees and greens are among the most intensely-maintained turf in the country. Preventative measures can be taken to assure healthy, weed-free and disease-free turf.

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Weed control of golf course fairways

Conscientious superintendents, concerned with the beauty and playability of their golf courses, can't afford to wait until unwanted weeds begin to appear.

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Weed control of home lawns

Research has shown that most homeowners prefer a "green, weed-free lawn." So lawn care companies must assure a quick green-up with fertilizers and controlling weeds with pre-emergence herbicides.

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Weed and disease control for ornamentals

Because of the trend toward more complex landscape designs, preventing weeds in plant beds is becoming a higher priority.

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Weed control of lakes and ponds

Aquatic weeds are not only unsightly, costly and upsetting to nature's balance, they have been extremely difficult to control—until now.

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Disease control for golf course greens and tees



■ ■ It does a good job retarding the poa annua without retarding the growth of the bentgrass. ■ ■

—Doug Petersan
Hutchinson, Kan.



■ ■ I'm a true believer in this product. ■ ■

—Neil DeWerff
Hays, Kan.

The maintenance of disease-free greens and tees is critical in order to provide a high quality playing surface for the golfer. Preventative measures are the best method for keeping greens and tees disease-free and of high quality.

This allows the turf manager to control the turf pathogens before they reach the vital symptom state, when control measures become more costly, not to mention the fact that the damage is already evident, unsightly and detrimental to the health of the overall turf.

The golf course superintendent can choose from several common fungicides when developing his disease control program. However, one special fungicide, Rubigan 50W, has been proven especially effective for disease control programs.

Rubigan has the three key features superintendents are looking for in a fungicide: (1) a broad spectrum of diseases controlled that includes dollar spot, copper spot, large brown patch, pink and gray snow mold, stripe smut, red thread, and pink patch; (2) 14 to 21 days of dependable dollar spot control for as low as 10 cents per 1,000 sq. ft. per day of control; and (3) tank mix flexibility with common fungicides like

Daconil 2787, which can expand the spectrum of control and enhance control of large brown patch.

An East Coast superintendent who has had success with Rubigan is Brian Cowan of Eastward Ho Country Club in Harwich, Mass., on Cape Cod. Cowan uses Rubigan mainly for poa control on his Seaside bentgrass greens.

"I've used it for four years now on six greens," Cowan says. "They're doing very well. The percentage of poa on them is less than the others."

Cowan usually makes three applications, in early July, early August, and late August or early September at a rate of $\frac{3}{10}$ oz. per 1,000 sq. ft. This season he will make four applications since he began in early June.

Cowan also plans to expand his use of Rubigan to six more greens. "It works well on dollar spot and fusarium, although we only get a little brown patch in the Cape," he says. "I've been very happy with it. I haven't seen any drawbacks."

Experience from regular use by superintendents shows Rubigan to be an important addition to a rotational disease program. With its multi sites of inhibition, Rubigan also helps reduce the worry of pathogens developing

resistance to fungicide treatments.

An extra benefit of Rubigan to golf course superintendents in cool-season and transition zone areas is the gradual reduction of poa annua, reduction that can only be achieved with cumulative rates of 2-3 oz. per 1,000 sq. ft. combined with proper management practices. Depending on personal preference, disease-free poa can be maintained, or it can be gradually reduced.

Doug Petersan of Prairie Dunes Country Club in Hutchinson, Kan., enters his third year of Rubigan use. He looks for two-fold control on his bentgrass greens.

"The thing that impresses me about Rubigan is the poa annua control besides its fungicidal quality," he says. "It does a good job retarding the poa annua without retarding the growth of the bentgrass (greens)."

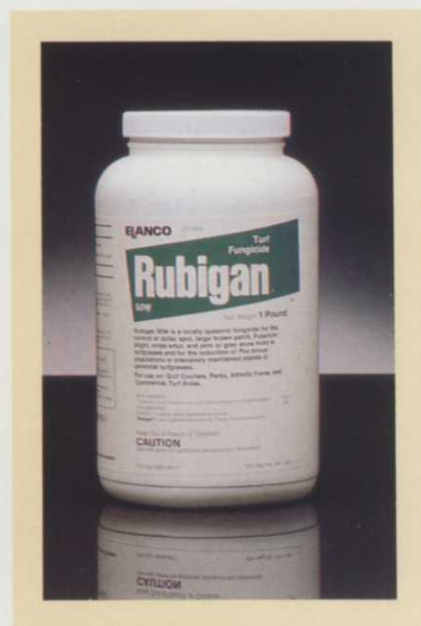
Petersan has used Rubigan on tees and says he is considering spot treatments in some fairway areas.

Petersan uses Rubigan at $\frac{1}{4}$ oz. per 1,000 sq. ft. around May 15. By July 15, four applications bring the total to 1 oz.

On July 15, Aug. 1, and Aug. 15, Petersan uses $\frac{1}{2}$ oz. per 1,000 sq. ft.,



Prairie Dunes Country Club, Huthchinson, Kansas



bringing the total to 2½ oz. After Labor Day, he aerates and topdresses his greens and then fills the aerator holes with sand three to four days after the initial topdressing.

He then seeds his Penncross bentgrass seed at ½ lb. per 1,000 sq. ft. Three weeks later, Petersan uses Rubigan at ½ oz. per 1,000 sq. ft.

"In the spring we can see almost every aerator hole with a plug of healthy-appearing bentgrass," he says.

Fellow Kansas superintendent Neil DeWerff of Smokey Hill Country Club in Hays began using Rubigan two years ago. At the time, his Penncross greens were approximately 35 percent poa annua. Now he says the percentage is down to

10 percent or less on the 13 greens he treats with Rubigan.

"On the 13 greens we've treated with Rubigan, we've never used another product (fungicide)," says DeWerff.

He uses a ½ oz. application per 1,000 sq. ft. every three weeks in the spring and then switches to ¼ oz. per 1,000 sq. ft. in the summer months.

"I'm a true believer in this product," says DeWerff, noting that he hasn't had dollar spot problems on his course since he moved to Rubigan.

Given its dependable and economical disease control, Rubigan 50W is, indeed, an important weapon in the wise superintendent's arsenal of maintenance products.

■ ■ It works well on dollar spot and fusarium... ■ ■

—Brian Cowan
Harwich, Mass.

Weed control for golf course fairways

Conscientious golf course superintendents, concerned with the beauty and playability of their courses, can't afford to wait until unwanted species like crabgrass, goosegrass and other annual weed grasses begin to appear on their fairways.

After weeds appear, it is too late to correct the impact on turf quality that has already occurred. So superintendents choose pre-emergence herbicide programs to control weeds before they become visible.

Many herbicides are available to provide control of different weeds for varying periods of time. Two proven performers for annual grass control are the granular pre-emergence herbicides Balan and Team, both of which are also available on fertilizer carriers through selected formulators.

Balan is the leading granular pre-emergence herbicide in use for golf course fairways. The eight- to ten-week control of a single Balan application yields excellent crabgrass and poa annua



■ ■ It's great for resistant strains of dollar spot. ■ ■

—Doug Johnson
Newton, Mass.

control with maximum overseeding safety. Balan's low price also allows the superintendent to make a second application if longer control is needed. This predictable length of control by Balan offers the turf manager flexibility to use the cultural practices he needs to maintain the best growing environment. On the other hand, superintendents

wanting longer-lasting control of crabgrass and goosegrass with a single application now have a product that fits this need. Team offers effective pre-emergence control of crabgrass and goosegrass for 18 to 20 weeks at an affordable price.

University research has shown Team to provide a higher percentage control of crabgrass than other available pre-emergence herbicides. Team is labelled for use on all common turfgrasses used on fairways and roughs, including bentgrass. Team is not labelled for use on bentgrass greens.

Another advantage of Team and Balan is their ease of application. These two granular products can be applied in one-half the time as sprayable herbicides because of the faster refill time, wider application pattern and no need to dodge obstacles in the fairway, plus clay particles spread more accurately, simplify equipment calibration and have no spray drift concerns.

"Applying Team is very easy," claims Howard Gaskill, who supervises three 18-hole golf courses for the Baltimore (Md.) County Department of Recreation & Parks.

The product has worked well for Gaskill, who was able to keep his perennial ryegrass fairways playable despite a record-setting drought and heavy traffic on the public courses this summer.

"I'm really quite pleased with our crabgrass control. The weather has been so bad that we've not been able to



Crooked Stick Country Club,
Indianapolis, Ind.

maintain a dense stand of turf, which is the best crabgrass control."

With the increase in higher quality fairway management programs has come the need for disease control. Rubigan 50W is an excellent fungicide to use in a fairway disease program.

"I've used it not only for disease control, but to control poa annua, too," says Doug Johnson, golf course superintendent at Pine Brook Country Club in Newton, Mass., just outside of Boston. "It's great for resistant strains of dollar spot. I started out with just fairways, basically as a fungicide, then last year decided to give it a try on greens, using it heavier to wipe out the poa."

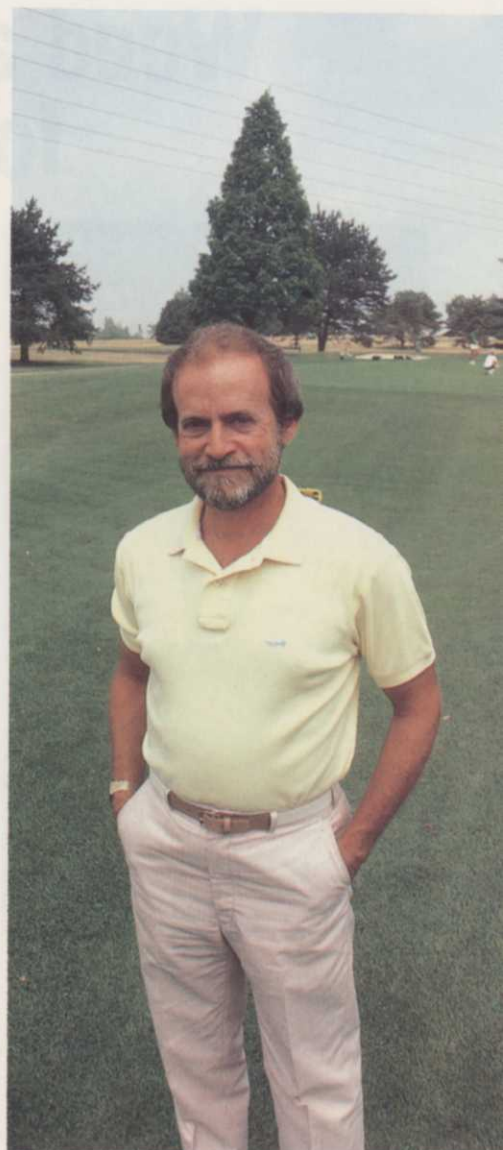
For disease control, especially dollar spot, on his poa/bentgrass fairways, Johnson uses Rubigan in early July, early August, and late August.

Johnson has used the product successfully for four seasons. "I think I might have been the first guy up around here to use it; now there's quite a few," he says. "It's a great fungicide."

Rubigan's control of a broad spectrum of common diseases allows for less product inventory since one product can solve a variety of problems. In addition, Rubigan has been proven unique in that it controls all three pathogens of the fusarium blight complex. This eliminates the need to try to correctly identify the specific pathogen. A preventative treatment of 2 oz. per 1,000 sq. ft. at 30-day intervals will solve his expanding disease problem.

Also, Rubigan is a natural for use in preventative dollar spot programs on bentgrass fairways. An application of Rubigan 50W will give 14 to 21 days of control at $\frac{2}{10}$ oz. per 1,000 sq. ft. or 30 days of control at $\frac{4}{10}$ oz. per 1,000 sq. ft. There's no better value fungicide for fairway dollar spot control.

Whether it's annual weeds or diseases, applications of Balan, Team or Rubigan 50W can help keep the beauty and playability of golf course fairways at their optimum for golf course superintendents.



■ ■ I'm really quite pleased with our crabgrass control. ■ ■

—Howard Gaskill
Baltimore, Md.

Weed and disease control for home lawns



**■ ■ From what I've seen,
it's done a super job. ■ ■**

—Mike Lancaster
Fairfax, Va.

Research has shown, time and time again, that most homeowners prefer a "green, weed-free lawn." At least homeowners who care enough about their yards to enlist the help of a professional lawn care company.

Not only do homeowners want to take pride in a well-kept property, a well-maintained lawn can increase a home's value significantly.

So the professional lawn care company's major priorities are assuring a quick green-up with fertilizers and controlling weeds with pre-emergence herbicides.

Why pre-emergence herbicides? Because they work early, controlling unwanted weeds that detract from the yard's beauty before spring germination.

Minimizing callbacks is critical to the success of a profitable lawn care company. Products which provide consistent control throughout the season help reduce these callbacks. That's one of the reasons why Team is an extremely popular choice of lawn care operators in



**■ ■ It looks like it's working
pretty well. ■ ■**

—Jim Johnson (left) and Bill Rowland
Topeka, Kan.

the part of the country where home lawns are composed of cool-season turfgrasses.

Few products on the market provide the 16- to 20-week control of crabgrass and goosegrass like Team, and it's gentle on cool-season turf like bluegrass and ryegrass. Team has provided consistent control across this cool-season turfgrass area.

A combination of benefin and trifluralin, Team is available on an easy-to-spread clay granular or through selected formulations as a sprayable or on a fertilizer granular.

Lawn Doctor of Fairfax, Va., is one of the largest lawn care companies in the Washington, D.C., area with 4,000 customers. Co-managers Bob DeKraft and Mike Lancaster ordered 60 tons of Team this spring. The results have been startling.

"I thought we'd see crabgrass really bad at the end of July. But we're not seeing it at all this year," says DeKraft. "We applied it with fertilizer in March.

Our new customers got it in late April."

Adds Lancaster: "I'm quite impressed with it. From what I've seen, it's done a super job."

Bill Rowland and Jim Johnson of Leprechaun Lawns in Topeka, Kan., used Team for the first time this spring. They used it in combination with fertilizer in two applications: one in March or April, and one in May or June.

With Team, Rowland looks for control of crabgrass and foxtail. Thus far the results have been positive.

"It looks like it's working pretty well," says Johnson. "The areas I've seen where we've used the product look good." Balan and Balan/fertilizer combinations are also available to lawn care operators. In the cool-season tier of states where control of annual grasses is needed for 10 to 12 weeks, Balan provides dependable control at a very affordable price.

As the lawn care market develops, lawn care operators should consider going a step farther, giving their



■ ■ It's been 90 to 95 percent effective. ■ ■

—Vince Flecker
Indianapolis, Ind.



■ ■ We're not seeing (crabgrass) at all this year. ■ ■

—Bob DeKraft
Fairfax, Va.

customers disease control with applications of Rubigan fungicide. Rubigan controls the two most common lawn diseases, fusarium blight complex and dollar spot, either preventatively or curatively.

Rubigan has been proven unique in that it controls all three pathogens of the fusarium blight complex. This eliminates the need to try to correctly identify the specific pathogen. A preventative treatment of 2 oz. per 1,000 sq. ft. at 30-day intervals will solve this expanding disease problem.

Also, Rubigan is a natural for use in preventative or curative dollar spot control. An application of Rubigan 50W

will give 14 to 21 days of control at $\frac{2}{10}$ oz. per 1,000 sq. ft. or 30 days of control at $\frac{4}{10}$ oz. per 1,000 sq. ft. There's no better value fungicide for dollar spot control.

And, while your applicators are out on their rounds, another service to offer customers is weed control in ornamental beds with Surflan or Treflan. Both products provide over-the-top control of a wide range of annual grasses and broadleaf weeds in 150 species of ornamentals. Surflan is available in a sprayable formulation while Treflan is an easy-to-use granular.

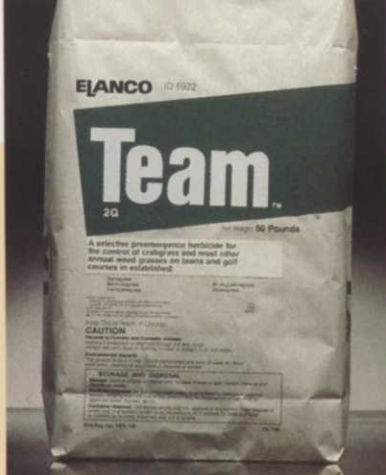
Vince Flecker has found Surflan plus Roundup suits his Shur-Spray Lawn Care

operation.

"We use it primarily for control along fencelines and around trees," says the Indianapolis LCO. "I drove by a site yesterday that we treated in the spring. It's been 90 to 95 percent effective, which I feel is pretty good. The best thing about it is that it's safe around trees."

Shur-Spray first used the wettable powder formulation four years ago, but has since changed to the liquid formulation.

Team, Balan, Rubigan, Surflan or Treflan can provide lawn care operators with the performance needed to have satisfied customers with fewer callbacks.



Dollar spotless.

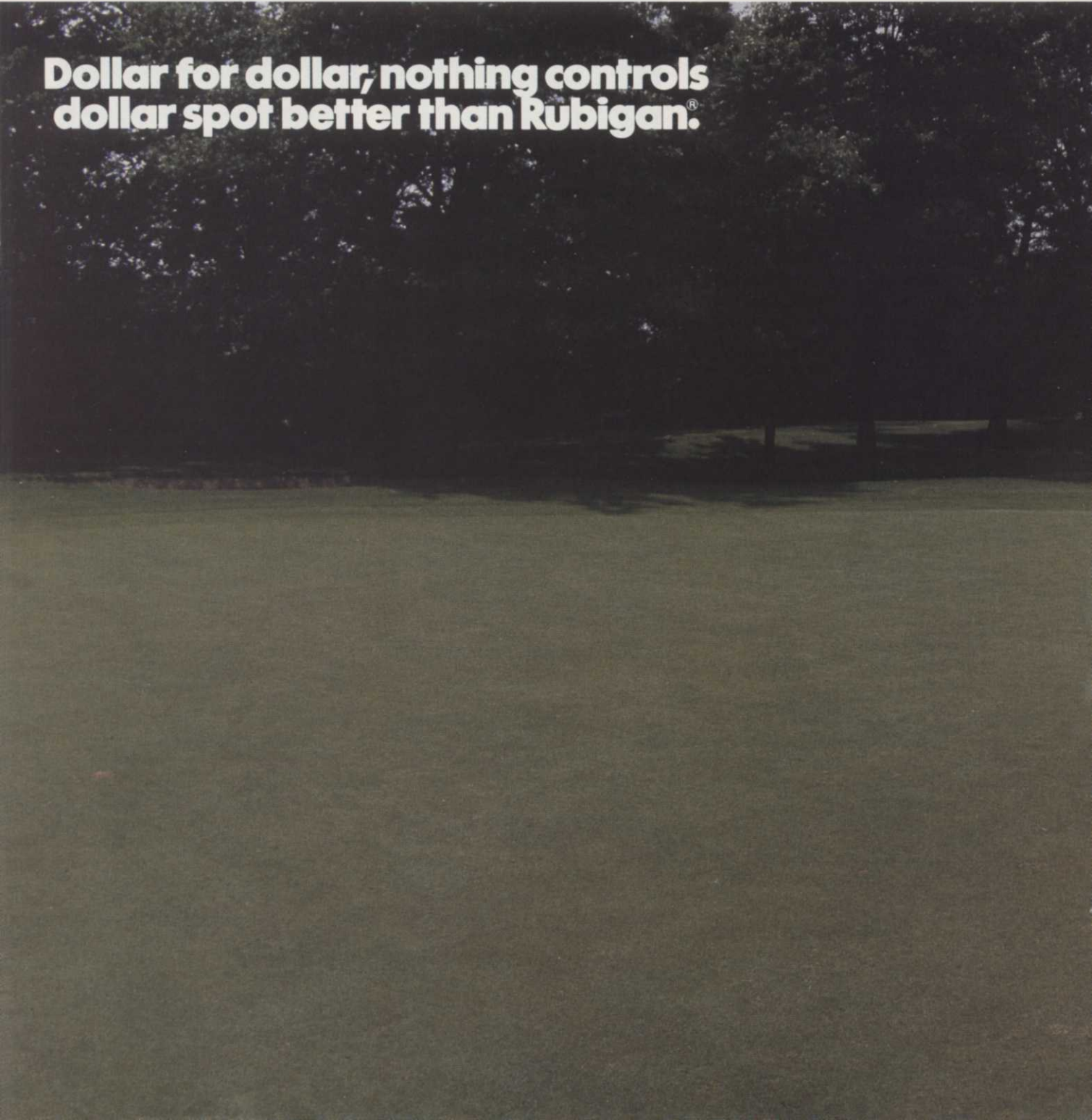
Look closely at this course. No dollar spot in sight. Not even resistant dollar spot, thanks to Rubigan.

Rubigan controls dollar spot on your tees, greens and fairways for only about 10 cents per 1,000 square feet. That's all.

Just one application gives you a full 28 days control. Apply only 0.4 oz. of Rubigan per 1,000 square feet for dependable 28-day control. Or 0.2 oz. for 14 days. You can't find a better fungicide value than Rubigan.

Now look closer at this course. Notice there's also no fusarium blight,

**Dollar for dollar, nothing controls
dollar spot better than Rubigan.[®]**



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necrotic ring spot, summer patch or take-all patch. And no large brown patch, either, with a Daconil 2787® tank mix. Nothing but clean, beautiful turf. No other fungicide controls so much for so little.

Only Rubigan is labeled to prevent and treat all these harmful diseases. No wonder Rubigan is the superintendents' choice for dependable dollar spot control in all types of weather.

Once you apply Rubigan, it's absorbed almost instantly through the leaves and roots so it won't wash off.

Its multi-sites of inhibition also mean less resistance problems.

This year, make your course look this spotless. Make it dollar spotless with Rubigan. Dollar for dollar, nothing controls dollar spot better. See your Elanco distributor. Or call toll-free: 1-800-ELANPRO. In Indiana, call collect: 317-261-6102.

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Weed and disease control for ornamentals



■ ■ *It's a time-saver and a labor-saver.* ■ ■

—Jimmy Collins
Houston, Tex.

Because of the trend toward more complex and beautiful landscape designs, preventing weed encroachment in more and larger plant beds is becoming a higher priority of landscape managers everywhere.

Two factors are foremost in the landscape manager's mind when selecting the appropriate herbicide: safety to plantings and length of control. Safety because ornamental materials are a costly part of the landscape, and length of control because longer residual means fewer herbicide treatments.

Two products which have excellent safety margins and longer-lasting control of weeds in plant beds are Surflan and Treflan. Season-long control of grassy and broadleaf weeds in more than 150 species of ornamentals is possible with them.

Treflan is a granular formulation offering the most convenient and economical control of annual grasses and broadleaf weeds. Surflan is a liquid that can be sprayed around the base of established plants or broadcast over the top of plants. Surflan can be tank-mixed with other herbicides such as Fusilade, Poast, or Goal to control specific weed problems.

In areas where vegetation exists such as fence rows, sidewalks, and around trees, Surflan can be tank-mixed with Roundup for complete weed control. Roundup provides the knockdown required to kill the existing vegetation, and Surflan provides the residual control necessary to keep the susceptible weeds

from germinating for the entire season.

To treat 1,000 sq. ft., mix 3 oz. of Surflan A.S. (liquid measure) with 4 oz. of Roundup in 2 gal. of water. Spray the entire area to wet only, not to drip.

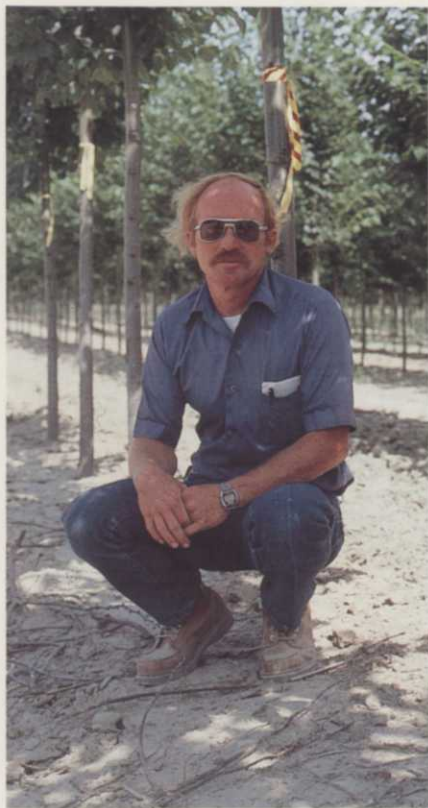
"We've used Surflan in combination with Roundup around trees," says John Luper, superintendent at Bardmoor Country Club, Seminole, Fla. "We've cut back considerably—perhaps as much as 20 to 30 percent—the number of times that we have to spray around trees and ditchbanks."

"I can't say enough about the product. It's a time saver and labor saver," says Jimmy Collins, operations manager for Earth Tone Development in Houston, Tex.

Collins applies Surflan around March 1 to ornamental beds. If weeds appear, he'll do a second application of Surflan and Roundup as needed. He also applies the mixture regularly in August.

In the past, Collins has applied Surflan at a rate of 2 qts. per acre, but has found better control with 4 qts. per acre. His crew has also discovered the Surflan/Roundup mix works well in expansion joints in concrete areas, although he still uses the product most frequently in ornamental beds.

In Whiteland, Ind., state-certified applicator Dave Jenkins of Maschmeyer Nursery uses the Surflan/Roundup mix for control between the rows of the nursery's 3 million trees. His goal is bareground control so there's no competition between the weeds and



■ ■ I'm real happy with it. It does a good job. ■ ■

—Dave Jenkins
Whiteland, Ind.

trees for the soil's nutrients.

He sprays all 300 acres single-handedly. This is his fifth year using the mix.

"I'm real happy with it. It does a good job. We use 120 gallons a year and I've only got 20 left," he says. Jenkins says sometimes in the early spring he uses Surflan by itself and then mixes with Roundup later in the spring for post-emergent control.

He uses Surflan at the rate of 1 gal. per acre per year.

One of the most devastating diseases of ornamentals is powdery mildew. Locally systemic fungicides like Rubigan EC are rapidly absorbed and used by ornamentals to prevent and control powdery mildew.

Rubigan has been proven effective and economical for powdery mildew or roses, myrtle, lilacs and other popular ornamental plantings. Without damage to roses and ornamentals by powdery mildew, they remain as beautiful as they are popular.

Landscape plantings provide a valuable addition to the landscape. Controlling weeds and diseases in these plantings with Surflan, Treflan and Rubigan is necessary to maximize their beauty and value.



Weed control for ponds and lakes



**■ ■ It's rare to see hydrilla
in those places. ■ ■**

—Mike Mahler
Polk County, Fla.

Aquatic weeds are not only unsightly, costly and upsetting to nature's balance, they have been extremely difficult to control—until now. Sonar is the first aquatic weed control product that controls hydrilla, milfoil, and other problem weeds without affecting water quality or wildlife.

Unlike other aquatic herbicides, Sonar is not a restricted use herbicide. Sonar carries no label restrictions against fishing, swimming, or drinking treated water, which allows it to be used without interrupting water use. It has no detrimental effect on fish, game birds, insects or other organisms like plankton. Neither is it harmful to nearby trees and shrubs that are not growing in the water.

"With Sonar, we were able to put the lakes back to the condition they were in before hydrilla came in," says Mike Mahler, operations coordinator for Polk County (Fla.) Environmental Services. "We've had some lakes that were



**■ ■ With Sonar, we got 99 percent control
without re-treating. ■ ■**

—Will Davis
Lake County, Fla.

virtually 100 percent surfaced out in hydrilla before we used Sonar. Now, it's rare to see hydrilla in those places.

"On a per-acre, per-year-of-control basis, Sonar is also cheaper than any other material."

In ponds, lakes and reservoirs, Sonar has shown its effectiveness on a variety of aquatic weeds while often leaving desirable populations of native plants (with proper application). One application has lasted one to two years, showing Sonar to be an economical method of long-lasting weed control.

More than 50 species of submersed plants, emerged and floating plants, as well as shoreline grasses, have proven susceptible to Sonar. The list includes such hard-to-control species as hydrilla, milfoil, pondweed and duckweed.

"If I had to say there was one big advantage to Sonar, it's very selective on the plants it controls," notes Will Davis, executive director of the Lake County

(Fla.) Water Authority. "Hydrilla is our main problem, and Sonar is our primary chemical for treating it. With Sonar, we got 99 percent control on Lake Yale without re-treating. There was no cost-effective method of getting a lake clean until Sonar came along. I don't know of a chemical on the market that can even come close to it."

Sonar controls water weeds slowly, usually 30 to 90 days, without oxygen depletion or fish kill. Sonar's selectivity lets desirable aquatic plants become re-established so that nature's balance is gently restored.

This new aquatic herbicide, which comes in both liquid and pellet formulation, is also easy to apply. With the low application rates, treatments of Sonar pellets can be made on one acre of water in just three to five minutes.

With new Sonar, there is now an easy way to control those aquatic weed problems without interrupting your water use.



After treatment with Sonar,
this lake (top photo) is clear
of unsightly weeds.

Compare that to the photo
taken before treatment
(bottom photo).

ELANCO PRODUCTS

	GREENS & TEES		FAIRWAYS & ROUGHS					
	Disease control	Poa annua control	Disease control	Crabgrass and goose-grass control	Poa annua control	Winter annual control	Fertilizer combinations	
Rubigan	●	●	●					
Surflan				●	●	●	●	
Team 2G				●	●		●	
XL Herbicide 2G				●	●	●	●	
Balan Herbicide 2.5G				●	●		●	
Treflan Emulsifiable Concentrate								
Sonar Herbicide								

USE GUIDE

ORNAMENTALS			HOME LAWNS				AQUATIC SITES		
Disease control	Pre-emerge control	Post-emerge control	Disease control	Crabgrass control	Winter annual control	Fertilizer combinations	Canals	Lakes	Ponds
●			●						
	●	●		●	●	●			
				●		●			
				●	●	●			
				●		●			
	●								
							●	●	●

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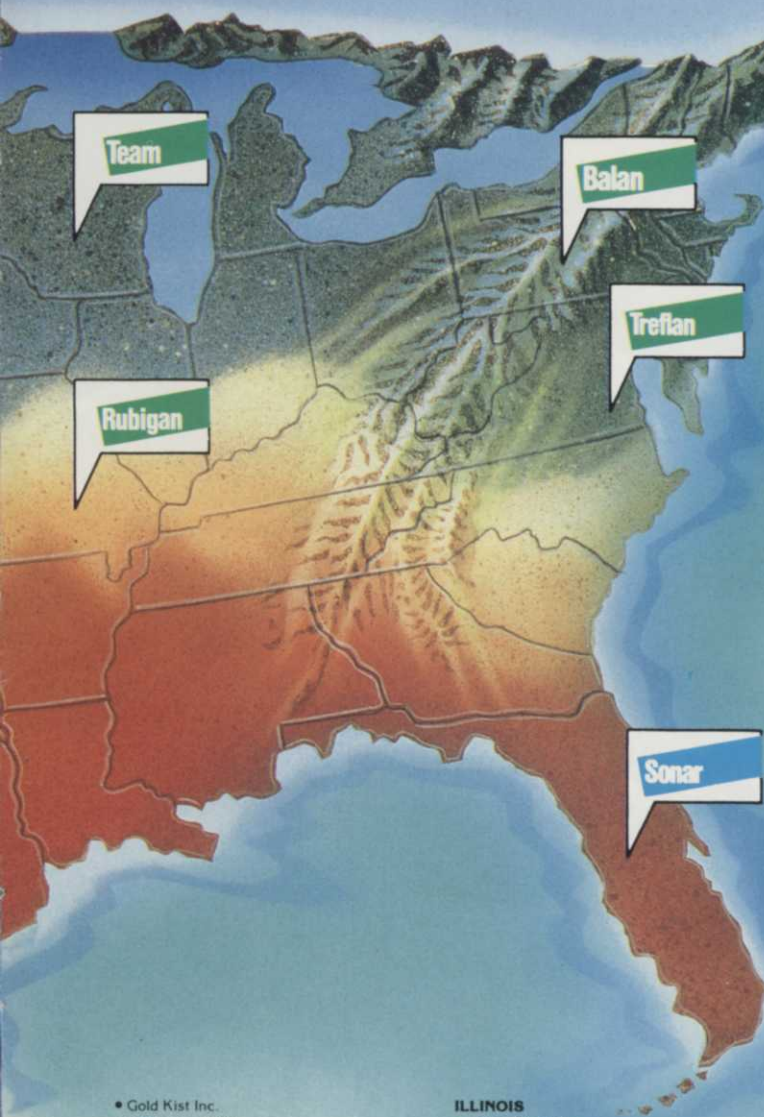
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LANDSCAPING

Royal garden challenge met by Ohio landscaper

When Jordan's King Hussein comes to town, Cleveland hustles.

The Mideast ruler paid a visit in June to the renowned Cleveland Clinic for his annual check-up.

Waiting for him at the clinic was a beautifully-landscaped garden featuring some 5,000 flowers, myriad ground cover, manicured Kentucky bluegrass, some 30 newly-planted trees, and yes, a flag of Jordan painted into a garden slope.

What the King didn't know was that two weeks prior to his visit, the area was nothing but a construction area parking lot (an addition was being built) with the usual features—heavy equipment, dirt, and more dirt.

That was before Cavotta Landscapers Inc. of Cleveland took over.

The way the schedule worked: the concrete contractor had two days to lay sidewalks and curbs; Cavotta had four days to spread the topsoil, install an irrigation system, and plant the flowers, groundcover, sod (1,200 yards), and trees.

"They gave us a blueprint," vice-president Phil Cavotta recalls, "but everyone purchases their materials in April and May so there was nothing available. We had to summer-dig material."

With Cavotta frantically "pulling strings" to secure materials, site supervisor Kathy Trhlin-Russ barking signals, and a crew of sometimes as many as 18 working nearly round-the-clock, the challenge was met even though everything that was planted had to be checked by ever-present Secret Service people.

By June 8, one day before the King's visit, the garden was complete. "The big thing was the coordination of everything. It took a big effort on the part of everyone who was involved," says Cavotta. "I even pulled my dad out of retirement for this job."

It wasn't a small job. The garden area measures some 6,000 sq. ft.



Part of the 6,000 sq. ft. garden prepared in four days by Cleveland's Cavotta Landscapers Inc. in preparation for a visit by King Hussein of Jordan. Upper left inset is Phil Cavotta.

When things "slow" down, Cavotta maintains the 80 acres of the Cleveland Clinic "campus," with as many as 18 workers on-site even in the winter months. "It's like an airport here. You can't shut it down," he says.

SEED

Pickseed introduces Bronco bluegrass

Bronco Kentucky bluegrass is making its debut this month as a turfgrass developed specifically as a mix component with turf-type tall fescues.

Dr. Jerry Pepin, director of research at Pickseed West Inc., developer of the grass, says Bronco has good overall turf quality, heat tolerance, and disease resistance.

Bronco features a leaf width of 3.2 mm, a vigorous rhizome system that facilitates active spreading, and a moderate tiller density to create less competition with tall fescues.

Pepin recommends a tall fescue/Kentucky bluegrass mixing in 95-5 to 90-10 mix ratios. The mix is recommended for both professional and home lawn use.



Baseball field clinic

Chief groundskeeper Roger Bossard explains maintenance of infield and skinned areas of Comiskey Park's baseball field during a clinic held July 23, 1986. The clinic was co-sponsored by the Chicago White Sox and the International Minerals and Chemicals Co. More than 100 Chicago-area athletic field managers from schools, colleges and parks attended the one-day seminar.

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SHORT CUTS

NO FUN AT ALL...A record-breaking drought along the eastern seaboard tried the patience of many turfgrass managers this year. Lawn care and landscape management companies, obviously, had plenty of troubles keeping clients happy. Golf course superintendents were busy keeping courses playable, despite heavy irrigation. By the middle of July, Baltimore was typical of drought-stricken locales. And in that area, any turf not irrigated was deep brown. "When you go dormant in late May, you don't know what to expect," lamented Howard Gaskill of the Baltimore County Department of Recreation & Parks. "I do know that I've greatly increased my seed order this year. This weather sure does take a lot of enjoyment out of being a golf course superintendent."

WELL-TRAVELED...Patrick O'Bryan of Chicago has seen golf courses in so many parts of the world, he could serve as special counsel to the GCSAA. O'Bryan, featured on the front page of the *Wall Street Journal* last May, has seen land mines in the rough in the Falkland Islands and Soviet gunfire across a fairway in Afghanistan. He has played India's Royal Calcutta course, Iceland's Golfklubb Akureyrar, and Egypt's Oberoi Mena House, 150 yards from the Great Pyramids. "I've got a bit of nomad in me," O'Bryan aptly claims.

SONAR SYSTEM...In the height of the pesticide scare, the Water Conservation and Control Authority of Lake County, Fla. has developed a system to warn people when any of its 25 lakes will be treated with Elanco's Sonar or other aquatic weed controlling chemicals. Executive director Will Davis puts a notice in the local newspaper and posts florescent orange warning signs around the lake. If that isn't enough, his staff goes door to door to every house on the lake to personally explain the treatment. Still, one homeowner pumped treated water from a lake and killed his lawn. The Water Authority replaced the lawn, but has since implemented a policy to survey lake residences after a treatment and videotape anyone using the water.

FOR YOUR CUSTOMERS..."What You Should Know About Professional Lawn Care," a full-color booklet answering six important questions posed by homeowners, is available from the Professional Lawn Care Association of America. The booklet was a joint project of the PLCAA and the Union Carbide Specialty Products Division. It addresses such questions as the safety of lawn care chemicals and the precautions taken by LCOs. Booklets are 25 cents each. For copies, write the PLCAA at 1225 Johnson Ferry Rd., NE, Suite B-220, Marietta, GA, 30067.

CORRECTION...An incorrect application cost was quoted for Limit turf regulator in the June "Short Cuts" column. Monsanto has not yet established a treatment cost for its turf regulator for the residential market. The cost of a professional application of Limit is currently \$60 per acre.

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While space here is limited, the list of terrific features on our front mowers isn't. To find out more, just write John Deere, Dept. 75, Moline, Illinois 61265. Or call 800-447-9126 toll free (800-322-6796 in Illinois) for the name of the dealer nearest you. If you're in the market for a front mower, we challenge you to check out the other guys, and then look at us. We'll only look that much better in comparison.



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THE KILLING FIELD

The Scott Halbrook story is a worst-case scenario. It should be required reading for all athletic turf managers. In this exclusive WEEDS TREES & TURF interview, Scott's dad and lawyer reveal the grim details of *death on a bad field*.

by Heide Aungst, associate editor



The shock of his only son's death left Alan Halbrook numb.

Scott Halbrook, a healthy, good-looking 19-year-old athlete, was too young to die. Because he was killed practicing the sport he loved—baseball—Scott's family cannot forget the accident.

At Marist High School in Eugene, Oregon, Scott lettered in football, basketball, and baseball. When offered a baseball scholarship at Oregon State University in Corvallis, Scott took the first step toward realizing a longtime goal — playing professional baseball.

But the dream ended tragically before Scott even had a chance to play a game for the Beavers.

On March 2, 1982, Oregon's soggy spring weather forced coach Jack Riley to hold baseball practice on the AstroTurf of Oregon State's Parker Stadium. (AstroTurf is a synthetic turf manufactured by the Monsanto Co. The team regularly played on natural turf.)

Local newspaper reports said Scott, playing left field, was injured in a collision with the shortstop while both were running for a short pop fly to the outfield. Scott died of head injuries three days later.

Scott's family—parents Alan and Betty, sisters Alana, Vinci, Janice, and Vicki—had no reason to doubt the story he heard of Scott's death...until the anonymous phone calls started.

The caller, according to Halbrook, said the artificial turf in Parker Stadium needed to be replaced. It wasn't the actual collision that killed Scott—it was the impact of Scott's head

on the worn-out AstroTurf.

The original AstroTurf field was installed in 1969, replaced in 1974, but problems were detected, and it was replaced again in 1976. During that replacement, however, the old pad was left down.

When the Halbrooks searched for answers, Oregon State quickly cut off all communication. Halbrook obtained a test which had been conducted shortly after Scott's death. The test, done by a Monsanto competitor, showed the field to be intolerant to a human body falling on it.

Oregon's state adjuster offered a \$5,000 payoff — "in good faith" — to Halbrook's family.

Halbrook filed suit against Oregon State, Monsanto, and Sports Install Inc., a subsidiary of Monsanto.

Attorney Dan Holland of Eugene uncovered internal Monsanto documents concerning the condition of Parker Stadium. One, dated November, 1981 (four months before Scott's death), rated the field in serious need of repair, judging by Monsanto's own grading system. Holland says the Monsanto inspector later claimed that the drop-test machine, a device used to measure field hardness, was broken that day, so he rated the field by walking on it.

Another document said the field was as hard as frozen sod or hard-packed clay.

Still another document, dated January, 1982 (two months before the accident), blatantly stated, "This field needs to be replaced!" Later, there was a question as to whether that document should have been dated January, 1983.

Monsanto's defense in the case has been that Scott's head injury was caused by the collision, not when his head hit the AstroTurf. "There's a real debate over whether the death

blow was caused by him running pell-mell into the shortstop," says Frank Vible, Monsanto's assistant general counsel.

Despite the debate, the suit was settled out of court in September, 1985. The amount of the settlement cannot be disclosed.

How hard is hard?

The Halbrook case may seem like the artificial vs. natural turf controversy is again being dredged to the forefront. That issue has been endlessly hammered into the ground it covers.

There's no denying the lush, green color of artificial turf shows up beautifully on TV...mud is non-existent...and it takes the abuse of rock concerts, tractor pulls, and rodeos, along with the usual sports wear-and-tear.

It also survives in domed stadiums.

But there's no denying the increased injury rates—from "turf toe" and infected abrasions to serious head injuries—its (yawn) predictability...and the scorching heat emitted from the artificial turf on hot days.

There's always room to debate. But, in the best interests of the players, the artificial and natural turf industries should stop arguing and each take a critical look at the questions raised by the Halbrook case:

- How hard is hard?

- Should there be a standard for athletic fields?

"There's a real question out there," Holland says. "To what extent does the hardness of the field play a part in injury?"

"The tendency is to blame something else...the athlete's condition, the risk of injury inherent in the sport, the equipment, the particular way the fall or injury occurred. Where do you draw the line?"

In researching the case, Holland found studies and cases involving abrasions and turf toe, but little on hardness.

"I was really shocked at the lack of information about field hardness," Holland says. "The bottom line is...is hardness an issue? That was the whole focus in the case and we found that it is an issue, so we tried to define the issue."

No excuse

Field hardness is becoming such an issue, in fact, that researchers at Penn State University have begun studying the hardness of natural fields.

Holland turned up several impact studies,



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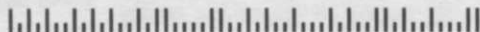
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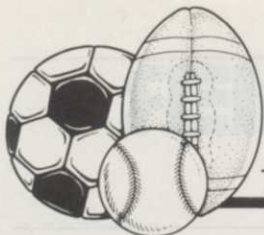
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and Halbrook dished out thousands of dollars for private studies to support his case.

Halbrook, a mechanical engineer, became consumed with the studies and documents trying to find answers to his son's wrongful death. "I read every one of them at least half a dozen times," Halbrook says.

They also discovered that in 20 years of making AstroTurf, Monsanto had never established a standard for hardness. But, then, neither had any other artificial turf manufacturer or the American Society of Testing Materials (ASTM), which has standards for most man-made products.

"Their excuse for failing to establish a standard in 20 years was to say that there's no standard on natural turf," Holland explains. "That's an improper perspective. They've created a product, put it in a different environment, and it works in a different way."

But Dr. Eliot Roberts, executive director of The Lawn Institute, says establishing a standard for natural turf fields will be necessary soon. With litigation getting out of hand, a law suit against a poorly-maintained natural turf field may not be far off.

In fact, it's difficult to even get university turf researchers to say, flat out, that natural turf fields are always safer than artificial turf fields.

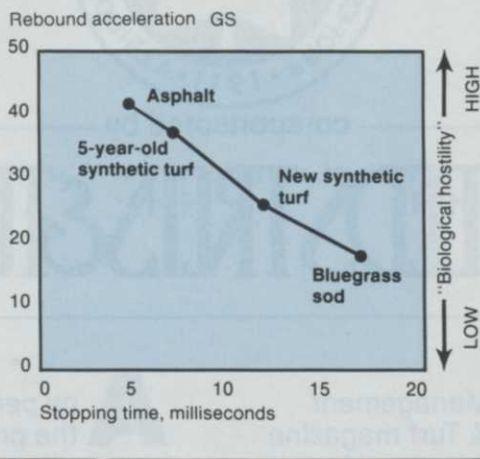
What may be true is that a new artificial turf field could be safer than a poorly-maintained natural turf field. But without standards in either industry, researchers hesitate to make blatant statements.

One of the most critical studies addressing this issue was published by Dr. Douglas Bower and Bruce Martin in *Medicine and Science in Sports* in 1974. The study, "Impact absorption, new and old AstroTurf at West Virginia University," looked at impact absorption effects on four surfaces: sod (well-maintained Kentucky blue grass about 1 1/2 inches high); new AstroTurf (glued down to 5-year-old underpad); old AstroTurf; and asphalt.

The study found the "new AstroTurf surface approximates, but does not equal, a grass field in impact absorption capability...5-year-old AstroTurf surface has significantly decreased ability to absorb impact compared to the new AstroTurf."

IMPACT ABSORPTION OF SURFACES

Rebound acceleration and stopping time of a 16-pound indoor shot put on four surfaces, West Virginia University, 1974.



Alan Halbrook (right) and attorney Dan Holland examine less than half the documents in the case of Scott Halbrook's death.

The West Virginia study showed after only five years the surface had decreased dramatically. Parker Stadium's AstroTurf was six years old, the pad underneath eight. Besides the usual wear, ultraviolet light can break down synthetic surfaces and bacterial degradation can literally eat away the pad.

A standard for all

Dr. Bower, chief of sports medicine at West Virginia University Medical Center, completed an updated study in July. His results have not yet been published. But Bower is a big advocate of standards in all sports fields.

"I would like to see a standard for playing surfaces for specific sports," says Bower. "If artificial surfaces can meet that, fine."

Of course, Bower points out, a standard for a baseball field would differ from a football field or soccer field. But, he says, the standards should be set using good natural surfaces, not artificial turf, as a guideline.

Bower's research is unique. Although most companies "test" their own products, little objective research has been conducted.

Monsanto's Vible says he doesn't believe a standard is necessary for artificial turf, because it is "an essentially safe product."

"There is no vehicle for producing a general standard," Vible says. "There is no artificial turf trade association. ASTM has standards most of us abide by."

Holland points out, however, that ASTM has test standards, not safety standards, which take into consideration human tolerance. Besides, there's no requirement for companies to abide by test standards.

Penn State University graduate students Trey Rogers and Rich Henderson, under the di-

rection of soil science professor Don Waddington, are measuring natural field hardness with a portable Clegg impactor. With this instrument, Rogers and Henderson will test fields under different conditions.

They will try to determine exactly how much affect various turf management methods, such as aerification and mowing height, actually have on the hardness of the field. Besides management methods, the researchers will check if turf species and root systems affect field hardness.

Henderson's tests so far have shown a decreased peak



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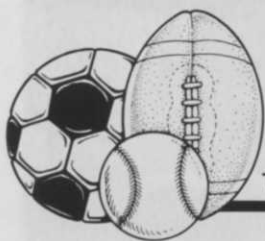
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Scott Halbrook

deceleration with the presence of turf and with core cultivation.

If the research is conclusive, it could help determine a standard on natural fields.

"The hardness aspect comes into the play of the game," says Waddington. Many players claim, for example, that the evenness of artificial turf allows them to run faster.

Protective instincts

How much does the field actually affect play? Halbrook argues that players adapt their actions to field conditions.

But, he questions, when kids are put on artificial turf, do they realize they're essentially playing on asphalt, or does the green carpet make it seem like grass? If an athlete thinks he's playing on grass he may lose his natural protective instincts to defend himself in a fall.

"If you're playing basketball in the street, you know you're playing on asphalt," says Holland.

"I can't believe that if Scott knew he were playing on frozen turf or hard packed clay that he wouldn't have put his elbow down," says Halbrook. "When you aerate it loosens the soil, makes it less compacted. The grass is yea-high," he says, signalling an inch or two with his fingers. "You water it to maintain it. Everything you do to maintain a nice green field gives cushion to the field. That also gives

more shock absorbancy. If it's brown, it shows immediately."

If a standard for athletic field hardness is established, all athletes would be aware of the type of surface they are playing on and its degree of hard-

ness, whether artificial or natural.

Athletic field managers, researchers, and artificial turf manufacturers need to work together in establishing such hardness standards. Because one death is one too many. **WT&T**

AN ACT OF GOD?

You've heard it before. Injuries are beyond your control. But experts tell WT&T that the athletic field manager can make his field safer. Here's how.

by Heide Aungst, associate editor

At high schools and grade schools throughout the country, it's a well-kept secret. Those who dare to whisper the truth are quickly hushed.

"It's an act of God," they're told. God's will.

But injuries on natural athletic fields are not all "acts of God." The truth is that many could be prevented. Injuries are frequently caused by poor field construction, cheap seeding, and haphazard management practices.

Young athletes, at the mercy of "responsible" adults, are falling on jagged rocks, twisting ankles in undulations, and tackling each other on hard, compacted fields.

Penn State University has published possibly the only study dealing with the relationship of field maintenance to injuries. In December, 1984, professors Don Waddington (soil science), John Harper (agronomy extension), Chauncey Morehouse (physical education/director of the Sports Research Institute), and William Buckley (health education), published the study "Turf management, athletic-field conditions, and injuries in high school football."

The researchers evaluated varsity and practice fields at 12 Pennsylvania high schools for soil properties, field surface (undulations, stones, roughness), vegetative characteristics, and maintenance factors. They collected injury data throughout the season. (Only 10 schools turned in complete injury statistics.)

Of the 210 injuries reported, 44 (20.9 percent) may have been caused by field conditions.

Waddington says the study has been criticized for being on such a small scale, but it clearly illustrates that a connection exists between field conditions and some injuries.

The problem results from school administrators assigning someone, such as a janitor, without proper knowledge, to care for a field. Administrators often cite budget restrictions as the reason for failing to hire qualified field managers.

"My attitude is you can't afford not to pay someone," says Dr. Henry Indyk, extension specialist in turfgrass management at Rutgers University. "I can use the same philosophy in hiring a teacher in the school system. An athletic field is a very important part of a kid's education."

The budget also is to blame for lack of proper equipment and fertilizer.

Some corners can be cut to manage a safe athletic field at low cost. But, other factors should never be neglected.

Get advice

The first step in either building or renovating a field is to consult a local extension agent. "I don't know how many people know we're here," says Dr. Dave Chalmers, extension agronomist at Virginia Tech. "We're recognized more in rural areas, than urban."

Extension agents can be found at

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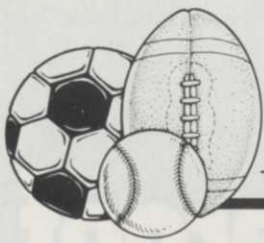
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Dr. Don Waddington has studied the connections between injuries and field conditions.



Dr. Tom Turner says turf-type tall fescues are highly adaptable in the transition zone.



Dr. Dave Chalmers recommends seeking the advice of extension agents.

any land grant university, which usually has the main agriculture school in the state. Athletic turf seminars sponsored by the local extension service are becoming more popular.

Rev up community support

Most extension agents consult free of charge which is an advantage to schools with low budgets. Schools that can't get in touch with an extension agent can often get free advice through a local golf course superintendent or landscape contractor. When pinching pennies, borrow equipment from concerned superintendents or contractors.

Community education can be difficult to achieve, but is important to any field managers. Indyk advises that if administrators don't listen, go to the PTA. Concerned parents have a way of getting action when it's a matter of their children's safety.

Aerate often

Aeration is perhaps the biggest factor in maintaining a safe playing field. Every field, regardless of age, needs aeration to loosen the compacted soil. "Aeration is the difference between failure and success," Indyk says.

"We find the tendency is to not aerify anywhere near enough," says Roberts. He recommends aerifying, about three inches deep, in five different directions, "as often in the spring and fall as it is visually evident that the grass is weak because the ground is hard."

The cores on the field need to be broken to work as a top dressing, which stimulates grass growth. Breaking the plugs also helps keep the field level.

Roberts recommends dragging a

chain-link fence over the cores to break them up. An upside-down harrow will also work (see WT&T "Job-talk" April 1986).

Sample the soil

While aeration can help many fields, some fields need complete renovation. An extension agent can complete soil tests which are necessary in evaluating the type of maintenance a field needs. Although many managers concentrate solely on turf quality, soil needs to be a primary focus in an athletic field.

"The majority of fields are dead be-

fore they start because they use the wrong soil," says Dr. Joe Duich of Penn State University.

Soil tests provide the manager with a chemical analysis to see how much fertilizer is needed and an analysis of the soil's physical properties to determine the percentage of sand, silt, and clay.

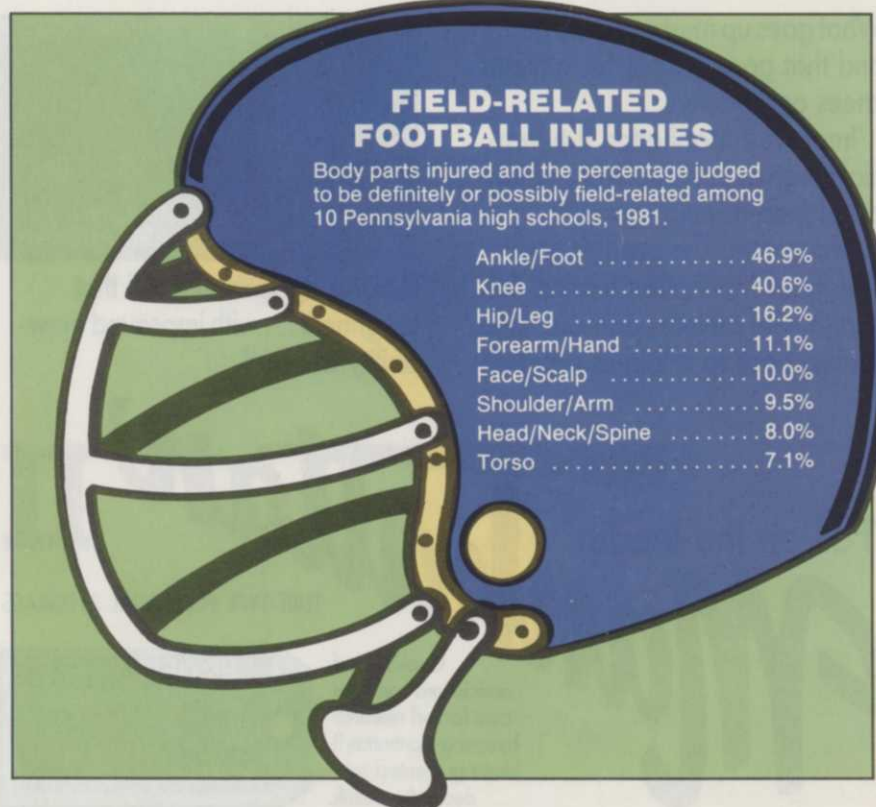
Dr. Eliot Roberts, executive director of The Lawn Institute, says a good sports field should have about 85 percent sand. The sand promotes drainage, which is also a key to a well-maintained athletic field. But, he warns, mixing in small amounts of sand will act like cement and clog a field.

"Too little sand can be more harmful than doing it right," Roberts explains. "Either go all the way or leave it alone."

For athletic fields which need help, but are hindered by budget constraints, Roberts recommends grading or contouring the surface. This is done with a grooving machine, such as the Ditch Witch.

The grooving should run from goal line to goal line, perpendicular with the flow of the water off the surface (toward the sidelines). The slits should run parallel to each other, every six feet, and be 18- to 24-inches deep.

The soil should then be hauled



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Larry, what makes Fairway Fertilizer with TGR™ Poa Annua Control so different from other weed control products? "Instead of acting like a

conventional herbicide, the new Scotts product *slows* the growth of the *Poa* plant, diminishing its competitive ability. The result is a gradual, more natural transition to desirable grasses without a sudden decrease in playing surface quality."

That really changes the way you think about growth regulators. How does it fit in with current turf management practices? "Fairway Fertilizer with TGR Poa Annua Control has proven to be effective in reducing *Poa* populations even under conditions that would normally enhance their growth. Extensive testing has shown that this product fits in with a range of different management practices. Treat your turf with successive fall and spring applications until the *Poa annua* has decreased to the desired level."

What about those ugly *Poa annua* seedheads? "A significant benefit of the new product is a reduction in the visibility of *Poa annua* seedheads after one

application. When applied before seedhead emergence in the spring, the treatment will slow the emergence of the seedhead stalk, resulting in fewer visible seedheads and more uniform turf color and playing surface."

How about color response? "This formulation provides not only selective control of *Poa annua*, but also extends the greening response well beyond what an equal rate of fertilizer alone can achieve."

For more information on Scotts new Fairway Fertilizer with TGR Poa Annua Control, call your ProTurf Tech Rep. Or call Scotts direct at 800-543-0006. In Ohio, call collect (513) 644-2900.

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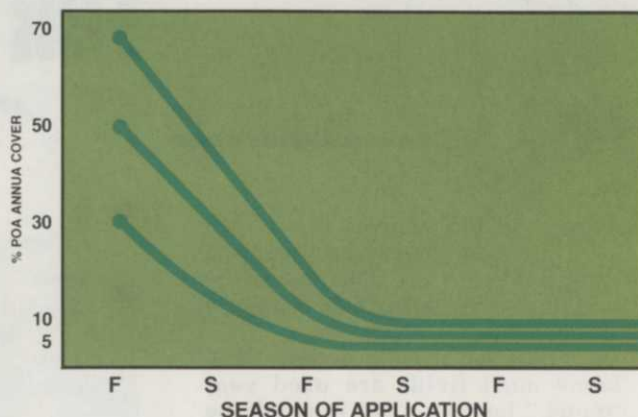
Dr. Larry Widell, Scotts Research project leader (Plant Growth Regulator R&D), talks about new Fairway Fertilizer with TGR™ Poa Annua Control.



*Scotts trademark for its turf growth regulator technology



Aggressive bentgrass can be seen encroaching into an area of *Poa annua* treated with ProTurf Fairway Fertilizer with TGR Poa Annua Control.



Typical *Poa annua* population suppression is shown over time with continued use of Scotts Fairway Fertilizer with TGR Poa Annua Control. The degree of control may be influenced by turfgrass management techniques, climate, soil type and *Poa annua* biotype.



The treated area (left) in this mixed *Poa annua*/bentgrass fairway has been converted to predominantly bentgrass after three applications.

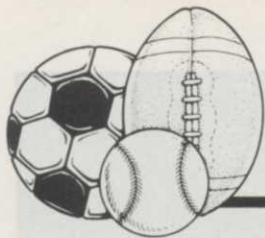


Notice the selective elimination of the *Poa annua* and the increased greening of the treated plots 7 weeks after application to a mixed stand of perennial ryegrass, Kentucky bluegrass and *Poa annua*.



Fewer seedheads are apparent in fairways when treated in the spring. The lens cap indicates the upper right corner of the treated plot.





away, and the grooves filled with sand. The sand helps trap water and carry it into the soil. Roberts says the best time to renovate a field is in early spring or fall.

"There isn't really a good time, since most fields are used year 'round," he says. "But it should be done when the grass grows best. The summer is too hot and it doesn't heal rapidly."

Seed selection

The variety of seed used on an athletic field makes a difference. Roberts emphasizes the necessity to always choose a name variety. "There's a bunch of these name brands out, and there's not a great deal of difference," Roberts says.

New varieties provide improved insect and disease resistance. Common varieties or blends don't guarantee enough cushion to a field, he says.

On cool-season fields, Roberts recommends using bluegrass (Adelphi, Baron, Touchdown, Glade, Merit, Midnight, Aspen). Bluegrass spreads by rhizomes. It holds together well under use and also forms a good sod. The rhizomes will automatically fill in divots in the field.

Turf-type tall fescue (Rebel, Houndog, Mustang, Olympic, Falcon, Apache) doesn't have the rhizomes found in bluegrass. Roberts describes it as a "clump-type" turf. It needs to be seeded close together. Despite the fact that it won't form sod, turf-type tall fescue does offer improved disease and insect resistance and provides a rugged cover.

Dr. Tom Turner, extension turf specialist at the University of Maryland, says turf-type tall fescues are best to use in the transition zone.

"In Maryland, we're strongly pushing turf-type tall fescues," he says. "You have to irrigate bluegrass in Maryland for it to survive well. It's too hot and humid in the summer."

Turner says Maryland is "in a hotbed of anti-pesticide groups." With improved insect resistance, the turf-type tall fescues offer a good compromise.

Perennial ryegrass (All*Star, Repel, Manhattan II, Citation II, Fiesta, Pennant, Derby, Palmer) also doesn't spread by rhizomes, but, Roberts says, it is ideal for overseeding, repairing, or renovating a field. Several new varieties of ryegrass contain endophytes, which naturally fight insects.

Ryegrass can be blended with

FOR SAFER TURF....



Dr. Eliot Roberts

In order to build or maintain a good athletic field, Dr. Eliot Roberts, executive director of The Lawn Institute, suggests following these five guidelines:

1. **Land**—First assess the grade/slope of the land.

2. **Soil**—Take core samples to determine the depth of the topsoil, subsoil, and rock layer. Determine the mixture of sand, silt, and clay. To promote drainage, good fields should be about 85 percent sand. (See related story for an easy way to renovate a poorly constructed field) Check the physical properties of the soil such as the particle size.

While looking into the soil, consider how it will work with the installation of drainage, tile lines, and the irrigation system.

3. **Consultant**—Bring in a consultant or local extension agent who is knowledgeable in the design of drainage and irrigation systems. If you haven't determined the properties of the soil, use the consultant to do that at the same time.

4. **Seed**—Select a name seed variety with improved disease and insect resistance. The turf should be able to compete with weeds and take wear. Stay away from common varieties and blends.

Bluegrass works best in cool-season grass areas because it spreads by rhizomes. Turf-type tall fescues are recommended for areas in the transition zone because of insect resistance and drought tolerance. Ryegrasses are good for overseeding and repairing.

Most southern states use bermudagrass on athletic fields. Bahiagrass and kikuyagrass also work in some regions.

5. **Maintain**—After constructing a good athletic field, maintenance should not be neglected. Aeration is the number-one priority for any field. Aeration should be done as often as necessary in the spring and fall, in five directions, at a 3-inch depth.

Irrigation and cultural treatments can be determined by the soil analysis and turf variety used.

If you have any specific questions, be sure to consult your local extension agent.

WT&T

bluegrass, but Roberts advises against mixing it with tall fescues. "The ryegrass is more aggressive and tends to colonize," he explains. "It doesn't make for a uniform surface."

In warm-season turf regions, bermudagrass is most commonly used on sports fields. Some gulf coast states use bahiagrass. Several regions of Southern California use kikuyagrass, despite the fact that the Soil Conservation Service has outlawed it because it spreads into agricultural crops.

Centipedegrass won't take the wear of an athletic field. St. Augustinegrass and zoysiagrass get too thatchy and spongy to work well.

To manage a good athletic field, just remember:

The key to top turf

To manage a good athletic field, just remember GRASS.

Get advice from a professional consultant or extension agent;

Rev up community support for the needed budgets or equipment;

Aerate a good field regularly and often; but, if the field needs help;

Sample the soil and renovate the field if necessary;

Select seed carefully, using name varieties only;

WT&T

EDITOR'S NOTE: Special thanks to Dr. Fred Grau of the Musser Turfgrass Foundation and Dr. Eliot Roberts of The Lawn Institute for their time and effort in providing the WT&T staff with background information used in this series of articles.



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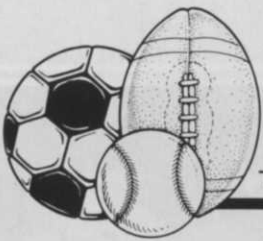


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ARE YOU LIABLE?

The courts are taking a broader view of liability, so conscientious athletic field managers should be taking daily walks around fields.

by Heide Aungst, associate editor

The game: Texas Christian University at Alabama.

The date: October 26, 1974.

The play: TCU's tailback carries the ball on an end sweep. An Alabama player pushes the tailback out of bounds from the front. Another chops his legs from behind. The tackle flips the tailback.

End of play.

Former TCU tailback Kent Waldrep watches that play over and over again. Not on videotape, but in his mind.

That play left him paralyzed from the neck down.

"I'll remember that moment the rest of my life," Waldrep says. "I can think and visualize exactly what happened and what I felt like it was yesterday."

What he felt the moment his head hit the artificial turf was nothing. Nothing.

Then, within minutes, the tremendous pain started.

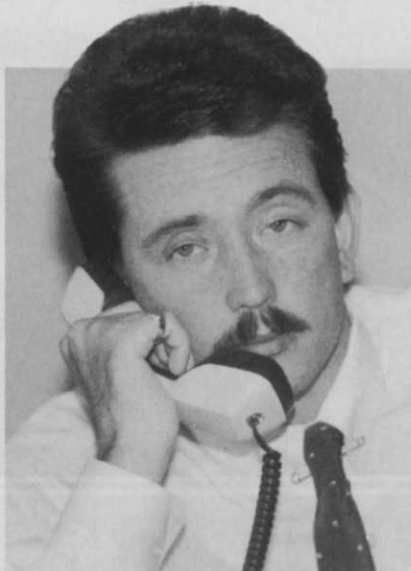
He spent a month in an Alabama hospital, then went to an acute spinal cord injury center in Houston for three months. He even became one of the few Americans permitted to receive experimental treatments in the Soviet Union.

Through all the physical pain, Waldrep had to endure the emotional trauma of starting life over in a wheelchair.

And, there were more frustrations. Less than a year after the accident, TCU officials stated they would no longer be responsible for his medical bills. An attorney advised him not to sue TCU.

But Waldrep did file suit in 1976 against the manufacturer of the artificial turf in Alabama's stadium.

The case was settled out of court in 1984, and, as is common in settlements, he can't talk about the case, even to mention the company he sued. But *Sports Illustrated* reported the suit was against American Biltrite, the manufacturer of Poly-Turf and the contractors who put it down.



Kent Waldrep: Paralyzed on artificial turf.

Although most law suits involving athletic fields focus on artificial turf fields, suits on natural fields may not be far off.

Going to court

Jim Leatzow, senior vice president of Financial Guardian Insurance, says field managers need to be aware that cases involving playgrounds and parks also affect athletic fields.

"The courts are taking a broader view of responsibility," Leatzow warns. "They hold a degree of liability and responsibility if someone is hurt because something is not properly maintained. The courts will ask, 'Is there something that could have been done to prevent the injury?'"

Leatzow cites a case involving a swing set which was set in concrete. The soft cover around the swing set had worn away because no one had maintained it. A child, misusing it, slid down the end support pipe and broke his leg. His parents sued and won a sizeable amount.

Leatzow says it didn't matter if the child was misusing the equipment. The court only looked at the fact that

the child was hurt because the covering had not been properly maintained.

The same type of suit could happen because of holes, ruts, and bare spots on a field from improper maintenance.

Leatzow says the No. 1 precaution for field managers is common sense.

"By that I mean look for the foreseen problem, like equipment which is not up to snuff," he explains. "Make sure the field is properly lighted, no lights are burned out."

Besides the mechanics of a field, the actual field condition is important. Eliminating hard bare spots, holes, and rocks in the field should be a primary concern. Poor drainage is also a major problem. If someone were to sink into a spot, twist and break a leg, a field manager could become the center of a lawsuit.

"All you have to do is walk around," Leatzow says. "You should be making daily inspections of all athletic facilities."

Critics say the responsibility for an injury on a natural turf field would be too difficult to prove. But Leatzow points to the *Deep-Pocket Theory*.

The theory, more formally known as *The Doctrine of Joint and Several Liability*, allows an injured party to collect regardless of whom is at fault.

An example of this occurred in California when a drunk driver, racing to cross railroad tracks before a train, ran off the road and into a gas station. The station exploded, injuring a man in a nearby phone booth.

The man sued. He collected from the phone company.

Profit motivated

In the case of artificial turf, it may take an actual court case to get standards or improvements, but even out-of-court settlements impact on liability insurance.

"The vast majority of cases never get to court," Leatzow says. "The insurance industry is profit motivated. For that reason, it's more expedient at

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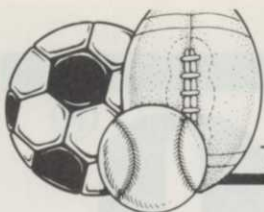
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times to settle out of court, rather than fighting the case on principle."

In the Halbrook case, college baseball player Scott Halbrook hit his head on Monsanto's AstroTurf (see accompanying story), allegedly causing his death. Monsanto assistant general counsel Frank Vible says the company offered a settlement in September, 1985, for purely economic reasons.

"It was not an admission of guilt," Vible says. "We felt that the economics indicated that it would be a lengthy trial and there would be a lot of sympathy for the plaintiff."

Dan Holland, attorney for the Halbrook family, says they decided to accept the settlement because Monsanto offered enough money.

"None of us will ever know if we made the right decision," adds Alan Halbrook, Scott's father. "But I got the information I went after."

Opponents of artificial turf say it will take a well-publicized case which actually goes to court before



Insurance expert Jim Leatzow says athletic turf managers are liable for injuries on natural turf.

anything will be done about the problems with artificial turf. Most of the cases are settled out of court with a non-disclosure clause.

No choice but to settle

Waldrep feels he had no choice but to settle. When TCU cut off its financial

support, Waldrep was left without medical insurance. The bills had to be paid.

"I couldn't afford to go to court and lose," he says of his decision to settle. "I wish it could have been me. It was an extremely hard decision...almost like giving up, and I've never given up on anything in my life."

Although Waldrep's and Halbrook's cases were serious, a vast number of lawsuits today aren't. Leatzow feels there should be an incentive not to sue frivolously. In Europe, if someone sues and loses the case, the loser is then responsible for the other party's attorney's fees.

Without such incentives, athletic field managers need to be extra cautious about properly maintaining an athletic field.

Rash lawsuits could make it difficult for schools to get liability insurance. Not having insurance could put some sports programs in jeopardy.

As the old adage goes, "An ounce of prevention..." **WT&T**



One wheelchair is too many

by Dr. Kent Kurtz

"Why is it that people wait until someone gets hurt to fix a playing field?"

Jeff Wishard, 26, speaks from his wheelchair:

"Neither the doctors, coaches nor my teammates are really sure how my accident happened. One theory is that, on impact, my head may have been forced down into the ground.

"The practice field was in real poor condition. That particular field was used for many activities other than football, and was extremely hard. The only maintenance to the field was a weekly mowing.

"When the field was wet, it was muddy. During the hot, dry weather in the fall, the surface was hard and traction was very poor. It was comparable to the farmer's field adjacent

Jeff Wishard: "Neither the doctors, coaches nor my teammates are really sure how the accident happened. One theory is that, on impact, my head may have been forced down into the ground."

to the school."

Some people are beginning to question whether the satisfaction of making a desperation tackle or scoring a touchdown is really worth the risk of becoming a paraplegic or quadriplegic.

The incidence of catastrophic injuries (those that result in permanent spinal cord disability) is not large when based upon player populations of 100,000. Data indicate that, in 1984, 1.575 million football young men played college and high school football, but only 0.38 percent were injured severely. Most spinal injuries occur during regular games to defensive players, and the majority are associated with blocking and tackling.

Such is the case of young Wishard, who suffered through a football field injury which has left him a quadriplegic.

Wishard lives in Davis, Ill. (pop. 550). Parents Ron and Sandy own an automotive body shop and gasoline

Dr. Kent Kurtz, executive secretary of STMA, is a WT&T advisor.

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station. His mother works for an optometrist. The Wishards are a typical hard-working, middle class Midwestern family who are well-liked and very active in the community.

When Wishard was injured 11 years ago, the family was not prepared for the hospital bills, the special care required, the anxiety that followed or the weeks, months, and years of learning to adjust to a new kind of life.

Tragedy strikes

On Oct. 15, 1975, the Dakota High School freshman/sophomore football team was going through a normal

Some people are beginning to question whether the satisfaction of making a desperation tackle or scoring a touchdown is really worth the risk of becoming a paraplegic or quadriplegic.

practice session.

Wishard recalls the day vividly.

"We had just finished our calisthenics on the Dakota practice field and our coach, Jeff Clark, was conducting what was called the 'hamburger' drill," he recalls. "As the defensive player, I was supposed to jump up (from the ground), turn around and tackle the offensive player. On my first attempt, I slipped on the hard, bare soil surface and by the time I recovered the offensive player had gotten passed me."

The coach told Wishard to try again.

"All I can remember from my second attempt is falling to the ground in pain and calling for the coach. I laid on my back while my helmet, socks and shoes were being removed. I knew something serious was wrong and I think the coach and team manager knew I had a broken neck. When they ran a pencil along the bottom of my feet to see if I had any sensations and I didn't, they called an ambulance."

In the next few hours, he went from hospital to hospital. Wishard re-

members seeing his mother at Freeport Hospital.

"When I awoke again, I was being transported to Rockford Memorial Hospital. During the ride, the shock subsided and I hurt real bad. My father was waiting at the Rockford hospital, and I'll never forget the shocked expression on his face. He was as white as a ghost," recalls Wishard.

Wishard soon learned that he had a broken neck, several fractured cervical vertebrae and would probably be a quadriplegic the rest of his life.

Wishard's injury seemed to bring more parents out to Dakota football games during the fall of 1975—perhaps because parents became more concerned or aware of their youth's welfare. They might have wanted to make sure their sons were receiving adequate instruction on the basic football fundamentals.

No better today

The maintenance of football fields in the Northwest Illinois Conference has not been upgraded or improved significantly since the Wishard injury.

Eleven years later, inspection of the Dakota High School football practice and game fields reveals hard, compacted surfaces, several grassy and broadleaf weeds and a maintenance program geared to a weekly mowing. Watering, fertilizing, aerifying, weeding, and the introduction of new turf-type grasses is apparently non-existent.

Minor injuries, and some serious such as broken legs or arms, twisted ankles, broken knuckles and knee injuries continue at Dakota and other conference schools because of rough terrain and poor quality turf.

Two prominent researchers feel that catastrophic football injuries may never be completely eliminated. But a united effort involving coaches, players, administrators, researchers, physicians, trainers and equipment manufacturers is required to identify the problems and then take the necessary preventative measures.

Hope for tomorrow

The purpose of the Sports Turf Manager's Association (STMA) is to provide knowledge and education to improve athletic field conditions throughout the United States, Canada and other countries. STMA is making a concerted effort to get grounds supervisors and personnel to become

members and to join forces to combat unsafe athletic facilities everywhere by providing quality fields for the youth and athletes.

STMA would like every athletic field manager to come together to solve problems, learn about new ideas and techniques, and find ways to further reduce severe athletic injuries.

STMA has long advocated that the easiest way to reduce injuries is to provide a well-turfed practice facility and game field. Selecting and using the adapted turfgrass species, fertilizing often enough and correctly, providing adequate water for the turfgrass plant, mowing at the correct height, and aerifying and topdressing to encourage deeper roots, a more resilient surface and a non-compacted soil medium can go a long way toward reducing sports-related injuries.

WT&T

Preventing, not promoting, the injury

by Ken Kuhajda, managing editor

A high school football player suffers a serious injury; not an abrasion or a bump. He tears up his knee.

His parents in the stands don't give a second thought to the condition of the natural grass field. After all, their son is hurt.

But would that player have been injured so seriously if the field were in better condition?

Data on whether a field's condition contributes to an injury is hard to find. At the playground, grade school, and high school levels, there haven't been many studies conducted.

"It's one of those things people just don't want to talk about," says Dr. Eliot Roberts, director of The Lawn Institute. "If there is a tie-in between field conditions and a young person's injury, it's not discussed much. The school systems just have too many other problems."

Adds Dr. Bill Knoop, Texas Agricultural Extension Service turfgrass specialist: "Some people don't want to document the relationship between field conditions and injuries because of the liability question."

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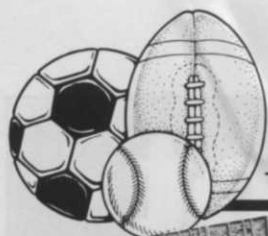
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Educating turf managers is one of the goals of the Musser Foundation. Ads like this help.

However, one well-known study suggests that yes, the field's condition does make a difference in the number and severity of injuries.

Revealing research

Penn State University performed a study in 1983 that found roughly 20 percent of all football injuries (in four categories) sustained by Pennsylvania high school players could have been "prevented or perhaps rendered less severe by more favorable field conditions."

Penn State extension agronomist Dr. John Harper II notes that most of the injuries judged to be related to field conditions involved the lower extremities (the hip/leg, knee, and ankle/foot).

The study concludes: "The results indicating that one of five injuries may be field-related should be an incentive to construct and maintain high quality playing surfaces."

Another study had similar findings. Carol Ann Comly studied 10 Pennsylvania high schools in 1981 to determine the specific cause of some 35,000 injuries recorded at the schools. (See Chart, p. 26.)

Dr. James Garrick, director of San Francisco's Center for Sports Medicine at St. Francis Hospital, agrees that field condition does make a difference. But he adds an asterisk.

"I suspect it does, but it's awfully difficult to sort out," Garrick suggests there's a give-and-take trade-off on all surfaces.

"People complain about fields being too hard, but a player's cleats don't get down into the hard field so there's less locking and less twisting-type injuries," he says. "But there are problems with bumps and bruises so it's sort of a trade off. By the same token, a good grass field will allow the cleats to escape if you put pressure on the foot," thereby causing fewer injuries, he says.

However, Garrick notes, "I think most people will agree that a well-maintained natural field is the best surface."

Practice fields worse

There's little doubt that improper maintenance is contributing to the problem. Harper and colleagues compared playing conditions on practice and game fields at 12 secondary schools in Pennsylvania and found practice fields were used far more yet maintained far less.

The study reported just 25 percent of the practice fields and 75 percent of the game fields were aerified to relieve compaction.

Little fertilizer was used on either practice or game fields. Not one school reported using herbicides on its practice field.

"We know how to grow the grass to provide the reliable footing needed by athletes," says The Lawn Institute's Roberts. "The bad fields can be corrected without a lot of expense. The fields just need to improve a little each year."

Free information

In Texas, Knoop provides many high schools with football field maintenance information at no charge. He says the injury rate of participating schools has dipped.

"The testimony of the coaches I've worked with indicate that as their fields improve, the number of injuries decrease," says Knoop. "I have several coaches who've not had serious injuries in years because of the good field conditions. Some of the coaches at smaller schools tell me they couldn't put a team on the field because they had so many injuries before they went on our program."

"There's no doubt in my mind" that a field's condition plays a role in injuries, says Comly, now a physical therapist. "As a (athletic) trainer, one of the first things you do is go out onto the field ahead of the team and look

for potential trouble spots," she notes.

Adds Roberts: "It's my strong opinion that field condition is a major factor in injuries. The evidence is there, but the problem is not being able to document."

Slow-moving research

Roberts began researching the relationship of good turf to fewer injuries in 1964 while at Iowa State University. Since that time, there have been few studies on the subject.

There is much research available on the increased injury rate on synthetic surfaces. Never has a study revealed fewer injuries sustained on synthetic surfaces, says Garrick.

(The average career span of an NFL player has dwindled from 4.2 to 3.6 years, according to a survey by the NFL Players' Association. Seventeen of the 28 teams play on synthetic turf.) However, research on the conditions of natural turf fields and injuries has moved at a snail's pace. "It's been going on a long time but not much progress has been made. We need to educate the people taking care of the fields, we have to convince people that we need improved fields," says Roberts.

"Even if you eliminate just one percent of the injuries, it's worth it." **WT&T**

For more information...

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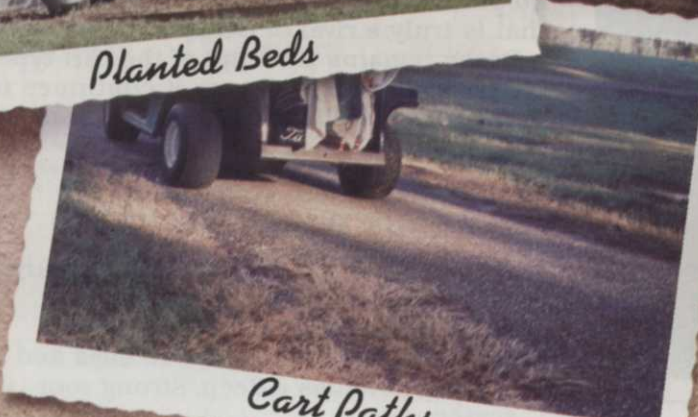
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by Jack Dirksing

Convenient uses for hydroseeding techniques contribute to growth in the green industry.

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Today, more landscape contracts are calling for hydroseeding. But, if need be, hydroseeding can be promoted by offering a weed-free lawn installation for less cost than sod. Small, previously impractical jobs can be made profitable by the speed and low labor demands of hydroseeding.

The process is less messy than straw, and hydraulic mulch will not blow away under normal conditions.

The equipment

Hydroseeding is relatively simple. But just as important as the decision to buy equipment is the selection of the right size machine. Consideration should be given to both current jobs and those in future plans. (For tank sizes and coverages, see accompanying chart.)

The hydroseeding process itself is simple.

Jack Dirksing is president of the Finn Corporation.



The Reinco Hydrograsser uses hydro-jet agitation with a grinder/blender feature.

Tank Working Capacity (Gal)	Acreage Per Load	
	With Seed, Fertilizer, Lime	With Wood Fiber Mulch
500	1-3/4	1/6
800	2-1/2	1/4
1000	3	1/3
1300	4	1/3 to 1/2
2500	8	2/3 to 1
3000	9	3/4 to 1-1/2

The materials put in the tank are mixed with water and kept in suspension by agitation. Seed, mulch, and fertilizer are introduced to the tank as it fills with water.

Seed protection

Hydraulic mulch of today is typically a ground wood or paper product. When applied through a HydroSeeder, it serves to protect the seed as it begins to germinate and establish itself.

A harmless green dye is added to the mulch as a marker between loads, allowing the operator to easily identify and judge the amount of material

being applied. Additionally, the dye gives a green appearance until the grass begins to germinate.

Most applications call for 1,000-2,000 pounds of hydraulic mulch per acre, depending on specifications, soil conditions, and type of mulch.

Additional products to enhance the seeding operation and satisfy specific needs are available. These can be added to the "recipe" during tank loading. Mulch tackifiers, water retention agents, and fiber length enhancers are typical additives.

The slurry is then pumped to the discharge assembly and directed onto



Reinco's Power Mulcher.

the seedbed by the machine operator. Discharge of the slurry (the mix of all materials) is done either from a tower-mounted gun on the tank or, for a more controlled application, through a hose and a remote valve.

HydroSeeders come equipped with a variety of nozzles to allow the selection of several different spray patterns: wide fan, narrow fan, and long-distance.

A discharge tower is standard equipment on all but the smaller HydroSeeders, where it is not considered necessary.

An electric (or manual crank) hose reel can be mounted on any size Hydroseeder. This allows the convenience of 200 feet or more of hose for jobs not permitting the machine to be close to the work. Most owners prefer the electric reel, as the small added cost of the motor outweighs the time and labor involved in hand cranking.

Few problems

Problems associated with hydroseeding are minimal. However, certain practices must be observed.

Seedbed preparation — The time spent in preparing a good seedbed will yield higher germination and turf density. Highway roadsides, mining reclamation, and landfill seedings re-

quire considerably less preparation.

Seed selection and application — Seed selection depends on many variables: width of grass leaf, erosion control ability, drought resistance, disease and fungus resistance, and soil conditions.

In most instances, cereal crop seeds are blended with turfgrasses. The cereal crop or nurse crop seed gives rapid germination and plant growth, protecting the primary grass seed from erosion and the elements. Typically, nurse crop seed germinate in less than seven days while primary grass seed takes at least 14 days.

Rate of seed application is determined by needed turf density and percentage of seed germination. Local seed suppliers are often the best source of information on seed and application rates.

Soil amendments — The selection of fertilizer, lime, and other soil amendments is often overlooked. However, selection is vital to the turf's establishment. The soil's nutrient level and pH additives determine the grass plant's vigor and vitality.

An inexpensive soil test kit can be used to determine the amendments needed. After taking the test, a suitable fertilizer plus pH additives can be added to the HydroSeeder slurry.

Again, local suppliers can be a good source for this information.

Moisture retention — After the hydroseeding is completed, regular watering is necessary for the development of healthy turf. This is especially important in arid areas or in summer months when rainfall is limited.

The hydroseeding mulch will absorb and keep water available for the germinating seed. The mulch's ability to hold water varies. Mulches also tend to insulate the seed and soil, protecting it from direct exposure to the elements.

Temporary irrigation on small to medium size projects is rapidly gaining acceptance in areas where little precipitation is expected.

Erosion — Seed and seedbed erosion are probably the most difficult problems to solve, and the most important consideration to make while hydroseeding. Landscape and seeding contractors are constantly faced with washout due to heavy rain. Hydraulic mulches control erosion to a greater or less degree, depending on their derivation and fiber length.

For additional insurance against erosion of the mulch and seedbed, tackifiers or tenacious synthetic fiber should be added to the slurry. Tack-

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Harrisonburg, VA



The Finn Corporation's HydroSeeder.

ifiers bind individual fibers of the mulch together with a water-insoluble, semi-porous film or crust. Tenuous synthetic fibers (mulch fiber enhancers) add fiber length to the slurry and entangle with the fibrillated fiber of the mulch.

The list of erosion control products for use with HydroSeeders grows as new technology is developed. Using an additional product depends, in part, on cost, site condition, rainfall and guarantees of the contract or

specifications.

A brief history

Back in 1949, the term "hydroseeding" didn't exist. The technique used to seed was a far cry from today's advanced technologies.

Seeding was seeding, no matter where it was being done...highway or agricultural areas.

On flat areas, scarification and seedbed preparation was followed by the use of agricultural grain drills

which placed the seed. On steep slopes, the cyclone hand-operated seeding machine or hand broadcasting the seed were the only methods available.

After planting seeds, a light raking with hand rakes, followed by hand-mulching, finished the job.

Not until the development of the Highway Trust Fund and Federal Interstate programs was it clear that a more rapid, effective, mechanized piece of equipment was needed.

In 1953, Charles Finn of the Finn Equipment Co. developed the first commercially successful HydroSeeder. It mechanically mixed seed, fertilizer, and lime with water, producing a slurry mixture, which was then applied to the seedbed.

The first machine was a two-piece unit consisting of a 1,000-gallon tank set in a small wheelbase dump truck with a separate pumping unit towed behind. As years passed, demands for a more compact piece of equipment were met.

Through the years, hydroseeding has evolved into perhaps the most economic means of establishing vegetation. It's a proven time-saver, labor-saver and profit-enducer. **WT&T**

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1. Equipment

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Clean-Flo Laboratories Inc
Kembro Inc
Son Shine Nursery

Aerators, Soil

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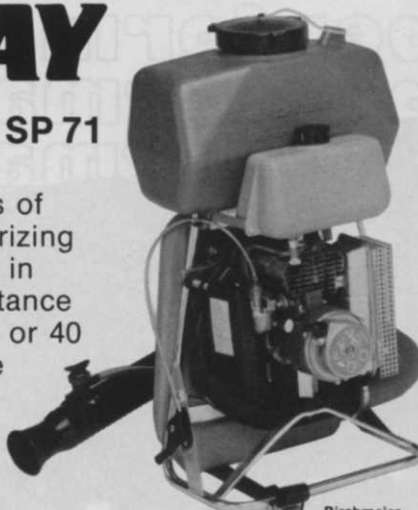
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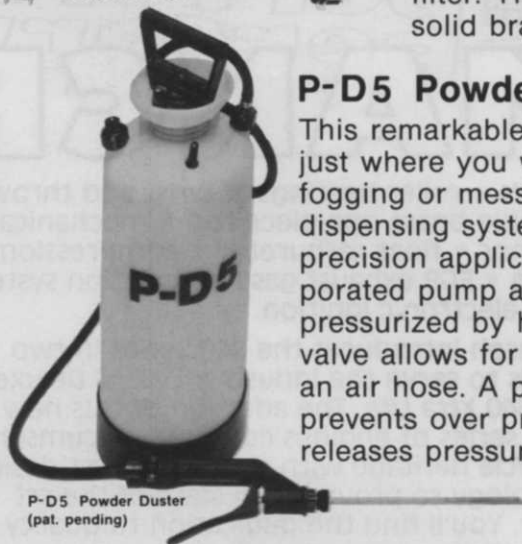
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Equipment

continued

Smith Precision Products
Son Shine Nursery
Southern Mill Creek Products Co
Westheffer Co

Filters, Sand

BASF Corp
James Hardie Irrigation
Holly Filter
Laval Corp Claude
Son Shine Nursery
Thorco/Master Sprayers

Flow Meters

Great Plains Industries

Foggers

B & G Equipment Co
Chemilene Co
FMC Corp
James Hardie Irrigation
Root-Lowell Corp
Thompson Mfg Co
Trebtor Corp

Forklifts

Bingham Equipment Co
Brouwer Turf Equipment Ltd
Roscoe Brown Corp
Caterpillar Lift Trucks
Caterpillar Tractor Co
Deere & Co
Edwards Equipment
Henderson Mfg
Industrial Leasing Corp
International Harvester Co
K-D Manitou Inc
Master Craft Industrial Equipment Corp
Melroe Co
Princeton Mfg Co
Vandermolen Corp
Worksaver Inc

Generators

American Honda Motor
Arizona Power Equipment Co
Clinton Engines Corp
Howard S Crane Inc
Deere & Co
Earth Energy Systems Inc
Homelite Div Textron Inc
Kohler Co
Kubota Tractor Corp
McCulloch Corp
Milwaukee Electric Tool Corp
MTD Products Inc
Shindaiwa Inc
Son Shine Nursery
Tanaka USA
WINCO Div

Geotextiles

Phillips Fibers Corp

Golf Cars

American Continental Products
Club Car Inc
Columbia ParCar Corp
Industrial Leasing Corp
Melex USA Inc
Noland Car Co
Ross Products

Golf Course Accessories

J A Cissel Mfg Co

FAST GREEN COVER UP

with



or with the new



HYDRAULIC MULCHING WITH CELLIN IS EASY, AND FAST, AND ECONOMICAL. SEED, FERTILIZER AND MULCH ARE MIXED INTO A SLURRY AND SPRAYED ONTO THE GROUND — IN ONE EASY STEP.

TACKLING STRAW (OR HAY) MULCHES WITH CELLIN MULCH IS EFFECTIVE, AND FAST, AND ECONOMICAL.

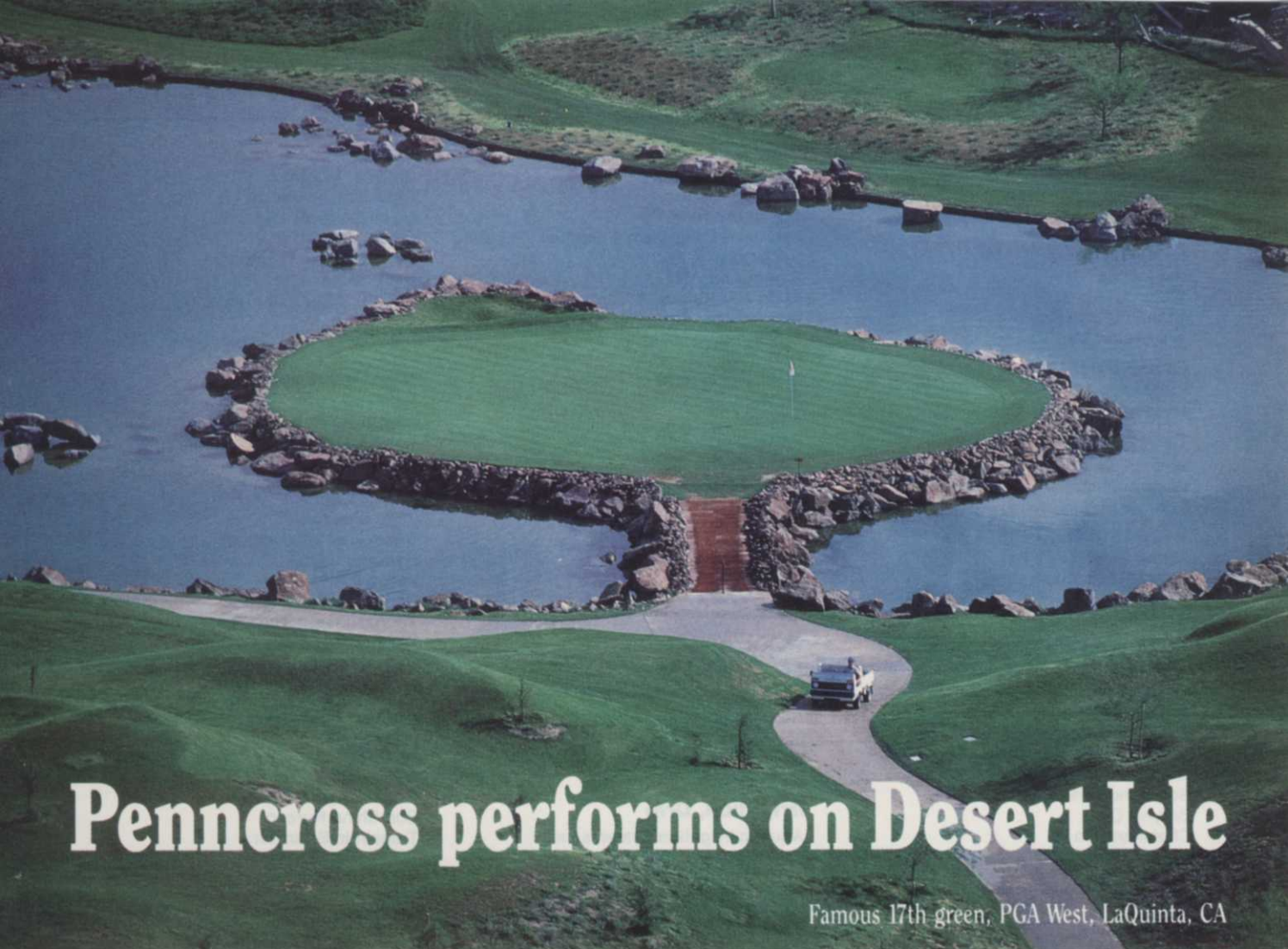
CELLIN MULCHES ARE DARK GREEN, COMPLETELY FREE OF WEED SEEDS AND CONTAIN NO GROWTH INHIBITING FOREIGN MATTER.

CELLIN MULCHES ARE FORMULATED TO MIX READILY WITH WATER AND TO REMAIN EVENLY DISPURSED IN THE SLURRY. PACKAGED IN 50 lb. HEAVY DUTY POLYETHYLENE BALES — EASY TO HANDLE, STACK AND STORE.



CELLIN
MANUFACTURING INC.
800/336-3074
703/690-1195

Circle No. 111 on Reader Inquiry Card



Pennncross performs on Desert Isle

Famous 17th green, PGA West, LaQuinta, CA

Pennncross not only survives, but thrives on all 18 greens at this innovative Pete Dye designed course.

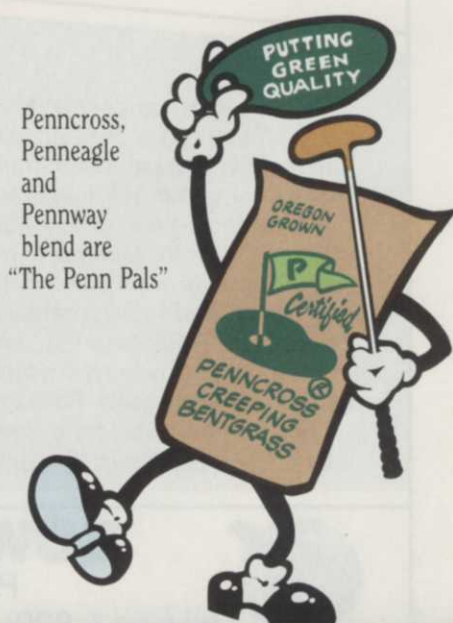
You've seen this awesome 17th green in pictures, or maybe you've had the good fortune of playing this 147 yard challenge, but we're reasonably sure you didn't know that it's Pennncross creeping bentgrass. Television announcers won't tell you and magazines don't print it, but the putting greens that have made more champions on some of the greatest courses in the world are Pennncross.

PGA West is a revolutionary new course with target greens, stadium spectator mounds and punishing hazards. Why would such an innovative designer use a strain of bentgrass that's been around for so many years? We maintain that there is no better all-around bentgrass anywhere!

Some people say that bentgrass won't survive the intense sunbelt heat. We have evidence to disprove that notion. Pennncross, and its Penn Pal, Penneagle have grown in popularity on courses from California to Florida . . . where bermudagrass used to reign.

Pete Dye specified Pennncross for *this* desert isle, as he did for his famous Sawgrass island green in Ponte Vedra, Florida. Pennncross is no ordinary putting green grass . . . and Pete Dye is no ordinary designer.

Watch Pennncross perform in the *Skins Game* at PGA West, Nov. 29 and 30, 1986.



Pennncross, Penneagle and Pennway blend are "The Penn Pals"

*Pennncross is a tried and true cultivar developed by Professor Burt Musser at Penn State University and released in 1955.

Pennncross is marketed by TEE-2-GREEN CORP / PO Box 250, Hubbard, OR 97032 / 1-800-547-0255 / TWX 510-590-0957

Circle No. 163 on Reader Inquiry Card

Equipment

continued

Earl J Crane Inc
FXG Corp
Kay Park Rec Corp
Lesco Inc
Rugg Mfg Co
Salsco Inc
Smithco Inc
Standard Golf Co
Westheffer Co

Grass Pavers

Presto Products Inc
Turfgrass Products Corp

Greenhouses

Beck Greenhouse
Covers Unlimited
Son Shine Nursery

Greenhouse Covers

Arthur Enterprises Inc
Covers Unlimited
Lesco Inc
Son Shine Nursery

Hose & Reels

Agrotec Inc
Ames Lawn & Garden Tool Co
Anchor Swan Div
Arborchem Products Co
Arizona Power Equipment Co
Arthur Enterprises Inc
Bowie Industries Inc
Broyhill Co
Chemilene Co

Coxwells Inc
Earl J Crane Inc
Encap Products Co
Ferguson Equipment & Supply
FMC Corp
Gilmour Mfg Co
Clifford B Hannay & Son Inc
International Reforestation Suppliers Inc
Kuker Industries Inc
Lesco Inc
Melnor Industries
Moyer & Son Inc
Pex Inc
Power Spray Technology Inc
Pro-Turf Mfg Inc
RL Corp
Spraying Devices Inc
Strong Ent Inc
Swan Hose
Thermoguard Co
Thorco/Master Sprayers
Tuflex Mfg Co
Westheffer Co
Winkler Hydraulics

Insect Killers, Electrical

Chemilene Co
Devpro Insectocutor Div
Insect-O-Cutor Inc
Micron Corp
Vandermolen Corp

Irrigation, Drip

Aquatic Irrigation Systems Inc

Buckner Irrigation
Chemilizer Products Inc
Dayni Controls Mfg Co
Gilmour Mfg Co
James Hardie Irrigation
Hydro Rain
Rain Bird Sprinkler Mfg Corp
Raindrip Inc
Rain Jet
L J Rensch & Co
O M Scott & Sons Co
Senninger Irrigation Inc
Son Shine Nursery
Submatic Irrigation Systems

Irrigation, Injection

John Blue Co
Chemilizer Products Inc
Hydroflo Corp
Jaeco Pump Co
Son Shine Nursery
Thorco/Master Sprayers
Westheffer Co

Irrigation, Mobile

Buckner Irrigation
Bunton Co
McDowell Mfg Co
Pierce Corp
Puror Corp
Son Shine Nursery
Travelrain Sprinkler



THE ORIGINAL IS BIGGER

Bowie's new Lancer 500 brings perfection to originality. It has a 30% greater capacity than our Lancer 350, and can hydro-mulch a standard residential corner lot in less than an hour.

We perfected our Lancer 350—the first production Hydro-Mulcher® manufactured—because we weren't satisfied with originality. And today, professionals call Bowie Hydro-Mulchers the "landscaper's workhorse".

Both these Bowie Hydro-Mulchers are small enough to operate in tight places, yet large enough to handle big jobs easily. Both load quickly, mix instantly and pump rapidly—without clogs.

Call or write today for a Bowie Hydro-Mulcher brochure. The original just got bigger. It's always been better. Because Bowie is built to stay that way.



BOWIE INDUSTRIES, INC.

P.O. Box 931 Bowie, Texas 76230

Toll free 1-800-433-0934, in Texas call 1-817-872-2286 TELEX: 887844

Circle No. 107 on Reader Inquiry Card



Castle Pines Golf Club, twenty minutes south of Denver, Colorado, will host the inaugural "International" this summer.

Grounds for Ransomes.



Getting ready for a PGA TOUR event is grounds for using the Ransomes Motor 180. This compact, lightweight ride-on triple provides exceptional maneuverability and ground-hugging stability, even on steep slopes. Available with floating head cutting units, the Motor 180 closely follows ground contours on undulating terrain like Castle Pines, and provides a superb finish to difficult areas. A golf course with the natural beauty of Castle Pines deserves to be kept looking and playing its best: a worthy challenge to a caring groundskeeper. And that's grounds for seeing your Ransomes Bob Cat distributor. Or call Ransomes, Inc., One Bob Cat Lane, Johnson Creek, WI 53038, (414) 699-2000.

RANSOMES

The grass machine.

Circle No. 156 on Reader Inquiry Card

Introducing

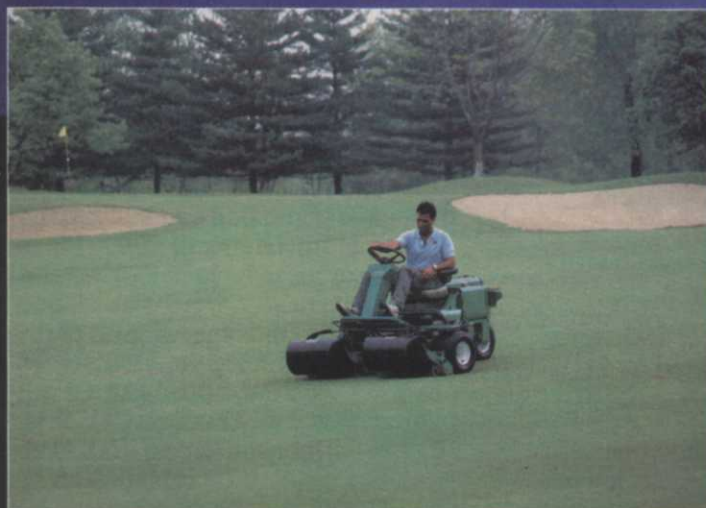
From LESCO, the company that listens and responds to customer needs, comes a complete new line of small-particle sulfur-coated urea fertilizers.

Specifically designed for low-cut turf, the new ELITE fertilizers from LESCO provide many more particles per square foot than coarser-grade products that can cause speckling. That means consistent greening and a more uniform distribution pattern. In addition, the slow-release feeding provided by the sulfur-coated urea insures steady growth and long residual.



Shown is a half-gram each of granular sulfur-coated urea fertilizer (-6/+16) and LESCO ELITE sulfur-coated urea fertilizer.

The chance of mower pickup is virtually eliminated with ELITE fertilizers because the new small particles readily filter into the turf.



The chance of mower pickup is virtually eliminated with the new LESCO ELITE fertilizers.



Granular Sulfur-Coated Urea (-6/+16)

LESCO

ELITE

And because LESCO manufactures its new ELITE fertilizers using sulfate of potash, there's more plant-available sulfur and low potential for burn.

The fertilizer you've been waiting for is available now in six analyses: 21-0-16, 19-0-19, 15-0-30, 12-24-14, 21-4-12 and 31-0-0.



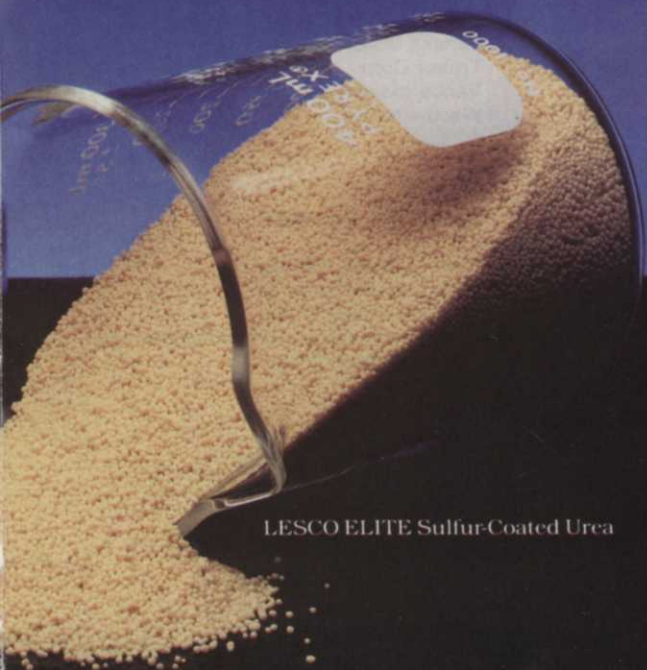
LESCO ELITE is available now in a variety of analyses.

To order the ELITE fertilizer that best fits your needs, call us toll free today.

(800) 321-5325
NATIONWIDE

(800) 362-7413
IN OHIO

Circle No. 251 on Reader Inquiry Card



LESCO ELITE Sulfur-Coated Urea

LESCO

LESCO, Inc., 20005 Lake Road, Rocky River, Ohio 44116 (216) 333-9250

Equipment

continued

Irrigation Systems & Supplies

Ag-Rain Inc
AMETEK/Plymouth Prods Div
AquaTurf
BASF Corp
Buckner Irrigation
Earl J Crane Inc
Dayni Controls Mfg Co
Dema Engineering Co
Gilmour Mfg Co
James Hardie Irrigation
Holly Filter
Hunter Industries
Hydroflo Corp
Hydro Rain
Irri-Trol Mfg Inc
Jaeco Pump Co
King Brothers Industries
Laval Corp Claude
Lesco Inc
Long Mfg NC Inc
Lumenite Electronic Co
McDowell Mfg Co
Motorola Electronic Command & Control Systems
National Irrigation Specialists
Pierce Corp
Puror Corp
Rain Bird Sprinkler Mfg Corp
Raindrip Inc
Rain Jet
Rain-O-Mat Sprinklers Inc
L J Rensch & Co
O M Scott & Sons Co
Senninger Irrigation Inc
Son Shine Nursery
Submatic Irrigation Systems
Telsco Industries (Weather-Matic)
Thompson Mfg Co
Toro Co Irrigation Div
Travelrain Sprinkler
United Farm Tools Inc

Landscape Design Kits

American Stamp Co
Raindrip Inc

Leaf Burners

Bock Products

Lighting Systems

Barebo Inc
Earth Energy Systems Inc
GTE Sylvania
Little Giant Pump Co Sub Tecumseh Prods Co
Musco Sports-Lighting Inc
Westinghouse Electric Corp Lamp Div

Lightning Protection Systems

Independent Protection Co

Litter Receptacles

BigToys

Clean City Squares Inc
Friend Mfg Corp
Kay Park Rec Corp
Landscape Structures Inc
Lesco Inc
Miracle Recreation Equipment Co
Standard Golf Co

Loaders

American Trencher
Ariens Co
Arizona Power Equipment Co
Atwater Strong Div
Bingham Equipment Co
Bombardier Inc
Bomford & Evershed Ltd
Bush Hog
J I Case
Caterpillar Tractor Co
Charles Machine Works Inc
Howard S Crane Inc
Deere & Co
Ford Tractor Operations
Henderson Mfg
Ingersoll Equipment Co
International Harvester Co
Kubota Tractor Corp
Kuker Industries Inc
Long Mfg NC Inc
Melroe Co
Multitek Inc
New Holland
Prentek Corp

Loading Ramps

Arizona Power Equipment Co
Earl J Crane Inc
Giant Vac Mfg Inc
Melcher Mfg Co
Salsco Inc
Worksaver Inc

Log Splitters

Arizona Power Equipment Co
Better Built Corp
Bingham Equipment Co
Buffalo Turbine Agricultural Equip Co
Bush Hog
J I Case
Comanche Steel Products Inc
Deere & Co
Didier Log Splitters Mfg
FXG Corp
Giant Vac Mfg Inc
Ingersoll Equipment Co
Karl Kuemmerling Inc
Lindig Mfg Corp
Morbark Industries Inc
MTD Products Inc
Promark Products Inc
Robush Engineering Co
Sensation Div Gilson
Siebring Mfg Co
Son Shine Nursery
Vermeer Mfg Co
Winkler Hydraulics

Markers, Field

Best Way Inc
B & G Equipment Co
Laurie Carlson & Assoc Ltd
Fox Valley Systems Inc
International Reforestation Suppliers Inc
Lesco Inc
Pioneer Mfg Co
Precision Laboratories Inc
Richway Industries Ltd
Smithco
Sorensen Sprayers Inc
Westheffer Co

Measuring Wheels

Gandy Co
Lesco Inc
Pro-Turf Mfg Inc
Westheffer Co

Mist Blowers

Arizona Power Equipment Co
Broyhill Co
Buffalo Turbine Agricultural Equip Co
Howard S Crane Inc
Echo Inc
Ferguson Equipment & Supply
FMC Corp
Friend Mfg Corp
Green Machine Div HMC
Karl Kuemmerling Inc
RL Corp
Root-Lowell Corp
Solo Inc
Tanaka USA
Trebor Corp
Vandermolen Corp
Westheffer Co

Moisture Sensors

Dayni Controls Mfg Co
James Hardie Irrigation
Hinds International Inc
International Reforestation Suppliers Inc
Karl Kuemmerling Inc

Mower Accessories

Arizona Power Equipment Co
Bomford & Evershed Ltd
Earl J Crane Inc
Cushman-Ryan/OMC Lincoln
Deere & Co
Jacobsen Div Textron Inc
Lesco Inc
Orbex Inc
Power Lawnmower Parts Inc
Simplicity Mfg Inc
Smithco
Snapper Products Equipment
Toro Co Commercial Prods Div
White Outdoor Products Co
Woods Div Hesston Corp



OK, Doug. What is it about Scotts new ProTurf 22-0-22 NK Fairway Fertilizer that makes it a high quality product?

"We use only top quality ingredients. All the potassium is in the form of potassium sulfate. The nitrogen is balanced between quick- and slow- release forms. And each high-density particle is homogeneous... providing a consistent feeding."

What does that mean on a fairway? "Several things—quick greenup, a greening effect that lasts up to two months, even distribution of nutrients. Also, less chance of burning turf, the addition of sulfur to the soil, and no chloride salts."

And you say it's designed for fairways? "Yes. It's composed of large particles that throw a wide, even swath from a rotary spreader."

What benefits do I get from a high potassium feeding? "It's been shown that potassium will enhance turfgrass

performance—better drought hardiness, improved disease resistance, more tolerance to wear, things like that. And studies on bermudagrass attribute reduced winterkill to high potassium."

Sounds like it would be hard to go wrong with ProTurf 22-0-22 NK Fairway Fertilizer. "That's right. It can be applied any time, and it's very versatile, too. You can use double rates spring and fall in the north and all summer in the south. Half rates are great for cool season grasses during the hot summer months."

Can you sum all that up, Doug? "ProTurf 22-0-22 NK Fairway Fertilizer is a great program complement to our regular Fairway Fertilizer at 32-3-10 and our High K Fairway Fertilizer at 15-0-30."

For more information on Scotts new ProTurf 22-0-22 NK Fairway Fertilizer, call your ProTurf Tech Rep. Or call Scotts direct at 800-543-0006. In Ohio, call collect (513) 644-2900.

Circle No. 149 on Reader Inquiry Card

"Superintendents have been talking about a high quality 1-0-1 product designed for fairways. We've been listening."

Doug Horn, Scotts Research project leader (Fertilizer R&D), talks about new ProTurf 22-0-22 NK Fairway Fertilizer.



Equipment

continued

Mower Parts

Arizona Power Equipment Co
Buck Haven
Bunton Co
Earl J Crane Inc
Cushman-Ryan/OMC Lincoln
Haban Mfg Co
International Harvester Co
Jacobsen Div Textron Inc
Kut-Kwick Corp
Lawnboy Prod Group
Lesco Inc
Massey-Ferguson
MoTrim Inc
MTD Products Inc
Orbex Inc
Power Lawnmower Parts Inc
Ransomes Inc
Scag Power Equipment Inc
Snapper Products Equipment
Toro Co Commercial Prods Div
Vrisimo Mfg Co
White Outdoor Products Co
Woods Div Hesston Corp
Yazoo Mfg Co

Mowers, Flail

Alamo Group
Arizona Power Equipment Co
Bingham Equipment Co
Bomford & Evershed Ltd

Bush Hog
Howard S Crane Inc
Edwards Equipment
Ford Tractor Operations
Gravely International Inc
Haban Mfg Co
Henderson Mfg
International Harvester Co
Jacobsen Div Textron Inc
Mathews Co
Middlesworth Engineering & Mfg Inc
MoTrim Inc
Mott Corp
Toro Co Commercial Prods Div
Turner International Eng Ltd
Vrisimo Mfg Co
Woods Div Hesston Corp

Mowers, Reel

Arizona Power Equipment Co
Brouwer Turf Equipment Ltd
Earl J Crane Inc
Jacobsen Div Textron Inc
Jerry Clipper
Kinco Mfg
Lesco Inc
Locke Mfg Inc
MTD Products Inc
National Mower Co
Ransomes Inc
Roseman Mower Corp

Toro Co Commercial Prods Div
Turner International Eng Ltd

Mowers, Rotary

Alamo Group
American Honda Motor
Ariens Co
Arizona Power Equipment Co
Bingham Equipment Co
Bombardier Inc
Bunton Co
Bush Hog
J I Case
Earl J Crane Inc
Howard S Crane Inc
Cushman-Ryan/OMC Lincoln
Deere & Co
Edwards Equipment
Excel Industries Inc
Exmark Mfg Co
Ford Tractor Operations
Giant Vac Mfg Inc
Grasshopper Co
Gravely International Inc
Grazer Div Willsey-D Inc
Haban Mfg Co
Heckendorn Mfg Co
Henderson Mfg
Homelite Div Textron Inc
Ingersoll Equipment Co
International Harvester Co
Jacobsen Div Textron Inc

The Reel for Your Wheels



The Hannay Series 1500 Spray Reel

Whether you drive a custom-built truck or a pickup with a skid unit, or tow a trailer, the Hannay 1500 is the reel for your wheels. Professionals in lawn maintenance and pest control demand the day in, day out reliability of Hannay Reels. The smooth payout, the precise windup and the all-around convenience. Plus efficient storage that reduces wear on the hose and subsequent repair and replacement costs. Not only that, but chances are your Hannay Reel will last longer than your truck! No matter what the size of your business, if you use hose, you need Hannay Reels. For more information on Hannay Reels or for a free Series 1500 feature sheet, circle the number below or call Hannay Reels today.



Circle No. 131 on Reader Inquiry Card

CLIFFORD B. HANNAY & SON, INC., 600 EAST MAIN STREET
WESTERLO, NEW YORK 12193 • TELEPHONE (518) 797-3791

CITATION II • BIRDIE II • MANHATTAN II FERRY-MORSE GOLD TAG BRAND COVERS THE 1986 ROSE BOWL



The Rose Bowl at Pasadena, CA, January 1, 1986

New generation perennial ryegrasses provide 'near perfect' playing surface . . . prove older ryegrass varieties to be passé

PASADENA, CA – When the field turf management team for the Rose Bowl specified the perennial ryegrass blend to

The field still looked terrific the day after the game



overseed the 1986 Classic, they chose Ferry-Morse Gold Tag Brand, a blend of Citation II, Birdie II and Manhattan II ryegrasses produced by Turf-Seed, Inc.

To meet demanding time and performance constraints, they opted to use this blend of genetically improved ryegrasses based on performance in prior testing against other varieties and combinations. Gold Tag Blend germinated and established quickly, producing a dark green, durable playing surface that enhanced the playing field graphics and the proud heritage of the Rose Bowl itself.

Based on comments and accolades bestowed in 1986, the turf management team anticipates the use of genetically improved ryegrasses like Citation II, Birdie II and Manhattan II, and Gold Tag Blend in the future.

And it looks like a very bright future, indeed.

Citation II, Birdie II and Manhattan II are products of



PO Box 250, Hubbard, OR 97032
503/981-9571 TWX 510 590 0957

Gold Tag Brand is a product of



Ferry-Morse Seed Co.

PO Box 4938, Modesto, CA 97352
In California, 1-800-572-SEED
209/ 579-SEED

2120 Via Burton, Anaheim, CA 92806
714/ 774-5460

600 Stephen Beale Dr., Fulton, KY 42041
1-800-626-3392 502/ 472-3400

Circle No. 171 on Reader Inquiry Card

Equipment

continued

F D Kees Mfg Co
Kubota Tractor Corp
Kut-Kwick Corp
Lawnboy Prod Group
Long Mfg NC Inc
Magic Circle Corp
Massey-Ferguson
Middleworth Engineering & Mfg Inc
MoTrim Inc
MTD Products Inc
Ransomes Inc
Ryan Turf/OMC Lincoln
Sarolo Power Mowers Inc
Scag Power Equipment Inc
Sensation Div Gilson
Simplicity Mfg Inc
Smithco Inc
Smithco
Snapper Products Equipment
Solo Inc
Steiner Corp
Toro Co Commercial Prods Div
Tradewinds Inc
Turner International Eng Ltd
United Farm Tools Inc
Vandermolen Corp
Vicon Farm Machinery Inc
Walker Mfg Co
Wheel Horse Products Inc
White Outdoor Products Co
Woods Div Hesston Corp
Yazoo Mfg Co

Mowers, Sickle Bar

Alamo Group
Arizona Power Equipment Co
Bingham Equipment Co
Earl J Crane Inc
Deere & Co
Gravely International Inc
Haban Mfg Co
International Harvester Co
Kinco Mfg
MoTrim Inc
Sensation Div Gilson
Solo Inc
Vermeer Mfg Co

Mulchers, Hydraulic

Arizona Power Equipment Co
Bingham Equipment Co
Bomford & Evershed Ltd
Bowie Industries Inc
Deere & Co
Finn Corp
Goossen Industries
Medallion Div
Reinco Inc
Thermoguard Co
Weldco (WA) Inc

Net Layers

American Excelsior Co

Netting

American Excelsior Co

J A Cissel Mfg Co
Conwed Corp
Covers Unlimited
Delmarva Textile Co
Eaton Brothers Corp
International Reforestation Suppliers Inc
Son Shine Nursery

Nozzles & Accessories

Arizona Power Equipment Co
B & G Equipment Co
Broyhill Co
Buckner Irrigation
Chemilene Co
Delavan Corp
Encap Products Co
Ferguson Equipment & Supply
FMC Corp
Friend Mfg Corp
Gilmour Mfg Co
James Hardie Irrigation
Hydro Rain
Hypro Div Lear Siegler Inc
Kuker Industries Inc
Lesco Inc
Liqui* Lawn Corp
Melnor Industries
Micron Corp
Pex Inc
Power Spray Technology Inc
Pro-Turf Mfg Inc
D B Smith & Co
Son Shine Nursery
Sorensen Sprayers Inc
Spraying Devices Inc
Strong Ent Inc
Thorco/Master Sprayers
Tri-Con Inc
Westheffer Co

Patio & Walkway Materials

Ozark Landscaping Products

Picnic Tables

American Playground Device Co
Architectural Precast Inc
BigToys
Columbia Cascade Lumber Co
Kay Park Rec Corp
Miracle Recreation Equipment Co
Playworld Systems
Trojan Playground Equipment Mfg Co

Pipe

Advanced Drainage Systems Inc
Comanche Steel Products Inc
Hancor Inc
Lesco Inc
Pro-Turf Mfg Inc
Son Shine Nursery
Westheffer Co

Planters

Architectural Precast Inc

BigToys
Bouldin & Lawson Inc
Clean City Squares Inc
Deep Root Corp
Deere & Co
Ellis Mfg Co
International Harvester Co
Lesco Inc
Miracle Recreation Equipment Co
L J Rensch & Co

Plants & Trees

L J Rensch & Co
Son Shine Nursery

Play Structures

American Playground Device Co
BigToys
Columbia Cascade Lumber Co
Delmer F Harris Co
Landscape Structures Inc
Miracle Recreation Equipment Co
Playworld Systems
Trojan Playground Equipment Mfg Co

Plows, Sand Trap

Steiner Corp
United Farm Tools Inc

Pools, Decorative

L J Rensch & Co

Post Drivers

McMillen Div
Rhino Sales Corp
Shaver Mfg Co
Worksaver Inc

Post Hole Diggers

Allegheny International Hardware Group
Ames Lawn & Garden Tool Co
Arizona Power Equipment Co
Bingham Equipment Co
Bush Hog
Howard S Crane Inc
Feldmann Engineering & Mfg Co
Ford Tractor Operations
Hoffco Inc/Comet Industries
Karl Kuemmerling Inc
Massey-Ferguson
McMillen Div
Rhino Sales Corp
Don Savage Co
Seymour Mfg Co
Shaver Mfg Co
Solo Inc
Tanaka USA
Union Fork & Hoe Co
Worksaver Inc



You Cannot Replace Lost Time!

We know your time is valuable. Grasshopper is designed to save mowing time. Depend on it day after day on every job.

CLOSE-QUARTER MOWING—

Our out-front rotary for full view mowing and unsurpassed trimming capabilities, coupled with hydrostatic power offers true zero-turning maneuverability around obstacles and especially in tight spots.

EASY OPERATION—Two steel levers do it all . . . controlling speed, direction and braking. It is natural and easy to learn. There are no gears or clutch to slow you down and dual transmissions send power independently to each drive wheel for traction when you need it.

MUSCLE FOR THE ROUGH CUT—Grasshopper muscle means decks that are constructed of 10 gauge steel and reinforced with an additional steel plate around the spindle housings. A 1" blade spindle shaft is another example of how Grasshopper keeps cutting in tough mowing.



YOUR NEXT MOWER

THE GRASSHOPPER COMPANY
BOX 637WT • MOUNDRIDGE, KS 67107
(316) 345-8621

Invest a few minutes to save a lot of hours...
Call or Write for Free Color Literature



"QUIK-D-TATCH"® VACUUM—

Vacuum the turf for a fine manicured cut. High capacity vacuum picks up wet grass clippings; even debris from dethatching. Write and ask us about our variety of attachments.

DEALER SUPPORTED—Get a quote from your local Grasshopper dealer. The low initial investment, inexpensive maintenance, and parts back-up make the Grasshopper an even more attractive addition to your mowing fleet.

The New Grasshopper Model 1822 Diesel



Circle No. 129 on Reader Inquiry Card

Equipment

continued

Pressure Gauges

Best Way Inc
Broyhill Co
Encap Products Co
FMC Corp
Friend Mfg Corp
James Hardie Irrigation
Irrrometer Co
Kuker Industries Inc
Lesco Inc
Northeast Industries Inc
Pex Inc

Power Spray Technology Inc
Pro-Turf Mfg Inc
Southern Mill Creek Products Co
Spraying Devices Inc
Strong Ent Inc
Thorco/Master Sprayers
Tuflex Mfg Co
Westheffer Co

Pruners, Hedge

Allegheny International Hardware Group

American Standard Co
Ames Lawn & Garden Tool Co
Arizona Power Equipment Co
Asplundh Safety Equipment Co
Bartlett Mfg Co
Chisholm-Ryder Co
Corona Clipper Co
Deere & Co
Echo Inc
Emblidge Corp
Fairmont Railway Motors
Gilmour Mfg Co
Green Machine Div HMC
International Reforestation Suppliers Inc
Karl Kuemmerling Inc
Rain Bird Sprinkler Mfg Corp
O M Scott & Sons Co
Seymour Smith & Son Inc
Stanley Hydraulic Tools
Union Fork & Hoe Co

Pruners, Tree

Allegheny International Hardware Group
Ames Lawn & Garden Tool Co
Arizona Power Equipment Co
Bartlett Mfg Co
Chisholm-Ryder Co
Citrus Systems Inc
Corona Clipper Co
Deere & Co
Echo Inc
Emblidge Corp
Fairmont Railway Motors
Fanno Saw Works
Friend Mfg Corp
Gilmour Mfg Co
Green Machine Div HMC
International Reforestation Suppliers Inc
Jameson Corp
Karl Kuemmerling Inc
H K Porter Inc
Rain Bird Sprinkler Mfg Corp
L J Rensch & Co
O M Scott & Sons Co
Seymour Smith & Son Inc
Stanley Hydraulic Tools
Union Fork & Hoe Co

Pumps

Ag-Rain Inc
AquaTurf
Arizona Power Equipment Co
Best Way Inc
Bowie Industries Inc
Broyhill Co
Clinton Engines Corp
Earth Energy Systems Inc
Encap Products Co
Ferguson Equipment & Supply
FMC Corp
Franklin Electric
Hanson-General Prod Corp
Homelite Div Textron Inc
Hydroflo Corp
Hypro Div Lear Siegler Inc
International Reforestation Suppliers Inc
Jaeco Pump Co
Kembro Inc
Kubota Tractor Corp
Kuker Industries Inc
Little Giant Pump Co Sub Tecumseh
Prods Co



NEW
Arid
TURF TYPE TALL FESCUE

A nationwide progress report in 1984 of turf-type tall fescues placed **Arid No. 1** in mean turf grass quality. Arid was tops in shade trials with greater disease and insect resistance. Finer leaves, rich, dark green color, low growing with deep roots to withstand high and low temperatures. Also good in humid transition zones.

An ideal sod former with little thatch makes Arid a new, refreshing choice with lower pesticide and fertilizer requirements.

Get complete information and order Arid from your seed wholesaler or sod distributor.

Another fine,
quality-controlled product of

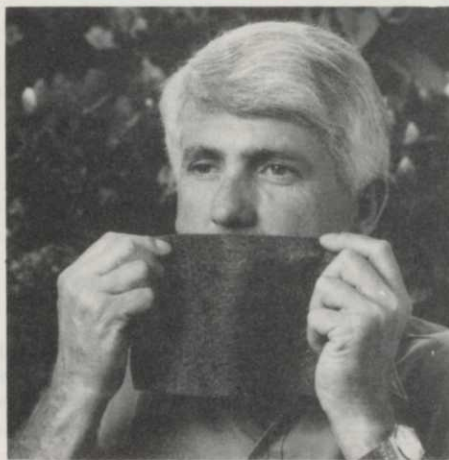
Jacklin
Seed Company

Circle No. 133 on Reader Inquiry Card

THIS TEST WON'T HOLD WATER —OR AIR.



Water passes easily through highly permeable Duon Weed Control Mat.



Just blow through Duon to see how easily air passes through it.

The proof is stronger, longer lasting plants with **DUON**[®] Weed Control Mat.

Both water and air pass easily through Duon Weed Control Mat, made of Phillips Fibers non-woven polypropylene. As a landscaper, you know how important that is to a plant's root system and to the future well-being of your big landscape jobs—especially those you use as references.

When water and air can't get through, plants die. Black plastic won't work for the long-term. And woven polypropylenes are nowhere near as permeable as nonwovens. For example, the air permeability for nonwoven Duon is about 14 times greater than for woven polypropylenes and the water

permeability for Duon is about 10 times greater.

Put our words to the test. Hold Duon under running water, then take another piece and breathe through it. Then try the same test with a competitive weed control mat.

When covered from sunlight, Duon is virtually permanent. It allows plants to thrive and impedes about 95% of weed growth (in most areas). It also keeps mulch from going down into the soil.

For your quality landscape jobs, order Duon. For further information, call Phillips Fibers (803) 242-6600.

MARKETED THROUGH: 8923 South Octavia
Blunk's Bridgeview, IL 60455
(312) 430-2025



PHILLIPS FIBERS CORPORATION
A SUBSIDIARY OF PHILLIPS PETROLEUM COMPANY

TEXTILE NONWOVEN FABRICS MARKETING
P. O. BOX 66, GREENVILLE, SC 29602
(803) 242-6600

*Trademark Phillips Petroleum Company

Equipment Companies

continued

McCulloch Corp
Minnesota Wanner Co
F E Myers Co
PBI-Gordon Corp
Pex Inc
Power Spray Technology Inc
Pro-Turf Mfg Inc
Shindaiwa Inc
Smithco Inc
Smithco
Solo Inc
Son Shine Nursery
Sorensen Sprayers Inc
Spraying Devices Inc
Strong Ent Inc
Tanaka USA
Tecumseh Products Co
Thorco/Master Sprayers
Tuflex Mfg Co
Westheffer Co
Winkler Hydraulics

Rakes, Landscape

Agrotec Inc
Allegheny International Hardware Group
Ames Lawn & Garden Tool Co
Arthur Enterprises Inc
Bartlett Mfg Co
Bingham Equipment Co
E-Z Rake Inc
Ford Tractor Operations
Glenmac Inc

Kenyon Mfg Inc
Karl Kuemmerling Inc
Lesco Inc
Roseman Mower Corp
Rugg Mfg Co
Sensation Div Gilson
Standard Golf Co
Union Fork & Hoe Co
York Modern Corp

Rain Sensors

Dayni Controls Mfg Co
Telsco Industries (Weather-Matic)

Rock Pickers

Bingham Equipment Co
Howard S Crane Inc
Glenmac Inc
KEM Enterprises
Son Shine Nursery
Vermeer Mfg Co

Rollers, Lawn

Aer-Way
Allegheny International Hardware Group
Arizona Power Equipment Co
Brouwer Turf Equipment Ltd

Gandy Co
Northeast Industries Inc
Robush Engineering Co
Ryan Turf/OMC Lincoln
White Outdoor Products Co

Rope

Asplundh Safety Equipment Co
Bartlett Mfg Co
Karl Kuemmerling Inc
Lambeth Corp
Lesco Inc
Power Lawnmower Parts Inc
Samson Cordage Works
Standard Golf Co

Safety Wear & Equipment

Asplundh Safety Equipment Co
Bartlett Mfg Co
Custom Products of Litchfield Inc
Deere & Co
Echo Inc
Edmont Div Becton Dickinson & Co
Ferguson Equipment & Supply
International Reforestation Suppliers Inc
Karl Kuemmerling Inc
Lesco Inc
McCulloch Corp
Moyer & Son Inc
Racal Airstream Inc



EZGO
TEXTRON

E-Z-GO Division of Textron, Inc.
P.O. Box 388, Marvin Griffin Road
Augusta, GA 30913-2699

SOME WORKERS DON'T

Equipment

continued

Tecfor Inc
Westheffer Co

Saws

AEG Power Tool Corp
Allegheny International Hardware Group
Arizona Power Equipment Co
Asplundh Safety Equipment Co
Bartlett Mfg Co
Deere & Co
Fairmont Railway Motors
Fanno Saw Works
Gilmour Mfg Co
Jameson Corp
Karl Kuemmerling Inc
Milwaukee Electric Tool Corp
Skil Corp

Scrapers

Allegheny International Hardware Group
Bingham Equipment Co
Deere & Co
Industrial Leasing Corp
International Harvester Co
Massey-Ferguson
York Modern Corp

Screeners

Laval Corp Claude

Lindig Mfg Corp
Royer Foundry & Machine Co

Seeders

Allegheny International Hardware Group
Ames Lawn & Garden Tool Co
Arizona Power Equipment Co
Bowie Industries Inc
Brillion Iron Works Inc
Brouwer Turf Equipment Ltd
Bush Hog
Cushman-Ryan/OMC Lincoln
Deere & Co
Gandy Co
Herd Seeder Co
Industrial Leasing Corp
Olathe Mfg Inc
Salsco Inc
Vandermolen Corp
Vicon Farm Machinery Inc
Weldco (WA) Inc
Worksaver Inc

Seeders, Hydraulic

Bowie Industries Inc
Brillion Iron Works Inc
Cushman-Ryan/OMC Lincoln
Finn Corp
Industrial Leasing Corp

Thermoguard Co
Weldco (WA) Inc

Sharpeners

Earl J Crane Inc
Foley-United Co
International Reforestation Suppliers Inc

Shears

AEG Power Tool Corp
Allegheny International Hardware Group
American Standard Co
Ames Lawn & Garden Tool Co
Arthur Enterprises Inc
Bartlett Mfg Co
Corona Clipper Co
International Reforestation Suppliers Inc
Milwaukee Electric Tool Corp
Rain Bird Sprinkler Mfg Corp
Seymour Smith & Son Inc
Seymour Smith & Son Inc

Shelters

Columbia Cascade Lumber Co
Miracle Recreation Equipment Co
Playworld Systems
W H Porter Inc Polygon/Cover-All Div
Western Wood Structures Inc



Meet the E-Z-GO work force. Tough guys who work down to dusk and never take a break.

Built to E-Z-GO's demanding standards, you can expect years of durable performance from these 3 and 4-wheel, gas or electric-powered turf vehicles. Plus lower maintenance costs and little to no downtime.

For every job you've got, there's an E-Z-GO designed specifically to handle it—quietly, efficiently and with the least amount of labor. With carrying capacities up to 1,500 pounds, a complete range of trailers, and adaptability to virtually any accessory, they're a team of superbly versatile workers.

E-Z-GO. Nobody builds them better.

KNOW WHEN TO QUIT.

Equipment

continued

Shovels

Ames Lawn & Garden Tool Co
International Reforestation Suppliers Inc
Kenyon Mfg Inc
Lesco Inc
Rugg Mfg Co
Son Shine Nursery
Union Fork & Hoe Co

Snow Blowers

American Honda Motor
Ariens Co
Beaird-Poulan/Weed Eater
Roscoe Brown Corp
Buntun Co
J I Case
Howard S Crane Inc
Cushman-Ryan/OMC Lincoln
Deere & Co
Ford Tractor Operations
Grasshopper Co
Gravely International Inc
Green Machine Div HMC
Haban Mfg Co
Hanson-General Prod Corp
Henderson Mfg
Hoffco Inc/Comet Industries
Homelite Div Textron Inc
Ingersoll Equipment Co
International Harvester Co
Kubota Tractor Corp
Massey-Ferguson
MTD Products Inc
Sensation Div Gilson
Simplicity Mfg Inc
Snapper Products Equipment
Steiner Corp
Toro Co Commercial Prods Div
United Farm Tools Inc
White Outdoor Products Co

Snow Plows

Ariens Co
Bomford & Evershed Ltd
J I Case
Earl J Crane Inc
Deere & Co
Gravely International Inc
Guest Industries Inc
Haban Mfg Co
Ingersoll Equipment Co
International Harvester Co
Swenson Spreader Co
United Farm Tools Inc
Western Products
White Outdoor Products Co

Sod Cutters

Allegheny International Hardware Group
Ames Lawn & Garden Tool Co
Brouwer Turf Equipment Ltd
Earl J Crane Inc
Cushman-Ryan/OMC Lincoln
Ryan Turf/OMC Lincoln
Turfco Mfg Inc
Union Fork & Hoe Co
Young Industries

Sod Equipment

Brouwer Turf Equipment Ltd
Deere & Co
Jerry Clipper
New Holland

Sod Harvester

Brouwer Turf Equipment Ltd
Princeton Mfg Co

Sod Planters

Soil Compactors

Soil Fumigation

Hendrix & Dail Inc

Soil Mixers

Bouldin & Lawson Inc
Roscoe Brown Corp
Lindig Mfg Corp
Royer Foundry & Machine Co
Son Shine Nursery
Vandermolten Corp
Worksaver Inc

Soil Moisture Sensing Equipment

Howard S Crane Inc
Dayni Controls Mfg Co
James Hardie Irrigation
International Reforestation Suppliers Inc
Irrrometer Co
Rain Bird Sprinkler Mfg Corp
Soilmoisture Equipment Corp
Sudbury Lawn & Garden Products

Soil Sampler

Clements Associates Inc
International Reforestation Suppliers Inc
LaMotte Chemical Products Co
Lesco Inc
P E Skaling Soilmoisture Equipment Corp
Soilmoisture Equipment Corp
Turfgrass Products Corp
Westheffer Co

Soil Shredders

Lindig Mfg Corp
Royer Foundry & Machine Co

Soil Test Labs

Hach Co
Orbeco Analytical Systems Inc
Sudbury Lawn & Garden Products

Soil Test Meters

Kel Instruments Co
Karl Kuemmerling Inc
LaMotte Chemical Products Co
Lesco Inc
P E Skaling Soilmoisture Equipment Corp
Sudbury Lawn & Garden Products
Terracare Products Co

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Agrotec Inc
Applied Biochemists Inc
Arborchem Products Co
Arizona Power Equipment Co
Bartlett Mfg Co
Best Way Inc
B & G Equipment Co
Bingham Equipment Co
John Blue Co
Broyhill Co
Buffalo Turbine Agricultural Equip Co
Bush Hog
Carmel Chemical Corp
Chemilene Co
Citrus Systems Inc
Country Mfg Inc
Earl J Crane Inc
Cushman-Ryan/OMC Lincoln
Deere & Co
Echo Inc
E-Z Rake Inc
Ferguson Equipment & Supply
Finn Corp
FMC Corp
Friend Mfg Corp
Gilmour Mfg Co
Great Northern Equipment Co
Jonathan Green Inc
Green Machine Div HMC
Hahn Inc
Hanson-General Prod Corp
H D Hudson Mfg Co
Industrial Leasing Corp
International Reforestation Suppliers Inc
Kuker Industries Inc
Lesco Inc
Liqui*Lawn Corp -
Marco Div of Llo-Mar Mfg Inc
Master Mfg Co
Melnor Industries
Micron Corp
F E Myers Co
Pex Inc
Power Spray Technology Inc
Pro-Turf Mfg Inc
Richardson Great Northern Mfg Inc
Richway Industries Ltd
RIGO Co
RL Corp
Root-Lowell Corp
Sidefire Inc
Siebring Mfg Co
Smithco Inc
D B Smith & Co
Smithco
Solo Inc
Sorensen Sprayers Inc
Southern Mill Creek Products Co
Spraying Devices Inc
Strong Ent Inc

HOW TO TELL IF YOUR COMMERCIAL MOWER IS BUILT FOR A LONG LIFE

There is a simple way to be sure your commercial mower is designed for a long life, and is built to achieve it.

Buy Bunton

to be sure your mowers have welded one-piece steel construction, lubrication points at each moving part, pneumatic puncture resistant tires and more.

Specify 2-cycle

for an engine that often provides 4 seasons of hard commercial use without major maintenance (2 season warranty), as much torque from an 8 hp as with an 11 hp 4-cycle, the piece of mind provided by taking the critical engine lubrication function out of the hands of your operators, and a cost competitive with the most popular 4-cycle engines.

Use the System

that puts your key equipment on the same fuel/oil mixture, with Bunton trimmers, backpack blowers and mowers.



Bunton builds 'em better.
BUNTON CO.

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Louisville, KY 40232
502/966-0550
Telex: 204-340

GSA No.: GS-07F-13196

Equipment

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Thorco/Master Sprayers
Trebor Corp
Universal-Gerwin
Vandermolen Corp
Vicon Farm Machinery Inc
Westheffer Co
Wheel Spray Corp

Sprayers, Measuring Equipment

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FMC Corp
Green Pro
Hanson-General Prod Corp
Lesco Inc
Marco Div of Llo-Mar Mfg Inc
Micro-Trak Systems
Moyer & Son Inc
Pro-Turf Mfg Inc
Southern Mill Creek Products Co

Spray Guns

Agrotec Inc
Arborchem Products Co
Arizona Power Equipment Co
B & G Equipment Co
Broyhill Co
Chemilene Co
Citrus Systems Inc
Cushman-Ryan/OMC Lincoln
Encap Products Co

Ferguson Equipment & Supply
FMC Corp
Friend Mfg Corp
Great Northern Equipment Co
Hanson-General Prod Corp
Hypro Div Lear Siegler Inc
Kuker Industries Inc
Lesco Inc
Marco Div of Llo-Mar Mfg Inc
F E Myers Co
Pex Inc
Power Spray Technology Inc
Pro-Turf Mfg Inc
Richardson Great Northern Mfg Inc
Root-Lowell Corp
Smithco Inc
Smithco
Southern Mill Creek Products Co
Spraying Devices Inc
Strong Ent Inc
Thorco/Master Sprayers
Tri-Con Inc
Tuflex Mfg Co
Westheffer Co

Spray Units

Agrotec Inc
Angus Sprayers
Arborchem Products Co
Arizona Power Equipment Co
Best Way Inc
B & G Equipment Co

Broyhill Co
Carmel Chemical Corp
Chemilene Co
Citrus Systems Inc
Cushman-Ryan/OMC Lincoln
Dedoes Industries Inc
Ferguson Equipment & Supply
FMC Corp
Friend Mfg Corp
Great Northern Equipment Co
Hahn Inc
Hanson-General Prod Corp
Kuker Industries Inc
Lesco Inc
Marco Div of Llo-Mar Mfg Inc
Minnesota Wanner Co
F E Myers Co
Pex Inc
Power Spray Technology Inc
Pro-Turf Mfg Inc
Richardson Great Northern Mfg Inc
Siebring Mfg Co
Smithco Inc
D B Smith & Co
Smithco
Southern Mill Creek Products Co
Spraying Devices Inc
Strong Ent Inc
Thorco/Master Sprayers
Tri-Con Inc
Tuflex Mfg Co
Westheffer Co
Wylie Sprayers

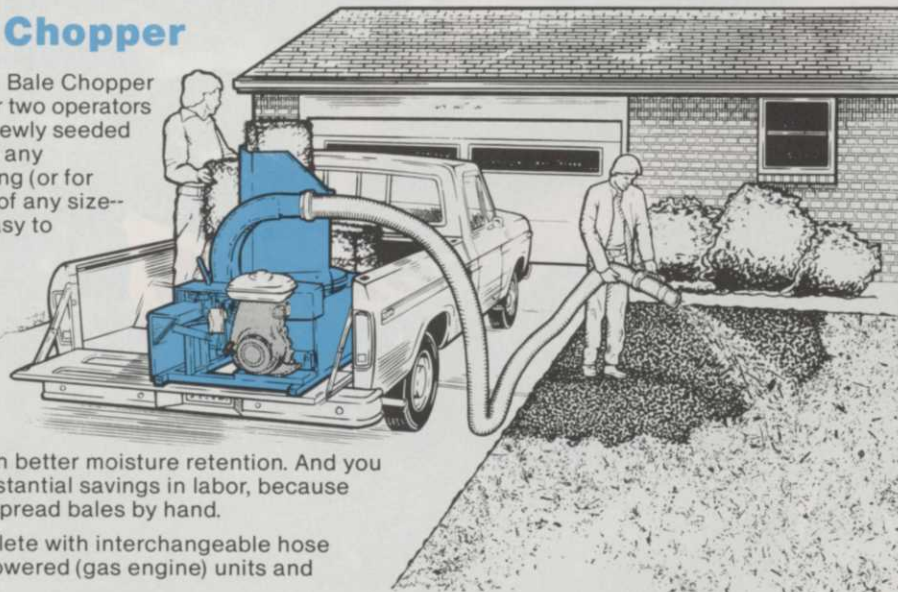
THE MULCHING SOLUTION

The Goossen Bale Chopper

In the field since 1982, the Goossen Bale Chopper is a proven machine which lets one or two operators lay down an even layer of mulch on newly seeded lawns. It chops and spreads virtually any material that can be used for mulching (or for composting!). And the lawns can be of any size--the Bale Chopper is compact and easy to maneuver in even the smallest residential applications. That makes it a very efficient and practical machine for landscaping.

The **Landscapers' answer** to the problem of clumps and gaps in mulching coverage, the Bale Chopper gives you even-blanket coverage for better germination, with better moisture retention. And you get this excellent coverage at a substantial savings in labor, because you eliminate the need to tear and spread bales by hand.

The Bale Chopper is available complete with interchangeable hose and directional spout, in both self-powered (gas engine) units and tractor-hitch PTO models.



Call right now and let us show you how the Goossen Bale Chopper can save you time and money!

Toll Free 800-228-6542

In Nebraska, (402) 228-4226

Goossen INDUSTRIES

927 West Court St. • P.O. Box 705 • Beatrice, Nebraska 68310

Circle No. 128 on Reader Inquiry Card



While nobody was looking, Fairmont developed a Limb Lopper power pack that lets you trim branches quietly without being tied to your truck.

A hundred feet or a hundred yards. Distances no longer matter with the quiet, self-contained mobile hydraulic power pack from Fairmont.

This compact, highly portable unit weighs just 53 pounds. It supplements the hydraulic outlets on your truck to let you do ground and ladder trimming beyond your truck's normal 25-foot hose limit. Best of all, it works with the tools that you're already using in your basket.

The practical benefits of Limb Lopper's mobile power pack are obvious. No longer do you have to equip each

truck with manual and gasoline-powered tools for jobs that a basket can't reach. One set of quiet, efficient hydraulic tools takes care of every tree-trimming job.

Many of the big commercial tree-trimming companies have already switched to Limb Lopper chain saws, circular saws, and shade-tree pruners. It's easy for you to do the same. Just phone or visit your nearest member of Fairmont's trained, dependable Limb Lopper dealer network. Or write: Fairmont Hydraulics, a division of Fairmont Railway Motors, Bldg. B, Suite 408, 800 Roosevelt



Road, Glen Ellyn, IL 60137.
Phone (312) 790-1690.



Limb Lopper

Fairmont

Fairmont Hydraulics
Division of Fairmont Railway
Motors

A DIVISION OF
harsco
CORPORATION

Equipment

continued

Spray Units, Mixer Proportioners

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Gilmour Mfg Co
Great Northern Equipment Co
Hanson-General Prod Corp
Kuker Industries Inc
Marco Div of Llo-Mar Mfg Inc
Moyer & Son Inc
Power Spray Technology Inc
Siebring Mfg Co
Young Industries

Spreaders

Allegheny International Hardware Group
Ames Lawn & Garden Tool Co
Arizona Power Equipment Co
John Blue Co
Brinly-Hardy Co
Bunton Co
Bush Hog
Central Quality Industry Inc
Country Mfg Inc
Cushman-Ryan/OMC Lincoln
Deere & Co
Gandy Co
Jonathan Green Inc
Hahn Inc
Highway Equipment Co
Industrial Leasing Corp
Lesco Inc
Locke Mfg Inc
PBI-Gordon Corp
Precision Products Inc
PSB Co
O M Scott & Sons Co
Seymour Mfg Co
Sta-Green Plant Food Co
Swenson Spreader Co
Vandermolen Corp
Vicon Farm Machinery Inc
Warren's Turf Nursery Inc
Western Products
Wheel Spray Corp
Worksaver Inc

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Straw Blowers

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Finn Corp
Reinco Inc

Stump Cutters

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Chipmore Mfg Co
Howard S Crane Inc
Heckendorn Mfg Co
Karl Kuemmerling Inc
Lindig Mfg Corp
Olathe Mfg Inc
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Rayco Mfg Inc
Siedfire Inc
Vermeer Mfg Co
Winkler Hydraulics

Sweepers

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Giant Vac Mfg Inc
Grasshopper Co
Industrial Leasing Corp
Ingersoll Equipment Co
Mathews Co
MTD Products Inc
Olathe Mfg Inc
Precision Products Inc
Steiner Corp
Sweepster Jenkins Equipment Co
Tennant Co
Toro Co Commercial Prods Div
Turf Vac Corp

Sweepers, Water

Sweepster Jenkins Equipment Co

Tanks, Fiberglass

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Best Way Inc
Broyhill Co
Fiberglass Unlimited Inc
FMC Corp
Friend Mfg Corp
Hydroflo Corp
Jaeco Pump Co
Kay Park Rec Corp
Kuker Industries Inc
Marco Div of Llo-Mar Mfg Inc
Moyer & Son Inc
PBI-Gordon Corp
Pex Inc
Power Spray Technology Inc
Pro-Turf Mfg Inc
Raven Industries Inc
Smithco Inc
Smithco
Sorensen Sprayers Inc
Spraying Devices Inc
Strong Ent Inc
Thorco/Master Sprayers
Tuflex Mfg Co
Westheffer Co

Tanks, Metal

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Arizona Power Equipment Co
B & G Equipment Co
John Blue Co
Bock Products
Broyhill Co
Clinton Engines Corp
Custom Products of Litchfield Inc
Fabridyne Inc
Ferguson Equipment & Supply
Finn Corp
FMC Corp

Friend Mfg Corp
Great Northern Equipment Co
Hydroflo Corp
Jaeco Pump Co
Kay Park Rec Corp
Minnesota Wanner Co
Pro-Turf Mfg Inc
Son Shine Nursery
Westheffer Co
Winkler Hydraulics

Tanks, Polyethylene

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Best Way Inc
Ferguson Equipment & Supply
Hancor Inc
Hanson-General Prod Corp
Hydroflo Corp
Kuker Industries Inc
Moyer & Son Inc
Pex Inc
Pro-Turf Mfg Inc
Raven Industries Inc
Richardson Great Northern Mfg Inc
Smithco
Strong Ent Inc
Westheffer Co

Tillers

Snapper Products Equipment

Tillers, Tractor-Mounted

Bingham Equipment Co
Bush Hog
Deere & Co
Gravely International Inc
Howard Rotovator Co
Industrial Leasing Corp
Ingersoll Equipment Co
Kubota Tractor Corp
MTD Products Inc
Sensation Div Gilson
Simplicity Mfg Inc
White Outdoor Products Co
Woods Div Hesston Corp

Tool Boxes

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Arizona Power Equipment Co
Chemilene Co
Handy Mandy Mfg
Hi-Ranger Inc
Milwaukee Electric Tool Corp
Nevr-Rust Tool-Tainer Inc
Pro-Turf Mfg Inc
Thorco/Master Sprayers
Winkler Hydraulics

Topdresser

Cushman-Ryan/OMC Lincoln
Turfco Mfg Inc
Vicon Farm Machinery Inc

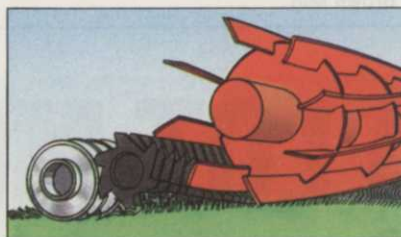


Stroke for stroke, the best in the business.

Greens King® IV Diesel.

Now, you can approach the green with the finest tournament-quality triplex greens mower and cut your fuel costs virtually in half. Because the innovative Jacobsen Greens King family introduces another industry first: *Diesel*.

The new 16½-hp. diesel Greens King IV provides more power for climbing and cutting. Plus, this diesel model has many standard features you'll only find as options elsewhere. Like full floating and pivoting reel units that steer through turns without scuffing or marking; full hydraulic drive with dynamic braking for greater control; just let up on the pedal to slow down; and, variable speed control which allows the operator to select the precise ground speed and frequency of cut for greens while still allowing full speed for transport.



By cutting horizontal runners and removing thatch, the patented Turf Groomer™ attachment creates faster, truer and healthier greens *without* lowering height of cut.

If you prefer a gas engine, both 14-hp. and 16-hp. models are available. Giving you the broadest selection of riding greens mowers in the industry. With more options, to help you meet your greens care needs more precisely.

Like the revolutionary, patented Turf Groomer™ attachment for faster, truer greens. *Without* lowering height of cut.

And, the unique *performance monitor* which digitally displays all speeds, including cutting frequency, so the operator can evaluate mowing performance, instantly.

What's more, every Greens King is backed by the most extensive support network in the industry. So, contact your Jacobsen distributor to arrange a free demonstration. And see for yourself why the Greens King family is the best in the business.

Lease and finance plans available. Jacobsen Division of Textron Inc., Racine, WI 53403. Telex: 264428.

Greens King and Turf Groomer are trademarks of Jacobsen Division of Textron.

JACOBSEN
TEXTRON

Jacobsen Division of Textron Inc.

Equipment

continued

Topdressing Brush

Standard Golf Co

Tractors & Attachments

Alamo Group
Ariens Co
Arizona Power Equipment Co
Bingham Equipment Co
Bombardier Inc
Roscoe Brown Corp
Brown Mfg
Buntion Co
J I Case
Citrus Systems Inc
Earl J Crane Inc
Cushman-Ryan/OMC Lincoln
Custom Products of Litchfield Inc
Deere & Co
Ford Tractor Operations
Fuerst Brothers Inc
Gravely International Inc
Homelite Div Textron Inc
Industrial Leasing Corp
Ingersoll Equipment Co
International Harvester Co
Kubota Tractor Corp
Massey-Ferguson
McMillen Div
Mitsubishi AG Machinery Co Ltd
Morbark Industries Inc
MTD Products Inc
Howard Price Turf Equip
Simplicity Mfg Inc
Steiner Corp
United Farm Tools Inc
Wheel Horse Products Inc
White Outdoor Products Co
Worksaver Inc
Yazoo Mfg Co

Trailers

Aer-Way
Arizona Power Equipment Co
Bingham Equipment Co

John Blue Co
Bock Products
Brown Mfg
Broyhill Co
Charles Machine Works Inc
Country Mfg Inc
Earl J Crane Inc
Howard S Crane Inc
E-Z-Go Textron
Ferguson Equipment & Supply
Giant Vac Mfg Inc
Great Northern Equipment Co
Handy Mandy Mfg
Holsclaw Brothers Inc
Lifetime Products
Magline Inc
Newman Tree Movers Ltd
Olathe Mfg Inc
Precision Products Inc
Prentek Corp
Promark Products Inc
Ravens Metal Products Inc
Smithco Inc
Snowco Inc
Son Shine Nursery
Steiner Corp
Wells Cargo Inc
Westheffer Co

Traps, Animal

International Reforestation Suppliers Inc

Tree Braces

Foresight Industries Inc
Karl Kuemmerling Inc
V I T Products

Tree Cutters

Brown Mfg

Tree Injector

Arborchem Products Co
B & G Equipment Co
Karl Kuemmerling Inc
J J Mauget Co
Moyer & Son Inc
Pro-Turf Mfg Inc
Richardson Great Northern Mfg Inc
Source Technology Biologicals Inc
Trebor Corp
Westheffer Co

Tree Movers, Spades

Big John Tree Transplanter Mfg Inc
Burkeen Mfg Co
Caretree Systems Inc
Clegg Nursery Equipment
Industrial Leasing Corp
Karl Kuemmerling Inc
Newman Tree Movers Ltd
Son Shine Nursery
Turner International Eng Ltd
Vermeer Mfg Co

Tree Protectors

American Excelsior Co
Foresight Industries Inc
International Reforestation Suppliers Inc
V I T Products

Tree Wrap

American Excelsior Co
Bartlett Mfg Co
BASF Corp
Ross Daniels Inc
General Bandages Inc
International Reforestation Suppliers Inc
Karl Kuemmerling Inc

CUT A LOT MORE TURF

Loaded with features, the newest generation of highly maneuverable Power Quint mowers virtually guarantee you decades of the finest turf care

with even small PTO-equipped tractors. Adjustable reels work against heavy duty bedknives in individual cutting units that truly float over uneven terrain. And when the job's finished, this



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ASK ABOUT OUR NEW VERTI-CUT UNITS!

Equipment

continued

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Bush Hog
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Henderson Mfg
Industrial Leasing Corp
Melroe Co
Midmark
MoTrim Inc
Olathe Mfg Inc
Seaman Parsons Corp
Vermeer Mfg Co

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Asplundh Safety Equipment Co
Bartlett Mfg Co
Beaird-Poulan/Weed Eater
Buck Haven
Bunton Co
DOB Distributors
Echo Inc
Green Machine Div HMC
Hoffco Inc/Comet Industries
Homelite Div Textron Inc
Lawnboy Prod Group
Lesco Inc
McCulloch Corp
Shindaiwa Inc
Snapper Products Equipment
Solo Inc
Tanaka USA
Tecfor Inc
Toro Co Commercial Prods Div
Winkler Hydraulics
Yazoo Mfg Co

Trucks/Truck Bodies

Altec Industries Inc

Arbortech/A Scott Fetzer Co
Bock Products
E-Z-Go Textron
Ferguson Equipment & Supply
Handy Mandy Mfg
Hi-Ranger Inc
Industrial Leasing Corp
International Reforestation Suppliers Inc
Multitek Inc
Nissan Motor Corp
Pitman Div
Prentek Corp
Pro-Turf Mfg Inc
Schodorf Truck Body & Equipment Co
Strong Ent Inc
Supreme Corp
Winkler Hydraulics

Turf Blocks

Vacuums

Arizona Power Equipment Co
Atwater Strong Div
Beaird-Poulan/Weed Eater
Billy Goat Industries
Brouwer Turf Equipment Ltd
Central Quality Industry Inc
Echo Inc
E-Z Rake Inc
Giant Vac Mfg Inc
Ingersoll Equipment Co
McCulloch Corp
Milwaukee Electric Tool Corp
MTD Products Inc
Ransomes Inc
Simplicity Mfg Inc
Snapper Products Equipment
Turf Vac Corp
White Outdoor Products Co
Woods Div Hesston Corp
Yard Vac Prods Inc

Vehicle Seats

Grand Rock Co

Vehicles, All-Terrain

Roscoe Brown Corp
Howard S Crane Inc
Carl Heald Inc
Industrial Leasing Corp
Pac-Trac
SNS Motor Imports Inc
Timberjack Inc
Yamaha

Vehicles, Electric

Cushman-Ryan/OMC Lincoln
E-Z-Go Textron
Industrial Leasing Corp
Melex USA Inc
Noland Car Co
Ross Products
Taylor-Dunn Mfg Co
Yamaha

Vehicles, Turf

Arbortech/A Scott Fetzer Co
Cushman-Ryan/OMC Lincoln
E-Z-Go Textron
Hahn Inc
Carl Heald Inc
Industrial Leasing Corp
K-D Manitou Inc
Noland Car Co
Olathe Mfg Inc
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Smithco Inc
Smithco
SNS Motor Imports Inc
Terrain Vehicles Inc
Toro Co Commercial Prods Div
Turf Vac Corp
Yamaha

WITH LESS TRACTOR

11 $\frac{1}{2}$ ' unit folds up its outboard reels automatically for easy trailering and storage.

For all the details and a free demonstration, call or write today for the name of the dealer nearest you.

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A cut above.

A professional cut.

The 48" Exmark mower's popular V-design deck makes this mower easy to handle and new adjustable pin casters allow quick height adjustments. The professional cut is turning heads across the nation.

A profitable cut.

Precision engineering, rigorous testing and exacting production procedures mean that all Exmark products, from the sleek 48" to the powerful Turf Rake, will give you years of profitable operation. Combine Exmark's quality and excellent pricing and you get lawn care equipment that's a cut above the competition.

For the dealer nearest you, call Exmark today:
402/223-4010.



*The mark of quality
in professional lawn care.*



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Equipment

continued

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Charles Machine Works Inc
Turfco Mfg Inc
Vermeer Mfg Co

Washers, Pressure

Best Way Inc
Broyhill Co
Carmel Chemical Corp
Deere & Co
Delco Mfg Co
Ferguson Equipment & Supply
FMC Corp
Ford Tractor Operations
Jaeco Pump Co
Kubota Tractor Corp
Kuker Industries Inc
Northeast Industries Inc
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Raindrip Inc
Sensation Div Gilson
Siebring Mfg Co
Sioux Steam Cleaner Corp
D B Smith & Co
Strong Ent Inc
Thorco/Master Sprayers
Westheffer Co

NEW TURF-TYPE TALL FESCUES

Now, more than ever the choice of professionals.

Join the rapidly growing number who select Tall Fescue for:

- rich, dark green dense turf
- low maintenance
- soil and climate adaptability
- tolerance to shade and cold



- tolerance to heat and drought
- resistance to disease
- durability and longer wear
- year-round beauty and performance

Oregon Turf Type Tall Fescue has all the superior qualities you want and need: beauty and rugged stability. Demand the perfect choice for low maintenance turf, ideal for playing fields, parks, home lawns, airfields, roadways, industrial and commercial sites and more.

*For more information
contact your seed dealer, or write to:*

OREGON TALL FESCUE COMMISSION
2140 Turner Rd. SE., Salem, Oregon 97302
Phone (503) 585-1157



110 KINDS OF PLANTS. 43 TYPES OF INSECTS. 1 SPRAY.

You're looking at a picture, not of a place, but of an idea: ORTHENE® Tree and Ornamental Spray, and why it means so much to professional gardeners, nurserymen, arborists and golf course superintendents.

ORTHENE offers blanket protection against an amazing variety of insect pests. It's cleared for use on a long list of trees and plants, from orchids to roses to ponderosa pine, even for turf. Cleared last year for use against turf insects, ORTHENE® has just been okayed for mole crickets in Florida—the main enemy of professionals' healthy greens and fairways.

By using ORTHENE, one

spray lets you kill pests like tent caterpillars, whiteflies, Japanese beetles and thrips on contact. Plus it provides lasting residual action against other insects from aphids to scale crawlers to sod webworms. It's a great way to make the whole job of protecting flowers, trees and turf simpler, and more effective.

If you're a professional in the plant care industry, ORTHENE can actually make it easier to do a better job of protecting plants. You ought to know more about it. To find out, send in this coupon.

*ORTHENE 75 S Soluble Powder (Florida SLN).

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ORTHENE.



ORTHO

Chevron Chemical Company

Mail to:
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Chevron Chemical Company
575 Market Street
San Francisco, CA 94105

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Name

Company

Street Address

City

State Zip



2. Equipment Companies

Advanced Drainage Systems Inc
3300 Riverside Dr
Columbus OH 43221
614-457-3051

AEG Power Tool Corp
One Winnenden Rd
Norwich CT 06360
800-243-0870

Aer-Way
20 Phoebe St
PO Box 339
Norwich ON CN
N0J 1P0
519-863-3414

Ag-Rain Inc
600 S Schrader
Havana IL 62644
309-543-4425

Ag-Share Computer Systems Inc
3334 Sheridan Blvd
Denver CO 80212
303-455-8734

★Agro-Chem Inc
11150 W Addison
Franklin Park IL 60131
312-455-6900

Agrotec Inc
PO Box 49
Pendleton NC 27862
919-585-1222

Alamo Group
PO Box 549
Sequin TX 78156-0549
512-379-1480

Algoma Net Co
1525 Mueller St
Algoma WI 54201
414-487-5577

Allegheny International Hardware Group
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PO Box 3500
Shiremanstown PA 17011
717-737-1500

Altec Industries Inc
PO Box 10264
Birmingham AL 35202
205-969-3400

American Continental Products
Box 280
Willmar MN 56201
612-235-1752

American Enka Co
See BASF Corp

American Excelsior Co
850 Ave H East
PO Box 5067
Arlington TX 76011
817-640-1555

American Honda Motor
100 W Alondra Blvd
Gardena CA 90247
213-327-8280

American Playground Device Co
1801-31 S Jackson St
PO Drawer 2599
Anderson IN 46011
317-642-0288

American Stamp Co
12290 Rising Rd Ste 400
Wilton CA 95693
916-687-7102

American Standard Co
157 Water St
Southington CT 06489
203-628-9643

American Trencher
503 Gay St
Delhi IA 52223
319-922-2981

Ames Lawn & Garden Tool Co
PO Box 1774
Parkersburg WV 26102
304-424-3000

AMETEK/Plymouth Prods Div
502 Indiana Ave
Sheboygan WI 53081
414-457-9435

Anchor Swan Div Harvard Ind Inc
8929 Columbus Pike
Worthington OH 43085
614-548-6511

Angus Sprayers
12001 N Cave Creek Rd
Phoenix AZ 85020
602-944-5591

Applied Biochemists Inc
5300 W County Line Rd
Mequon WI 53092
414-242-5870/800-558-5106

Aquamarine Div of Erectoweld Inc
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Waukesha WI 53186-7434
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Aquatic Irrigation Systems Inc
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805-965-5125

★Aquatrols Corp of America
1432 Union Ave
Pennsauken NJ 08110
609-665-1130/800-257-7797

Aquaturf
11363 San Jose Blvd
Jacksonville FL 32241
904-268-6707

Arborchem Products Co
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Fort Washington PA 19090
215-748-4455

Arbortech/A Scott Fetzer Co
3203 W Lincoln Way
Wooster OH 44691
216-264-4266

Architectural Precast Inc
2021 Longwood Ave
PO Box 23110
Columbus OH 43223
614-875-0963

Ariens Co
655 W Ryan St
Brillion WI 54110
414-756-2141

Arizona Power Equipment Co
12001 N Cave Creek Rd
Phoenix AZ 85020
602-944-5591

Arthur Enterprises Inc
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Santa Ana CA 92704
714-557-5112

Asplundh Safety Equipment Co
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Montgomeryville PA 18936
215-628-0570

★Atwater Strong Div
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PO Box 68
Atwater OH 44201
216-947-2344

Auburn Consolidated Industries Inc
2100 S "J" St
Auburn NE 68305
402-274-4911

Badger Chipper Co
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Bay City MI 48706
517-894-4579

Barebo Inc
Rd 2
Emmaus PA 18049
215-965-6018

Bartlett Mfg Co
3003 E Grand Blvd
Detroit MI 48202
313-873-7300

★BASF Corp Fibers Div Geomatrix Systems
Enka NC 28728
704-667-7946



Insecticide-Nematicide

NEW CHIPCO MOCAP® RUBS OUT GRUBS FASTER.

New CHIPCO® MOCAP® insecticide gives you the kind of grub control you need...control that's fast and effective.

CHIPCO MOCAP starts killing grubs as soon as you water it in. Other products take hours or days to work.

And all that time, grubs continue to feed, destroying your turf.

For best results, apply CHIPCO MOCAP before grubs start to feed—usually in August or early September. But if grubs get the jump on you, you can still take control quickly and effectively with fast-acting CHIPCO MOCAP.

And fast action is just part of the story. CHIPCO MOCAP gives effective control of a broad spectrum of grubs.

CHIPCO MOCAP KILLS OTHER TURF INSECTS, TOO.

CHIPCO MOCAP knocks out a broad range of surface insects, including chinchbug and sod webworm. And if nematodes or mole crickets are destroying your turf, you can destroy them, too, with CHIPCO MOCAP.

For the fastest, most effective control of grubs and other turf pests, include CHIPCO MOCAP in your turfgrass management program. CHIPCO

MOCAP from Rhône-Poulenc Inc., makers of CHIPCO® 26019 and CHIPCO® Ronstar®, is a new addition to the CHIPCO line of fine products for turfgrass protection.

For more information write to Rhône-Poulenc, CHIPCO Department, P.O. Box 125, Monmouth Junction, NJ 08852



CHIPCO® MOCAP®

Rubs out grubs.

CHIPCO, RONSTAR and MOCAP are registered trademarks of Rhône-Poulenc.

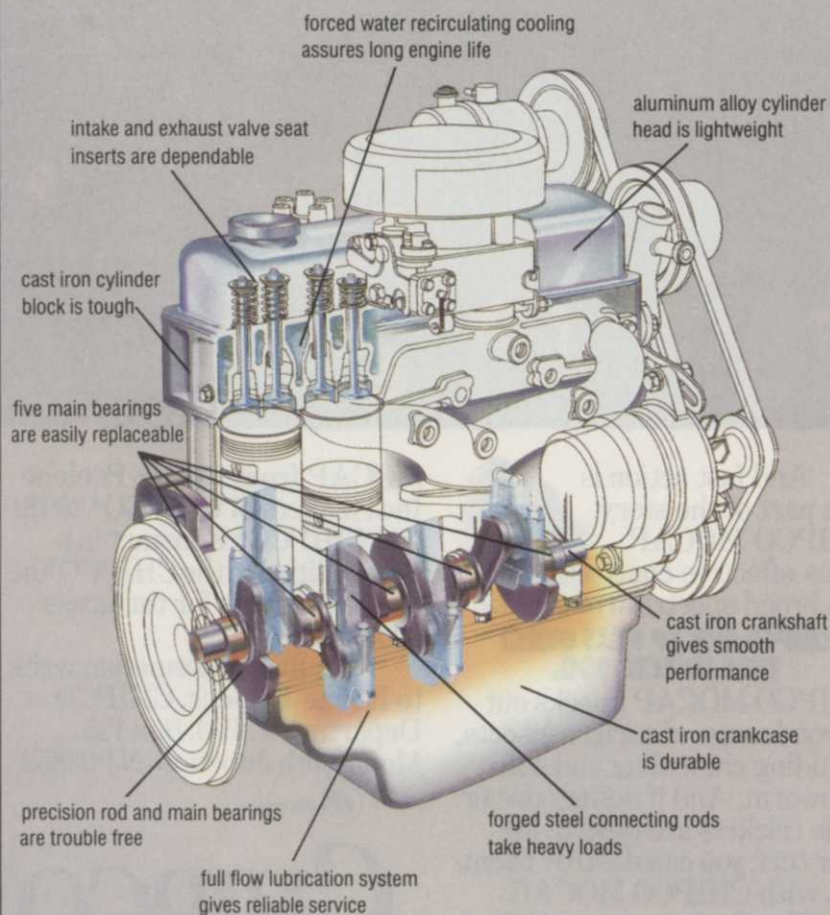
10 reasons why you should ask for a Continental R-Series engine

High performance, long life design — that's what the Continental R-Series liquid-cooled engines from Teledyne Total Power can offer you.

Take a look at the counter-weighted spheroidal cast iron crankshaft with five main bearings and forged steel connecting rods...right down to the cast iron cylinder block and crankcase, you can depend on the quality to keep up with your

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Ask for Continental R-Series engines from Teledyne Total Power, with over 5,000 distributors and service centers in over 90 countries ready to serve you. Send for your free "Reasons Why" brochure today: Teledyne Total Power, P.O. Box 181160, Memphis, TN 38181-1160, 901/365-3600, Telex: 462-1058 (ITT)



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Call toll-free: 1-800-932-2858

R-11/14

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Shreveport LA 71139
318-687-0100

Beck Greenhouse Co
1510 Pumphrey Ave
PO Box 650
Auburn AL 36831-0650
205-821-4600

Best Way Inc
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Clear Lake IA 50428
515-357-6155

B & G Equipment Co
Applebutter Ln
PO Box 130 Rte 611
Plumsteadville PA 18949
215-766-8811

Better Built Corp
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Wilmington MA 01887
617-938-1002

Big John Tree Transplanter Mfg Inc
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PO Box 608
Heber Springs AR 72543
501-362-8161

BigToys
2601 S Hood St
Tacoma WA 98409
206-572-7611

Billy Goat Industries Inc
1803 S Jefferson
Lee's Summit MO 64063
816-524-9666

Bingham Equipment Co
710 N 195th Ave
Buckeye AZ 85326
602-247-7638

BlueBird International Inc
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Englewood CO 80110
303-781-4458

John Blue Co
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Huntsville AL 35805
205-536-5581

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Elkhart IN 46515
219-294-5581

Bolens Corp
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Port Washington WI 53074

Bombardier Inc
Rue De La Montagne
Valcourt PQ Canada
JOE 2L0
514-532-2211

Bomford Center
R L Parson & Son Equipment Co
Box 28

Circle No. 165 on Reader Inquiry Card

BEFORE WE DEVELOPED THESE PROBLEM-SOLVING TURFGRASS MIXTURES, WE MARCHED THROUGH ACRES AND ACRES OF PROBLEMS.

Nobody knows the troubles we've seen.

Our Northrup King turf specialists and researchers have hoofed through salt problems, soil compaction, disease, starved turf, baked turf, cleated-to-shreds turf, and dormant winter turf—all depressing sights. But it was a road well worth our travels.

The result is a complete line of Medalist® turfgrass formulas that meet the demands of the professional turf manager.

If you've been staring down at a turf problem, look up your solution here. And if you think it's a turf problem we haven't seen, just let us know.

Our business is putting your problems behind us.



MEDALIST TURF PRODUCT	MAJOR AREAS OF USE	SPECIAL FEATURES
Athletic Pro and Athletic Pro II	For athletic turf.	Well suited for new seeding or overseeding. Fast establishing, traffic tolerant, rapid recovery. Both provide good footing.
Boulevard Mix	Any area with high pH (roadsides, sidewalks, boulevards, alkaline soils, etc.).	Contains 'Fults' and Dawson red fescue for beautiful salt-tolerant turf. Performs at low to high fertility levels.
Landscape Pro Mix	School grounds, cemeteries, golf course roughs, home lawns.	Establishes fast. Adapts to broad range of conditions and management levels. Low to moderate fertility needs.
Overseeder II Mix	Fairways, tees, athletic fields.	Rapid germination and establishment. Withstands heavy traffic and resists diseases. Penetrates compacted soils.
Medalist North Mix	Fairways, tees, cart paths, wear areas.	Quality turf for high traffic areas. Clean mowing and disease resistant.
Premium Sod Blend	Commercial sod production.	Exceptional dark green color. Tolerates light shade. Superior disease resistance. Rapid sod producer.
Renovator Pro Mix	Problem solver for heavy traffic areas (athletic fields, golf tees, and fairways).	Penetrates compacted soils and combats <i>Poa annua</i> . Adaptable to most geographic regions.
Medalist Brand Overseeding Products	Winter overseeding of dormant bermudagrass.	Establishes rapidly and evenly. Tolerates traffic while providing a superior putting surface. Smooth spring transition.

*Ask your Northrup King distributor about Medalist Turf Products to solve your turf problems.
Or write Northrup King Medalist Turf Products, P.O. Box 959, Minneapolis, MN 55440.*

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Bouldin & Lawson Inc
Rte 10 Box 208
McMinnville TN 37110
615-668-4090

★ Bowie Industries Inc
1004 E Wise St
PO Box 931
Bowie TX 76230
817-872-1106/800-433-0934

Briggs & Stratton Corp
12301 W Worth St
Milwaukee WI 53222
414-259-5333

★ Brillion Iron Works Inc
200 Park Ave
Brillion WI 54110
414-756-2121

Brinly-Hardy Co
340 E Main St
Louisville KY 40202
502-585-3351

★ Brouwer Turf Equipment Ltd
Woodbine Ave
Keswick ON Canada
L4P 3E9
416-476-4311
7320 Haggerty Rd

Canton MI 48187
313-459-3700

Roscoe Brown Corp
RR 1 Box 48
Lenox IA 50851
515-333-4551

Brown Mfg Corp
Route 3
Ozark AL 36360
205-795-6603

Broyhill Co
N Market Square
Dakota City NE 68731
402-987-3412

Buck Haven
Box 112 Kendricks Bldg
Northport WA 99157
604-367-9202

Buckner Irrigation
4381 N Brawley Ave
Fresno CA 93711
209-275-0500

Buffalo Turbine Agricultural Equipment Co
Industrial Place
Gowanda NY 14070
716-532-2272

★ Bunton Co
4303 Poplar Level Rd

PO Box 33247
Louisville KY 40232
502-966-0550

Burkeen Mfg Co
11200 High Point Cove
Olive Branch MS 38654
601-895-4150

Bush Hog
PO Box 1039
Selma AL 36701
205-872-6261

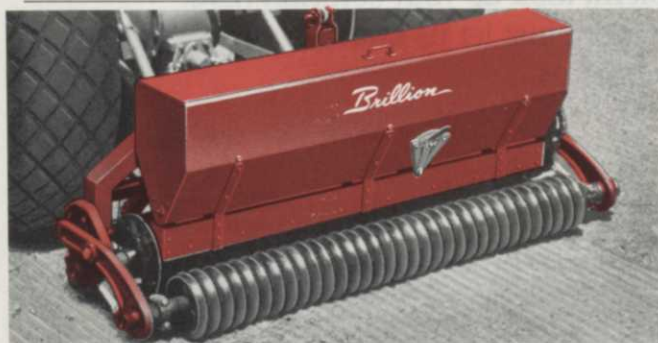
Cambridge Soil Services of America Inc
106 Robert Gene St
Glencoe AL 35905
205-492-7847

Caretree Systems Inc
160 Outerbelt St
Columbus OH 43213
614-861-7775

Laurie Carlson & Assoc Ltd
PO Box 35
Waunakee WI 53597
608-849-4770/849-5166

J I Case Outdoor Power Equipment Div
700 State St
Racine WI 53404
414-636-6011

Caterpillar Lift Trucks
Towmotor Corp



**Thick turf in one pass
...at less cost**

BRILLION'S POPULAR LANDSCAPE SEEDER
eliminates costly hand labor and seeds big jobs in less time, at less cost. In one pass, you end up with sure, even, thick stands... the best looking seedings you've ever seen.

The Brillion presses out air pockets and firms the soil. It sows all grass seed mixtures... accurately, uniformly, and at the rate you select. And it sows the seed shallow, within the top 1/4" of soil, in a firmed, clod-free seedbed that cuts seed waste and promotes high germination and healthy growth.

In addition to Brillion's 5'4" Landscape Seeder, shown above, there's the 10' Turf-Maker Seeder designed for sod raisers and growers with larger areas to seed. Write or call Brillion for full-color literature on these two seeders today.



Brillion Iron Works, Inc.
200 Park Avenue, Dept. 41-986
Brillion, WI 54110
Tel. 414/756-2121

SURE-STAND SEEDINGS EVERY TIME

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110 WEEDS TREES & TURF/SEPTEMBER 1986

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**IMPERIAL WALK
BEHIND AERATOR**

(Patent Pending)

SPECIFICATIONS:

- Engine—5 HP, 4 Cycle Briggs and Stratton, 6 to 1 Gear Reduction
- Weight—450 lbs.
- Drive—Chain Driven and Belt
- Aerating Path—20"
- Width—Overall 30"
- Drive Wheel Castings—6-34 # each
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- Retractable Tines
- Adjustable Handle for Ease of Handling



**is rugged and
requires little maintenance.**

NOW, See And Buy the BEST! . . .

A Demonstration Will Convince You!



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AND ASSOCIATES

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Ph. 419-447-8313

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★ Advertiser. See Advertiser's Index

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continued

Sub of Caterpillar Tractor Co
7800 Tyler Blvd
Mentor OH 44060
800-528-6050 Ext 812

Caterpillar Tractor Co
100 NE Adams
Peoria IL 61528

Central Quality Industries Inc
900 S Division Ave
Polo IL 61064
815-946-2311

A B Chance Co
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Centralia MO 65240
314-682-8450

Charles Machine Works Inc
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Perry OK 73077
405-336-4402

Chemilene Co
1818 N Floradale
El Monte CA 91733
818-443-9475
213-686-0871

Chemilizer Products Inc
12745 49th St N
Clearwater FL 33520
813-576-7211

Chipmore Mfg Co
6 Johnson Ct
Bay City MI 48706
517-894-4578

Chisholm-Ryder Co
College & Highland Ave
Niagara Falls NY 14305
716-285-9186

J A Cissel Mfg Co
Squankum Yellowbrook Rd
PO Box 339
Farmingdale NJ 07727
201-938-6600 NJ/800-631-2234

Citrus Systems Inc
1300 E Hwy 50
Winter Garden FL 32787
305-656-6858

Clean City Squares Inc
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St Louis MO 63144
314-968-2950 MO/800-231-1327

Clean-Flo Laboratories Inc
4342 Shady Oak Road
Hopkins MN 55343
612-935-2137

Clegg Nursery Equipment
909 N Michigan St
Plainfield IL 60544
815-436-2357

Clements Associates Inc
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Newton IA 50208
515-792-8285

Clinton Engines Corp
Clark & Maple Sts
Maquoketa IA 52060
319-652-2411

Club Car Inc
PO Box 4658
Augusta GA 30907
404-863-3000

Columbia ParCar Corp
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Deerfield WI 53531
608-764-5474/800-222-GOLF

Columbia Cascade Lumber Co
1975 SW Fifth Ave
Portland OR 97201
503-223-1157

Comanche Steel Products Inc
343 N W W White Rd
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San Antonio TX 78220
512-333-5210

Continental Custom Bridge Co
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Alexandria MN 56308
612-852-7500

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Lock moisture in the leaves and increase plant survival — use FOLICOTE™ transpiration minimizer. If you're transplanting or transporting ornamental plants or sod...or want to protect established plants from weather extremes, FOLICOTE™ reduces moisture loss by partially blocking stomates, without limiting actual photosynthesis.

FOLICOTE™ is a wax emulsion that mixes easily with water and stays mixed. When used as directed, FOLICOTE™ has

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And FOLICOTE™ costs as much as 50% less to use than any other anti-desiccant or anti-transpirant on the market.

Your plants use available water more efficiently and you profit from increased plant survival when you use FOLICOTE™. If your local distributor doesn't carry FOLICOTE™ yet, or you'd like our free brochure, call 1-800-257-7797, in NJ (609) 665-1130.

FOLICOTE™

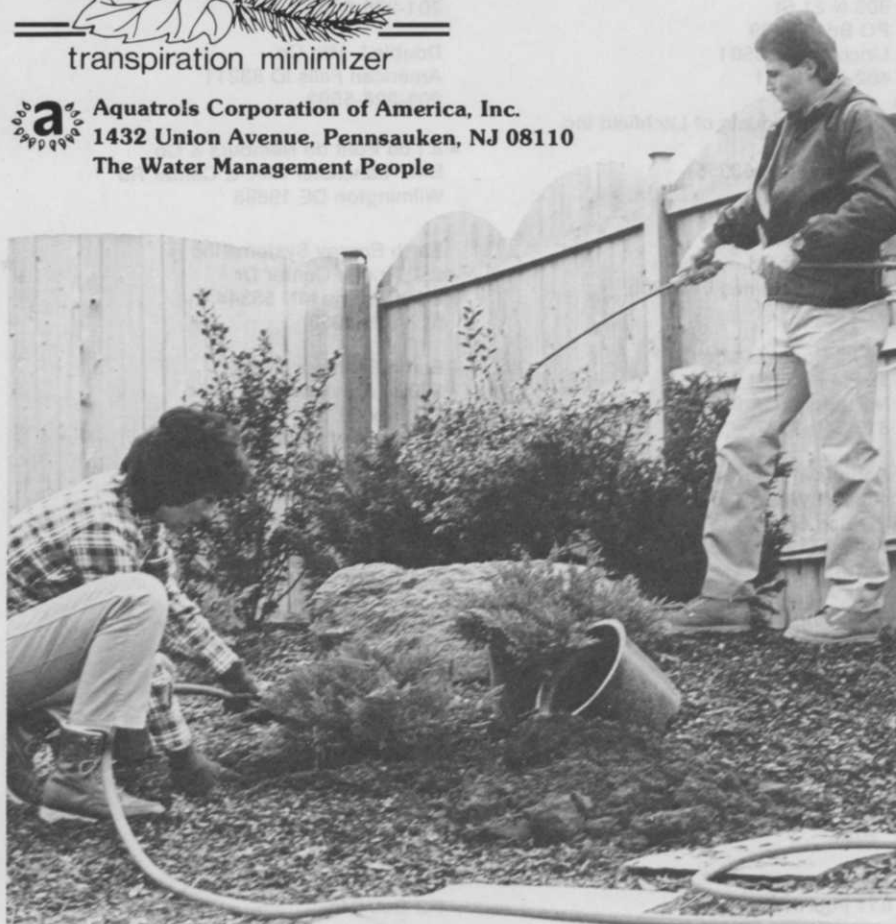


transpiration minimizer



Aquatrols Corporation of America, Inc.
1432 Union Avenue, Pennsauken, NJ 08110
The Water Management People

Circle No. 105 on Reader Inquiry Card



Equipment Companies

continued

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St Paul MN 55164
612-221-1100

Corona Clipper Co
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Corona CA 91719
714-737-6515

Country Mfg Inc
PO Box 104
Fredericktown OH 43019
614-694-9926

Covers Unlimited
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Cleveland OH 44109
216-398-1940

Coxwells Inc
6000 S Avalon Blvd
Los Angeles CA 90003
213-232-7171

★ Earl Crane Inc
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Tiffin OH 44883
419-447-8313

Howard S Crane Inc
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Oneida NY 13421
315-363-3390

★ Cushman Ryan/OMC Lincoln
900 N 21 St
PO Box 82409
Lincoln NE 68501
402-475-9581

Custom Products of Litchfield Inc
PO Box 718
Litchfield MN 55355
612-693-3221

Ross Daniels Inc
1720 Fuller Rd
West Des Moines IA 50265
515-225-6471

Dayni Controls Mfg Co
18414 Eddy St
Northridge CA 91325
818-349-8367

★ Dedoes Industries Inc
1060 W West Maple
PO Box 575
Walled Lake MI 48088
313-624-7710

Deep Root Corp
7354 Bolsa Ave
Westminster CA 92683
714-898-0563

★ Deere & Co
John Deere Rd
Moline IL 61265
309-752-8000/800-447-9126/800-322-6796

Delavan Corp
811 Fourth St

West Des Moines IA 50265
515-274-1561

Delco Mfg Co
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Siloam Springs AR 72761
501-524-6471

Delmarva Textile Co
254 N Rehoboth Blvd
Milford DE 19963
302-422-7531

Devpro Insectocutor Div
80 Telegraph Rd
PO Box 46
Middleport NY 14105
716-735-7768

Didier Log Splitters
7777 N 73rd St
Milwaukee WI 53223
414-354-2310

Display Data Corp
Executive Plaza IV
Hunt Valley MD 21031
301-584-1985

DOB Distributors
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Silver Springs MD 20904
301-622-9397

Doggett Corp
Cherry St
Lebanon NJ 08833
201-236-6335

Double L Mfg Co
American Falls ID 83211
208-226-5592

★ E I du Pont de Nemours & Co
BMP Lancaster Pike & Center Rd
Wilmington DE 19898

Earth Energy Systems Inc
250 Prairie Center Dr
Eden Prairie MN 55344
612-829-1933

Eaton Brothers Corp
3530 Lakeview Rd
PO Box 60
Hamburg NY 14075
716-649-8250

Echo Inc
400 Oakwood
Lake Zurich IL 60047
312-540-8400

Edmont Div Becton Dickinson & Co
1300 Walnut St
Coshocton OH 43812
614-622-4311

Edwards Equipment
4312 Main St
Yakima WA 98903
509-248-1770

Ellis Mfg Co
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Reston VA 22090
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Encap Products Co
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312-593-6464

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Paper Corp
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Tuscaloosa AL 35404
205-553-6200 Ext 461

★ Excel Industries Inc
PO Box 7000
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316-327-4911

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Beatrice NE 68310
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Fabridyne Inc
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Northglenn CO 80233
800-325-5360

Fox Valley Systems Inc
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Cary IL 60013
800-323-4770

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Bluffton IN 46714
219-824-2900

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PO Box 385
Gasport NY 14067
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Fuerst Brothers Inc
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Oregon IL 61061
815-732-3239

FXG Corp
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Woburn MA 01801
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Gandy Co
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Owatonna MN 55060
507-451-5430

General Bandages Inc
8300 Lehigh Ave
Morton Grove IL 60053
312-966-8383

Giant-Vac Mfg Inc
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Box 195
South Windham CT 06266
203-423-7741

Gilmour Mfg Co
PO Box 838

Somerset PA 15501
814-443-4802

Glenmac Inc
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701-252-9300

★ Goossen Industries
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Beatrice NE 68310
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Mentor OH 44060
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316-345-8621

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201-938-7007 NJ/800-526-2303 | Henderson Mfg Co
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319-927-2828 | H D Hudson Mfg Co
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Overland Park KS 66203
913-677-0094 |
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20710 S Alameda St
Long Beach CA 90810
213-603-9888 | Hendrix & Dail Inc
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Greenville NC 27835
919-758-4263 | Hunter Industries
1940 Diamond St
San Marcos CA 92069
619-744-5240 |
| Green Pro Cooperative Serv
380 S Franklin St
Hempstead NY 11550
800-645-6464 | Herd Seeder Co
US 35 Southeast
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219-753-6311 | Hydroflo Corp
Plumsteadville PA 18949
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Sylvania Lighting Center
Danvers MA 01923
617-777-1900 | Highway Equipment Co
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Laguna Niguel CA 92677
714-831-6000 |
| Guest Industries Inc
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Torrington CT 06790
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| Hach Co
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Tacoma WA 98403
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St Paul MN 55104
612-644-4666

King Brothers Industries
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Valencia CA 91355
805-257-3262

Kohler Co
444 Highland Dr
Kohler WI 53044
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Compton CA 90220
213-537-2531

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Kuker Industries Inc
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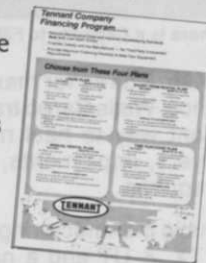
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309-853-3387

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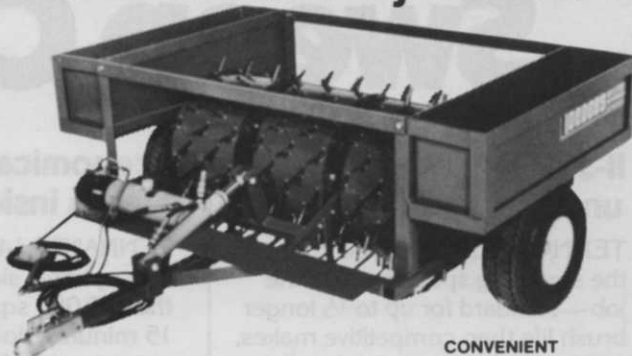
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713-932-1405

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Systems
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Cambridge OH 43725
614-439-2725

Mott Corp
500 Shawmut Ave
PO Box 518
LaGrange IL 60525
312-354-7220

Moyer & Son Inc
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215-723-6001

MTD Products Inc
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Strongsville OH 44136
216-225-2600

Mud Cat Div National Car Rental System
Inc
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612-893-6400

Multitek Inc
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Musco Sports-Lighting Inc
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816-333-7281

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Cleveland OH 44134
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Pitman Div
Third & Duck Rd
PO Box 120
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816-763-6000

Playworld Systems
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Holland MI 49423
616-399-1963

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Janesville IA 50647
319-987-2976

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Lowell MI 49331
616-897-9211

Robush Engineering Co
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Root-Lowell Corp
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Lowell MI 49331
616-897-9211

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717-287-9624

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413-773-5471

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Waltham MA 02154
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414-544-4090

Schodorf Truck Body & Equipment Co
885 Harmon Ave
Columbus OH 43223
614-228-6793

★ O M Scott & Sons Co
14111 Scottslawn Rd
Marysville OH 43041
513-644-0011

Seaman Parsons Corp
147 E Becher St
Milwaukee WI 53207
414-769-8900

Sea-Ranch
Rte 2 Box 604
Sheridan AR 72150
501-942-2515

Senninger Irrigation Inc
6416 Old Winter Garden Rd
Orlando FL 32811
305-293-5555

Sensation Div Gilson
PO Box 152
Plymouth WI 53073
414-893-1011

Seymour Mfg Co
500 N Broadway
Seymour IN 47274
812-522-2900

Shaver Mfg Co
5727 NE 16
Des Moines IA 50313
515-266-7550

Shindaiwa Inc
11975 SW Herman Rd
Sherwood OR 97140
503-692-3070

Sidefire Inc
6 Johnson Ct
Bay City MI 48706
517-894-4570

Siebring Mfg Co
303 S Main
George IA 51237
712-475-3317

Simplicity Mfg Inc
500 N Spring St
Port Washington WI 53074
414-377-5450

Sioux Steam Cleaner Corp
Sioux Plaza
Beresford SD 57004
605-763-2776

Skil Corp
7330 W Peterson Ave
Chicago IL 60646
312-286-7330

D B Smith & Co
414 Main St
Utica NY 13501
315-735-5223

Smithco Inc
11 West Ave
Wayne PA 19087
215-688-4009

Smith Precision Products
1299 Lawrence Dr
Newbury Park CA 91320
805-498-6616

Seymour Smith & Son Inc
900 Main St
Oakville CT 06779
203-274-2558

Snapper Power Equipment
535 Macon Rd
McDonough GA 30253
404-957-9141

Snowco Inc
4350 McKinley St
PO Box 12067
Omaha NE 68112
402-453-2200

SNS Motor Imports Inc
500 Esplanade Dr Ste 1000
Oxnard CA 93030
805-485-3300

Soilmoisture Equipment Corp
801 S Kellogg Ave
Goleta CA 93117
805-964-3525

Solarwest Electric Inc
232 Anacapa St
Santa Barbara CA 93101
805-963-9667

Solo Inc
5100 Chestnut Ave
Newport News VA 23605
804-245-4228

Son Shine Nursery
PO Box 776
Carthage MO 64836
417-358-8173/800-641-4552

Sorensen Sprayers Inc
Box 344 Airport Rd
Worthington MN 56187
507-376-6230

Source Technology Biologicals
2850 Metro Dr
Minneapolis MN 55420
612-854-9426 MN/800-ELM-TREE

Southern Mill Creek Products Co
Alpatah St
PO Box 420981
Miami FL 33142
305-635-0321

Sperry New Holland
See New Holland

Equipment Companies

continued

- Spraying Devices Inc
8333 Doe St
Visalia CA 93291
209-651-1306
- Sta-Green Plant Food Co
PO Box 540
Sylacauga AL 35150
205-245-5282
- ★ Standard Golf Co
220 E Fourth St
PO Box 68
Cedar Falls IA 50613
319-266-2638
- Stanley Hydraulic Tools
3810 SE Naef Rd
Milwaukie OR 97222
503-659-5660
- Steiner Corp
930 Penn Ave
PO Box 85
Orrville OH 44667
216-683-0055
- Strong Entertainment Inc
14090 SW 144 Ave Rd
Miami FL 33186
305-235-0967
- Strong Mfg Co
PO Box 8068
Pine Bluff AR 71611
501-535-4753
- Submatic Irrigation Systems
PO Box 246
Lubbock TX 79408
806-747-9000
- Sudbury Lawn & Garden Products
301 W Osborn
Phoenix AZ 85013-3928
602-285-1660
- ★ Supreme Corp
16500 CR 38
PO Box 463
Goshen IN 46526-0463
219-642-4888
- Swan Hose
PO Box 509
Worthington OH 43085
614-548-6511
- Sweepster Jenkins Equipment Co
2810 Baker Rd
Dexter MI 48130
313-426-3961
- Swenson Spreader Co
127 Walnut St
Lindenwood IL 61049
815-393-4455
- Tanaka (USA) Co Ltd
22121 Crystal Creek Blvd SE
Bothell WA 98021
206-481-2000
- Taylor-Dunn Mfg
2114 W Ball Rd
Anaheim CA 92804
714-956-4040
- Tecfor Inc
224 Thorndale Ave
Bensenville IL 60106
312-595-8500
- Teco Inc
9733 Indianapolis Rd
PO Box 9247
Fort Wayne IN 46809
219-747-1631
- ★ Tecumseh Products Co
900 N St
Grafton WI 53024
414-377-2700
- ★ Teledyne Total Power
3409 Democrat Rd
Memphis TN 38118
901-365-3600
- Telsco Industries (Weather-Matic)
3301 W Kingsley Rd
Garland TX 75041
214-278-6131
- ★ Tennant Co
701 N Lilac Dr
PO Box 1452
Minneapolis MN 55440
612-540-1200/800-328-5727
- Terracare Products Co
Hwy 22 & 33
PO Box 506
Pardeeville WI 53954
608-429-3402
- Terrain Vehicles Inc
221 Mitchell Court
PO Box 418
Addison IL 60101
312-953-8747
- Thermoguard Co
412 113th St
Arlington TX 76011
817-640-8733
- Thompson Mfg Co
PO Box 1500
Chino CA 91710
714-591-4851
- Thorco/Master Sprayers
1818 N Floradale South
El Monte CA 91733
818-350-8964
- Timberjack Inc
37 Lakeview Estates
Northport AL 35476
205-339-8827
- ★ Toro Co Commercial Prods Div
8111 Lyndale Ave S
Minneapolis MN 55420
612-887-8805
- Toro Co Irrigation Div
5825 Jasmine St
Riverside CA 92502
714-688-9221
- Tradewinds Inc
2339-41 Tacoma Ave S
PO Box 1191
Tacoma WA 98401
206-272-4887
- Travelrain Sprinkler
239 N Robertson Blvd
Beverly Hills CA 90211
213-276-3213/276-8848
- ★ Trebor Corp
4045-A Jonesboro Rd
Forest Park GA 30050
404-366-0957/800-331-1449
- Tri-Con Inc
27331 Tungsten Rd
Cleveland OH 44132
216-261-3400
- Trojan Playground Equipment Mfg Co
11-2nd Ave NE
St Cloud MN 56301
612-251-3080
- Tuflex Mfg Co
1406 SW Eighth St
Pompano Beach FL 33060
305-785-6402
- Turfco Mfg Inc
3456 N Washington Ave
Minneapolis MN 55412
612-588-0741
- Turfgrass Products Corp
2210 NE 124 St
North Miami FL 33181
305-893-6449
- Turf Vac Corp
2750 Gundry Ave
Signal Hill CA 90806
213-426-9376
- Turner International (Eng) Ltd
6480 Chupp Rd
Lithonia GA 30058
404-482-7661
- Union Fork & Hoe Co
500 Dublin Ave
PO Box 1940
Columbus OH 43216
614-228-1791
- United Farm Tools Inc
4540 W Washington St
Charleston WV 25313
304-744-5865
- Universal-Gerwin Div
460 Main St
Saranac MI 48881
616-642-9413
- Vandermolen Corp
119 Dorsa Ave
Livingston NJ 07039-1092
201-992-8506
- Vermeer Mfg
One mile E on New Sharon Rd
Pella IA 50219
515-628-3141

Equipment

continued

Vicon Farm Machinery Inc
3741 Cook Blvd
PO Box 6313
Chesapeake VA 23323
804-485-1600

V I T Products Co
15561 Product Lane D-4
Huntington Beach CA 92649
714-891-8338

Vrisimo Mfg Co
PO Box 699
Ceres CA 95307
209-537-5746

Walker Mfg Co
1839 E Harmony Rd
Ft Collins CO 80525
303-226-1514

Jim Walls Co
12820 Hillcrest Rd Ste 119
Dallas TX 75230
214-239-8577

Warren's Turf Nursery Inc
Chadbourne & Cordelia Rds
PO Box 459
Suisun City CA 94585
707-422-5100 CA/800-828-8873

Weather-Matic
See Telsco Industries

Weldco (WA) Inc
2328 Roosevelt Ave
PO Box 8
Enumclaw WA 98022
206-825-3581

★ Wells Cargo Inc
McNaughton
PO Box 728-473
Elkhart IN 46515
800-348-7553/219-264-9661

Western Cascade Inc
1150 N Red Gum St
Anaheim CA 92803
714-630-4640

Western Products
7777 N 73 St
Milwaukee WI 53223
414-354-2310

Western Wood Structures Inc
20675 SW 105 St
Tualatin OR 97062
503-692-6900

Westheffer Co
1235 N Third St
PO Box 363
Lawrence KS 66044
913-843-1633

Westinghouse Electric Corp Lamp Div
Bloomfield NJ 07003

Wheel Horse Products Inc
515 W Ireland Rd
PO Box 2649
South Bend IN 46680-9988
219-291-3112

Wheel Spray Corp
PO Box 97
Delafield WI 53018
414-646-8640

White Outdoor Products
PO Box 8875
Cleveland OH 44136
216-273-5272

WINCO Div Dyna Technology Inc
See Earth Energy Systems Inc

Winkler Hydraulics
9705 Enloe
South Elmonte CA 91733
818-443-6687

Wood/Chuck Chipper Corp
PO Drawer 400
Shelby NC 28150
704-482-4356

Woods Div Hesston Corp
Hwy 2 South
PO Box 1000
Oregon IL 61061
815-732-2141

Worksaver Inc
S State St Rd
Litchfield IL 62056
217-324-5973

Wylie Sprayers
PO Box 399
Hewitt TX 76643

Yamaha
6555 Katella Ave
Cypress CA 90630
714-761-7304

Yard Vac Prods Inc
3849 E Ventura
Fresno CA 93702
209-251-7125

Yazoo Mfg Co
3650 Bay St
PO Box 4449
Jackson MS 39216
601-366-6421

York Modern Corp
PO Box 488
Unadilla NY 13849
607-369-7111

Young Industries
1033 Wright Ave
Mountain View CA 94043
415-968-8486

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3. Chemicals

This section is broken down by chemical product with companies providing that chemical listed below.

Products common name (in parentheses) and brand names are listed on the line following the company name.

Absorbefacient (Aquatic)

Aquashade Inc
(dyes) Aquashade

Adjuvant/Carrier

Arborchem Products Co
(Phytobland Oil) Clean Cut; (Phytobland oil, terpene) Clean Cut and Pine;
Arborchem basil oil
Carmel Chemical Corp
(Gylcol) Carmel Carrier II
W A Cleary Corp
(non-ionic surfactant) All Wet; (fatty acid and esters, non-ionic) Super Wet
Drexel Chemical Co
(Petroleum Oils) Drexel Peptoil;
(Alkylaryl polyethoxyethanol, n-butanol) Drexel Surf-Ac 820
Lesco Inc
(non-ionic surfactant) Lesco Spreader Sticker; (non-ionic wetting agent) Lesco West
PBI-Gordon Corp
(Petroleum oil-paraffin base, surfactant blend) Adjumer
Precision Laboratories Inc
(Vegetable oil base) Pen-A-Trate
Regal Chemical Co
(Non-ionic wetting agent) DiAqua
Rohm & Haas Co
(Alyl aryl polyoxyethylene glycols) Triton
Stull Chemical Co
(Encapsulation & Suspension agent) Bivert
UAP Special Products Inc
Activator 90

Algaecide

Applied Biochemists Inc
(Mixed Copper Ethanolamine Complexes) Cutrine-Plus, Cutrine-Plus Granular, Aquatrine

Ciba Geigy Corp
(Simazine) Aquazine
Clean-Flo Laboratories Inc
(Buffered Alum) Lake Cleanser
Faesy & Besthoff Inc
Copper Sulphate
Great Lakes Biochemical Co
(liquid Chelated Copper) Algimycin PLL-C + (pelleted Chelated Copper Slow Release Algimycin PLL-C
Lesco Inc
(Elemental Copper) Lescocide plus Liquid and Granular
Pennwalt Corp
(Endothall) Hydrothol 191
Southern Mill Creek Products Co

Antitranspirant

Aquatrols Corp of America
(refined paraffin wax emulsion) Folicote
Bonide Chemical Co
(Acrylic Polymer Resins) Bonide Rabbit and Deer repellent
W A Cleary Chemical Corp
(acrylic polymers) Clearspray
Encap Products Co
Wilt-Pruf
PBI-Gordon Corp
(Polyethylenes/Polyterpines) Transfilm
Rockland Chemical Co
(Winter-Shield) Rockland
Wilt-Pruf Products Inc
Wilt-Pruf

Bacteriocide

Carmel Chemical Corp
(Quat) Carmel Disinfectant Solution
J J Mauget Co
(Streptomycin) Inject-A-Mycin 'S'
Merck & Co
(Streptomycin) AGRI-STREP

Colorant

Aquashade Inc
(Dye Colorant) Aquashade
Arborchem Products Co
(Oil Soluble blue) Basal Dye
W A Cleary Chemical Corp
(pigments) Greenzit, Super Greenzit, Super Greenzit C
Doggett Corp
Doggett Blue/Green Dye
Lesco Inc
(pigment) Lesco Green
Mallinckrodt Inc
Turf Colorant, Auragreen, Vitalon
Milliken Chemicals
Blazon
Precision Laboratories Inc
(blue dye) Signal; (yellow/green & hot pink dye) Tracer
Regal Chemical Co
Dy'on
Rockland Chemical Co
(Polymers) Green-Top

Compatibility Agent

Drexel Chemical Co
(Polyhydroxy Aliphatic compounds) Drexel Mix

Precision Laboratories Inc
(Alcohol Sulphates & Adjuvants) Compliment
Stull Chemical Co
(Encapsulation & Suspension agent) Bivert

Defoamer

Applied Biochemists Inc
(Silicon emulsion) Foamtrine
Arborchem Products Co
(Dimethylsiloxane) Arborchem
Carmel Chemical Corp
(Silicone) Carmel Defoamer
W A Cleary Chemical Corp
(Dimethylsiloxane) Cleary's
Great Lakes Biochemical Co
(Silicone Emulsion) Foam Out
Lesco Inc
(Silicone) Lesco Defoamer
Montco Products Corp
(Silicone) Zap!
Moyer Chemical Co
Anti-Foam, Foam Fighter
Precision Laboratories Inc
(Silicon Emulsion) Control, Knockdown
Regal Chemical Co
(Alkyl Polyoxyethylene) Foam-X

Drift Retardant

Arborchem Products Co
(Acrylic polymer, polysaccharide) Clean Way Drift Control; (Acrylic polymer) 38-F Drift Control
W A Cleary Chemical Corp
Drift-Proof
Chevron Chemical Co
Orthothol
Nepera Inc
(Polyacrylates) Viterra 800
Precision Laboratories Inc
(vegetable oil base) Pen-A-Trate
Stull Chemical Co
(Encapsulation & Suspension agent) Bivert
UAP Special Products
Chemtrol

Fertilizer, Tree

Adco Works
Eezy Grow
J & L Adikes Inc
(Urea-from) Gro-Well
Agro-Chem Inc
(Primary, Secondary & Micro Nutrients) Tes
The Andersons
(complex Iron) Lawn Pride Liquid Iron
C-I-L Inc
Sulfur Coated Urea
W A Cleary Chemical Corp
(Ureaformaldehyde concentrate) Fluf 18-0-0, Fluf 16-2-4
Creative Sales Inc
(Fe, Mn, Zn, N, P, K) Medicap
Ross Daniels Inc
Ross Fertilizer Stakes
Doggett Corp
(slow release) XL-Injecto Feed 32-7-7, XL-Injecto Feed 12-24-24; (NPK) XL-Spray-Fol 30-10-10

Chemicals

continued

Estech Branded Fertilizers Inc Specialty Prods Div
(Isobutylidene Diurea) Woodace
Faesy & Besthoff Inc
Growth Products Ltd
(Slow release Methylene Diurea liq)
Nitro-26 PLUS
Hawkeye Chemical Co
(Methylol ureas, methylene ureas, ureaformaldehyde, mono urea nitrogen and low salt index potassium)
Formolene, Slo-Release
La Roche Industries Inc
N-P-K Vertagreen
Lebanon Chemical Corp
(16-4-8) Lebanon Pro
Lesco Inc
(sulfur coated nursery grade) Lesco 20-6-12, 14-26-6, 14-14-14 all with minors; (Hi Trace) Lesco Iron + N
J J Mauget Co
Stemix, Iron Zinc Stemix, Zinc Stemix
MCI Agsystems
(Triamino-triazine & Urea) MCI 55N, MCI 60N
Minntralia Mfg Inc
(Fish, Urea Nitrogen, Phosphoric Acid, Potassium Hydroxide, Norwegian Seaweed) Sunrane 8-8-8 Fish & Seaweed Fertilizer
Moyer & Son Inc
(16-3-3- 55% CRN) Arbor Flo; (9-27-5) RootFlo; (Iron Sulfur Chelate) MiroFlo Micronutrients
Moyer Chemical Co
Superblend 20-9-9, Container Spec 21-7-7
NOR-AM Chemical Co
(Ureaform) NitroForm-Slow Release Nitrogen
Plant Marvel Laboratories Inc
Plant Marvel
Rockland Chemical Co
(10% WIN-Nitroform, Iron, Copper, Manganese & Zinc) Rockland Soluble Tree Food 30-8-8
Sierra Chemical Co
Agriform
Southern Mill Creek Products Co

Fertilizer, Turf

J & L Adikes Inc
(Urea-form, Sulphur coated Urea) Gro-Well
Agro-Chem Inc
(Primary, Secondary & Micro Nutrients)
Green Magic; (Soil Penetrant) Nutra-aid; (Soil Cleanser) Relief; (Primary, Secondary & Micro Nutrients)
Strengthen & Renew
American Pelletizing Corp
(Lime, Gypsum) Reveille Pelletized; (Lime) Vita Power Pelletized
The Andersons
(N, P, K) Tee Time, Lustre Lawn, Liqua Line, custom mix
Center Plains Industries Inc
Ultra Turf, Zipp, Nitran
C-I-L Inc
Sulfur Coated Urea
W A Cleary Chemical Corp
(Ureaformaldehyde concentrate) Fluf 18-0-0, Fluf 16-2-4; (micronutrients) Trugreen

Doggett Corp
(NPK) XL-Turf Special 28-7-14; (slow release) XL-UF Turf Special 34-4-7
Estech Branded Fertilizers Inc Specialty Prods Div
(Isobutylidene Diurea) IBDU, Par Ex Professional Products
Faesy & Besthoff Inc
Garfield Williamson Co
Lebanon-Swift
Jonathan Green & Sons
Spring Green-Up 20-4-4
Growth Products Ltd
(Slow release Methylene Diurea liq)
Nitro-26 CRN
Hawkeye Chemical Co
(Methylol ureas, methylene ureas, ureaformaldehyde, mono urea nitrogen and low salt index potassium)
Fomolene, Slo-Release, Form-U-Sol
La Roche Industries Inc
(N-K-P) Vertagreen
Lebanon Chemical Corp
(N, P, K, S, Fe) Country Club, Greenskeeper, Green Gold, Turfmaster, Lebanon Pro
Lesco Inc
(blends with SCU, UF and/or all chemical) Lesco
MCI Agsystems
(Triamino-triazine & Urea) MCI 55, MCI 60N
Milwaukee Metropolitan Sewerage District
(6-2-0 Natural Organic) Milorganite
Minntralia Mfg Inc
(Fish, Urea Nitrogen, Phosphoric Acid, Potassium Hydroxide, Norwegian Seaweed) Sunrane 8-8-8 Fish & Seaweed Fertilizer
Moyer & Son Inc
TurfFlo; (Iron Chelate) MicroFlo Micronutrients; (18-0-0 UF 30-0-2 UF) Fluf & Fomolene Super Blend 20-9-9
Moyer Chemical Co
Lawn & Golf 16-6-8, Superblend 20-9-9
NOR-AM Chemical Co
(Ureaform) Nitroform-Blue Chip and Powder
North Hampton County Seed Co
Lawn Fertilizer
PBI-Gordon Corp
(Liquid-Iron & Sulphur, Urea) Ferrimec (Precessed cow slurry) Bov-a-Mura
Plant Marvel Laboratories Inc
Plant Marvel Bent Special; Bermuda Special; Lawn Marvel;
Regal Chemical Co
(Nitroform) Regalite; (15-23-22) Regal Starter; (32-3-12) Regal Fwy fertilizer; (8-2-34) Regal Potash Plus; (22-6-6) Greens Nursery Special
Rhone-Poulenc Inc
(Sulfur, Copper, Iron Manganese, Zinc) Chipco Microgreen
Rockland Chemical Co
(IBDU, Nitroform, Micro) Rockland Twin Win; (Milorganite, IBDU, Iron) Rockland Mil-An-Chem II; (Milorganite, Urea) Rockland Mil-An-Chem I
O M Scott & Sons Co
(Methylene Urea/dry-applied) Proturf 31-3-10 Fairway; (Methylene Urea/liquid-applied) Proturf Milled 41-0-0; (SCU) Proturf 31-3-7 Turf

Sierra Chemical Co
Agriform, Osmolote
Southern Mill Creek Products Co
Sta-Green Plant Food Co
Sta-Green
Stanford Seed Co
(Balan) Old English
Sudbury Lawn & Garden Products
(Nitrogen, Phosphorus, Potash) Tailor-Made
Warren's Turf Nursery Inc
(SCU IBDU) Warren's Turf Professionals

Fungicide, Tree

American Pelletizing Corp
(Gypsum) Vita Power Pelletized
Bonide Chemical Co
(Captan) Bonide Captan 50W; (Benomyl + Bonide Folpet, phalton) Bonide Benomyl 50W; (Copper + Bonide liquid maneb) Bonide Liquid Copper
Ciba-Geigy Corp
(Metalaxyl) Subdue
Drexel Chemical Co
(Maneb) Drexel Manzi; (Dicofol) Drexel Dicofol E C
Elanco
(Fenarimol) Rubigan EC
Faesy & Besthoff Inc
Fermenta Plant Protection Co
(Chlorothalonil) Daconil 2787
Howe Inc
(ammoniated grade) 10-10-10
Lesco Inc
(Mancozeb) Lesco 4; (Maneb, Zinc) Lesco 4 Flowable with Zinc
Mallinckrodt Inc
(Zn, Mn, Thiophanate Methyl) Zyban
J J Mauget Co
(DEBC, Carbendazim) Fungisol; (Plantvax Oxycarboxin) Fungisol PV;
Merck & Co
(Thiabendazole) ARBOTECT
Mobay Chemical Corp
Bayleton 25 Turf & Ornament Fungicide
NOR-AM Chemical Co
(Cycloheximide) Acti-Dione TGF, Acti Dione RZ, Acti-Dione Thiram; (Propamocarb) Banol
Rohm & Haas Co
(Manczeb) Dithane
Source Technology Biologicals Inc
(Copper Sulphate Pentahydrate) Phytan 27
Southern Mill Creek Products Co

Fungicide, Turf

J & L Adikes Inc
(Dyrene, Cadmium Chloride) Gro-Well
The Andersons
(Daconil) Tee Time, Luster Lawn, custom mix
Bonide Chemical Co
(Dyrene) Lawn Fungicide; (Chloethalonil) Lawn & Turf Fungicide; (Thiram) Lawn disease control
Ciba-Geigy Corp
(Metalaxyl) Subdue
W A Cleary Chemical Corp
(Topsin-E) 3336-F; (Cadmium Chloride) Caddy; (PMAS) PMAS 10%

E I du Pont de Nemours & Co
(Mancozeb) Tersan LSR; (Benomyl) Tersan 1991

Elanco Products Co
(Fenarimol) Rubigan 50W

Fermenta Plant Protection Co
(Chlorothalonil) Daconil 2787

Garfield Williamson Co
Major Brands

Gustafson Inc
(Fungicide) Apron

Howe Inc
(Balan source Pre-emergence) 26-5-10;
(Trimec source broadleaf) 20-10-10
Weed & Feed; (1/3 N from nitroform)
20-5-10 Turf Special; (quick green-up)
20-10-10 Lawn Food; (ammoniated
grade) 10-10-10 Lawn & Garden;
(formolene base N) 16-2-6 Liquid Lawn;
(28% base N) 14-2-6 Liquid Lawn

Kincaid Enterprises Inc
(Chloroneb) Terraneb SP

Lebanon Chemical Corp
(Daconil) Greenview, Country Club,
Green Gold

Lesco Inc
(Mancozeb) Lesco 4; (Thiram) Lesco
Thiram; (PCNB) Lesco PCNB 10% G

Mallinckrodt Inc
(Mercuric Chloride, Mercurous Chloride)
Calo-Clor, Calo-Gran; (Cadmium
Succinate) Cadminate; (ZN, Mn EBCD,
Thiophanate Methyl) Duosan;
(Thiophanate Methyl) Fungo 50;
(Cadmium Sebecate, Potassium,
Chromate, Thiram) Kromad; (Ethazol)
Koban 30, Koban 1.3G; (Thiram)
Thiramad

Mobay Chemical Corp
Bayleton 25 Turf & Ornamental
Fungicide; Dyrene 4 Turf Fungicide

Nor-Am Chemical Co
(Cycloheximide) Acti-Dione TGF,
Thiram, RZ; (Propamocarb) Banol

PBI Gordon Corp
(Chloroneb) Teremec SP (Fore) Formec
80

Rhone-Poulenc Inc
(Iprodione) Chipco 26019; (Aluminum
Tris) Aliette

Rockland Chemical Co
(8.6% Dyrene) Rockland Dyrene;
(Benomyl; (Daconil) Rockland Lawn
Fungicide 2787

Rohm & Haas Co
(Mancozeb) Fore

O M Scott & Sons Co
(Thiophanate-Methyl, Iprodione) Proturf;
(PCNB) Proturf FFII

Southern Mill Creek Products Co

Growth Regulator

Aquashade Inc
(Dye Colorant) Aquashade

Arborechem Products Co
(Paclobutrazol) Clipper; (Ethyle ester of
NAA) Sprout Gard

J & L Adikes
Embark

Cal-Fiber Co
(Cellulose) Mulch

W A Cleary Chemical Corp
(6-Benzyladenine) Pro-Shear

Drexel Chemical Co
(Maleic Hydrazide) Drexel Retard

Elanco
(Flurprimidol) Cutless; (Ancymidol)
ARest

Maag Inc
Atrinal

3M/Agricultural Products
(Mefluidide) Embark

Merck & Co
(Gibberellic Acid) GIBREL

Monsanto Co
Limit

PBI Gordon Corp
(Atrinal) Attrimex; (Mefluidide) Embark

Pennwalt Corp

Perlur Inc
(Liquid Growth Retardant) Perlur

Regal Chemical Co
Regal Crown

UAP Special Products
Respond

Herbicides, Aquatic

Applied Biochemists Inc
(Diquat Dibromide) Weedtrine-D; (2,4-D
ester) Weedtrine II

Aquashade Inc
(Dye Colorant) Aquashade

Chevron Chemical Co
Ortho Diquat Herbicide H/A

Clean-Flo Laboratories Inc
(Buffered Alum) Lake Cleanser

Elanco
(Fluridon) Sonar

Faesy & Besthoff Inc

Monsanto Co
Rodeo

Pennwalt Corp
(Endothol) Aquathol K/Aquathol
Granular Hydrothol 191/Hydrothol
Granular

Riverdale Chemical Co
(2,4-D Granuals) Riverdale; (AM-4D)
Riverdale Weeddestroy

Southern Mill Creek Products Co

Union Carbide Ag Prod Co

Herbicides, Nonselective

J & L Adikes Inc
(Prometon) Gro-Well

American Cyanamid
(Imidazoline) Arsenal

Arborechem Products Co
(Bromacil) Clearway

Bonide Chemical Co
(Ammonium Sulphamate) Bonide
Ammate XNI (Sodium Arsenite) Bonide
Sodium Arsenite

Carmel Chemical Corp
(Bromacil) Carmel Vegetation Killer

Chevron Chemical Co
Ortho Paraquat Plus

Drexel Chemical Co
(Atrazine) Drexel Atrazine 4L & Atrazine
5L; (Diuron) Drexel Diuron; (DSMA)
Drexel DSMA Liquid & DSMA Slurry;
(Simazine) Drexel Simazine 4L; (MSMA)
Drexel MSMA 4 Plus, MSMA 6 Plus &
MSMA 6.6

Elanco Products Co
(Tebuthiuron & Trifluralin) Spike Treflan
6G

Faesy & Besthoff Inc

Garfield Williamson
Major Brands

La Roche Industries Inc
(Ammonium Sulfamate) Vertagreen

Lesco Inc
(Ureabor) Lescobor

Monsanto Co
(Glyphosate) Roundup

Occidental Chemical Co
Monobor Chlorate, Ureabor

PBI Gordon Corp
(Dichlobenil) Nordsac 10-G, Barrier 50-
W; (Prometon 2,4-D, Vegemec

Riverdale Chemical Co
(Granular Vegetation Killer) Riverdale;
(Granular Herbicide) Riverdale;
(Herbicide) Riverdale Killsall

Rockland Chemical Co
(Pramitol + 2, 4-D) Rockland

Southern Mill Creek Products Co

Herbicides, Postemergence Selective

J & L Adikes Inc
(Trimec, AMA, 2,4-D, DSMA Gro-Well

The Andersons
(2, 4-D, MCPP) Tee Time, Lustre Lawn,
custom mix

Aquashade Inc
(Dye Colorant) Aquashade

Arborechem Products Co
(Triclopyr, Picloram) Tordon 1 Plus 2
Mixture; (Triclopyr) Garlon 4

Bonide Chemical Co
(Banvel + 2,4-D) Bonide Lawn Weed
Killer-Liquid or granular, Bonide
Chickweed & Clover Killer, Bonide
Crabgrass & Broadleaf Weed Killer

W A Cleary Chemical Corp
(2,4-D, + dichlorprop) Weedone DPC
(DSMA) Methar 30; (Mecoprop) Cleary's
MCP; (Mecoprop/2, 4-D) Cleary's
MCP/2, 4-D

Dow Chemical Co
(Triclopyr + 2,4-D, ester formulation)
Turfion D; (Triclopyr + 2, 4-D, amine)
Turfion II Amine

Drexel Chemical Co
(MSMA) Drexel Ansar 529, MSMA 6
Plus, MSMA 6.6, MSMA 4 Plus;
(Atrazine) Drexel Atrazine 4L & 5L;
(DSMA) Drexel DSMA Liquid & Slurry;
(Cacodylic Acid) Drexel KACK;
(Cacodylic Acid + MSMA) Drexel KACK
+ MSMA; (Simazine) Drexel Simazine
4L

Elanco Products Co
(Teuthiuron) Spike

Faesy & Besthoff Inc

Fermenta Plant Protection Co
(MCP; (MCP/2, 4-D) (MSMA) Daconate 6;
(Dalapon) Dalapon 85

Garfield Williamson
Major Brands

La Roche Industries
(2, 4-D, Dicamba) Vertagreen; (Dacthal)
Vertagreen 5%

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FIRM _____ **PLACE COVER LABEL HERE**

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101	115	129	143	157	171	185	199	213	227	241	255	269	283	297	311	325
102	116	130	144	158	172	186	200	214	228	242	256	270	284	298	312	326
103	117	131	145	159	173	187	201	215	229	243	257	271	285	299	313	327
104	118	132	146	160	174	188	202	216	230	244	258	272	286	300	314	328
105	119	133	147	161	175	189	203	217	231	245	259	273	287	301	315	329
106	120	134	148	162	176	190	204	218	232	246	260	274	288	302	316	330
107	121	135	149	163	177	191	205	219	233	247	261	275	289	303	317	331
108	122	136	150	164	178	192	206	220	234	248	262	276	290	304	318	332
109	123	137	151	165	179	193	207	221	235	249	263	277	291	305	319	333
110	124	138	152	166	180	194	208	222	236	250	264	278	292	306	320	334
111	125	139	153	167	181	195	209	223	237	251	265	279	293	307	321	335
112	126	140	154	168	182	196	210	224	238	252	266	280	294	308	322	336
113	127	141	155	169	183	197	211	225	239	253	267	281	295	309	323	337
114	128	142	156	170	184	198	212	226	240	254	268	282	296	310	324	338

WEEDS TREES & TURF

SEPTEMBER 1986

This card void after

Nov. 15, 1986

MY PRIMARY BUSINESS AT THIS LOCATION IS:
(PLEASE CHECK ONE ONLY IN EITHER

A, B OR C)

**A. LANDSCAPING/GROUND CARE AT ONE OF THE
FOLLOWING TYPES OF FACILITIES:**

- 0005 ☐ Golf courses
0010 ☐ Sport complexes
0015 ☐ Parks
0020 ☐ Rights-of-way maintenance for highways, railroads & utilities
0025 ☐ Schools, colleges & universities
0030 ☐ Industrial & office parks/plants
0045 ☐ Condominiums/apartments/housing developments/
hotels/resorts
0050 ☐ Cemeteries/memorial gardens
0060 ☐ Military installations & prisons
0065 ☐ Airports
0070 ☐ Multiple government/municipal facilities
☐ Other type of facility (please specify) _____

B. CONTRACTORS/SERVICE COMPANIES/CONSULTANTS:

- 0105 ☐ Landscape contractors (installation & maintenance)
0110 ☐ Lawn care service companies
0125 ☐ Landscape architects
0135 ☐ Extension agents/consultants for horticulture
☐ Other contractor or service
(please specify) _____

C. SUPPLIERS:

- 0205 ☐ Sod growers
0210 ☐ Dealers, Distributors
☐ Other supplier (please specify) _____

Approximately how many acres of vegetation do you
maintain or manage? _____

What is your title? (please specify) _____

I would like to receive (continue receiving)

WEEDS TREES & TURF each month: YES ☐ NO ☐

Your Signature: _____ **Date:** _____



BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 665 DULUTH, MINNESOTA

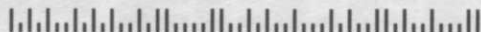
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Chemicals

continued

Lebanon Chemical Corp
(2,4-D + MCPP) Lebanon, Green Gold;
(DSMA) Greenview

Lesco Inc
(2,4-D & 2,4-DP) Lesco Granular
Herbicide, Lesco Weedone DPC;
(MCPP+2,4-D, MCPP+2,4-D-dainber,
decaibnba+2,4-D) Lescopar, Lesco 3
Way, 8:1

Mallinckrodt Inc
(Dicamba, 2,4-D, MCRP) Trexsan

Mobay Chemical Corp
Sencor Turf Herbicide

Monsanto Co
(Glyphosate) Roundup

NOR-AM Chemical Co
(Ethofumesate) Prograss

PBI Gordon Corp
(Esters of 2,4-D & 2,4-DP + Dicamba)
Super Trimec; (2,4-D, MCPP +
Dicamba) Trimec; (Dichlobenil) Dyclome
4-G, Norsac 4-G

Pennwalt Corp
(Endothal) Endothal Turf

Rhone-Poulenc Inc
(Bromoxynil) Chipco Buctril; (2,4-D,
MCCP) Chipco Turf Kleen

Riverdale Chemical Co
(AM-4D) Riverdale Weeddestroy;
(Herbicide) Weeddestroy Triamiane;
(MCPP) Weeddestroy; (MCPP+D)
Weeddestroy; (Herbicide) Casoron;
(Herbicide) Weeddestroy Tri-Ester;
(D+DP) Riverdale Turf; (Herbicide)
Triamiane Lawn Weed Killer

Rockland Chemical Co
(2LB, 2, 4-D + 2, 4-DP) Rockland Lawn
& W K DDP; (MCPP-2, 4-DP, 2, 4-D)
Rockland Tri-Amine LWK; (MCPP-2, 4-
D, Banuel D) Rockland Three Way LWK

Rohm & Haas Co
(Pronamide) Kerb; (Oxyfluorfen) Goal

O M Scott & Sons Co
(2,4-D, MCPP, Dicamba) Proturf

Sta-Green Plant Food Co
(2, 4-D, Dicamba, MCPP) fertilizer +
Trimec; (Atrazine) fertilizer + Atrazine

Sudbury Lawn & Garden Products
(2, 4-D) Killer Kane w/Kartridges

UAP Special Products
(2,4-D, MCPP dicamba) Mec Amine-D,
Mec Amine Plus; (2,4-D, dicamba) Four
Power Plus

Herbicides, Preemergence

J & L Adikes Inc
(Balan, Tupersan, Betasan) Gro-Well

The Andersons
(Balan, Dacthal, Betasan, Siduron) Tee
Time, Lustre Lawn; (Dursban, Treflan)
Team, custom mix

Aquashade Inc
(Dye Colorant) Aquashade

Bonide Chemical Co
(75W Dacthal) Bonide Dacthal; (Eptam)
Bonide Eptam; (5% G Dacthal) Bonide
Dacthal

Ciba-Geigy Corp
(Metalachlor) Pennant

Drexel Chemical Co
(Simazine) Drexel Simazine 4L

Elanco Products Co
(Trifluralin & Benfenin) Team; (Oryzalin &
Benfenin) XL; (Benfenin) Balan; (Oryzalin)
Surflan; (Trifluralin) Treflan

Faesy & Besthoff Inc
Fermenta Plant Protection Co
(DCPA) Dacthal

Garfield Williamson Co
Major Brands

La Roche Industries Inc
(Balan) Vertagreen 2.5%; (Betasan)
Vertagreen 7%

Lebanon Chemical Corp
(Betasan, Balan, Dacthal, Team,
Ronstar) Greenskeeper, Lebanon;
(Treflan, Tupersan) Green Gold,
Greenview

Lesco Inc
(Bensulide) Lescosan; (Pendimethelin,
DCPA) Lesco Dacthal 5G, Lesco Pre-M;
(Benfenin, Napropamide) Lesco Benfenin,
Lesco Devrinol

Mallinckrodt Inc
(Bensulide) Presan

NOR-AM Chemical Co
(Ethofumesate) Prograss

PBI Gordon Corp
(Dichlobenil) Norosac 4-G, Dyclomec 4-
G; (Bensulide) Bensumec 4LD

Regal Chemical Co
(Oxadiazon + Balan) Regal Star;
(Oxadiazon) Regal Ronstar Plus

Rhone-Poulenc Inc
(Oxadiazon) Chipco Ronstar

Riverdale Chemical Co

Rohm & Haas Co
(Pronamide) Kerb; (Oxyfluorfen) Goal

O M Scott & Sons Co
(Pendimethalin) Proturf

Sta-Green Plant Food Co
(Ronstar) fertilizer + 1.0% Ronstar;
(Surflan, Balan) fertilizer + XL; (Betasan)
fertilizer + 3.6% Betasan

Stauffer Chemical Co
(Bensulide) Betasan

UAP Special Products
(DCPA) Dacthal WDG; (Benfenin) Balan
2.5G; (Bensulide) Betasan

Insecticides, Tree

J & L Adikes Inc
(Malathion, Methoxychlor, Diazinon,
Sevin) Gro-Well

Bonide Chemical Co
(Methoxychlor 25%) Bonide Metoxychlor
25E; (Cygon) Bonide Cygon 2E;
(Metasystox R) Bonide Metasystox R
2E; (Carbaryl) Bonide Sevin 2F;
(Malathion 50%) Bonide Malathion 50E;
(Diazinon 25%) Bonide Diazinon 25E

Chevron Chemical Co
(Acephate Dibrom 8 Emulsive) Orthene;
(Lindane) Naled Isotox Lindane Spray
200

Ciba-Geigy Corp
(Diazinon) DZN

W A Cleary Chemical Corp
(Carbaryl) Cleary's Sevin SL

Creative Sales Inc
(Acephate/Orthene) Acecap

Ross Daniels Inc
(Di-Syston) Ross

Dow Chemical Co
(Chlorpyrifos) Dursban 50W

Drexel Chemical Co
(Carbaryl) Carbaryl 4L & 2L; (Diazinon)
D-264-4E; Methoxychlor Drexel
Methoxychlor 4L; (Endosulfan) Drexel
Endosulfan

Faesy & Besthoff Inc
Garfield Williamson Co
Major Brands

Kincaid Enterprises Inc
(Methoxychlor) Marlate 50

Lesco Inc
(Diazinon) Lesco Diazinon 500;
(Chlorpyrifos) Lesco Dursban 2E & 4E

Mallinckrodt Inc
Bendiocarb, Dycarb, (Diazinon &
Methoxychlor) Dymet; (Bendiocarb)
Dymet

J J Mauget Co
(Demeton Methyl) Inject-A-Cide;
(Dicrotophos) Inject-A-Cide "B"

Mobay Chemical Corp
Metasystox-R 2 Ornamental Insecticide
Baygon 70 Wettable Powder Insecticide

NOR-AM Chemical Co
(Bendiocarb) Turcam

PBI-Gordon Corp
(Fenitrothion) Pestroy

Prentiss Drug & Chemical Co
(Diazinon, Malathion, Methoxychlor)
Prentox

Rockland Chemical Co
(Organic spray) Rockland Rotenone
Pyrethrum Spray; (Malthaion,
Methoxychlor, Kelthane) Rockland
Shade Tree Insect Spray; (2E
Methoxychlor) Rockland Methoxychlor
2-E

Southern Mill Creek Products Co

Stauffer Chemical Co
Imidan

Union Carbide Ag Prod Co
Sevin

Zoecon Corp
(Fluvalinate) Mavrik Aquaflow

Insecticides, Turf

J & L Adikes Inc
(Oftanol, Diazinon, Dursban, Sevin) Gro-
Well

American Cyanamid Co
(Dimethoate) Cygon

The Andersons
(Dursban, Diazinon) Tee Time, custom
mix; (Oftanol) Lustre Lawn

Bonide Chemical Co
(Dursban) Bonide Dursban 2E; (Diazinon
25%) Bonide Diazinon 25E; (Carbaryl)
Bonide Seven 10% & 5%

Chevron Chemical Co
(Acephate) Orthene

Ciba-Geigy Corp
(Diazinon) DZN

W A Cleary Chemical Corp
(Chlorpyrifos) Dursban 2E; (Diazinon)
Diazinon 5% Granules, Diazinon AG-500

Dow Chemical Co
(Chlorpyrifos) Dursban

Drexel Chemical Co
(Carbaryl) Drexel Carbaryl 4L & 2L;
(Diazinon) Drexel D264-4E

Faesy & Besthoff Inc

Kincaid Enterprises Inc
(Methoxychlor) Marlate 50

La Roche Industries Inc
(Sevin) Vertagreen Sevin 5%; (Diazinon)
Vertagreen 12.5%, 25%; (Macathion)
Vertagreen 55%; (Diazinon) Vertagreen
5%; (Chlorpyrifos) Vertagreen 1.14%
Dursban

Chemicals

continued

Lesco Inc
(Trichlorfon) Lesco Dylox 5G; (Diazinon) Lesco Diazinon 500, 5G & 14G;
(Chlorpyrifos) Lesco; (Isofenfos) Lesco Oftanel 1.5G

Lebanon Chemical Corp
(Dursban, Oftanol) Greenview, Lebanon Pro Green Gold, Country Club, Greenskeeper

Mallinckrodt Inc
Diazinon & Methoxychlor, Dymet

Mobay Chemical Corp
Oftanol 5% Granular, Oftanol 2, Dylox 80

NOR-AM Chemical Co
(Dioxathion) Deltic; (Bendiocarb) Turcam; (Trichlorfon) Proxol

PBI Gordon Corp
(Carbaryl) Carbanec; (Fenoxycarb on vegetable oil-coated expanded corn grit) Logic Fire Ant Bait

Prentiss Drug & Chemical Co
(Diazinon, Chlorpyrifos, Propoxur) Prentox

Rhone-Poulenc Inc
(Ethoprop) Chipco Mocap

Rockland Chemical Co
(2.32% Dursban) Rockland Super Dursban; (Trichlorofon) Rockland White Grub Control; (Diazinon, Kelthane) Rockland 5% Diazinon

O M Scott & Sons
(Isofenfos) ProTurf Insecticide 4; (Diazinon) Proturf Insecticide One

Southern Mill Creek Products Co

Sta-Green Plant Food Co
(Oftanol) fertilizer + 1.5% Oftanol; (Dursban) fertilizer + 0.67% Dursban; (Oftanol) 1.5% Oftanol on Cob

Stanford Seed Co
(Oftanol) Old English

Stauffer Chemical Co
Aspon

UAP Special Products
(Bendiocarb) Turcam 2.5G

Union Carbide Ag Prod Co
(Carbaryl) Sevin

Zoecon Corp
(Fluvalinate) Mavrik Aquaflo

Miticides

J & L Adikes Inc
(Kelthane) Gro-Well

Bonide Chemical Co
(Kelthane 18.5) Bonide Kelthane

Mobay Chemical Corp
Morestan 25%

Rockland Chemical Co

Rohm & Hass Co
(Dicofol) Kelthane

Zoecon Corp
(Dienochlor) Pentac Aquaflo

Mulches And Erosion Control

American Excelsior
(Excelsior Blanket) Curlex

Cal-Fiber Co

Cellin Mfg Inc
Cellin, Cellin-K, Cellin Seal

Conwed Corp
Hydro Mulch

Finn Corp
(tackifier/gum) Hydro-Stik; (mulch fiber additive) Fiber Plus

Grass Fiber Inc
(Processed Fiber) Grass Mulch

Grass Growers Inc
Terra Tack I, III, AR, MP

Hoechst Fibers Ind

National Bark Sales
(sized forest bark) High Sierra, Ponderosa; (shredded red cedar) Montaho

Nepera Inc
(Potassium Propenoate-Propenamide Copolymer) Vittera Gelscape

Ozark Landscaping Products
(oak, pine, cedar)

Phillips Fibers Corp
Weed Control Mat

Reclamare Co
(Hydrocolloids) J-tac; (Plantago ovata) R-2400; (Poly vinyl acrylic)

Soil Seal Corp
(Copolymer Basel) Soil Seal Concentrate

Thermoguard
Turfiber-Cellin

Warren's Turf Nursery Inc
Warren's Terrabond Polyester

Geotextile Fabrics

Weyerhaeuser
Weyerhaeuser Silva Fiber

Nematocides

Bonide Chemical Co
(Vapam) Bonide Soil Fumigant

La Roche Industries Inc
(Vapam) Vertagreen

Mobay Chemical Corp
Nemacur 3 & 10%

Rhone-Poulenc Inc
(Ethoprop) Chipco Mocap

Stauffer Chemical Co
Vapam

Lesco Inc
(petroleum based) Lesco 4-Way Lubricant

Repellents, Animal

Bonide Chemical Co
(Thiram + acrylic polymer resins) Bonide Rabbit & Deer Repellent

W A Cleary Chemical Corp
(Thiram) Spotrete F, Spotrete 75% WP

Faesy & Besthoff Inc

Rockland Chemical Co
Deer-Guard

Sudbury Lawn & Garden Products
(Oil of Lemongrass & Allylthiocyanate) Chaperone Dog & Cat Repellent, Repel-O-Rope; (Tetramethylthiuramdisulfide) Chaperone Rabbit & Deer Repellent; (Naphthalene) Chaperone Squirrel & Bat Repellent

Root Killer

Faesy & Besthoff Inc

Soil Amendments

Bonide Chemical Co
(Sulfur 95%) Bonide Sulfur

Finn Corp
(Starch acrylate water absorbant) Hydro Gel

Lesco Inc
(ferment & polymers) Lescozyme

Nepera Inc
(Potassium Propenoate-Propenamide Copolymers) Vittera Gelscape

PBI Gordon Corp
(Processed cow slurry) Bov-A-Mura

Sta-Green Plant Food Co
Pro-Start, Pro-Start Plus

Soil Conditioner

Aquatrols Corp of America
(polyacrylamide water absorbant polymer) Super Sorb

Cal-Fiber Co
(Cellulose) Mulch

W A Cleary Chemical Corp
(Dolomitic Limestone) Limestone F; (Elemental sulfur) Sulphur F

Faesy & Besthoff Inc

Four Star Agricultural Services Inc
(Ammonium Laureth Sulfate) Pene-Turf

Grass Fiber Inc
Garden Mulch

International Reforestation Suppliers Inc

Lesco Inc
(ferment & polymers) Lescozyme

Michigan Peat Co
(Peat Moss) Baccto Michigan Peat, Baccto Horticultural Sphagnum, Baccto Top Soil

National Bark Sales
(Composted Bark) Top-N-Turf

Nepera Inc
(Potassium Propenoate-Propenamide Copolymer) Vittera Gelscape

Oil-Dri Corp of America
(Montmorillonite) Terra Green

Ozark Landscaping Products
(oak, pine, cedar)

Sudbury Lawn & Garden Products
(Liquified Seaweed) Sea Power Seaweed

Soil Fumigants

Bonide Chemical Co
(Vapam) Bonide Soil Fumigant

Faesy & Besthoff Inc

Hendrix & Dail Inc
(Methyl Bromide/Chloropicrin) MBC Soil Fumigant, MBC Concentrate, MBC-33; (Chloropicrin) HD-Pic Fumigant

Stauffer Chemical Co
Vapam

Sudbury Lawn & Garden Products
(1-1-1 Trichloroethane) Fire Ant Killer

Sticker Extender

J & L Adikes Inc
NuFilm 17

Bonide Chemical Co
Bonide Spreader Sticker

Chevron Chemical Co
Chevron Spray Sticker

Equipment

continued

W A Cleary Chemical Corp
(acrylic polymers) Clearspray
Encap Products Co
Spray-Stay
Kalo Agricultural Chemicals
BioFilm
Lesco Inc
(non-ionic surfactant/sticker) Lesco
Sticker-Spreader
Precision Laboratories Inc
(Non-ionic Surfactant, vegetable oil
base) Pen-A-Trate
Rohm & Haas Co
(Modified phthalic glycerol alkyd resin)
Triton
Stull Chemical Co
(Encapsulation & Suspension agent)
Bivert
UAP Special Products
Bond
Wilt-Pruf Products Inc
Spray-Stay

Tree Dressings

J & L Adikes Inc
Gro-Well
Arborchem Products Co
(Ethyl ester of NAA) Sprout Gard
Bartlett Mfg Co
Bonide Chemical Co
Bonide Tree Wound Paint, Bonide
Pruning Bomb
Coopers Creek Chemical Corp
C-4
Lesco Inc
Lesco Pruning Paint
Rockland Chemical Co

Wetting Agents

Aquatrols Corp of America
(non-ionic polyoxyethylene esters and
ether alcohols) Aqua-Gro "L", "S"
Arborchem Products Co
(blended non-ionic surfactants)
Arborchem
W A Cleary Chemical Corp
(non-ionic surfactant) All Wet; (fatty acid
and esters, non-ionic) Super Wet, Super
Wet 15G
Drexel Chemical Co
Drexel Wetz
E I du Pont de Nemours & Co
Surfactant WK
Finn Corp
Hydro-Gel
Lesco Inc
(non-ionic wetting agent polymer) Lesco
Wet
Mallinckrodt Inc
Aquadro
Montco Products Corp
(Non-ionic Surfactants) Surf-Side
PBI-Gordon Corp
(Oxyethylene) Aqua-Zorb
Precision Laboratories Inc
(Non-ionic Surfactant, vegetable oil
base) Pen-A-Trate
Regal Chemical Co
D'Aqua
Rohm & Haas Co
(Alkyl aryl polyoxyethylene glycols)
Triton



4. Chemical Companies

J & L Adikes Inc
182-12 93rd Ave
Jamaica NY 11423
718-739-4400

★ Agro-Chem Inc
11150 W Addison
Franklin Park IL 60130
312-455-6900

American Cyanamid Co
Agricultural Div
One Cyanamid Plaza
Wayne NJ 07470

American Excelsior Co
850 Ave H East

PO Box 5067
Arlington TX 76011
817-640-1555

American Pelletizing Corp
PO Box 3628
Des Moines IA 50322
515-278-5900

The Andersons
1200 Dussel Dr
Maumee OH 43537
419-893-5050


Applied Biochemists Inc
5300 W County Line Rd
Mequon WI 53092
414-242-5870/800-558-5106

Aquashade Inc
PO Box 198
Eldred NY 12732
914-557-8077

★ Aquatrols Corp of America
1432 Union Ave
Pennsauken NJ 08110
609-665-1130/800-257-7797

Arborchem Products Co
PO Box 1567
Fort Washington PA 19090
215-748-4455

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When others fail,
they survive.



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Circle No. 146 on Reader Inquiry Card

Chemical Companies

continued

- Bonide Chemical Co
2 Wurz Ave
Yorkville NY 13495
315-736-8231
- Cal-Fiber Co
611-625 S Anderson St
Los Angeles CA 90023
213-268-8381
- Carmel Chemical Corp
17303 US 31 N
Westfield IN 46074
317-896-2531
- ★ Cellin Mfg Inc
9610 Gunston Cove Rd
Lorton VA 22079
703-690-1195
- Center Plains Industries Inc
10800 Canyon Dr
Amarillo TX 79114
806-622-2000
- ★ Chevron Chemical Co
575 Market St
San Francisco CA 94105
415-894-2378
- ★ Ciba-Geigy Corp Ag Div
401 Swing Rd
Box 18300
Greensboro NC 27419
919-292-7100
- C-I-L Inc
171 Queens Ave
PO Box 5201
London ON N6A 4L6
Canada
519-672-9220
- Clean-Flo Laboratories Inc
4342 Shady Oak Rd
Hopkins MN 55343
612-935-2137
- W A Cleary Corp
1049 Somerset St
Somerset NJ 08873
201-247-8000
- Conwed Corp
444 Cedar St
St Paul MN 55101
612-221-1100
- Coopers Creek Chemical Corp
River Road
West Conshohocken PA 19428
215-828-0375
- Creative Sales Inc
222 N Park Ave
PO Box 501
Fremont NE 68025
402-727-4800
- Ross Daniels Inc
1720 Fuller Rd
West Des Moines IA 50265
515-225-6471
- Doggett Corp
Cherry St
- Lebanon NJ 08833
201-236-6335
- ★ Dow Chemical Co/Ag Products
9008 Bldg
PO Box 1706
Midland MI 48640
517-636-1000
- Drexel Chemical Co
2487 Pennsylvania St
Memphis TN 38109
901-774-4370
- ★ E I du Pont de Nemours & Co
BMP Lancaster Pike & Center Rd
Wilmington DE 19898
302-774-1000
- ★ Elanco Products Co
Lilly Corporate Center
Indianapolis IN 46285
317-261-5589
- Encap Prods Co
PO Box 278
Mt Prospect IL 60056
312-593-6464
- ★ Estech Branden Fertilizers Inc
Specialty Products Div
PO Box 512
Winter Haven FL 33882-0512
813-294-2567
- Faesy & Besthoff Inc
143 River Road
Edgewater NJ 07020
201-945-6200
- Fermenta Plant Protection Co
7528 Auburn Rd
PO Box 348
Painesville OH 44077
- ★ Finn Corp
9281 LeSaint Dr
Fairfield OH 45014
513-871-2529
- Four Star Agricultural Services Inc
2275N St Rd 1
PO Box 463
Bluffton IN 46714
219-824-5384
- Fuerst Brothers Inc
PO Box 271
Rhinebeck NY 12572
914-876-3575
- Grass Fiber Inc
520 E Second St
Junction City OR 97448
503-998-6812
- Grass Growers Inc
424 Cottage Pl
Plainfield NJ 07060
201-755-0923
- Great Lakes Biochemical Co
6120 W Douglas Ave
Milwaukee WI 53218
414-464-1200
- Growth Products Ltd
PO Box 1259
White Plains NY 10602
914-428-1316
- Gustafson Inc
PO Box 660065
Dallas TX 75266
214-985-8877
- Hawkeye Chemical Co
Box 899
Clinton IA 52732
319-243-5800
- Hendrix & Dail Inc
803 Industrial Blvd
Greenville NC 27835
919-758-4263
- Hoechst Fibers Ind
PO Box 5887
Spartanburg SC 29304
800-845-7597
- Howe Inc
4821 Xerxes Ave N
Minneapolis MN 55430
612-535-1030
- Kincaid Enterprises Inc
Box 671 Plant Rd
Nitro West Virginia 25143-0671
304-755-3377
- La Roche Industries Inc
1100 Johnson Ferry Rd NE
Atlanta GA 30342
404-851-0377
- Lebanon Chemical Corp
1600 E Cumberland St
Lebanon PA 17042
717-273-1685
- ★ Lesco Inc
20005 Lake Rd
Rocky River OH 44116
216-333-9250
- Maag Inc
PO Box 6430
Kings Hwy
Vera Beach FL 32961-6430
305-567-7506
- J J Mauget Co
2838 N Naomi St
PO Box 3422
Burbank CA 91504
213-849-2309 CA/800-423-2699
- MCI AgSystems Div
Melamine Chemicals Inc
811 Railroad Ave
Donaldsonville LA 70346
504-473-3121
- ★ Merck & Co
PO Box 2000
Rahway NJ 07065-0912
201-750-8463
- Michigan Peat Co
PO Box 66388

Chemical Companies

continued

Houston TX 77266
800-231-6211/713-522-0711

★ Milliken Chemical
Campton Rd
PO Box 817
Inman SC 29349
803-472-9041/800-845-8502

Milwaukee Metropolitan Sewerage District
735 N Water St
Milwaukee WI 53202
414-225-2222

3M/Agricultural Products
3M Center/Bldg 223-1N-05
St Paul MN 55144-1000
612-733-3150

Minntrolia Mfg Inc
Box 135 West Edge Village
Garfield MN 56332
612-834-2214

Mobay Chemical Corp
Agricultural Chemicals Div
PO Box 4913 Hawthorn Rd
Kansas City MO 64120
816-242-2000

★ Monsanto Co
800 N Lindbergh Blvd (C35D)
St Louis MO 63167
314-694-6640

Montco Products Corp
Box 404
Ambler PA 19002
215-628-3144

Moyer & Son Inc
113 E Reliance Rd
Souderton PA 18964
215-723-6001

Moyer Chemical Co
3321 W Castor St
Santa Ana CA 92704
714-549-2871

MSD AGVET
See Merck & Co

National Bark Sales
1365 N Orchard St
PO Box 7672
Boise ID 83707
208-375-0656

Nepera Inc
Route 17
Harriman NY 10926
914-782-8171

NOR-AM Chemical Co
3509 Silverside Rd
PO Box 7495
Wilmington DE 19803
302-575-2000

North Hampton Seed Co
Box 51
Bath PA 18014
215-837-6311

Oil-Dri Corp of America
520 N Michigan Ave

Chicago IL 60611
312-321-1515

Ozark Landscaping Products
Rt 4 Box 479
Perryville MO 63775
314-547-2531

★ PBI-Gordon Corp
1217 W 12 St
Kansas City MO 64101
816-421-4070

Pennwalt Corp
3 Pkwy
Philadelphia PA 19102
215-587-7286

Perluc Inc
PO Box 1359
Wendell NC 27591

Plant Marvel Laboratories
371 E 16 St
Chicago Heights IL 60411
312-757-7500

Precision Laboratories Inc
333 Anthony Trail
PO Box 127
Northbrook IL 60065
312-498-0800

Prentiss Drug & Chemical Co
21 Vernon St CB 2000
Floral Park NY 11001
516-326-1919

Reclamare Co
20727 Seventh Ave South
Seattle WA 98198
206-824-2385

Regal Chemical Co
PO Box 900
Alpharetta GA 30201
404-475-4837/800-621-5208

★ Rhone-Poulenc Inc
PO Box 125
Monmouth Junction NJ 08852
201-297-0100

Riverdale Chemical Co
220 E 17 St
Chicago Heights IL 60411
312-756-2010

Rockland Chemical Co
686 Passaic Ave
Box 809
West Caldwell NJ 07007
201-575-1322

Rohm & Haas Co
Independence Mall West
Philadelphia PA 19105
215-592-3000

★ O M Scott & Sons Co
14111 Scottslawn Rd
Marysville OH 43041
513-644-0011

SDS Biotech
See Fermenta Plant Protection Co

Sierra Chemical Co
1001 Yosemite Dr
Milpitas CA 95035
408-263-8080

★ Soil Seal Corp
1111 W Sixth St
Los Angeles CA 90017
213-481-7185

Source Technology Biologicals Inc
2850 Metro Dr
Minneapolis MN 55420
612-854-9426 MN/800-Elm-TREE

Southern Mill Creek Products Co
PO Box 420981 Alpatash St
Miami FL 33142
305-635-0321

Sta-Green Plant Food Co
201 W Fourth St
Sylacauga AL 35150
205-245-5282

Stanford Seed Co
Muddy Creek Rd
RD 1 Box 405
Denver PA 17517
215-267-3805

Stull Chemical Co
1006 Paulsun
San Antonio TX 78219
512-227-5255

Sudbury Lawn & Garden Products
301 W Osborn
Phoenix AZ 85013-3928
602-285-1660

Thermoguard Co
412 113th
Arlington TX 76011
817-640-8733

UAP Special Products Inc
13808 'F' St
Omaha NE 68137
402-330-1910

Union Carbide Ag Prod Co
TW Alexander Ave
PO Box 12014
Research Triangle Park NC 27709

Warren's Turf Nursery Inc
Chadbourne & Cordelia Rds
PO Box 459
Suisun City CA 94585
707-422-5100
800-828-8873

Weyerhaeuser
1010 S 336th WSC-3
Federal Way WA 98477
206-927-7900

Wilt-Pruf Products Inc
PO Box 4280
Greenwich CT 06830
203-531-4740

Zoecon Corp/A Sandoz Co
PO Box 10975
Palo Alto CA 94303
415-857-1130



5. Seed Companies

Adelphi Kentucky Bluegrass
PO Box 310

Hollis NY 11423
718-739-4400

Kentucky Bluegrasses: Adelphi; Perennial
Ryegrasses: All Star

J & L Adikes Inc
182-12 93rd Ave
Jamaica NY 11423
718-739-4400

Kentucky Bluegrasses: Adelphi; Perennial
Ryegrasses: All Star; Turfseed Mexes or
Blends: Mixed to order

★ AM Sod Co
2606 Hollister St
San Diego CA 92154
619-428-5567
Fescues: Jaguar Tall; Sod/Sprigs
(California & Arizona Only): Tifgreen
Hybrid Bermuda Mix, Santa Ana
Bermuda, Bluegrass-Ryegrass Mix, El
Toro Zoysia

Bamert Seed Co
Route 3 Box 1120
Muleshoe TX 79347
806-272-4787
Other: treated Texoka Buffalo, native
grasses

Cenex Seed Co
2882 Howell Prairie Rd Northeast
Salem OR 97305
800-228-4119
Kentucky Bluegrasses: Plush, Holiday;
Perennial Ryegrasses: Magnum Brand;
Fescues: Bonanza (Tall); Turfseed Mixes
or Blends: various mixtures, custom
blended; Other: public varieties and
selected proprietary varieties available

Ernst Crownvetch Farms
RD 5 Box 806
Meadville PA 16335
814-425-7276/425-7897
Other: Crownvetch

Daehnfeldt Inc
PO Box 947
Albany OR 97321
503-928-5868
Kentucky Bluegrasses: Melba, Trampas;
Perennial Ryegrasses: Polly Hybrid;
Fescues: Puma Chewings Other:
Wildflowers

Fine Lawn Research Inc
PO Box 290
Madison GA 30650
503-636-2600
Kentucky Bluegrass: Chateau; Perennial
Ryegrasses: Pennant; Fescues: Finelawn
Turf Type Tall, Jaguar Turf Type Tall;
Turfseed Mixes or Blends: Triple Play,
Perennial Ryegrass blend

Full Circle Inc
PO Box 49
Madras OR 97741
503-475-3877
Kentucky Bluegrasses: Merit

Garfield Williamson Co
1072 Westside Ave
Jersey City NJ 07306
201-435-3500
Kentucky Bluegrasses: Eclipse, Liberty;
Perennial Ryegrasses: Omega II;
Fescues: Jaguar Tall, Shadow Chewings;
Turfseed Mixes or Blends: Eagle 3
Brand, Proform, Tri-Rye, Eclipse/Omega
II, Wonderlawn; Other: Native grasses,
wild flowers

Great Western Seed Co
810 Jackson St
Albany OR 97321
503-928-3100
Kentucky Bluegrasses: Common, Baron,
Nassau, Mystic, Georgetown, Ram I;
Perennial Ryegrasses: Palmer, Prelude,
Cowboy, Diplomat, Repell, Yorktown II;
Fescues: Clemfine, Rebel, Rebel II (Tall)
Jamestown (Fine); Turfseed Mixes or
Blends: Marvelgreen Line (many
formulas), Par 3 (perennial ryegrass)

Jonathan Green Inc
Squakum-Yellowbrook Rd
PO Box 326
Farmingdale NJ 07727
201-938-7007 NJ/800-526-2303
Kentucky Bluegrass: Adelphi, A-34,
America, Baron, Banff, Birka, Classic,
Columbia, Eclipse, Enmundi, Enoble,
Flyking, Glade, Gnome, KenBlue,
Common, Merion, Nassau, Merit,
Monopoly, Parade, Ram I, Reubens,
Sabre; Perennial Ryegrasses: Allstar,
Blazer, Citation II, Dasher, Fiesta, Jazz,
Manhattan II, Pennfine, Linn, Premier;
Fescues: Agram Chewing, Barena
Creeping, Bonanza Tall, Creeping Red,
Finelawn I Tall, Hounddog Tall,
Jamestown Chewing, Kentucky 31 Tall,
Mustang Tall, Pennlawn Creeping,
Sparta; Bentgrasses: Asoria, Emerald,
Exeter, Pennncross, Penneagle, Pennway,
Hard, Tournament Hard, Victory
Prominent, Seaside, Sheeps Fescue;
Turfseed Mixes or Blends: Perennial



NEW! RAVENS MAINTENANCE FREE UTILITY TRAILERS

The Ravens all-aluminum frame utility trailers are sized from 4' x 6' to 6' x 10' to meet your individual transport needs. Lightweight. Will not rust. Eliminates yearly scraping and painting. Looks new season after season.

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- 3/4" exterior grade plywood deck
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RAVENS 

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Circle No. 157 on Reader Inquiry Card

Seed Companies

continued

Ryegrass, Drought Tough Mixture, Blue-Rye, Full Sun Grass Seed, Funlawn Turf-Type Tall Fescue, Fast Grow, Bentgrass, Pennway Bentgrass; Other: Birdsfoot Trefoil, Blackwells Switchgrass, Alsike, Red, White, Ladino Clovers, Penngift Crownvetch, Tioga Deertongue, Orchardgrass, Redtop, Reeds Canarygrass, Sericia Lespedeza, Timothy, Weeping Lovegrass, Pinto Wildflower, Winter Rye

Geo W Hill & Co
8010 Dixie Hwy
Florence KY 41042
606-371-8423

Kentucky Bluegrasses: Eclipse, Chateau; Perennial Ryegrasses: Pennant; Fescues: Finelawn Turf-Type Tall, Jaguar Turf Type Tall; Turfseed Mixes or Blends: Triple Play Perennial Ryegrass Blend

★ International Seeds Inc

820 First St
PO Box 168
Halsey OR 97348
503-369-2251

Kentucky Bluegrasses: Vantage; Perennial Ryegrasses: Derby, Regal, Gator; Fescues: Highlight (Chewing), Red, Ensylva (Creeping), Hounddog (Tall); Bentgrasses: Emerald, Penncross, Penneagle; Turfseed Mixes or Blends: Dixie Green Mix, Dixie Green/Sabre Mix, Ph D Overseeding Blend, Ph D/Sabre

★ Jacklin Seed Co

W 5300 Jacklin Ave
Post Falls ID 83854
208-773-7581

Kentucky Bluegrasses: Nugget, Glade, Adelphi, Eclipse, Classic, Amazon, A-34, Geronimo, Huntsville, Nassau, Ram I, Cheri; Perennial Ryegrasses: All Star, Manhattan II, Pennfine; Fescues: Arid (Tall), Logro, Highlight, Ensylva; Bentgrasses: Penncross, Seaside, Penneagle; Other: Environmental; Reubens Canada Bluegrass, Streaker redtop, Covar Sheeps fescue

★ Lesco Inc

20005 Lake Rd
Rocky River OH 44116
216-333-9250

Kentucky Bluegrasses: Dawn, Julia; Fescues: Cimmarron (Tall); Turfseed Mixes or Blends: Eagle, Lesco Shade Mix, Transition

★ Loft Seed Inc

Chimney Rock Rd
PO Box 146
Bound Brook NJ 08805
201-356-8700

Seed Types: Clemfine Tall Fescue, Rebel Tall Fescue, Prelude & Palmer Perennial Ryegrasses, Diplomat & Yorktown II Perennial Ryegrasses, Baron & Ram I KY Bluegrasses

Mangelsdorf Seed Co
1415 N 13 St
St Louis MO 63106

314-421-1415

Kentucky Bluegrasses: Arboretum etc.; Perennial Ryegrasses: Omega II, etc.; Fescues: KY 31, Jaguar Turf Type, Creeping Red and Chewings fescue; Bentgrasses: Penncross, Penneagle, Emerald, Highland; Turfseed Mixes or Blends: M-Brand & custom mixes; Other: Zoysia & Crownvetch Seed; Sod/Sprigs (South only): Crownvetch Crowns

Normarc Seeds Inc

32080 Hwy 34
Tangent OR 97389
503-926-5801

Kentucky Bluegrass: Merit, Park, Newport; Perennial Ryegrasses: Premier; Fescues: Tempo, Pennlawn Creeping, Cascade Chewing, Koket, Fawn Tall; Bentgrasses: Penncross, Highland, Seaside; Turfseed Mixes or Blends: Turf Star, Perennial Ryegrass Mix

Northampton County Seed Co

646 Georgetown Rd
Nazareth PA 18064
215-837-6311

Kentucky Bluegrass: Common, Nassau, Glade, Birka, Baron; Perennial Ryegrasses: Linn, Derby, All Star, Pennfine; Fescues: Koket Chewing Red, Pennlawn Creeping Red, Creeping Red, Kentucky 31 Tall, Falcon Tall; Bentgrasses: Penneagle, Penncross; Turfseed Mixes of Blends: Country Brand I-50% Creeping Red fescue, 25% K. B., 25% Annual Ryegrass; Shale mix-50% Creeping, 50% Derby Perennial; White Dutch Clover; Crownvetch; Poa Trivialis; Red Top; Farm Seed

★ Northrup King Co

Medalist Turf Div
7500 Olson Memorial Hwy
PO Box 959 (55440)
Minneapolis MN 55427
612-781-8011

Kentucky Bluegrasses: Adelphi, Aspen, Aquila, Parade, Park, Rugby; Perennial Ryegrasses: Delray, Eton, Goalie, NK200, Pennfine; Fescues: Atlanta chewings Dawson red, Ruby creeping, Scaldis hard, Galway turf-type tall; Bentgrasses: Penncross, Penneagle, Seaside; Turfseed Mixes or Blends: Special Park Mix, Premier Turf, Swift & Sure, Athletic Pro I & II, Shady Turf, Premium Sod Blend, Overseeder II, Medalist North, Landscape Pro, Landscape Pro West, Boulevard Mix, Renovator Pro Blend, Super Pro III, Alkali Turf Mix, Medalist Overseeding Blends; Other: Fulps Puccinellia distans Alkaligrass

Nutri-Turf

10777 Sunset Office Park
St Louis MO 63127
314-822-6571

Fescues: Rebel Chewings; Other: Centipede; Sod/Sprigs (South Only): St Augustine, Hybrid Bermuda, Zoysia

Oregon Fine Fescue Commission

2140 Turner Rd SE
Salem OR 97302
503-585-1157
Fescue: creeping and chewings

Oregon Ryegrass Growers Seed

Commission
4093 12th St Southeast
Salem OR 97302
503-364-3346

Perennial Ryegrasses: Oregon
Ryegrasses; Other: Annual Ryegrasses

★ Oregon Tall Fescue

2140 Turner Rd SE
Salem OR 97302
503-585-1157

Oseco Inc

PO Box 219
Brampton ON Canada
L6V 2L2
416-846-5080

Kentucky Bluegrass: Baron, Gnome, Haga, Midnight, Nassau, Sydport, Regent, Majestic; Perennial Ryegrasses: Palmer, Yorktown II, Barry; Fescues: Banner Chewings, Koket Chewings, Rebel Tall, Biljart Hard, Reptans Red, Fortress Creeping; Bentgrasses: Penneagle, Emerald; Turfseed Mixes or Blends: PHD-1, PHD-2, PHD-3; Other: PHD-1 Rapidgrass

Patten Seed Co

119 Murrell Ave
Lakeland GA 31635
912-482-3131

Other: Centipede grass Seed; Sod/Sprigs (South Only): Meyer Zoysia, Emerald Zoysia, Tifton Hybrid Bermudas, Centipede, St Augustine

Pennfine Perennial Ryegrass

500 Olson Memorial Hwy
Minneapolis MN 55427
612-781-8011
Perennial Ryegrasses: Pennfine

Peterson Seed Co

PO Box 346
Savage MN 55378
612-445-2606
Kentucky Bluegrasses: Monopoly, Classic

Otto Pick & Sons Seeds Ltd

11151 Yonge St
Box 126
Richmond Hill ON Canada
L4C 4X9
416-884-1147

Kentucky Bluegrasses: America, Banff,

Nugget, Touchdown; Perennial Ryegrasses: Blazer, Fiesta; Fescues: Agram, Mustang, Tournament hard; Bentgrasses: Exeter

Otto Pick & Sons Seeds Ltd

RR 2 Box 4 Group 200
Winnipeg MB Canada
R3C 2E6
204-633-0088
Kentucky Bluegrasses: Nugget, Touchdown, A34, America, Ram I, Banff, Cheri, Fylking, Dormie, Baron, Common SQ/QT 98/85, Park; Fescues: Agrams

Seed Companies

continued

Chewings, Jamestown Chewings, Pennlawn Creeping, Boreal Creeping, Tournament Hard; Sheeps Ovina, Mustang Tall; Bentgrasses: Penncross Perennial

Pickseed West Inc
PO Box 888

Tangent OR 97389
503-926-8886

Kentucky Bluegrasses: America, Banff, Touchdown; Perennial Ryegrasses: Blazer, Dasher, Fiesta, Jazz; Fescues: Mustang & Maverick (tall), Agram (chewing), Spartan & Tournament (hard); Bentgrasses: Exeter (colonial); Turfseed Mixes or Blends: Futura Plus, Futura Blue; Other: Colt Poa trivialis, Flowers 'n' Flowers, Flowers 'n' Grass

Pioneer Hi-Bred International
See Peterson Seed Co

Prairie Seeds Ltd
RR 1

South Edmonton AB
Canada T6H 4N6
403-955-7345

Kentucky Bluegrasses: Baron, Glade, Eclipse, Nugget, Ram I, Regent; Perennial Ryegrasses: Derby, Manhattan; Fescues: tall, chewings, creeping; Bentgrasses: Penncross, Penneagle, Prominent; Turfseed Mixes or Blends: Custom; Other Turf Seed: Alpine Bluegrass, Tufted Hairgrass

Pro-Lawn Products Inc
PO Box 4908
Syracuse NY 13221
315-477-6007

Kentucky Bluegrasses: Rugby; Perennial Ryegrasses: Pennfine, Palmer; Fescues: Jaguar Tall Fescue, Rebel Tall Fescue; Turfseed Mixes or Blends: Professional Green, Royal Green, Wear Green

Roberts Seed Co
PO Box 206
Tangent OR 97389
503-926-8891

Kentucky Bluegrasses: Newport, Park, Merion; Perennial Ryegrasses: Pennfine, Manhattan, Linn; Fescues: Cascade, Pennlawn, Rainier Red; Bentgrasses: Astoria, Seaside, Highland

Rothwell Seeds Ltd
PO Box 511
Lindsay ON
Canada K9V 4S5
705-324-9591

Kentucky Bluegrasses: Adelphi, Argyle, Classic (225), Eclipse, Glade, Monopoly, Julia, Regent, Geronimo, Harmony, Welcome Midnight, Nugget, Park, Vantage; Perennial Ryegrasses: Manhattan, Derby, Diplomat, Prelude, All*Star, Pennant; Fescues: Barfala Chewings, Koket Chewings, Durlawn Creeping Res; Bentgrasses: Penncross, Penneagle, Prominent, Bardot, Carmen, Seaside, Highland, New Zealand Brown Top, Astoria; Other: seeds of most adapted northern species, both for turf

& agriculture, soil stabilizers & ground cover

★ O M Scott & Sons Co
14111 Scottslawn Rd
Marysville OH 43041
513-644-0011

Kentucky Bluegrasses: Victa, Bristol, Merit; Perennial Ryegrasses: Loretta, Pennant, Ovation, Caravelle, Derby, Pennfine, Proturf; Fescues: chewings: Jamestown, Banner, Improved Tall: Falcon, Mustang, Chesapeake; Bentgrasses: Penncross, Penneagle, Emerald, Seaside; Turfseed Mixes or Blends: Uicta/Bristol/Merit, Winter Turf Overseeding, Sportsturf, Utility; Other: Sabre Pia Trivialis

Seed Production & Introduction Corp
7500 Olson Memorial Hwy
Minneapolis MN 55427
612-781-8011

Kentucky Bluegrasses: Rugby; Perennial Ryegrasses: Pennfine

Seed Research of Oregon
644 SW 13 St
Albany OR 97333
503-757-2663

Kentucky Bluegrass: Enmundi, Harmony, Merit; Perennial Ryegrasses: SR 4000, SR 4100; Fescues: Trident, SR 8000, SR 8100; Bentgrasses: Prominent Creeping, SR 1019 Creeping, SR 1020 Creeping; Turfseed Mixes or Blends: Champion, Trophy, Endurance, Survivor

Southern Turf Nurseries
5172 A Indian Trail Ind Pkwy
Norcross GA 30071
404-448-9932

Sod/Sprigs (South Only): Tifway, Tifway II, Tifgreen, Tifwarf, Midiron bermudagrasses, Meyer, Emerald Zoysiagrasses

Southern Turf Nurseries Inc
PO Box 1459
Lake Wales FL 33853
813-537-2149

Sod/Sprigs (South Only): Hybrid Bermuda Springs & Sod; Grassing Contractor

Stanford Seed Co
Buffalo NY 14240
716-825-3300

Seed Types: Koket Chewings Fescue, Old English, Crown Vetch, Pennfine Perennial Ryegrass, Rugby KY Bluegrass

Stanford Seed Co
Muddy Creek Rd
RD1 Box 405
Denver PA 17517
215-267-3805

Kentucky Bluegrasses, Perennial Ryegrasses, Fescues, Bentgrasses, Turfseed Mixes or Blends, Other, Sod/Sprigs: Old English

Sunbelt Seeds Inc
5172 Indian Trail Ind Pkwy
Ste A
Norcross GA 30071
404-448-9932

Kentucky Bluegrass: Baron, Nassau, Ram I, Georgetown, Mystic; Perennial Ryegrasses: Palmer, Prelude, Cowboy, Repell, Yorktown II, Agree; Fescues: Rebel Turf Type, Clemfine Turf Type Tall, Jamestown Fine, Reliant Fine; Bentgrasses: Penncross, Penneagle, Emerald, Seaside; Turfseed Mixes or Blends: Marvelgree series; Other: Bermudagrass, Centipedegrass, wildflower mixes

★ Tee-2-Green Corp
PO Box 250

Hubbard OR 97032
503-981-9574
800-547-0255

Bentgrasses: Penncross (Creeping), Penneagle (Creeping)

★ Turf Merchants Inc (TMI) 30065 Hwy 995
PO Box 1467

Albany OR 97321
800-421-1735/503-491-3622

Kentucky Bluegrass: Gnome, Tendos, Rugby; Perennial Ryegrasses: Pennfine, Manhattan II, Rodeo, Barry; Fescues: Vitrus Creeping, Regans Chewings, Brookston Tuft Type Tall, Turfem Turf Type Tall, Gremlin Dwarf Turf Type Tall; Bentgrasses: Seaside Creeping; Turfseed Mixes or Blends: V I P Turf Type, V I P Creeping, TrueBlue Kentucky

★ Turf Seed Inc

PO Box 250
Hubbard OR 97032
503-981-9571

Kentucky Bluegrasses: Columbia, Sydsport, Midnight, Challenger; Perennial Ryegrasses: Citation II, Omega II, Birdie II, Manhattan II, CBS II Blend, 2DF, 3CN; Fescues: Flyer Creeping, Triathelawn Blend Tall, Shadow Chewings, Aurora Hard, Bighorn Sheep, Olympic Tall, Apache Tall; Bentgrasses: Penncross, Penneagle; Turfseed Mixes or Blends: CBS II, Triathelawn

Vaughan's Seed Co
5300 Katrine Ave
Downers Grove IL 60515
312-969-6300

Seed Types: Adelphi KY Bluegrass, Citation Perennial Ryegrass

Vaughan's Seed Co
Chimney Rock Rd
Bound Brook NJ 08805
201-356-4200

Seed Types: Adelphi KY Bluegrass, Glade KY Bluegrass, Cheri KY Bluegrass, Merit KY Bluegrass, Touchdown KY Bluegrass, Pennant Perennial Ryegrass, Citation Perennial Ryegrass, Regal Perennial Ryegrass

Warren's Turf Nursery Inc
Chadbourne & Cordelia Rds
PO Box 459
Suisun City CA 94585
707-422-5100

Kentucky Bluegrasses: A-34 BenSun, Warren's; Fescues: Adventure turf type (Tall)

Diagnosing sap flow problems

Problem: A number of elm trees are showing some kind of sap flowing on the trunk. We think it is wetwood. Are there any other problems similar to wetwood? Is drain tube installation still recommended for wetwood problems? (Illinois)

Solution: Yes, there are some other problems which can produce sap flow, in addition to wetwood disease. For example, sap flow is associated with flux, slime flux, wetwood, and alcoholic slime flux problems.

Whenever a cut is made on trees, sap begins to flow. This is called flux. This is usually severe in spring because of heavy sap flow. Often many different bacteria or yeast can get into this flux which is then referred to as slime flux. Slime flux is primarily on the surface and it does not go beyond the cambium layer. Since neither flux nor slime flux are inside the plant, there is no need for treatment.

Alcoholic slime flux, a bacterial disease, is generally found on white oaks. Reports indicate that this problem can also occur on beech trees. This problem can be managed by bark tracing the affected areas.

Wetwood disease on American elm is caused by a specific bacterium (*Enterobacter* sp.). Affected trees may show chronic "bleeding" from crotches and wounds. The bacteria infects the sapwood and heartwood and then ferments the sap, releasing gases which create pressure build-up within the tree. This pressure causes the sap to flow out at crotches or near wounds. This fermented sap is toxic.

As a result, the "bleeding" wounds may not heal and often the bark tissues under the area of sap flow may be injured. Many insects may be attracted to fermented sap. This problem can be treated by making a downward slanting hole ($1\frac{1}{2}$ / 16 -inch in diameter through the trunk) and inserting a brass pipe into the hole (just far enough to hold it securely).

The drain tube should be installed below the bleeding site so that the sap will drip on the ground and away from the trunk. Copper tubing should not be used since it is toxic to the trees. Often the sap flowing from these tubes may kill grass or ground cover around the drip sites. Install one tube per 12-inch DBH tree or two to three tubes per 24-inch diameter tree at the base.

Power raking to reduce thatch

Problem: Why power rake since it does little to reduce thatch? (Colorado)

Solution: Although it may appear that power raking does little to reduce thatch, it can be beneficial if done properly. For best results the lawn should be raked several times. Periodically check the thatch level with a probe, and continue power raking until the thatch is reduced to the desired level.

Because of the nature of this operation, it may be damaging to lawns. Modifying the thatch layer by

core aeration is less disruptive to turf. With this method, the thatch barrier will be broken and the cores will bring the soil above the turf. Ideally, these cores should be broken to reintroduce the soil containing micro-organisms which are needed for thatch decomposition.

Aerating fairways and roughs

Problem: What are the most effective and most efficient methods of core aeration of a fairway or rough? What is the fastest method? Can this material be used for future construction? (New York)

Solution: Tractor-mounted aerifying equipment would be the most efficient for removing core aeration plugs in a fairway or rough. The effectiveness of the method can be affected by the soil moisture and cutting height. Often fairways and roughs are cut a little longer than the greens, which would reduce the penetration of tines. Also, if the soil is dry, tine penetration is reduced. Walk-behind type aerifiers are not practical for the fairways and rough areas because of the large area to be covered.

The plugs pulled out during aerification would contain some plant material and soil. In most cases, these are left on the ground and allowed to break down slowly and incorporated back into the turf. However, if the plugs are collected, they can be used for future construction.

Roundup and poison ivy control

Problem: Can Roundup be used to control poison ivy plants? Some are growing on tree trunks. When is the best time to treat? (Ohio)

Solution: Roundup can be used to control poison ivy plants. A representative from the Monsanto Company, manufacturers of Roundup, indicates that an application of 2 percent solution when the plants begin to turn leaf color in late summer or fall would provide effective control of poison ivy within seven to 10 days. If the plants are growing up a tree, one must try to cut down most of the vines and then apply the treatment. Avoid any material drifting onto green tissue of non-target, desirable plants because Roundup can cause injury. Read and follow label specifications for best control.



Balakrishna Rao is Director of Lawn Care Technical Resources for The Davey Tree Co., Kent, Ohio.

Questions should be mailed to Problem Solver, Weeds Trees & Turf, 7500 Old Oak Boulevard, Cleveland, OH 44130. Please allow 2-3 months for an answer to appear in the magazine.

PRODUCTS

Reconditioned sweepers offer low-cost service

Reconditioned Tennant sweepers can mean extra savings and expanded services to the landscaper and lawn care operator.

Reconditioned sweepers can be used to clean and maintain parking lots, access roads, sidewalks, and other hard outdoor surfaces.

The wide variety of walk-behind and rider sweepers are reconditioned by factory-trained mechanics in au-

thorized Tennant Company service centers, according to Tennant. The machines pass rigorous performance tests to guarantee that all systems work properly. They come with a 90-day warranty on all components except normal wear items.

Circle No. 190 on Reader Inquiry Card

Lesco spreader makes granular application easy

Lesco's gasoline-powered, hydraulic-driven spreader enables the operator to select a constant speed, from zero to four miles per hour, thus providing a constant rate and a cost savings.

For application of granular material, the Lesco spreader features an 80-pound capacity polyethylene hopper, corrosion-resistant Delrin 100 gears, and third hole on shut-off plate with adjustable metering slide for varying product bulk densities.

The spreader is powered by a 3-hp recoil Briggs & Stratton Industrial-

Commercial engine. A hopper cover to protect the product and allow transportation without spillage is available as an option.



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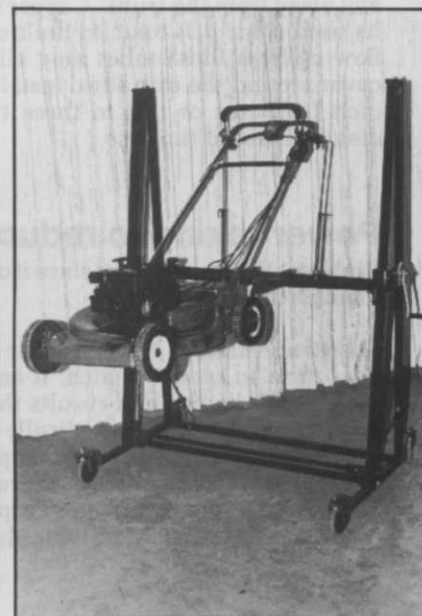
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Jiffy Lift makes mower servicing easier

The Jiffy Lift can alleviate the problem faced by many lawn mower repairmen: how to lift the mower and then suspend it to make the necessary repairs.

With the Jiffy Lift, the mower is clamped in the lift so that it is suspended in space without any obstructions to interfere with work to be performed. Any working level up to five feet is possible. The Jiffy Lift is available in different sizes and models.



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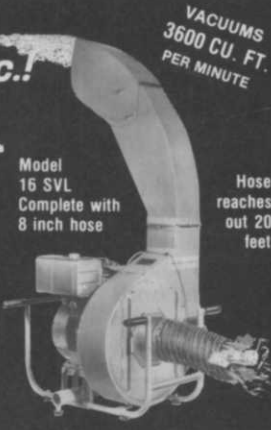
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Conversion to dual fuels can mean savings

A program that helps save money and trains students — that's one of many reasons why Hocking Technical College in Nelsonville, Ohio, remains a stable institution.

The two-year college is moving toward energy self-sufficiency through vehicle conversion to dual fuels—traditional gasoline and natural gas. The program also serves as a student training program. At Hocking Tech, a student learns and produces.

The school's vehicle fleet is undergoing natural gas conversion, taking advantage of the school's abundant supply. Hocking Tech draws from nine producing wells located on the college's 250 acres.

(Students are also trained in oil-well drilling and production on both rotary and cable tool rigs, while at the same time providing natural gas.)

The converted vehicles include those driven by admissions counselors visiting high schools throughout the state and buses transporting students to campus.

Hocking Tech president Dr. John J. Light drives a vehicle sporting a "powered by natural gas" sticker in the back window.

The conversion doesn't stop there. A truck and sprayer have recently been converted to natural gas. Both were a gift from the Davey Tree Company of Kent, Ohio (February, 1986, WT&T).

Hugh Morton, director of the Institute for Forest Industries Training at Hocking Tech, says that conversion is especially important.

"The truck and sprayer are used in



Tanks for storing natural gas are installed as a part of the conversion to dual fuel operation by participants in a seminar on natural gas conversion at Hocking Technical College in Nelsonville, Ohio.

residential areas and the engine is left running while the spraying is being done," he says. "Natural gas is clean burning and will emit far less pollutants in the air."

Students attending the publicly-funded college can obtain a degree in tree care and timber harvesting, that includes an intensive 11-week program in tree care.

Clean burning is just one advantage of natural gas, says Jerry Hutton, director of the automotive and oil well drilling and production programs.

"The alternate fuel has an outstanding ability to start in cold weather and

because the ignition temperature is 300 degrees higher than gasoline, it's safer. Because it's lighter than air it rises into the atmosphere," says Hutton.

Longer engine life is also a feature of natural gas conversion.

Hutton says the cost of converting the truck and sprayer was \$2,300.

He notes a fleet of five vehicles can make conversion cost-efficient.

The process is gaining support not only for those seeking energy self-sufficiency but for larger fleet owners such as international airports and taxi delivery companies throughout the U.S. and Canada.



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BOX NUMBER REPLIES: Mail box number replies to: WEEDS TREES & TURF, Classified Ad Department, 1 East First St., Duluth, MN 55802. Please include box number in address.

BUSINESS OPPORTUNITIES

Established Colorado grounds maintenance business; good reputation in community; 1700 customers; profitable; \$165,000. Rhys Christensen, (303) 493-7990. 9/86

WANT TO BUY OR SELL a golf course? Exclusively golf course transactions and appraisals. Ask for our catalog. McKay Golf and Country Club Properties, 15485 N. East Street, Lansing, Michigan 48906. Phone (517) 484-7726. TF

HELP WANTED

Millikin University is seeking a Supervisor of Grounds. Primary responsibility includes care of lawns, athletic fields, trees and shrubs on campus. Preference will be given to persons having a successful experience in supervision and management roles with a thorough knowledge of pruning, pest control, fertilization, turf grass maintenance. Possession of an Illinois Certified Pesticide Applicator License or ability to obtain within three months of employment. A degree in Horticulture is preferred. Submit resume to: Millikin University Personnel Office, Decatur, IL 62522. An EEO employer. 9/86

PROJECT MANAGER: Excellent opportunity for career and goal oriented individual to work with a commercial landscape firm in Atlanta, Georgia. Must be experienced in all aspects of landscape construction and willing to assume total responsibility. Good salary, benefits and incentive program. Scapes, Inc., 404-956-7500. 10/86

HELP WANTED: Land Estimator - KT Enterprises, Inc. is expanding its landscape installation department & has a challenging new position in our fast growing firm for the right person with exceptional sales ability. Must be experienced in take-offs and costing. Progressive design/build firm doing business in Washington, D.C. Metro area. Excellent salary, benefits & growth potential. Call John Warren 703-922-8540. 9/86

CHAIRPERSON GOLF COURSE/LANDSCAPE PROGRAMS: Master's degree in Plant/Soil Sciences, Business/Public Administration and two years' experience in Golf Course/Landscape Operations. Earned Doctorate preferred. Responsibilities include student recruitment, administration, public relations w/industry, student placement, supervision of faculty/staff, minimal teaching. Salary negotiable based on experience/qualifications. Deadline: Open. Send resume to Lake City Community College, Rt. 3, Box 7, Lake City, Florida 32055. (904)752-1822 ext. 313. EA/EO EMPLOYER. 9/86

Landscape Architects/Supervisors (project foremen) join a nationally acclaimed firm looking to expand into its second generation Long Island area supports a high budget landscape industry. Year round employment, company benefits and continuing education available. Experienced and aggressive people send resume to: **GOLDBERG & RODLER, INC.**, 216 East Main Street, Huntington, New York 11743. 10/86

Landscape Maintenance Foreman: South Florida firm seeking individuals who are experienced in all aspects of maintenance including irrigation. Send resume to: G & E, 4540 S.W. 75th Ave., Miami, FL 33155. 9/86

Sales Professional: To the Greens Industries in Mid-Atlantic region; must have "2 years" sales experience selling to lawn care, landscape, and tree care firms. A good knowledge of the business and customer's needs is necessary. Excellent compensation package offered. Please send resume to: Moyer & Son, Inc., 113 East Reliance Road, Souderton, Pennsylvania 18964. Attn: Specialty Fertilizer. 9/86

AGRONOMIST - Lawn Doctor, the nations leader in franchise lawn care, is seeking an individual to join our national staff. Position involves working with franchises on turf program development, training, safety, and regulation. BS Agronomy with warm and cool season turf experience and strong communication skills required. Must be willing to travel and relocate. Resume and salary history to Lawn Doctor, P.O. Box 512, Matawan, NJ 07747. 9/86

An extremely progressive private Country Club in St. Louis is seeking a Greens Superintendent. Must excel in training, follow through and organization. Hands on experience and knowledge of soils, chemicals, irrigation, manicuring, equipment and turf, especially Zoysia is essential. We are seeking a professional that is dedicated to excell. Excellent salary and outstanding benefits. Send resume only (No Calls Please) to: Westborough Country Club, 631 South Berry Road, St. Louis, MO 63122. 9/86

Irrigation Designer & Installation Supervisor— Experience a must!! Send resume to P.O. Box 157, Fairburn, GA 30213. 9/86

EASTERN NEW YORK AND VERMONT IRRIGATION MANAGER— Seeking qualified manager for full time position to build up Irrigation sales to Golf Courses, Municipalities, Residential/Commercial Contractors. Must have some knowledge of design. All company benefits. Please respond to: President, GEI, WTT Box 396. 9/86

GOLF COURSE SUPERINTENDENT - 18 hole, daily fee course located in Western Illinois seeks a knowledgeable and enthusiastic Superintendent to assume responsibility 12-1-86. Budgeting, planning, supervisory skills, turf grass and problem solving skills required. Please send a written resume along with salary requirements to WTT Box 398. 9/86

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If you are a creative, aggressive person with experience in turf management, and possess good communication skills, a B.S. degree in Agronomy or related degree, we would like to speak with you.

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HELP WANTED—A diversified growing landscape company in the Northeast is looking for experienced people for Landscape Design, Construction and Maintenance as Supervisors and Managers. Salary to be determined by experience. Send Resume including work and salary history to: **Control Env. Services, Inc., 2605B Durham Road, Bristol, PA 19007, Attn: J.R.B.** 9/86

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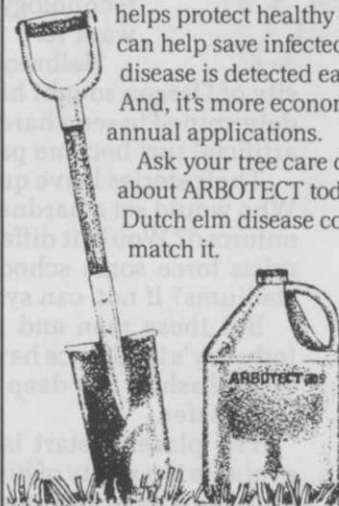
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Circle No. 143 on Reader Inquiry Card

Images of grief

Images. Most bombard the brain, evaporating quickly into oblivion. But some grab you, creeping into your thoughts throughout an otherwise routine day.

As I watched a baseball game played on artificial turf, I couldn't shake the memory of the tears in Alan Halbrook's eyes as he told me about Scott, who died when his head hit the artificial turf during baseball practice. "He was my son,"

he said softly, his lips quivering in an effort to hold back the tears. "How many kids get a baseball field named after them?" (Marist High School in Eugene, Ore., named the field in Scott's memory.)

As I caught a glimpse of the PGA Tour, I remembered the hope in Kent Waldrep's voice as he described how he'll swing a golf club when his paralysis is cured. Kent was left quadriplegic in a fall on artificial turf during a college football game.

Their stories are sad. The images, haunting. The results, courageous.

Waldrep runs the Kent Waldrep National Paralysis Research Foundation in Dallas, which raises money to find a cure for paralysis. He speaks out against artificial turf, suggesting Prescription Athletic Turf as a viable alternative. "I'm not convinced that system couldn't be adapted to dome stadiums," Waldrep says. "The technology is not the problem. It's applying that technology. It's the want to."

Halbrook has become such an expert on fields that the University of Oregon sought his advice on its new Omniturf football field. Halbrook is determined to see a hardness standard set for all athletic fields and knowledge of artificial turf become part of an athlete's training.

Their stories leave questions for our industry: Is the PAT system the answer? Who would set a hardness standard for schools, colleges, pros? How would it be enforced? Would it differ depending on a region's soil and turf? Will the liability crisis force some schools to eliminate athletics? Can turf be grown in dome stadiums? If not, can synthetic turf be made safer?

But these men and their families have their own question: Why does an industry's ignorance have to hurt anyone? Pain reflects in their eyes. Sometimes, anger flashes. But deep down is a strength which keeps them fighting to make fields safer.

The place to start is in our own backyard. Every field manager needs to evaluate the safety of his fields and make necessary changes. We need to do more than remember the stories of Scott Halbrook and Kent Waldrep, we must take responsibility for the safety of our athletes.

Images aren't enough.



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LESS CARE - REBEL requires less water and fertilization than most cool-season turf grasses.

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REBEL	6.8	8.2	7.5	6.5	4.8	7.0	7.6	6.8	5.1	6.7
FALCON	6.8	7.7	6.9	6.6	4.8	6.2	7.3	6.4	5.1	6.4
OLYMPIC	6.9	8.1	6.5	6.3	4.2	5.8	6.6	6.4	4.8	6.2
CLEMFINE	5.9	7.3	6.3	5.9	4.1	6.3	4.6	5.9	4.2	5.6
GALWAY	—	7.5	6.0	6.4	4.8	6.1	5.1	5.5	4.4	5.5
KY-31	5.5	6.8	6.3	5.2	4.1	5.9	3.6	5.4	5.0	5.3
ALTA	5.8	—	5.8	5.2	—	5.2	2.5	—	4.1	4.8
FAWN	—	5.8	5.5	5.1	3.4	4.5	2.1	—	3.9	4.3
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