

Weed control strategies for sports fields

Developing a game plan means scouting the opponent—identifying the weeds, recording their location, and learning their lifecycle.

by Gil Landry, Ph.D.
and Tim Murphy, Ph.D

■ Controlling weeds in sports fields is often the ultimate challenge.

The athletic events themselves are big obstacles to maintaining a high quality, safe turf. Wear, soil compaction and divoting serve as open invitations to sports field's enemy number one: weeds.

As coaches drill teams into shape and develop game plans or strategies, so should turfgrass managers. This begins with shaping up the grass through proper management: fertilization, irrigation, mowing and cultivation.

Just as the best defense is a good offense, a healthy, vigorous turf is much less prone to weed problems than a weak one. So first spend your time and money conditioning the field through proper management. It will save you time and money later.

Developing a game plan involves assessing or scouting the opponent and then developing proper strategies. Turf managers scout by identifying the weeds, recording their location, and learning their lifecycle.

Proper identification is essential. After all, if what looks like a sweep right ends up being a reverse left, you're in big trouble.

THE WEEDS OF SUMMER



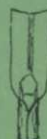
Crabgrass



Goosegrass



Annual
Bluegrass



Many publications are available that aid in weed identification and weed control program development. Well-trained sales representatives and local county extension agents can also be very helpful. Once the weeds are identified, a control strategy can be developed.

Common weeds—The most common weeds include various species of crabgrass, goosegrass (also called silver crabgrass or crowfoot) and annual bluegrass (aka *Poa annua*). Other common weeds might include purple and yellow nutsedge, wild garlic, clovers, dandelion and various winter annuals such as henbit and common chickweed.

Crabgrass and goosegrass, both summer annuals, can be controlled with herbicides. Crabgrass starts germinating in the spring when soil temperatures at a four-inch depth reach 53-58° F. Goosegrass usually germinates about two to eight weeks later than crabgrass when soil temperatures reach 60-65° F.

University research shows that the effectiveness of pre-emergence herbicides varies in controlling crabgrass and goosegrass. Refer to weed control guides or recommendations available through most land grant universities.

Additionally, the effectiveness of many pre-emergence herbicides can be increased by using split or sequential applications: one-half when the herbicide is normally applied and a second half-application 8 to 10 weeks later. This extends the life of the active ingredient and has been shown to increase effectiveness, particularly against goosegrass.

In the case of a winter annual such as annual bluegrass, germination occurs in the late summer and fall when soil temperatures drop to 70-75° F. It can also be controlled by both pre-emergence and post-emergence herbicides.

After the scouting has been done, developing a game plan or strategy involves becoming thoroughly familiar with the her-

ELSEWHERE

**Ammonium sulfate found
to control summer patch
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**Plan ahead for
Japanese beetles
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The authors keep Sanford Stadium, home of the University of Georgia football team in Athens, Ga., free of weeds.

bicide label and consideration of the following factors:

Turfgrass tolerance: Does the turfgrass tolerate the herbicide? (For example, dormant bermudagrass has excellent tolerance to glyphosate but will be severely damaged if treated in the later stages of spring green-up or while actively growing.)

Time of application: This can influence

turfgrass tolerance and control. (For example, turfgrass herbicide injury increases as air temperatures exceed 90° F. Also, some post-emergence herbicides applied just prior to or during spring growth may delay green-up. Finally, the more mature a weed is, the less effective a herbicide usually will be.)

Application frequency: Repeat applications are necessary to control some weeds.

(For example, two applications of oryzalin or benefin at intervals of 8 to 10 weeks will generally give better control of goosegrass than a single application. Also, two applications of MSMA at a 5- to 7-day interval is more effective for crabgrass control than two applications at a 14-day interval.

Application equipment: Selecting a sprayable or granular formulation will depend on the application equipment available. Generally, sprayable and granular formulations of the same pre-emergence herbicide are equally effective.

Economics: Remember: materials are priced differently, and the most expensive materials are not necessarily the most effective. Also, cost comparisons should be made based on the cost per acre treated, not on the costs per unit of product.

Cultural management—The meshing of a weed control program with a cultural management program is like bringing the offense and defense together. For years, it was not acceptable to follow pre-emergence applications with core cultivation. However, a number of studies have shown that coring and even vertical mowing after herbicide application does not increase weed problems. Therefore, if soil compaction is a problem, don't avoid coring.

Sports fields frequently need renovation. So if areas need re-seeding, either use post-emergence herbicides or allow adequate time for pre-emergence herbicides to dissipate before re-seeding.

Proper herbicide use can be one of the most effective tools available to the sports turf manager. However, it also can be somewhat like a running back who can run 100 yards in 9.4 seconds. He has the potential to be great, but he's not worth much if he fumbles half the time he touches the ball.

Likewise, if you control weeds with post-emergence herbicides but the turfgrass lacks adequate fertility or water, it will not recover and fill in the area previously occupied by weeds. That's like the fullback taking out the linebacker and the tailback slipping in the backfield. It looked good for a while, but it failed to advance the game plan.

Although we often think that taking time to develop a strategy is only for the fortunate few with big staffs and plenty of time, we should recognize that without a strategy or plan, we simply are reacting. If we plan, we begin building and refining a program.

—Dr. Landry is a professor of agronomy at the University of Georgia and president of the national Sports Turf Managers Association. Dr. Murphy is an associate professor of agronomy at the University of Georgia.

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Ammonium sulfate reduces summer patch

■ Ammonium sulfate fertilizer (21-0-0-24S) suppresses summer patch, a fungal disease attacking the roots of turfgrasses, says Dr. Joseph Heckman of Rutgers University.

Heckman says the intensity of this turf disease increases during hot, humid summers. While summer patch can cause problems for homeowners, the turf market—especially golf course managers—must deal with it on a larger scale. Summer patch affects Kentucky bluegrass, annual bluegrass and fine fescues.

"Ammonium sulfate reduces soil pH almost immediately, and that has been shown to suppress summer patch in our test on Kentucky bluegrass," says Rutgers pathologist David Thompson, who worked with Heckman and Bruce Clarke on the study. "Urea lowers the pH in the long term, but in the short term it actually increases the soil pH and urea does not suppress summer patch."

Neither calcium nitrate nor potassium nitrate offer the pH lowering effect found with ammonium sulfate, Thompson says.

Tests in 1991 showed a 60 to 80 percent reduction in summer patch when ammonium sulfate was applied, and a 35 to 45 percent when sulfur-coated urea was applied, compared to urea or nitrate. Thompson also says ammonium sulfate caused a delay of three to five weeks in the development of symptoms while sulfur-coated urea only showed a one- to two-week delay of symptoms compared to nitrate nitrogen.

Plan ahead for Japanese beetles

■ Warm weather next spring will bring with it the arrival of Japanese beetles. These voracious insects begin their summer feeding frenzy in late June or early July in most cool-season areas, a practice they keep up through August. Some may even linger until late September.

Although adult Japanese beetles seem especially attracted to roses, annuals, vegetables and grapes, they can—and do—feed on more than 250 kinds of plants, according to Dr. Lee Hellman, an extension entomologist with the University of Maryland. Just one or two of the insects

can virtually destroy a flower in a matter of hours.

When it comes to control, there's good news and bad news. The good news is that control methods are available; the bad news is that none of them is completely effective, Hellman says.

Although insecticides will kill Japanese beetles that eat or walk on treated leaves, they remain effective for only a few days—a week at the most. You may need to spray

some ornamental plants several times during the summer to prevent serious damage caused by the beetles as they migrate from one yard to another.

The most common insecticides for use against Japanese beetles are malathion and carbaryl (Sevin).

Both are effective, if applied according to label directions. They may be used on fruit trees, but may involve a pre-harvest waiting period.



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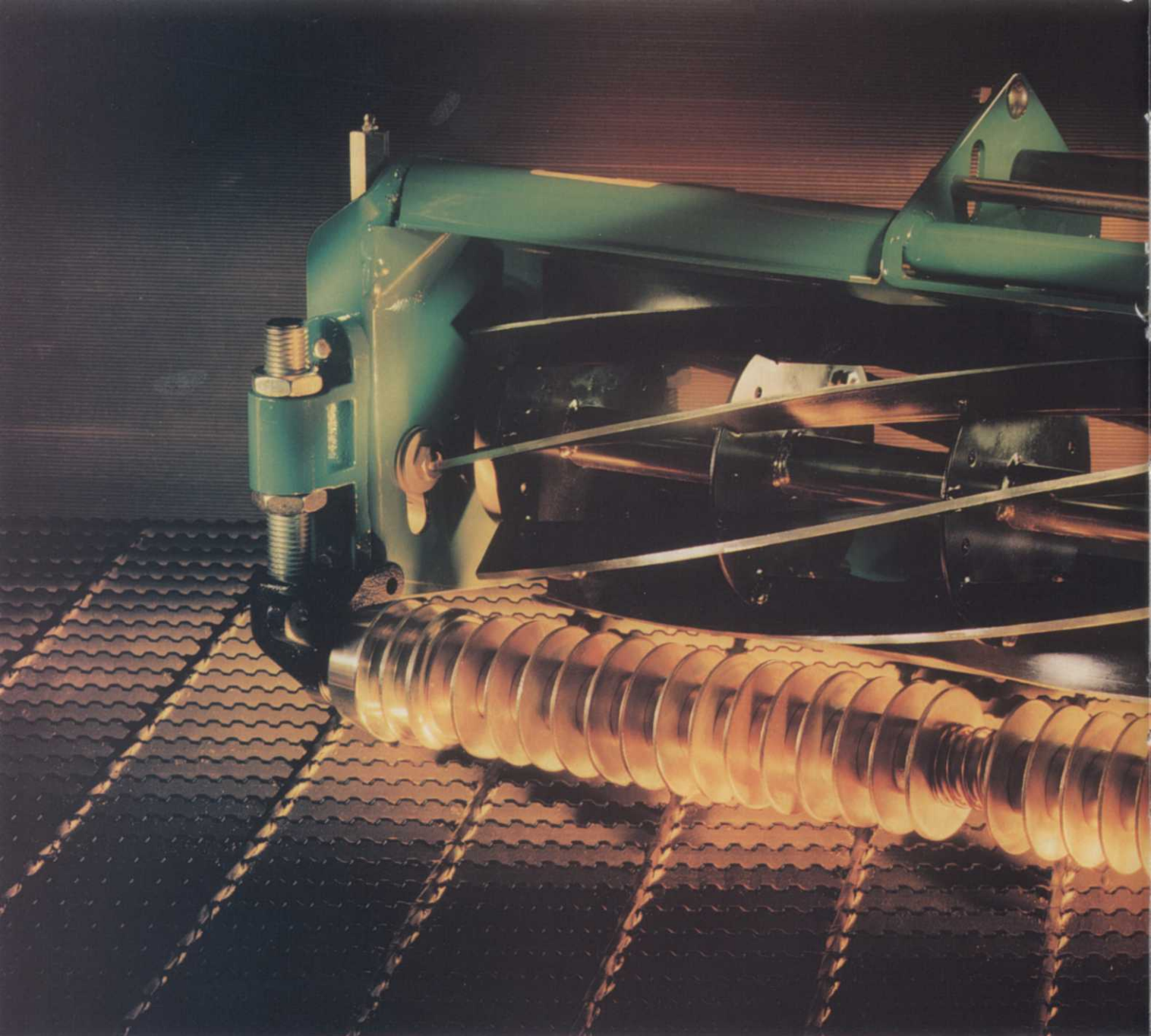
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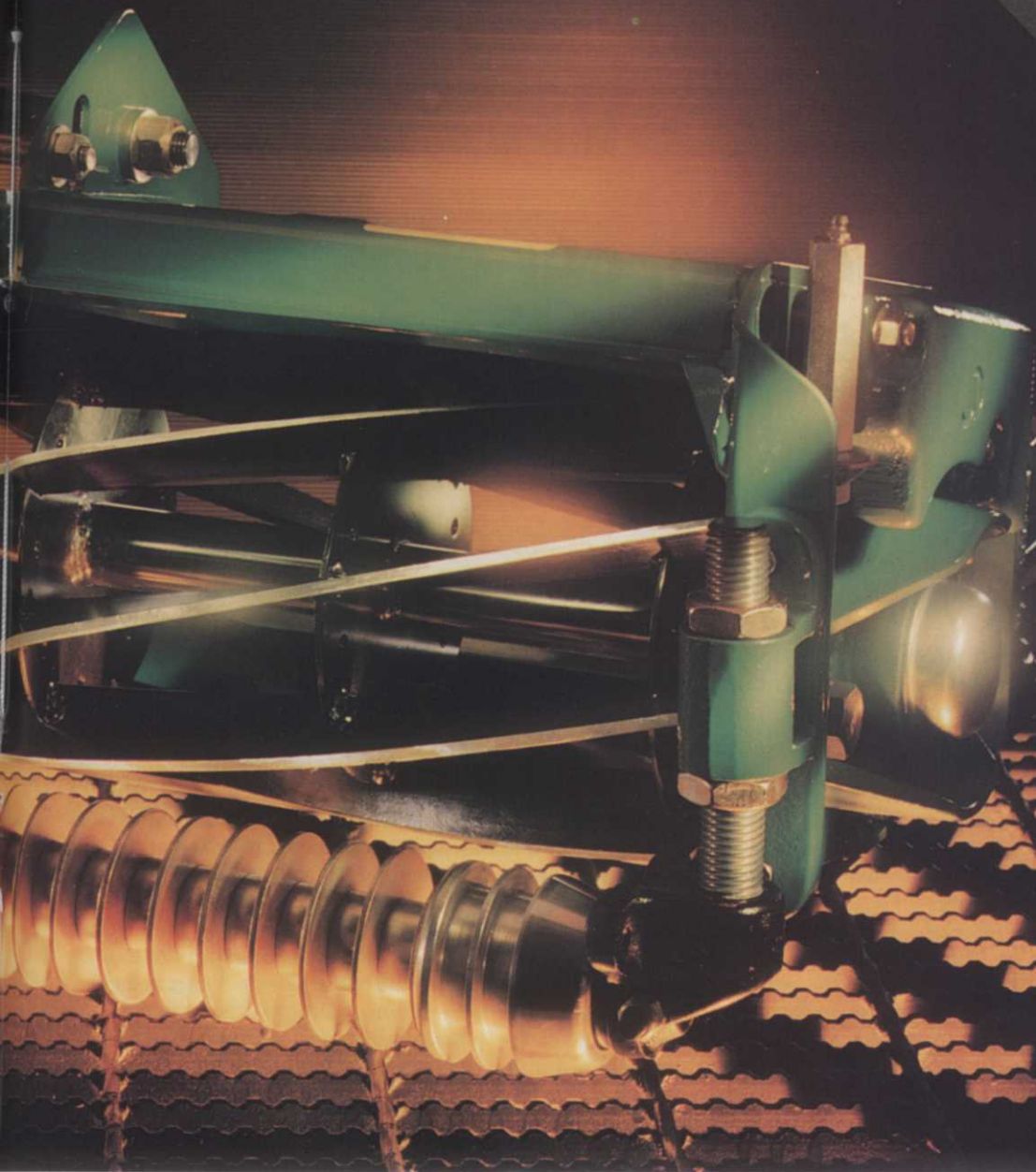
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LAWN CARE INDUSTRY

Patrick J. Norton, our choice for 1992 'Person of the Year'

■ Patrick J. Norton describes the lawn care business as both "tough and fair."

Norton, president and chief executive officer of Barefoot Grass Lawn Service, Inc., is our 1992 "Person of the Year." Both he and the company he's helped guide the past 13 years represent many of the best aspects of professional lawn care to the public and competitors alike.

Barefoot Grass's continued growth and acceptance by American homeowners—especially the past couple of years when most lawn care companies struggled just to stay even—reaffirms what everyone in any service business knows but sometimes has trouble translating into action: provide quality service, charge a fair price, earn an acceptable profit.

Quality service—Barefoot Grass prides itself on its well-trained service force of more than 750 fulltime employees which delivered premium lawn services to more than 300,000 customers this past season. The company, unlike many of its competitors, exclusively uses dry, granular fertilizers in a two-step application process. Its technicians apply weed and insect controls only as needed.

Headquartered in Worthington, Ohio, the company gets a fair return for the extra time and care its technicians spend on clients' properties, its prices being in the upper half of the industry scale.

Its seemingly always clean service vans are common sights in more than 60 metropolitan areas, particularly in the



Patrick J. Norton, left, insightful CEO of Barefoot Grass, accepts 'Person of the Year' plaque from LANDSCAPE MANAGEMENT publisher Jon Miducki.

Midwest, Mideast and East. Barefoot Grass operates in 22 company-owned locations, while the other locations are either franchises or "branchises." A branchise is, basically, a franchise managed by the parent company according to well-defined management agreements.

This season Barefoot Grass, now the second largest lawn care company in North America, will total more than \$65 million in sales systemwide.

Focused and committed—The company, in some very real ways, mirrors the personality of its president, Pat Norton: competent, focused on the market, committed to customer service.

Norton, 42, came to Barefoot Grass in

1979 after working as a certified public accountant in Arthur Anderson & Co.'s Cleveland office. After two years as company finance director, Norton became Barefoot's general manager in 1981, and in 1985 company president.

Barefoot Grass itself was founded in 1975 by Marvin Williams, a former employee of O.M. Scott & Sons Co. It took off in the 1980s, growing 40 percent in both 1984 and 1985 with sales continuing upward in a steady though less dramatic pattern since. It went public late in 1991 and its stock is now traded on NASDAQ.

Still optimistic—Norton, with his strong financial background and outlook, has helped build Barefoot into one of the most market-targeted, tightly managed lawn care businesses in the nation. But a company that retains much of its entrepreneurial spirit.

Although you'd never describe Barefoot's president as an industry cheerleader, Norton remains steadfastly optimistic about the future of the lawn care industry. This has been particularly apparent for the past two years as he's served as a director for the Professional Lawn Care

Barefoot to acquire Ever-Green

■ **COLUMBUS, OH**—Barefoot, Inc. announced on November 23 that it has entered into a definitive purchase agreement whereby its Barefoot Grass Lawn Services, Inc. subsidiary will acquire ADT Limited's Ever-Green Lawns Corporation. The acquisition is expected to be finalized on or about January 1, 1993.

Ever-Green, headquartered in St.

Louis, services about 100,000 customers in nine markets. Barefoot currently carries 315,000 customers in 68 markets, including franchises.

All of Ever-Green's markets are currently serviced by Barefoot, according to Patrick Norton, Barefoot's president and CEO, who says the purchase "will be synergistic and will have a positive impact on next year's earnings."

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THE CHEMLAWN STORY, PART III

ChemLawn, under Ecolab, found out it 'couldn't go home again'

Many factors contributed to ChemLawn's demise, but had its trademark passion for customer service left it first?

■ A lot of the public still thinks ChemLawn is ChemLawn. This past season they saw company trucks stopping in their neighborhoods. They recognized lawn specialists in their distinctive company uniforms.

Folks, *the* ChemLawn Corp. is gone.

It's now part of TruGreen—actually the biggest part of TruGreen, a subsidiary of ServiceMaster, which reported operating revenue of \$2.1 billion in 1991.

ChemLawn didn't go suddenly. Although, if a date has to be picked, select March 20, 1987, the day ChemLawn signed a merger agreement with Ecolab Inc., of St. Paul, Minn. The deal's completion several weeks later halted an escalating financial fracas begun a month earlier by Waste Management Inc.'s surprise \$27-per-share offer for ChemLawn stock. ChemLawn's management fought the takeover, and within weeks ChemLawn embraced Ecolab as its "white knight."

Not a fit—Ecolab, panting to be player in the residential services market, came up with \$370 million (\$36.50 per share) for ChemLawn which responded with profits in 1987 and 1988, although not at the level Ecolab had hoped. Short, in fact, of even covering interest on its acquisition debt.

Finally, in 1989, on sales of \$394 million, ChemLawn started losing money. Its residential customer base fell 6 percent.

Profits eluded ChemLawn in spite of earnest efforts by its Ecolab-groomed management to reinvent the same passion for customer service that launched ChemLawn to industry preeminence in the first place.

"We are hiring the right people this year and training and re-certifying every ChemLawn field employee," said Mike Shannon, who took over ChemLawn in the summer of 1988 after Jack Van Fossen resigned. "There is no question that in 1990 we will have the best trained, most qualified force in our industry," he told shareholders



Mark Cruse: ...not much difference between them and us.



Dr. Miller: 'I think the entire industry got sloppy.'

in 1989, as if commanding lightning to strike twice in the same place.

ChemLawn couldn't go home again.

By mid-1990, almost 80 percent of ChemLawn's pre-Ecolab staff had, through several reorganizations, found other jobs.

No single reason—Ecolab's sale of the limping lawn care giant to TruGreen this past June for just over \$100 million was, in a sense, a postscript.

There is no single reason why ChemLawn doesn't yet stand independently atop the market it helped create and shape. The single most obvious reason lies in the warped financial thinking of the 1980s that allowed companies access to mountains of debt to gobble up other companies.

Other reasons for ChemLawn's problems, people reasons, are just as compelling but harder to document. For example, media-savvy "anti-pesticide" forces nipped savagely at lawn care's heels in the 1980s. They disillusioned thousands of potential customers. They still do.

Then there are the not-so-obvious people reasons.

Employee turnover accelerated in the 1980s, in spite of ChemLawn management's best efforts. Management had prided itself, and rightly so, on its progressiveness. But, had lawn care become *just* a job to too many of ChemLawn's front-line workers? The next customer *just* a customer?

Turnover woes—An equally vexing problem, customer turnover, wasn't ChemLawn's exclusive property either, but it felt the pinch on a national scale.

"I think the entire industry got a little sloppy," says Dr. Bob Miller, a former ChemLawn vice president and 19 years with ChemLawn. The industry "promised too much," he says. It created the impression that all a homeowner needed for a perfect lawn was a lawn service.

Even so, by the mid-1980s, ChemLawn dominated lawn care. With sales exceeding \$350 million, its research said it commanded 30-35 percent market share.

"They are so much larger than anyone else that they can't steal business," Paul Green, vice president of marketing for Stanley Steemer International, once told a reporter from *Business First of Greater Columbus*.

ChemLawn's remarkable success and size gave it enormous marketing advantages over its competitors, but its size also made it a target.

"We had been new and different and, by the mid-1980s, there were lots of people doing exactly what we were doing. There wasn't that much differentiation between us and them," says Mark Cruse, 18 years with ChemLawn and a former company vp.

Why change?—Competitors included a growing legion of ambitious, well-trained former employees, eager and able to slice off slivers of ChemLawn's business. Meanwhile larger, better-capitalized regional outfits strafed affluent neighborhoods with sophisticated telemarketing campaigns while ChemLawn scratched its head over the falling results of its mailed brochures.

Competitors increasingly offered more

Sources listed of ChemLawn's demise

■ Dry breezes replaced snow and rain early—too early—in 1985, and whisked in with them a chilly reality for the ChemLawn Corp., which mistimed its spring marketing and never really caught up.

Net income that year fell 20 percent, from \$15.6 in 1984 to \$12.5 million. Any doubts that marketplace forces, in addition to weather, were ganging up on the lawn application industry, and particularly on ChemLawn, began fading in 1986 as ChemLawn's after-tax profit slipped another 4 percent.

The industry leader's customer base actually fell!

L. Jack Van Fossen, ChemLawn's chairman, president and chief executive officer, in the 1986 annual report, listed these causes for the stall:

● **Competition**—A growing number of competitors "caused more rapid penetration of the potential market and a negative

impact on consumer attitudes because of deteriorating quality of service."

● **Environmental issues**—"One of the results of this publicity has been the movement of lawn care from its position as a valuable innocuous consumer service into the media spotlight," Van Fossen explained.

● **Employee retention and training**—"Over the past two years, high turnover in our specialist workforce has led to decreasing customer satisfaction with the quality of our service. The result has been higher than acceptable cancellations and fewer customer referrals which are essential to grow the business properly."

● **Marketing programs**—"For the past two years, consumer response to our advertising programs has been much lower than expected and lower than historic trends suggest they should have been," he wrote shareholders.

Company management began putting



Van Fossen pinpointed areas for improvement, but WMI entered the picture.

together:

- ✓ improved training for specialists,
- ✓ a stronger advertising effort, and
- ✓ customized service offerings.

This was the direction ChemLawn was going when Waste Management Inc., early in 1987, began the bidding war that culminated in Ecolab's purchase of ChemLawn.

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flexible, more specialized and/or more diversified services to distinguish themselves from "spray and go," the image that lawn care began to represent to American homeowners. But for ChemLawn, lawn care remained business as usual—until, perhaps, it was too late.

In retrospect, it's easy, and probably unfair, to fault ChemLawn too strongly for the shortcomings that led to its demise. Monday-morning quarterbacks always see the weekend's game in clearest light.

Lawn care professionals are better served in learning from ChemLawn's experiences—as they always have. And to keep alive the philosophy that ChemLawn founder, the late Dick Duke, burned into the company, making it such a winner with the American public in the first place: treat both your employees and customers with the respect they deserve.

Says William Copeland, one of the original ChemLawn employees and now retired: "All I can say is that it was great while it was going."

"Regrets? No I have no regrets. We ended up, the seven of us that were in it in the beginning, with 7,000 employees and feeding all their families. And everybody was happy doing it."

—Ron Hall

Nitro-Green, Lawn Doctor rank high among franchisors, says Success

■ Two lawn care companies are among *Success* magazine's top 100 franchisors in the United States for 1992.

Nitro-Green Professional Lawn & Tree Care, Fairfield, Calif., is ranked 53rd on the magazine's third annual "Gold 100" listing. Lawn Doctor, Matawan, N.J., checks in at 70th.

"We feel it's an honor to be included," says Nitro-Green President Roger Albrecht. "The magazine surveys over 2,000 companies."

Nitro-Green, started in 1977, sold its first franchise in 1979 and has 39 locations owned by franchisees. Based in California,



Nitro-Green's competition for customer satisfaction has led it to be recognized by *Success* magazine.

there are Nitro-Green locations as far east as Iowa and Minnesota.

The company has been somewhat conservative in selling franchises. That's not likely to change, says Albrecht.

"We only sold one franchise last year. It wasn't our focus. We were putting more of our effort into opening a new corporate branch. This year I think we'll sell a few more franchises."

Albrecht says he's not particularly interested that Nitro-Green competes with any other company in terms of size or growth, only in customer satisfaction.

"Some companies measure how many locations they have, or how much production they can accomplish. We just measure one thing, the customer service index," he explains.

Lawn Doctor, also cited by *Success*, began in 1967 and has grown to 293 locations.

Success says its listing isn't a ranking of the 100 fastest-growing franchisors, but rather the franchisors that will "empower franchisees to succeed." The rankings are based on categories: services provided to franchisees, stability, profitability, etc., the magazine explains.

HOT TOPICS



Hoosier basketball coach Bobby Knight (standing) entertains the green industry. (Left to right) Tom Garber of ALCA, John Abernathy of PGMS, Bob Andrews of PLCAA, Anne McClure of PLCAA and GIE show coordinator, Earl Wilson of PGMS and GIE show coordinator.

Bobby Knight: play to strengths, away from weaknesses

More than 3,000 green industry professionals listen, learn at GIE and three annual meetings.

INDIANAPOLIS — Bobby Knight, the volatile men's basketball coach at Indiana University, was both a "hit" and a "hoot" as keynote speaker for the 1992 Green Industry Expo here last month.

Though he spent much of his 45 minutes at the podium telling the packed meeting room humorous sports anecdotes, Knight managed to intersperse some of his own "words of wisdom:"

● "The best study is how to lose. We identify the reasons why we can get beat. If we can figure out why we lose, we eliminate them and there's only one alternative

left: we win."

● "You play to strengths and away from weaknesses."

● "It's really important to get people involved in what the hell you're doing."

● "There is nothing more important than the ability to communicate an idea."

A more pointed message came from U.S. Rep. Charles Stenholm (D-Texas) who told about 150 LCOs that they'd better start building coalitions for more favorable legislation, or they're going to suffer.

Congressman Stenholm, a friend of agriculture and the green industry, spoke at PLCAA's GIE breakfast meeting. He didn't pull any punches.

"If you don't look after your special interests, somebody else will," he said. "Somehow, somehow, we're going to have to get together to build a scientific record of just what we're doing."

Only by working together can LCOs

maximize their strength, he said.

Generally speaking, all three co-sponsoring organizations were pleased with the turnout, which included a great many drive-ins from the surrounding area. The PLCAA reported 831 registrants, ALCA 450 and the PGMS 240. Overall attendance at the Green Industry Expo was 2,332, according to GIE coordinator Anne McClure of the PLCAA.

"We had at least 400 more people than last year, but it seemed like much more," McClure noted. "So many of the people were quality attendees."

"The momentum we gathered here just has to carry into 1993."

Next year's Green Industry Expo will be held at the Sheraton Baltimore and Baltimore Convention Center, Nov. 14-18. Baltimore was the site of the all-time record-setting PLCAA trade show five years ago.

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HOT STUFF

Small business scholarships

ATHENS, Ga. — High school seniors who are the children of independent business owners are eligible to apply for a \$500 scholarship offered by Padgett Business Services of North America.

Applicants must be graduating high school seniors who plan to attend a post-secondary accredited institution. In addition, the legal guardian of the student must be an active owner of at least 10 percent of the stock or capital in a local business that employs fewer than 20 people.

Deadline for applying is March 1, 1993. For an application and further information, phone Padgett Business Services at (800) 323-7292. All regional winners will become eligible for a grand prize scholarship of \$4,000.

Benefits of ornamental grasses

BOUND BROOK, N.J. — Ornamental grasses can serve many purposes, depending on the site, says **Chris Rauch** of Lofts Seed.

During Lofts' Fall Field Day and Seminar, Ms. Rauch noted that tall grasses such as ravengrass and giant miscanthus grow to heights of 10 to 12 feet and can create dramatic borders when planted in line, or look like natural sculptures when planted singly in an open area.

Smaller, colorful grasses such as weeping lovegrass create soft borders around lakes and other natural areas, Rauch said. And fescues, switchgrass and indiagrass are groundcovers that give large, open areas a meadow or prairie appearance.

Environmental study released

JUPITER, Fla. — The National Golf Foundation recommends establishing a special information clearinghouse for environmental issues, according to a specially-commissioned study released this fall.

The report also recommends that the golf industry begin networking with other industries that have similar environmental interests.

Driving these recommendations is a situational analysis: while things may not be all that bad at the moment, "environmental issues have the potential to be a serious threat to the golf industry."

For more information on the report, contact **Bill Burbaum** or **Trish Davis** at the NGF, 1150 South U.S. Highway One, Jupiter, FL 33477; (407) 744-6006.

ASGCA supports Audubon

CHICAGO — Members of the American Society of Golf Course Architects have pledged to design projects in accordance with the Audubon Cooperative Sanctuary Program for golf courses (See June, 1992 LM), according to president **Art Hills**.

"Golf courses are already a good thing for wildlife and for the environment," says Hills. "But the Cooperative Sanctuary Program helps courses further promote sound land management and the conservation of our natural resources by encouraging the development of wildlife habitats.

"With the involvement of ASGCA members, perhaps someday all golf courses will serve as wildlife habitats."

'Barricade' okayed for combos

DES PLAINES, Ill. — Barricade pre-emergence herbicide has received EPA approval for use in herbicide/fertilizer combinations.

Barricade will now be available in two forms: new dry, granulated fertilizer forms and easy-to-mix water soluble packets for spray applications.

According to its manufacturer, Sandoz Agro, Barricade's effectiveness and long-lasting capabilities provide superior weed control of crabgrass and other turf weeds by using 75 to 80 percent less active ingredient than other pre-emergence herbicides.

Environmental topics discussed by GCSAA panels

LAWRENCE, Kans. — The Golf Course Superintendents Association of America (GCSAA) headquarters building here was a recent host to panels on pesticide exposure and environmental training.

The GCSAA held the pesticide exposure meeting to discuss the possibility of sponsoring studies through its Scholarship & Research program. Such studies would be used to document worker safety, address public concern about pesticide exposure, and guide GCSAA education and research programs.

Represented on the panel—besides the GCSAA—were the National Institutes of Health, the U.S. EPA, DowElanco Specialty Products, O.M. Scott & Sons, and the Department of Environmental Health of Colorado State University.

"The golf community, led by the GCSAA, has maintained an open and positive approach to addressing ecological and health concerns," said GCSAA president **Bill Roberts**. "This approach stresses professional education for superintendents and applicators, cooperation with regulatory agencies and increased scientific research."

In addition, the Golf Course Development Resource Committee discussed tentative educational courses of its Environmental Management Program (EMP). The environmental impact of course maintenance practices has attracted increasing scrutiny from the general public and regulatory agencies.

The EMP consists of six specialized categories:

- underground storage tanks,
- golf course development,
- IPM,
- employee safety and right-to-know,
- water quality and application, and
- storage disposal and recycling.

Superintendents may choose to complete one or more of these specializations. Those who successfully complete the required work receive certificates from the GCSAA and are listed in the "Directory of Environmental Specialists in Golf Course Management."

For more information on the pesticide exposure study, the EMP, or other continuing education programs, you can telephone the GCSAA at (913) 841-2240.