



That's an exceptionally strong statement, Ray. But let's start with the product. Is it something new?

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What broadleaf weeds does it control? "Oxalis, prostrate spurge, chickweed, cudweed, hop clover, henbit, and eveningprimrose. And soon we may be able to add to that list."

That sounds good, but how long does it last? "It provides excellent residual activity... four to five months for most weeds when properly applied."

How many species of turfgrasses can I use pendimethalin on? "Right now, it's labeled for use on nine species of established cool and warm season turfgrasses."

What forms does it come in? "Four. In addition to water-dispersible granules, we also offer three exclusive ready-to-use dry-applied products—a fertilizer/pendimethalin combination and two straight pendimethalin products—one for cool-season grasses and one for warm-season grasses."

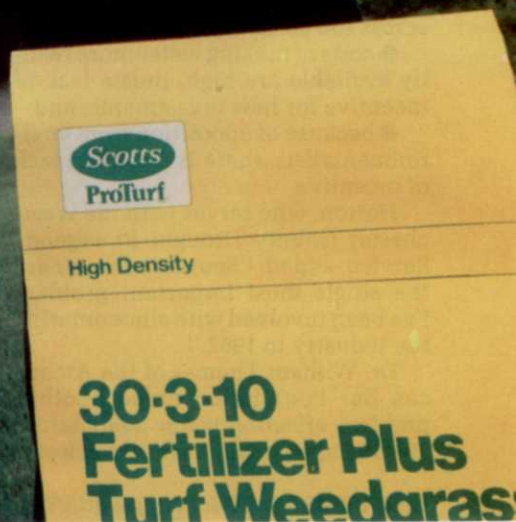
And how much does it cost? "On a square-foot basis, the price is very competitive. Factor in the broad-spectrum action and residual... which should reduce callbacks... and Scotts pendimethalin products become an unbeatable value."

For more information about pendimethalin turfgrass herbicide, call Scotts Lawn Care Service Supply Division at 800-543-0006. In Ohio, call collect 513-644-2900.

Circle No. 153

"You can't get better pre-emergent control of grassy and broadleaf weeds... or a better value."

Ray Huey, Scotts project leader (Herbicide Research and Development), talks about Scotts pendimethalin-based turf products.



WATER.

That one word describes what could become the golf course superintendent's No. 1 concern. A GCSAA panel of experts recently hashed over the intricacies of water usage. Here's what was said.

by Jerry Roche, editor

Water, water, everywhere—and not a drop to drink," goes the old saying.

But water, in this day and age, is decidedly *not* everywhere. Yes, there may be enough to drink. But it's getting tougher to justify large amounts of water to irrigate golf courses. As a matter of fact, it's getting so difficult that the Golf Course Superintendents Association of America recently spent half a day hashing over the problem.

At the GCSAA Mid-Year Turfgrass Conference and Show last September, a panel discussion on "Management Response on Water Crisis" was held. Nine water experts shared the podium.

"This natural resource is decreasing, and we definitely need a plan to stay in business," said moderator Gerald Faubel, of the Saginaw (Mich.) Country Club.

Five factors

Edward Horton of Westchester Country Club, Port Chester, N.Y., observed that water availability is reaching crisis stage because of five factors:

- the "suburban sprawl" has increased demand for water and pollution;
- money allocation is going toward anti-pollution research rather than availability;
- water facilities, on the whole, across the country, are old;
- costs of making water more readily available are high, thus a lack of incentive for new investments; and
- because of opposition from environmentalists, there is a general lack of incentive.

Horton, who serves with the Westchester County Drought Emergency Service, added, "Sources of water are the single most important problem I've been involved with since entering the industry in 1967."

Dr. William Thomas of the American Bar Foundation noted another problem affecting water availability: 50 percent of all public drinking water

comes from groundwater, and groundwater legislation "is in disarray." Thomas, a member of the National Water Alliance, stressed the fact that the golf course superintendent has to "know more about hydrology than the local hydrologist," to work on educating the public and to support research on drought-resistant turf.

A groundwater 'code'

Katherine Jacobs of the Arizona Department of Water Resources described that state's Groundwater Code, which has been instituted to cut water use.



"One of the first ideas we're using is reducing the amount of turf and uncut roughs of native grass on golf courses," she said. "Taken a step further, you get into the concept of 'target golf.'"

Jacobs, a former Olympic ice-dancer, added that golf course superintendents are asked to: minimize the surfaces of lakes and ponds and lime them; reduce areas of overseeding (just tees and greens); control cart traffic; use proper mowing techniques and wetting agents; and—most importantly—oversee the proper installation and maintenance

of irrigation systems.

She has received excellent cooperation from superintendents. "Working with them in our area has been a phenomenally positive experience," she concluded.

Reducing usage

Dr. James Watson of the Toro Co. offered some ways water usage can be reduced:

- Select plants that use and survive with less water.
- Support research that will introduce such plant species. "We believe researchers will produce more drought and heat-tolerant species within 10 years."
- Design new golf courses with reduced acreage of plants that need water.
- Use more mulch, "a tremendous adjunct to the conservation of water."
- Cultivate turf to ensure the infiltration of water.
- Use soil modification techniques to maximize the use of water.
- Closely monitor the irrigation system's efficiency.

"We need to know more about mowing," Dr. Watson surmised. "We need to know more about height of cut, frequency, and how it impacts on the various types of cultivars."

"It's gratifying to see the efforts being made to use effluent water. And I see a bright future for the use of saline and brackish waters."

Researchers speak up

Dr. James Beard of Texas A&M University, perhaps the foremost expert on turf water usage in the nation, was sitting in the audience. He was asked his thoughts.

"We have a long way to go," Dr. Beard said. "The objectives of 50 percent reduction (in water usage) are very realistic. I'm thinking 60 to 70 percent in the back of my mind as being achievable."

Dr. William Daniel of Purdue University, co-inventor of the Prescription

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The panel giving their observations on water usage problems in the green industry is shown here. Left to right, are: Paul Dermott, Jonathon Scott, Bruce Cadenelli, Ted Horton, Gerald Faubel, Dr. Jim Watson, Katharine Jacobs, Dr. William Thomas and John Ausen.

Athletic Turf (P.A.T.) system, was also called upon. He noted that home lawns should be designed to have moisture storage systems, and that improved rooting systems are the key. He also said that growth regulators may have some future effect on the efforts to reduce water use, and that "increasing reservoir systems is a possibility to go

with increased water needs."

About legislation

John Ausen of Hyperion Field Club, Johnston, Iowa, and Bruce Cadenelli of Hollywood Golf Club, Deal, N.J., attacked the question of government legislation as it pertains to water usage.

"Some of our state meetings are

raising an awareness that there could be a potential problem," said Ausen. "So we're trying to develop a conservation program of our own. And we've put together a survey showing that were not frivolous.

"The GCSAA is probably the group that will pull this all together."

Cadenelli said that water restric-

Turf water use rates found by Texas A&M

Researchers at Texas A&M University have determined water use rates of several types of turfgrass, by species, according to Dr. James Beard.

The turfgrasses were divided into cool-season and warm-season for purposes of the experiments. They were ranked "very low," "low," "medium," "high," and "very high." The experiment was conducted in an environmental chamber under non-limiting moisture conditions. Here is how Texas A&M ranked the grasses:

Warm-season

VERY LOW: buffalograss

LOW: bermudagrass hybrids, centipedegrass, bermudagrass, zoysiagrass, blue brama

MEDIUM: bahiagrass, seashore paspalum, St. Augustinegrass, zoysiagrass hybrids

HIGH: none

VERY HIGH: none

Cool-season

VERY LOW: none

LOW: none

MEDIUM: fine fescue, chewings fescue, red fescue

HIGH: perennial ryegrass

VERY HIGH: tall fescue, creeping bentgrass, annual bluegrass, Kentucky bluegrass, Italian ryegrass

"The biggest thing facing us is the water problem," Dr. Beard says. "Most improvements in hardiness to environmental stress have been purely by chance in the past. In the future, however, we hope to be able to help the breeder.

conservation, reduced mowing, more efficient use of fertilizer, fewer poa annua problems, fewer disease problems, reduced soil management problems, better playing surfaces and reduced maintenance costs. □

This natural resource is decreasing, and we definitely need a plan to stay in business.

tions in New Jersey this summer affected nearly 50 percent of all golf courses. The government told superintendents that no watering of fairways was allowed, and that they could syringe for just 10 minutes in the evening.

"The state made no differentiation among turfgrass uses," he said. "We've got to make our state officials aware of the differences in turfgrasses. And we've got to take a more active role in creating legislation that is kind to golf.

"Most of us have said that we could live with a 25 percent reduction (in water usage) and not adversely affect the turfgrass. We haven't made much headway in four years," Cadenelli concluded.

Though he was the first speaker, one of Horton's comments aptly summed up the entire session:

Golf course superintendents must prepare for the future. We are better equipped to get involved than our modesty sometimes allows us to admit."

WT&T



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Circle No. 182 on Reader Inquiry Card



John Rector, left, talks to one of his California customers about the importance of quality care at Pacific Sod.

JUST RUST?

Pacific Sod personnel worry about plenty of turfgrass pests infecting their product. But, since 1982, the agronomic staff has not had to worry about rust.

Orange-brown rust pustules are as common on bluegrasses in Ventura County, Calif. as three-foot breakers and white sand beaches.

Listed as one of the 10 most liveable climates in the world, Ventura also provides an ideal climate for hearty strains of rust.

John Rector, agronomist for Pacific Sod, knows.

He's responsible for cultural practices and quality control at Pacific Sod's 500-acre Camarillo facility, which includes cool season, heat-tolerant and drought-resistant varieties. New plots of Tifgreen hybrid bermuda, Dichondra, tall fescues, Kentucky bluegrass, Excalibre, St.

Augustine and Santa Ana hybrid bermuda grow vigorously in the pleasant Ventura climate which boasts an average yearly temperature of 70 degrees Fahrenheit.

"We're not here to admire grass," says Rector. "Our objective is to bring in a field from seed to sod as quickly as possible. We're concerned with quality at the outset.

"Diseases set a field back. And rust is potentially our No.1 turf disease on bluegrasses. Rust is something we have to deal with eight to nine months out of the year from September to June."

Caused by spores

Rust is the common name for a group

of turf diseases caused by spores.

These tiny spores alight on healthy grass blades where they germinate by sending hyphae (tiny roots) into the grass leaf and disrupting the plant's ability to grow. Rust-infected grass looks thin, chlorotic, and is orange to brown in color. If examined under a microscope or magnifying glass, the rust pustules are raised on the leaves.

Mild temperatures make rust a persistent problem, encouraging the disease to thrive as much as nine months out of the year.

When climactic conditions are right, these orange/brown pustules appear and erupt in about 10 days, releasing millions of spores which, in turn, infect other susceptible grasses.

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The Vintage Club, Indian Wells, CA



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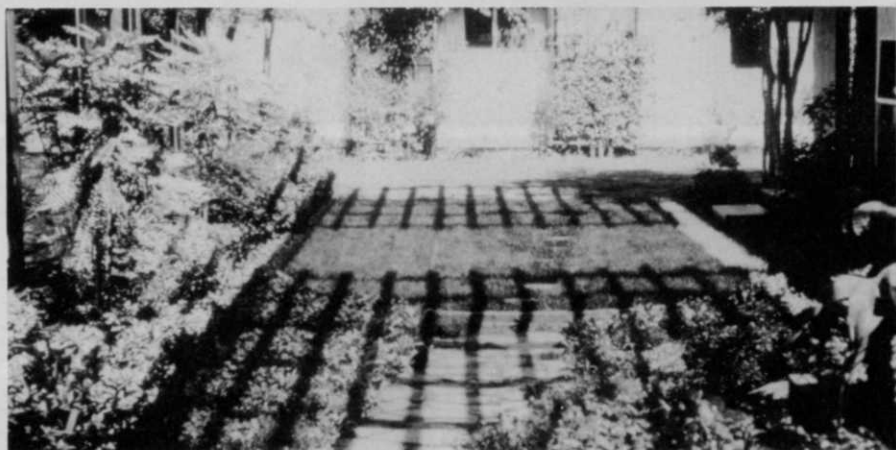
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A nylon netting is put down to help the natural meshing of the grass, cutting production time to three to four months.

Pacific Sod's 500-acre facility includes cool season, heat-tolerant and drought-resistant varieties.



These spores may turn shoes, machinery and field crews a lovely shade of orange. It not only makes the grass difficult to sell to Southern California buyers, but—if left untreated—can be fatal to the turf.

"When you spray, you're playing with big dollars," notes Rector. "Each decision to spray must be carefully weighed. Spray programs—especially preventative sprays for rust—are generally based on field history, time of year, bluegrass variety and other field conditions. There's only so many dollars you can throw at a field before you've eliminated its profit.

"There are times when you can see rust in the sprinkler patterns," Rector continues. To battle it, Pacific Sod used to spray a contact fungicide three to four times each month. Then came 1982.

A wipe-out?

"That year, we had a severe infesta-

tion that we couldn't get a handle on," remembers Rector. "Ten acres were bright orange. Mowers, field equipment—everything that went into that field—came out orange.

"We applied Bayleton fungicide, a brand new product at that time. The area distributor gave us a sample for testing, and we had nothing to lose. In one month, the turf was back to first quality.

"Since then, we've reduced the number of applications to one every four to six weeks, and we've achieved more consistent control and better overall quality."

Dr. Art McCain, extension plant pathologist at the University of California/Berkeley who recommends Bayleton, stresses the importance of other preventative measures:

- Correct timing of overhead irrigation so water doesn't remain standing on the turf overnight.
- Mowing and trimming infected

plants regularly.

● Picking up clippings so surviving spores don't travel to neighboring plants and reinfest.

Tough competition

According to Rector, rust control is vital to achieve a reputation for top-quality bluegrass products.

"Competition in California, which is nearly 99 percent of our market, is especially tough with quality of product leading the way. A bad reputation here would quickly cut us out of the market.

"We are one of the largest sod growers in the western United States, yet being the largest isn't important—being the best is."

And Pacific Sod's grass will pass muster among tough California customers who love Ventura's climate, three-foot breakers, white sand beaches, grass bright and green, and free of ugly rust patches. **WT&T**



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Circle No. 164 on Reader Inquiry Card

DOING IT THEMSELVES

Weed control on industrial sites is not easy. Officials at an Illinois chemical facility tried it a couple ways before settling on in-house—and it finally worked.



Alec Rogers, left, discusses spraying equipment and spray tips with Perry Paulson. Rogers assisted Northern Petrochemical Co. by providing instruction on spraying herbicides.

It's not often costs can be cut and performance improved at the same time. But that's exactly what Northern Petrochemical Co. did with the weed control program at its 1,500-acre plant site, which borders the Illinois River near Morris, Ill.

"About 75 acres of the total acres is bare ground subject to weed growth," says maintenance supervisor Perry Paulson. "Some of that is open area, and some is around buildings and storage facilities. We have broadleaf weeds, grasses and vines. They're unsightly as well as a fire hazard."

Northern Petrochemical, which began operating at the Morris location in 1968 and has been expanding ever since, has tried a number of weed control programs.

In recent years, its maintenance staff used hand-operated mechanical weed trimmers around buildings and storage areas, while the firm hired a commercial applicator to spray the open acreage. Neither was satisfac-

tory, say company officials.

Maintenance manager Bernie Sandner explains that the company spent \$5,000 for weed trimmers, and

'We spent \$50,000 on equipment, materials and labor in the first year, but we believe it was a good investment.'

—Paulson

the cost didn't include labor.

Paulson says the commercial applicator just wasn't timely enough.

Making the choice

Faced with high costs and disappointing results, Northern Petrochemical decided to buy high-volume applica-

tion equipment and handle its own weed maintenance.

The company purchased a 500-gallon, trailer-mounted, tractor-drawn, high-capacity sprayer. It's equipped with a 20-foot boom for large open areas and a hand gun with 200 feet of hose for hard-to-reach areas. The unit has a Hypro self-driven pump with a gasoline engine. There is hydraulic jet agitation.

Paulson completed the state examination which is required for chemical applicators so he could supervise the spraying.

There was still one snag to overcome, however.

The company had purchased 55-gallon drums of a chemical for spraying, but the firm's environmental officer ruled against its use; he was concerned that the chemical could leach into the Illinois River and kill fish.

Advisor called on

At that point, a company official