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In five years of rapidly-expanding use, Pennfine has been put to the test on golf courses, athletic fields, sod farms, parks, cemeteries and public grounds from Maine to California. We've yet to hear of a real weakness.

Other breeders have tried to duplicate Pennfine's qualities; we've yet to see another fine-leafed

perennial ryegrass that can match Pennfine's performance record. Of course, you're the ultimate judge of what's best for your needs. All we ask is this. Before you select a turfgrass, compare it—benefit for benefit—with Pennfine. For more information, write:

Pennfine, P.O. Box 923,
Minneapolis, MN 55440.



*If it has a weakness,
nobody's found it yet.*

WEEDS TREES & TURF®

JANUARY 1977, Vol. 16, No. 1

15 Buying Automatic Irrigation — The awesome job of purchasing a new irrigation system can be simplified by applying logic. One superintendent tells how he did it successfully.

20 A Pulled Pipe System for Drainage — Proper drainage is essential for healthy turf and plastic pipe can be installed to handle this with little disturbance to the land.

22 GCSAA Show Preview — More than 5000 people are expected to attend this outstanding conference and show in February. Here is a look at what you'll find there.

28 The Meticulous Consultant — Veteran Irrigation Consultant Don Burns explains some of the unique concepts that have made him one of the most sought after specialists from Fresno to Maui.

42 Black Cutworm Control — Cutworms in the larval stage cause severe damage to turf and plants but they can be controlled by several new and established materials.

Editorial	4	Meeting Dates	48
Government News	8	People on the Move	50
Industry News	12	New Products	62
From the Campus	46	Classifieds	64
Advertisers' Index		64	

ON THE COVER: This month the emphasis is on irrigation, an all-important aspect of the Green Industry.

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TO OUR READERS —

December was a busy month for the WEEDS TREES & TURF staff. On the 8th, I headed for Columbus for the Ohio Turfgrass Conference and Show while Assistant Editor Eric Friedman went East to New Jersey Turfgrass Expo 76.

Going to these conferences and shows has got to be one of the most rewarding aspects of the job. It's here where we really get to meet our readers and contributors face-to-face. Communication is open, uninhibited.

The show in Columbus was a fantastic success. Nearly 1200 people attended the three-day series of seminars and exhibits. Among the notables was Dr. Robert Schery, director of the Lawn Institute. Dr. Schery was the author of our article on cultivars (October 1976). A friendly, personable man, he said feedback has been excellent and has promised to do another piece for us.

Among the many seminars I attended was one presented by Steven Kennedy, superintendent of the Columbus Country Club, on buying an irrigation system. Kennedy's talk was well received, and since our focus this month is irrigation, I got it all on tape. We present his straight-from-the-hip advice on page 15. Unfortunately, we could not transcribe his humor which struck familiar chords with many in the audience.

Friedman tells me his experience at the New Jersey Expo was "most edifying." He was hosted by Dr. Henry Indyk, the tireless, paternal chairman of the conference. In summing up the conference, Dr. Indyk told WEEDS TREES & TURF that a major objective was to bring together the total turfgrass industry.

"The format of the New Jersey Turfgrass Expo 76 effectively provided an opportunity not only for the dissemination of useful infor-

mation on a wide range of topics, but also as an attractant for the unification of the heterogeneous mix which comprises the total turf industry."

Even more importantly, he added, than the attendance figures, which totaled more than 800, were the diverse turfgrass interests that were attracted for the pursuit of a common objective — increased knowledge for better turf. "It was Green Power in the true sense of the phrase."

After Expo 76, Friedman went west to La Jolla, California, to interview irrigation consultant Don Burns. Because of the hectic pace that Burns maintains, he was not the ideal subject for a fireside tete-a-tete. Friedman stalked him from the serene, coastal refuge into the desiccated flatlands of the Palm Desert where an omnipresent sun and the Santa Ana winds bake the picachos and breathe quick warmth into the desert bowl. How does Don Burns irrigate a barren wasteland? Find out on page 28.

More travel as that is the name of the game. We'll be heading west in January for the annual meeting of the Associated Landscape Contractors of America and to Dallas for the Southern Weed Science Society. We'll also be at the Golf Course Superintendents Association of America convention in Portland in February. WEEDS TREES & TURF will have an exhibit booth. Stop in and talk with us. We need to hear from you.

Now we must get a bit more somber. As we put together our

irrigation issue we were constantly reminded of man's incredible indifference to his own well being.

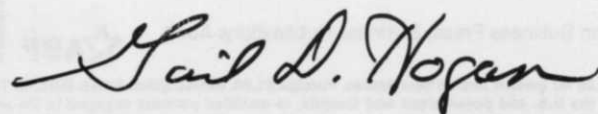
In the past year we have witnessed drought-like conditions reminiscent, perhaps, more of an episode from the "Twilight Zone" than of days we can recall. Water has become a priceless commodity.

Data compiled by the Agricultural Climatology Service Office of the Departments of Agriculture and Commerce in Washington yield the conclusion that the eastern Dakotas, Minnesota, northern and western Iowa, eastern Nebraska, and portions of Missouri suffered drought patterns similar to the record drought of the 1930s. Irregular rainfall patterns across the United States caused a multitude of drought-drainage problems. These were compounded by high temperatures and stiff winds, resulting in extensive turf damage.

For some reason, complacent folks that we are, we respond with alarm to crisis situations, but we fail to make ongoing provisions for addressing the source of the problem once the furor has waned.

We are extremely fortunate to possess the caliber of technology which can attempt to balance some of the mysterious inequities of the ecosystem. The highly evolved state of our irrigation systems and products is a tribute to our ingenuity. We must, however, learn as a nation that an inordinate sense of economic well being and technological prowess coupled with indulgent overuse of our natural resources is a formula for disaster.

In the coming year we must necessarily measure our uses of water against our own stringent guidelines for need.



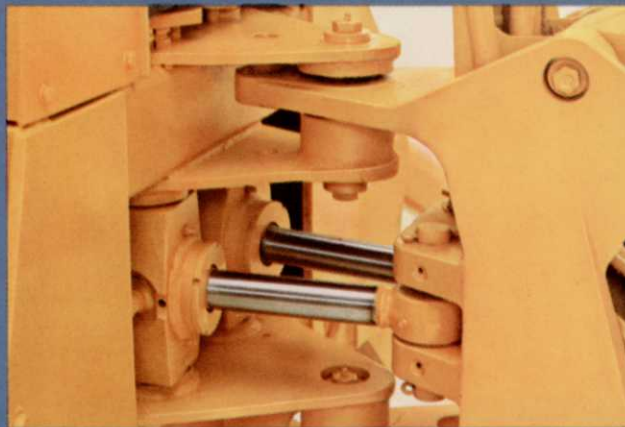
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Each loader/backhoe is equipped with hydraulic direction reverser, differential lock, and single-lever loader control. Ask your John Deere dealer for all the details. John Deere, Moline, Illinois 61265.



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Loader booms are reinforced at the arch point with the plate applied to *both* sides of the boom. Slotted mounting point (arrow) permits horizontal float.

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Its versatility also lets you cut down on

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HERBACEOUS ANNUAL, BIENNIAL AND PERENNIAL PLANTS such as carnation, chrysanthemum, gladiolus, iris, peony, zinnia, etc.	blister beetles, boxelder bug, flea beetles, Japanese beetle, June beetles, lace bugs, leafhoppers, leafrollers, mealy bugs, plant bugs, psyllids, rose aphid, thrips (exposed).
SHRUBS, TREES AND WOODY PLANTS such as ash, arborvitae, azalea, barberry, beech, birch, boxwood, catalpa, cedar, cypress, dogwood, elm, euonymus, fir, ginkgo, hackberry, hawthorn, holly, honeysuckle, hydrangea, juniper, lilac, magnolia, maple, oak, pine, redbud, rose, spruce, sycamore, tulip-tree, etc.	apple aphid, bagworms, birch leaf miner, boxelder bug, boxwood leaf miner, cankerworms, catalpa sphinx, Cooley spruce gall aphid, Eastern spruce gall aphid, elm leaf aphid, elm leaf beetle, elm spanworm, eriophyd mites, gypsy moth, Japanese beetle, June beetles, lace bugs, leafhoppers, leafrollers, mealy bugs, mimosa webworm, oak leaf miner, orange striped oakworm, orange tortrix, periodical cicada, plant bugs, puss caterpillar, rose aphid, roseslug, saw flies (exposed), scale insects, spruce needle miner, tent caterpillars, thorn bug, thrips (exposed), webworms, willow leaf beetles, yellow poplar weevil.
LAWNS, TURF	ants, bluegrass billbug, chiggers, chinch bugs, cutworms, earwigs, European chaffer, fall armyworm, fleas, green June beetle, leafhoppers, millipedes, mosquitoes, sod webworm (lawn moths), ticks.

NOTE: SEVIN will injure Boston Ivy, Virginia Creeper, and Maidenhair fern.

Make a quick check of the plants and insects for which SEVIN carbaryl is registered. See how many problems it can solve for you. In all there are over 160 pests on more than 100 plants. This broad registration minimizes the problem of drift to adjacent areas.

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Government News

EPA proposes to cancel BHC, a chemical used in pesticides manufacture, and asks for public comment on risks and benefits of pesticides containing benzene hexachloride. Despite the fact that BHC for use in other pesticides is no longer being made, some 58 U.S. firms are still employing old BHC stocks to produce some 86 different pest control products.

Scientists at the University of Wisconsin will study feasibility of transferring chloroplasts from one plant species to another, under a cooperative agreement with the USDA. USDA Agricultural Research Service will provide \$59,918 for the two-year study.

The USDA made three changes in the citrus blackfly quarantine: 1) replaced emergency regulations on the recent Florida outbreak with more formal citrus blackfly quarantine; 2) extended the regulated area in Florida to two additional counties; and 3) added two articles to the list of restricted items.

Three national parks and three national forest areas are the first to be officially recognized as Biosphere Reserves in the U.S. The Biosphere Reserve Project is an effort of the international Man and the Biosphere Program to protect representative segments of the world's natural regions as major centers for animal and plant preservation, environmental research, and education.

The six designated areas are: Coweeta Experimental Forest, N.C.; Great Smokey Mountains National Park, Tenn. and N.C.; Hubbard Brook Experimental Forest, N.H.; Everglades National Park, Fla.; Virgin Islands National Park, V.I.; and Luquillo Experimental Forest, P.R.

Use of Mirex for fire ant control is to be discontinued by June 28, 1978. EPA Administrator Russell Train accepted the cancellation plan proposed by the state of Mississippi to end all use of the pesticide in the South. Train agreed to gradually phase out federal permission for Mirex production and use. Airplane applications against fire ants will end December 31, 1977. Ground treatment ends six months later. During the phase-out, more environmentally acceptable Mirex 10:5 will be substituted for current 4X bait.

Further increases in minimum wage become effective January 1, 1977. Seasonal exemptions will be eliminated. The minimum wage for agricultural employees becomes \$2.20/hour on January 1, and \$2.30/hour for other employees covered by law.

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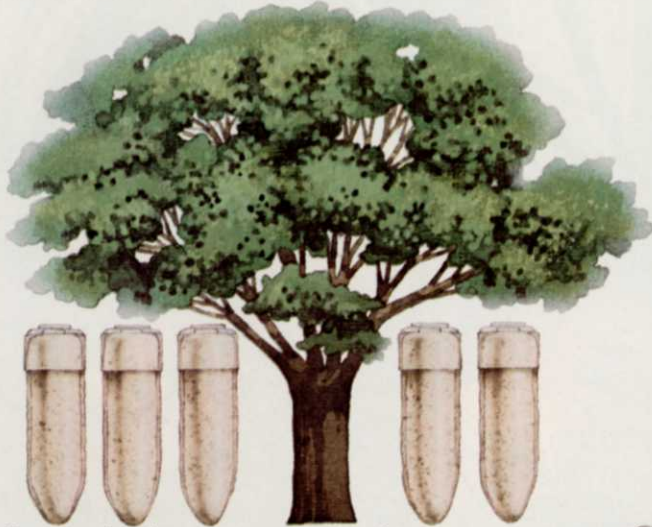
Tony Kimball, Superintendent, Deerwood Country Club, Jacksonville, Florida



"We put Jobe's Spikes out in no time at all. We bought the first cases on an experimental basis, and we're really pleased with them. We'll continue with the Spikes. "We can afford to feed a lot more trees now because we can do it in a lot less time."

It makes dollars and sense to feed trees with Jobe's.

You can expand your tree feeding business and take better care of the trees you're now responsible for with Jobe's® Tree and Shrub Spikes. A 5' tree needs 5 Spikes, and it takes just about 5 minutes to get the job done. How long would it take to feed that 5" tree by drilling? About 30 minutes? With the cost of labor these days, you can see it makes dollars and sense to feed trees with Jobe's.



5" trunk diameter, 5 Spikes.

"We use one for each inch of diameter. Figuring, say, a 5" tree, that's \$1.50 a tree. If we weren't using Jobe's Spikes, we would probably be using a slow-release, high-nitrogen fertilizer. Compared to that, the cost is drastically cut by using Jobe's Spikes."

Now Jobe's offers Evergreen and Fruit Tree Spikes, too.

You can meet most feeding situations with Jobe's Tree and Shrub Spikes 16-8-8, Evergreen Spikes 12-6-8 or Fruit Tree Spikes 5-15-15.

They're as effective as drilled fertilizer because rainwater carries the fertilizer down to the root zone. (University leaching

studies have proved it.) Jobe's Spikes are better than surface-applied fertilizer because there's no danger of burning turf or excessive leaching.

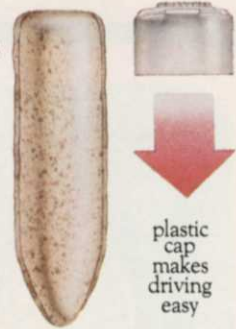
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"Very handy and easy to install around trees. They cut down a lot on labor costs."

Tony Kimball is saving time and making money with Jobe's.

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Diazinon controls more any other major

Over twenty turf insects are listed on the Diazinon[®] label. More than any other major turf insecticide.

Granted, a turf manager must be able to recognize an insect problem. And know when to apply treatment for the most effective control.

But when you've got Diazinon, the one broad-spectrum turf insecticide with the label to prove it works for you, it sure makes things easier.

The insects: Lawn chinch bugs, Ants, Armyworms, Clover mites, Springtails (Collembola), Crickets,