

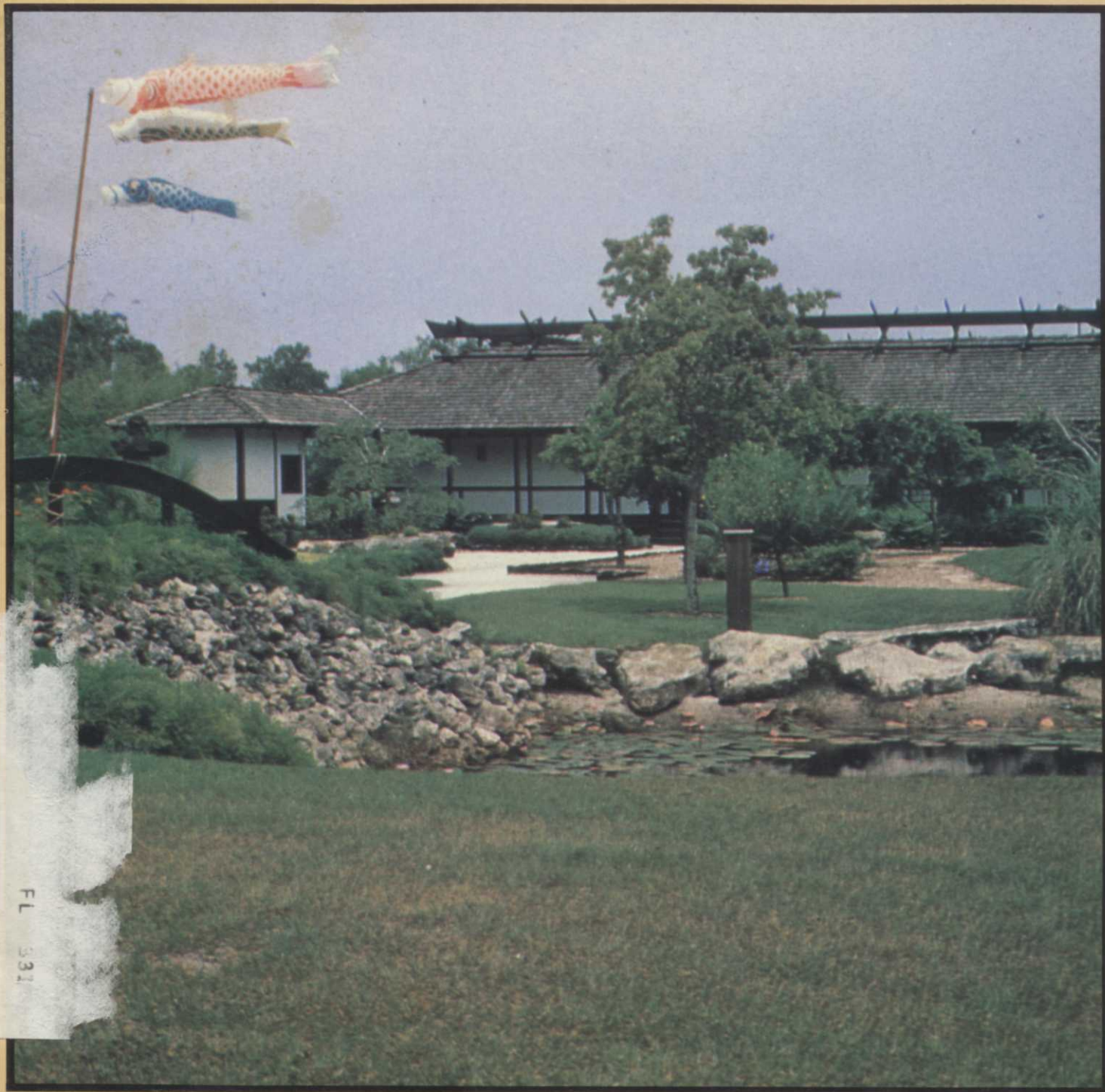
WEEDS TREES & TURF

The Professional Journal of Landscape Design, Construction and Care Since 1962

Choices in Athletic Field Care

The Important Role of Nine Hole Courses

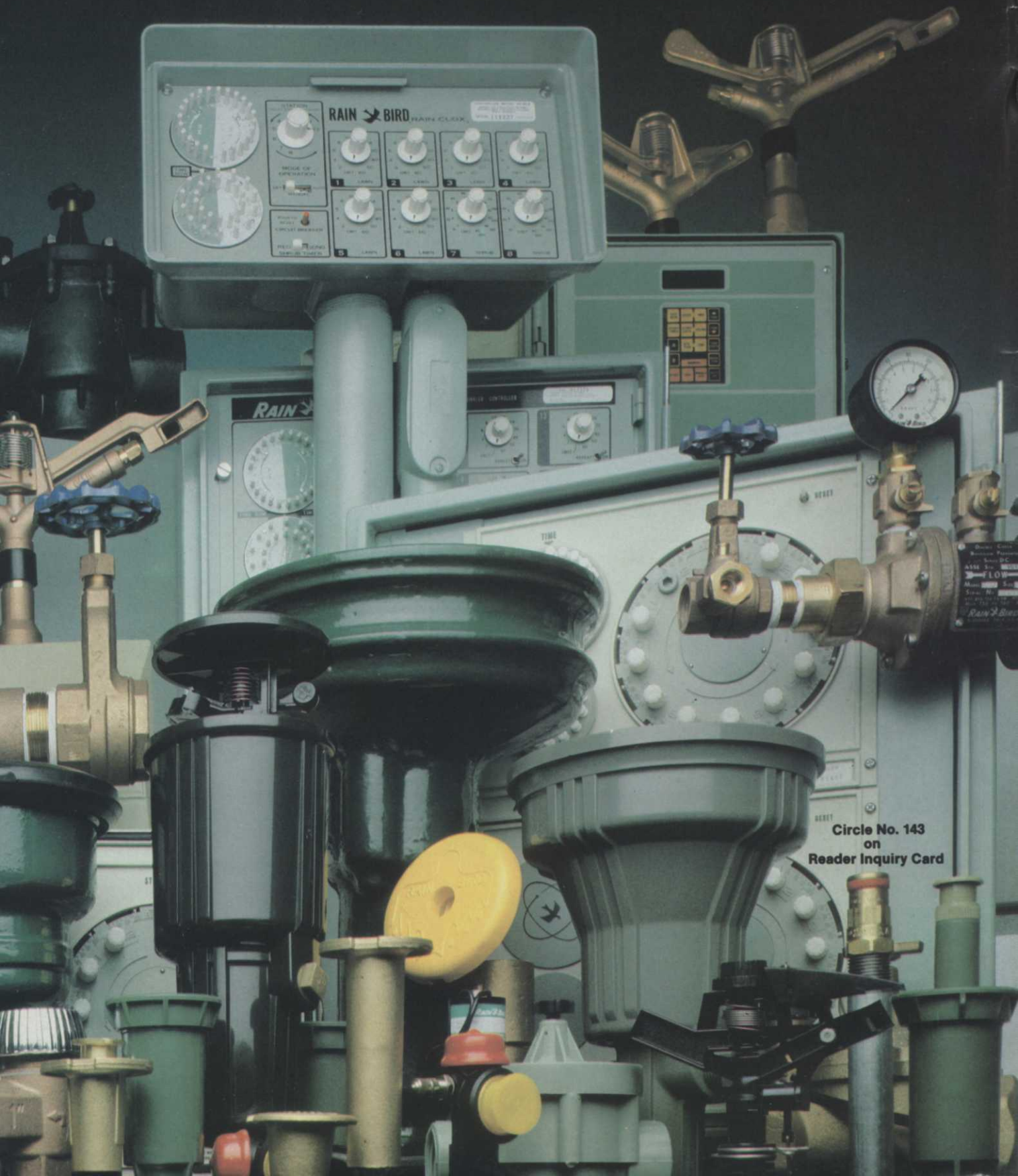
Co-op Education for Experience and Knowledge



FL 331

NO ONE MAKES RAIN SO MANY WAYS.

RAIN BIRD[®]
Simply Better



Circle No. 143
on
Reader Inquiry Card

CASE STUDIES:

The compact trencher with a bagful of tricks: 25+4.



Most times the best player on the course is the one who makes all the shots. Long and short. Around trees. Through narrow openings. In all kinds of conditions.

That's just the kind of trencher the Case 25+4 is. A total player. With the compact D70 backhoe, a fully hydraulic backfill blade, and trenching capability to 66" (1676 mm) deep, the 25+4 can handle the toughest hole on your course. Whether it's for installation of sprinkler systems. Drainage work. Tree planting. Or just about anything.

At 23 hp (17 kW) it gives you a perfect balance of power and economy. It's articulated and has 4-wheel hydrostatic drive. So it'll probably never get trapped

someplace you don't want it. And it won't tear up the turf getting to and from jobs.

The 25+4 is easy to operate and service. New amateurs quickly learn how to use it. And old pros just love it.

The Case 25+4. The ideal trencher for golf course maintenance. The compact trencher with a whole bagful of tricks.

JI Case

A Tenneco Company

Light Equipment Division

P.O. Box 9228 Wichita, KS 67277 U.S.A.



Bruce F. Shank
Executive Editor

Tom Paciello
Associate Editor

Maxine Hagen
Production Manager

Denise Johnson
Graphics Manager

Agnes Aspling
Circulation Manager

Business

Atlanta
Dick Gore, Publisher
James R. Brooks, National
Sales Manager
Ron Kempner, Regional
Sales Manager
3091 Maple Drive
Maple Center One Building
Atlanta, GA 30305
(404) 233-1817

New York
757 Third Ave.
New York, NY 10017
(212) 888-2563 (or 2892)

Chicago
11 East Wacker Drive
Chicago, IL 60601
(312) 938-2344

Seattle
Robert Mierow
1333 N.W. Norcross
Seattle, WA 98177
(206) 363-2864



HARCOURT BRACE JOVANOVIICH PUBLICATIONS
Robert L. Edgell, Chairman; Richard Moeller, President;
Lars Fladmark, Executive Vice President; Arland Hirman,
Treasurer; Thomas Greney, Group Vice President; Ezra
Pincus, Group Vice President; Larry Witchel, Group Vice
President; Joe Bilderbach, Vice President; James Gherna,
Vice President; George Glenn, Vice President; Harry
Ramaley, Vice President.

WEEDS TREES & TURF (ISSN 0043-1753) is published
monthly by Harcourt Brace Jovanovich Publications. Cor-
porate and Editorial offices: 757 Third Avenue, New York,
New York 10017. Advertising offices: 757 Third Avenue,
New York, New York 10017, 111 East Wacker Drive,
Chicago, Illinois 60601 and 3091 Maple Drive, Atlanta,
Georgia 30305. Accounting, Advertising Production and
Circulation offices: 1 East First Street, Duluth, Minnesota
55802. Subscription rates: \$15 per year in the United States
and Canada. All other countries: \$40 per year. Single cop-
ies: \$2 in the United States and Canada; all other countries:
\$4.50. Second Class postage paid at Duluth, Minne-
sota 55806 and additional mailing offices. Copyright
© 1981 by Harcourt Brace Jovanovich, Inc. All rights re-
served. No part of this publication may be reproduced or
transmitted in any form or by any means, electronic or me-
chanical, including photocopy, recording, or any informa-
tion 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.

Outlook	4
Landscape Contractor News	8
Government Update	11

GREEN INDUSTRY NEWS

Fire postpones ASLA move to new headquarters in Washington, D.C. . . Supreme Court upholds surface mine act . . . Housing starts continue to fall . . . Association for sports turf managers is formed . . . GCSAA editor, training director resign. 6

FEATURES

Nine Hole Courses Serve Their Purpose

Joe Much, National Golf Foundation northwestern director, denies that nine hole courses are losing out to larger courses. Nine holers still represent almost half of the courses in the United States. 14

Co-op Landscape Students Put Education Into Action

Mississippi State University programs in landscape architecture and contracting require an extra year of college and field experience. Both employers and students discuss co-op benefits. 23

Cultural Practices Discourage Poa Invasion in Kentucky Bluegrass

Seed rate, mowing height, turfgrass cultivar, and fungicides can affect the speed and degree of invasion by *Poa annua* in Kentucky bluegrass turf. Penn State trial results show how to get a bluegrass turf off to a good start. 34

Choices in Athletic Field Care

The turf needs of sports vary from good footing to reliable ball response. Meeting these needs and three levels of maintenance for sports fields are presented by Daniel and Freeborg of Purdue University. 40

Maintenance Efficiency Is Key to Award Winning Park System

George Irvin, horticulturist for Florida's Palm Beach County Parks, provides tips to maintenance efficiency in a park system experiencing high user demand and rapid growth. 48

Tree Research Increases to Meet Environmental Challenges

Applied tree research is picking up momentum with new propagation and research techniques. Answers to modern threats to tree health and resistance may soon be found. 54

Local Media Exposure Can Help Tree Programs

Louisiana consulting arborist Mike Searce gives tips to exposure for public tree programs. Getting the word to the public is the key. 58

Vegetation Management	60
Sod Producer News	62
Events	70
Products	78
Classifieds	87

Cover: Morikami Museum and Japanese Garden is a high maintenance feature of Palm Beach County's park system.



Member; American Business Press, Business Publications Audit, National Golf Foundation, American Sod Producers Association, Associated Landscape Contractors of America, National Landscape Association, Horticultural Research Institute.

FALCON

PVP applied for



New turf-type tall fescue of the 80's

You'll like this new, fine-textured variety with higher density than most of the currently available tall fescues. Falcon is a leafy, moderately low growing turf-type variety with pleasing green color and tolerance to heat and drought. It's a good performer under minimum maintenance programs, too. Throughout its area of adaptation, mature stands of Falcon have shown tolerance to wear and moderate shade which makes it useful for home lawns and play areas such as athletic fields and parks.

Contact us for more information.



E. F. BURLINGHAM & SONS
P.O. Box 217 • Forest Grove, OR 97116
(503) 357-2141 • Telex: 36-0274
Cable: Burlingham

OUTLOOK

By Bruce F. Shank, Editor

Golf Business joins WTT

Golf Business magazine is now a part of *Weeds Trees & Turf*. As one of the three top landscape markets, golf course management in many ways is the leader in technology, research and product development. We will continue to bring the latest word on golf to you.

I was a fledgling assistant editor when Harvest Publishing Company bought *Golfdom* in 1974. Bob Earley, publisher of *Lawn Care Industry*, joined us to work on *Golfdom* when we purchased it from Times Mirror. At that time, the magazine was already having problems and we tried for eight years to keep it breathing. The Golf Course Superintendents Association of America publication was stiff competition and as the market matured the viability of a privately published magazine to the golf turf market diminished.

It was not for a lack of effort or interest that *Golf Business* failed the profit test. Many of us worked extra hours to make it succeed, especially Jim Brooks

who is now sales manager of *Weeds Trees & Turf*. That interest still exists but in *Weeds Trees & Turf*. A third of WT&T will be devoted to golf from now on.

At the same time, we are honing in on better editorial coverage of the landscape and public sectors, such as schools, parks, and athletic field managers. Many pleasant surprises are on their way.

This month we welcome Bill Hoffman as our Washington correspondent. Bill recently retired from the Environmental Protection Agency after 34 years of service in the government. He knows the people and the way government works. His expertise will provide an early warning system for you in regard to pending regulations and registrations. We've witnessed a number of new channels, mainly state local need registrations. Bill will follow products and regulations from the early stages of development to announcement.

We invite your questions on Federal

regulations. Bill can get answers quickly and accurately. Bill's expertise is now a service to you from *Weeds Trees & Turf*. Please don't hesitate to use him for answers to your regulatory problems.

Finally, we have some new blood in New York. Tom Paciello has joined the magazine as associate editor. He is very New York, very Italian, and very energetic. Part of his job will be to travel to all parts of the country interviewing readers about their businesses, problems, needs, and successes. He is also a good photographer and well educated. Please welcome him when he calls you. You'll warm to his personality.

These are just part of the improvements planned for the magazine in the coming months. This magazine is going to be responsive to your needs. It is here to serve you, please use it. Write me at 757 Third Ave., New York, NY 10017. You'll get results!

WTT

TRANS-TREE Leads Revolution In The Marketing of Mature Trees!!

NEW!

10-CONE TRAILER TRANSPORTS 10
4" TREES PER LOAD



Get and deliver 10 trees at a time... slash production costs, increase tree sales and profits. Trans-Tree trailer with 10, 44" cones does it all. Cones tilt to transport mode. Root clumps sit solid in cones.

Call or write:



Trans-Tree Corporation

NEW!

PRECISION SPADE CONTROL
FOR DIGGING AND TRANSPLANTING



Trans-Tree 44" Tree Spade provides precision digging and transplanting control; hydraulic 48" extension and retraction, 24" side action left or right of centerline, 10° tilt side-to-side and 130° tilt front-to-back. Be first with these new money-makers.

DEALERS WANTED IN WIS., IOWA, NO. AND SO. DAK.

5100 Eden Avenue/Suite 113/Edina, MN 55436
Phone (612) 927-4450

Circle No. 152 on Reader Inquiry Card

3 GOOD REASONS TO GO BROUWER NOW!

1. NEW BROUWER "2000" HARVESTER

All the features of the Brouwer Harvesters PLUS

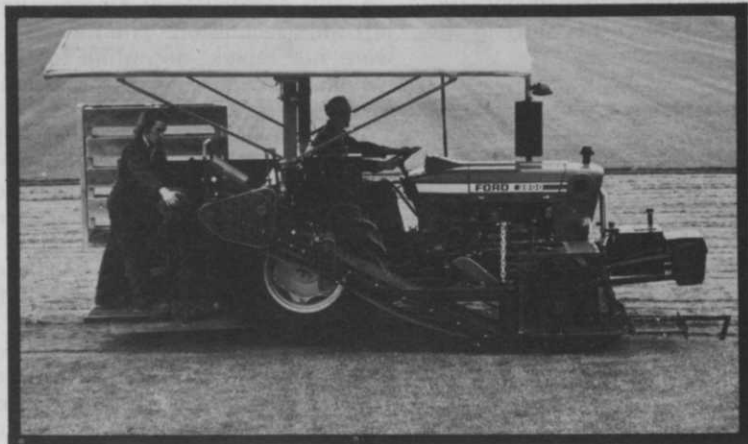
- Automatic Steering guaranteed to cut exact width of sod for landscaper, with no loss of sod strips in the field.
- Automatic Pallet Injector to eliminate back breaking manual work.
- Controlled Pallet Level
- 4-Wall Piling Cavity ensures a square pallet at all times
- New Cutter Head
- Easy Stacking—1 or 2 men
- Higher Yield per hour



2. BROUWER ECONOMY HARVESTER

- Operate off uncut turf
 - A more uniform cut
 - Less down time
 - Less top soil removal
- Available in 15, 16, 18 and 24 inch widths and choice of pallet sizes
- Cut, Roll, Slab or Fold 24 hours a day, wet or dry weather, all sod, all conditions.

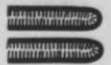
Top Turf men around the world use Brouwer Harvesters to assure top profit.



ROLL



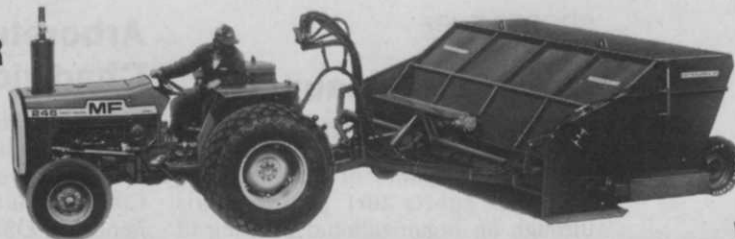
SLAB



FOLD

3. NEW BROUWER GRASS COLLECTOR

CHECK OUT THE COMPLETE LINE OF TURF EQUIPMENT A PROVEN SUCCESS.



NEW

- Operates off Tractor PTO Drive
- 4 wheel flotation
- Pick-up width 12 ft.
- Simple easy-to-clear side unloader
- Enhances sod quality
- Collect grass clippings for cattle feed

Write for our free brochures

BROUWER

The Turf Equipment People

Circle No. 106 on Reader Inquiry Card

Brouwer Turf Equipment Limited, Woodbine Ave., Keswick, Ontario, Canada L4P 3E9

Tel: (416) 476-4311

WT&T

GREEN INDUSTRY NEWS

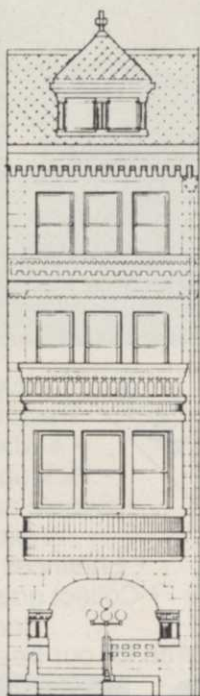
LANDSCAPE

Fire postpones move to new ASLA offices

Within two weeks of the scheduled move date, a renovated brownstone which is to be the future offices of the American Society of Landscape Architects in Washington, D.C., was damaged by fire.

The association has been carefully renovating the building to preserve woodwork, old brick, and wide staircases. Change of address notices had been mailed and the association staff was ready to move.

Fortunately, executive director Ed Able secured temporary office space in the existing building in downtown Washington until repairs could be made. Seven months is the hoped for short delay until the move to the building located at 1733 Connecticut Ave. Able hopes to have his staff in the building by December.



Future ASLA Headquarters being renovated for the second time after a fire gutted the lower floors one week prior to occupancy.

ASLA hopes to have the building back in shape for viewing by members during its annual meeting in Washington Nov. 22-25. More than \$145,000 of a \$400,000 goal for building fund pledges has been received.

"Nearly all the building will have to

be reconstructed," said Able. "About 90 percent of the lobby woodwork will have to be replaced from the first floor down, and will match the existing woodwork above the first floor. Design-wise, the building will be the same."

GOLF

Editor, training director leave GCSAA staff

Dick Hale, editor of *Golf Course Management*, and Palmer Maples, training director for the Golf Course Superintendents Association of America, have left the association. The departures were not related according to Larry Goldsmith, manager-informational services.

Zahid Ikbal, a former member of the Kansas City Star staff and instructor at Kansas University, is the new editor. No major changes in the magazine's content or direction are expected.

An announcement is expected soon on Palmers Maples' replacement. Maples was acting executive director of the association after Conrad Sheetz left and before James McLoughlin took over. The director of training controls perhaps the largest training program for golf course superintendents in the country.

SPORTS TURF

Organization launched at Midwest Conference

Dr. William Daniel of Purdue led a group of sports turf professionals through an organizational meeting of the Sports Turf Managers Association during the Midwest Turf Conference this spring. The new group will be managed by Eric Madisen of Appleton, Wisconsin, who also manages the National Institute on Park and Grounds

Management and publishes *Park Maintenance*.

The association intends to hold a concurrent conference with the 11th NIPGM conference Nov. 1-6 in Kansas City, Missouri. Dues will be \$30 per year. Membership is open to professionals who are in charge of stadiums, college level sports areas, secondary school sports areas and others managing industrial and private sports areas.

Richard Ericson of Bloomington, Minnesota was elected president; Harry Gill of Milwaukee vice president; and Dan Weisenberger of W. Lafayette, Indiana, treasurer.

The goals of the association are to unite those persons engaged in the construction and maintenance of athletic turf areas for better playing conditions; to promote the interchange of ideas among members and other organizations; and to encourage the dissemination of scientific and practical knowledge.

HORTICULTURE

Arboretum honoring Chadwick is dedicated

The Ohio State University Board of Trustees dedicated in May a two-and-one-half acre horticultural garden in Columbus as the Chadwick Arboretum honoring OSU professor and author Lewis C. Chadwick.

Chadwick, who retired in 1967, has contributed a tremendous deal to the field of horticulture in 38 years of teaching and writing. Many leading

Continues on page 8



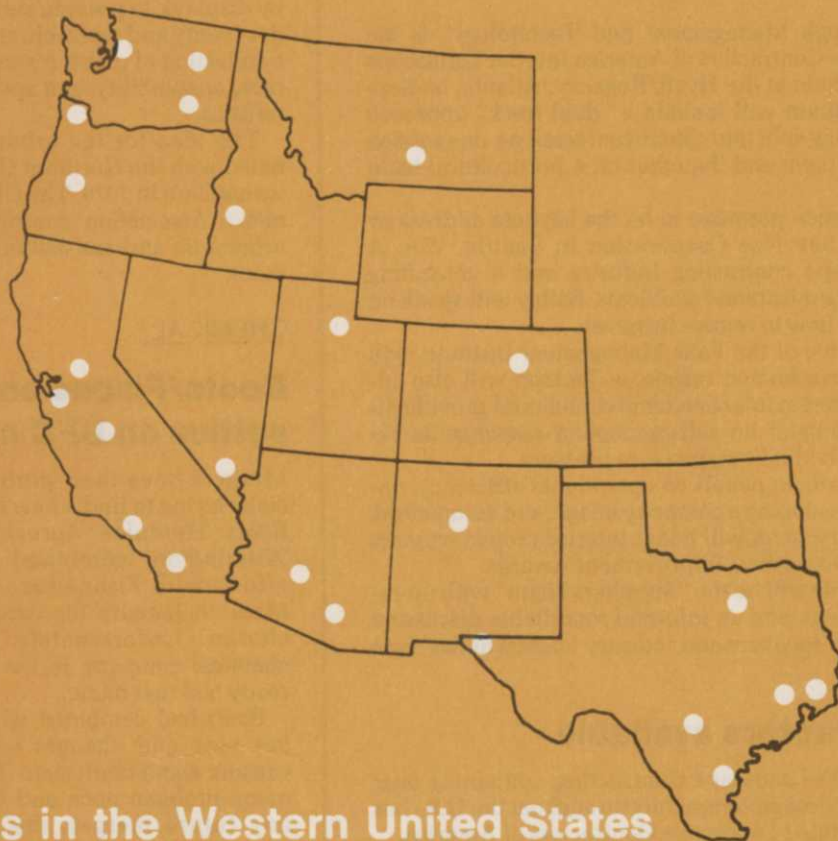
Van Waters & Rogers

division of Univar

Corporate Office
2600 Campus Drive
San Mateo, CA 94403
(415) 573-8000

Servicing the Structural Pest Control Industry
with a complete product line

Chemicals, Equipment, and Education available at:



Washington
Kent (206) 872-5000
Spokane (509) 534-0405
Pasco (509) 545-8401

Oregon
Portland (503) 222-1721
Eugene (503) 342-5544

California
San Jose (408) 263-9900
Sacramento (916) 371-7600
Fresno (209) 486-1221
Los Angeles (213) 265-8492
San Diego (714) 262-0711

Hawaii
Honolulu (808) 836-1361

Idaho
Boise (208) 376-3922

Montana
Billings (406) 252-6651

Nevada
Las Vegas (702) 736-7066

Utah
Salt Lake City (801) 328-1112

Colorado
Denver (303) 388-5651

Arizona
Phoenix (602) 272-3272
Tucson (602) 747-8717

New Mexico
Albuquerque (505) 842-6303

Texas
Dallas (214) 239-9111
San Antonio (512) 656-9186
Houston (713) 683-8371
El Paso (915) 778-4225
Beaumont (713) 835-3426
Corpus Christi (512) 888-6543

Programs in the Western United States Chemicals, Equipment and Educational

We Recommend and Sell **CIBA-GEIGY DIAZINON** – The Most Useful Insecticide For Home, Yard and Garden.

DIAZINON® * Effectively Controls More Lawn Insects Than Any Other Major Insecticide – Over twenty insects are labeled such as lawnmoths, chinch bugs, fleas, white grubs, cutworms, ants, mites and armyworms.

DIAZINON Effectively Controls Nuisance and Problem Pests Around The Home, Yard and Garden – Such as ants, cockroaches, chiggers, ticks, fleas, earwigs, millipedes, sowbugs, spiders, crickets, aphids, wasps, mites, grasshoppers, slugs, scales, caterpillars, fruitworms, beetles, cutworms plus many moths and worms. Check the **DIAZINON** label for specific insects.

* Diazinon is the registered trademark of CIBA-GEIGY Corporation.

MEMBER
NATIONAL
PEST CONTROL
ASSOCIATION

Van Waters and Rogers handles a complete line of insecticides, herbicides, and fungicides for your turf grass needs.

LANDSCAPE

CONTRACTOR NEWS

ALCA's ILD Conference to Emphasize Management

"Professional Growth through Management and Technology" is the theme of the 1981 Landscape Contractors of America Interior Landscape Division Conference, to be held at the Hyatt/Regency, Atlanta, on September 9-12, 1981. The program will include a "dual track" approach with much of the programming split into concurrent sessions, one session on a business management topic and the other on a horticultural technical subject.

A highlight of the conference promises to be the keynote address by Rod Bailey of Evergreen Services Corporation in Seattle, WA. A professional in the landscape contracting industry and a consulting professional to firms with organizational problems, Bailey will speak on personnel management and how to reduce turnover.

I.J. Jackson, a representative of the Fails Management Institute, will speak on strategies to improve human resources. Jackson will also administer the D.I.S.C. Profile test to interested individuals and provide direct feedback to each participant on self-perception response as expected by others and the individual's response to pressure.

Other experts will participate in panels on operational efficiency, developing a lease program, developing a company image, and automation. The Awards Presentation Luncheon will honor interior project winners of ALCA's 11th annual Environmental Improvement Awards.

Other Convention highlights will be the "Suppliers Night" with up-to-date information on equipment, and an informal roundtable discussion program with the conference speakers and industry leaders at the close of the conference.

Directory of contractors available

The 1981/1982 *Who's Who in Landscape Contracting*, containing over 900 listings of commercial landscape contractors throughout the U.S., has been published by the Associated Landscape Contractors of America.

The directory lists the members of ALCA and provides the full name, address, and phone number for each contractor, as well as the name of the principle contact person. Each listing also contains a size index and the specialties for that contractor.

To receive the directory, send \$3 to ALCA Publications, 1750 Old Meadow Road, McLean, VA 22102.

Housing Starts Continue Slide

Landscapers and other businessmen affected by the housing industry are distressed that the number of housing starts continues to fall. After rising to an annual rate of 1.66 million starts in the construction of homes and apartments in January, housing starts plunged to an annual rate of 1.15 million units in May. This is the lowest level since the 938,000 starts of May, 1980, when the 1980 recession was in full swing.

"It's unquestionably interest rates," says Adren Cooper, a Commerce Department analyst. Although they have declined somewhat since then, mortgage rates were averaging a near-record 16.1 percent in early May.

"While the immediate future of the housing industry is not rosy," according to Commerce Secretary Malcolm Baldrige, "we are seeing some initial decline in inflation, and more recently in interest rates.

"If we can achieve lasting relief from inflation, then interest rates will come down," Baldrige added. "In this case, the next housing recovery could be more lasting than the recent one."

News from page 6

horticulturists of today were Chadwick's students. Some tree names carry the name "Chadwicki" having been selected by the professor.

The goals of the arboretum is to provide the place to expand on the number of improved landscape plants; to acquaint the public with landscape plants by displays; to provide subjects for student study and research; and to provide a collection of plants for study of hardiness, adaptability, and specific characteristics.

The idea for the arboretum originated with the Northern Columbus Kiwanis Club in 1979. The Ohio Nurserymen's Association contributed to the arboretum and assisted in its development.

CHEMICAL

Boots/Fisons combo settles on BFC name

Mergers have their problems, especially trying to find a new name. When Boots Hercules Agrochemicals of Wilmington combined marketing efforts with Fisons Inc. of Bedford, Mass. in January the name FBC was chosen. Unfortunately a regional chemical company in the country already had that name.

Boots had combined with Hercules last year and changes were already causing some confusion. To solve the name problem once and for all, until any future merger, the name BFC Chemicals Inc. was selected. BFC officials have their fingers crossed that they can take this name as their own and stop the series of changes.

URBAN HORTICULTURE

NY Botanical Garden plans futuristic thrust

The New York Botanical Garden has announced its plans to create three new "institutes" to apply botany and horticulture to problems of the present and future. The primary function of the Garden has been to serve scientists with the leading collection of plant information for reference and identification.

The three institutes are the Institute of Ecology, the Institute of Economic Botany, and the Institute of Urban Horticulture. The first will approach environmental deterioration and the role of plants. The second will deal with expanding the number of economically

Inquiries serviced for 90 days from date of issue. For those countries outside the U.S., please apply appropriate postage before mailing.

READER SERVICE INFORMATION CARD

8-81 1

For more information on products or services mentioned in this issue, circle the corresponding numbers below, fill in appropriate information and mail today.

101	115	129	143	157	171	185	199	213	227
102	116	130	144	158	172	186	200	214	228
103	117	131	145	159	173	187	201	215	229
104	118	132	146	160	174	188	202	216	230
105	119	133	147	161	175	189	203	217	231
106	120	134	148	162	176	190	204	218	232
107	121	135	149	163	177	191	205	219	233
108	122	136	150	164	178	192	206	220	234
109	123	137	151	165	179	193	207	221	235
110	124	138	152	166	180	194	208	222	236
111	125	139	153	167	181	195	209	223	237
112	126	140	154	168	182	196	210	224	238
113	127	141	155	169	183	197	211	225	239
114	128	142	156	170	184	198	212	226	240

- 0050 CEMETERIES/MEMORIAL GARDENS
0055 HOSPITAL/HEALTH CARE INSTITUTIONS
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
0115 CUSTOM CHEMICAL APPLICATORS (GROUND)
0120 TREE SERVICE COMPANIES/ARBORISTS
0125 LANDSCAPE ARCHITECTS
0130 EROSION CONTROL COMPANIES
0135 EXTENSION AGENTS/CONSULTANTS FOR HORTICULTURE
0140 IRRIGATION CONTRACTORS
 OTHER CONTRACTOR OR SERVICE (PLEASE SPECIFY) _____

C. SUPPLIERS:

- 0205 SOD GROWERS
0210 EQUIPMENT DEALER/DISTRIBUTOR
 OTHER SUPPLIER (PLEASE SPECIFY) _____

Approximately how many acres of vegetation do you maintain or manage? _____

What is your title? (please specify) _____

Your primary business at this location is: (check one only in A, B or C)

A. LANDSCAPING GROUND CARE 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
0035 SHOPPING CENTERS, PLAZAS AND MALLS
0040 PRIVATE/PUBLIC ESTATES & MUSEUMS
0045 CONDOMINIUMS/APARTMENTS/HOUSING DEVELOPMENTS/
HOTELS/RESORTS

NAME _____

BUSINESS NAME _____ ADDRESS _____

CITY _____ STATE _____ ZIP _____ TELEPHONE () _____

AREA CODE

I WISH TO RECEIVE (CONTINUE RECEIVING) WEEDS, TREES & TURF EACH MONTH YES NO

SIGNATURE _____ DATE _____

Circle
the
Reader
Service
numbers
of those
items of
interest
to you.



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY CARD

FIRST CLASS PERMIT NO. 665 DULUTH, MINNESOTA

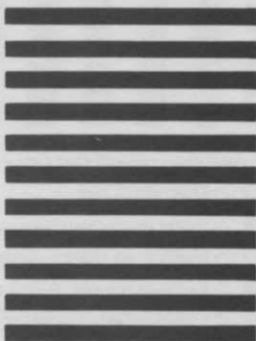
POSTAGE WILL BE PAID BY ADDRESSEE

READER SERVICE DEPARTMENT

WEEDS TREES & TURF

POST OFFICE BOX 6049

DULUTH, MINNESOTA 55806



**GET
MORE
FACTS**

significant plants for food. The Institute of Urban Horticulture will study and develop plants which can withstand pollution and other environment threats such as disease and insects. Horticulturists, plant pathologists, landscape architects and urban planners will play a part in this institute.

The Garden hopes to use its various facilities located in the New York City area to develop the information for application in problems of today and tomorrow.

LANDSCAPING

Nurserymen advise on energy savings

The proper use of landscape materials—including trees, shrubs, ground cover, grass, earth, fences, walls, and surface materials such as paving, brick, and gravel—can help you modify the air temperature, solar radiation, wind, and humidity that affect a home, says James Hayward, horticulturist and executive secretary of the Illinois State Nurserymen's Association.

For example, the shaded area under a tree is from 15 to 25 degrees lower than the surrounding unshaded area, which means that a home in the shaded area will be cooler in the summer.

A row of evergreens planted as a windbreak can reduce wind velocity up to 20 percent, providing a zone of protection 15 to 20 times the height of the plants, and thus protect the home against heat loss from the wind in winter.

The following guidelines prepared by William Nelson Jr., extension landscape architect at the University of Illinois, can be used in planning the energy-efficient landscape:

1. The west wall of the home will benefit most from shading against the summer sun. If there is space for only one tree, place it up to 25 feet from the house where it will shade the west wall from 3 to 5 p.m., when the sun's heating effect is greatest. If there is room for a second tree, put it where it will shade the south end of the west wall from 1 to 2 p.m., as close as 15 feet from the house.

2. Shade is generally not necessary on the east wall, unless there are large glass areas that catch the morning sun. If shade is needed, a tree can be planted to shade the south end of the east wall at the 11 a.m. sun angle.

3. Because the summer sun is at its highest at mid-day, the shadow it casts

Continues on page 64

Supreme Court Upholds Surface Mine Act

The decade-old battle over federal strip mining regulation took yet another complex twist in June. On June 15, the Supreme Court unanimously upheld the constitutionality of the four-year-old Surface Mining Control and Reclamation Act.

The Act, enacted after a nine year battle in Congress, called for the Federal Government to enforce the law in the "interim" phase, with the states eventually enforcing the law in the "permanent" phase, once they had developed acceptable programs.

Mine owners, mining industry groups and the Virginia and Indiana governments challenged Congress' right to impose stringent environmental regulations on unwilling states and property owners. Lower Federal courts in Virginia and Indiana found the act unconstitutional, but the Supreme Court held that the 10th Amendment does not bar Congressional regulation of strip mining.

The Court's decision was particularly distressing for James Watt, the Secretary of the Interior. Under Watt's predecessor, the Interior Department had appealed the lower courts' ruling, while Watt had filed a brief on the coal mining operators' behalf. Before the decision was announced, Watt told the National Coal Association that the Office of Surface Mining had to be reorganized because it contained "every abuse of government." He added: "what a shame, what a shame. I promise you it will be changed."

The Interior Department had no comment on the government's unwelcome legal victory.

Federal Plant Care In-House Only

In 1979, Senator James Sasser, Tennessee, upon learning that the General Services Administration (GSA) was contracting for professional services to care for the plants in the Federal Government offices, championed a bill that would eliminate this practice and save the taxpayer's money — \$251,000 in 1977, \$181,000 in 1978 and \$157,000 in 1979.

Now GSA has its own four member gardening staff watering, spraying and feeding 3,688 tropical plants in 32 different agencies in the Washington, D.C. area. They work from 2 A.M. until mid-morning and are paid \$13.24 an hour. A fifth person will be needed next year.

The cost for 1980 was about \$243,600 or about \$60,000 a year more than the professional plant care services charged. GSA estimates that contracting would save about 20 cents per plant per month.

It appears that the Sasser plant bill has added to the national debt. This does not consider the cost of two separate General Accounting Office (Congress' watchdog) reports on plant conditions in the Federal offices.

Where were most of the tropical plants? In 1977, they were in the Department of Interior, Department of Energy, the Veterans Administration, the Environmental Protection Agency and the Department of Agriculture.

Cathey to Direct National Arboretum

Henry Marc Cathey was recently named director of the U.S. National Arboretum in Washington, D.C. Dr. Cathey started with the USDA in Beltsville, Maryland, in 1956 where he did research on the interrelations of light, temperature and chemicals in the growth, flowering and production of florist and nursery plants. Since 1972 he has been chief of the Florist and Nursery Crop Laboratory at Beltsville.

The National Arboretum, established in 1927 and one of the world's great arboretums, is a research and educational institution with an active and acclaimed staff of horticultural scientists. Among the outstanding attractions are the new National Herb Garden, the National Bonsai collection, the Gotelli collection of dwarf and slow-growing conifers, azaleas, crabapples, dogwoods and magnolias, and the community youth gardens.

The John Deere line of compact utility tractors keeps growing smaller.

Not long ago, it was possible to have a job that was a little too big for a garden tractor, and a little too small for a full size tractor to handle.

So we introduced two diesel-powered compact utility tractors: the 22-PTO-hp 850 and the 27-PTO-hp 950.

They were simple, reliable, sensibly-priced diesel tractors. And lots of people liked them.

So, then, we introduced a little bigger one: the 33-PTO-hp 1050.

And now, here come two more additions to our line of Task Master™ Tractors: the 14.5-PTO-hp 650 and the 18-PTO-hp 750*.

They're a little smaller and a little less powerful than the other three, but

they have many of the same big tractor features.

Because, like the others, they're not beefed up garden tractors. They're scaled down farm tractors. With plenty of clearance under the axles.

They also have fuel-saving, water-cooled, diesel engines. A transmission with 8 forward speeds and 2 reverse speeds. Differential lock. Rear power take-off. A Category 1 3-point hitch. Mechanical front wheel drive is optional. And you can get either traction tread or high-flotation tires.

Of course, one of the big reasons to buy a John Deere is the variety of power-matched attachments that go with it.

There are 5 different types of mowers, a front loader, backhoe, box scraper, post hole digger, rotary tiller, just to name a few.

Which means these small tractors can handle all kinds of jobs: from mowing to chores like plowing, tilling, augering, loading and digging.

And believe it or not, they're priced well within reach of the average week-end farmer or jack-of-all-trades.

So if you're one of those people who needs a tractor that can do more than cut grass, whether it's landscaping, groundskeeping or construction, take a look at the full line of Task Master Tractors at your John Deere dealer.

Better yet, take one for a ride.



Nothing runs like a Deere®

For more information, write John Deere, Dept. 67-68, Moline, Illinois 61265.

*Maximum PTO horsepower at 2600 engine rpm for the 650 and 850, 2400 engine rpm for the 750, 950 and 1050. All ratings by official test, except for the 650 and 750, which are factory observed.



NINE-HOLE GOLF COURSES: SERVING THEIR PURPOSE

By Joe Much, NW Director, National Golf Foundation

Just as supermarkets sent corner grocery stores into obsolescence nearly four decades ago, development of multiple-course golf operations and the expansion of scores of shorter courses to 18-hole dimensions yearly is threatening to put nine-hole golf courses "out to pasture," where many were built in the first place.

But it would be premature to suggest obsolescence for nine-holers, which still number 5,993 in America, including 4,749 of regulation length, according to the National Golf Foundation's inventory. While that figure does not account for half of all golf courses, as nine-hole layouts did just a few years ago, it does represent some 47 percent. And it is unlikely expansion programs will reduce that percentage by more than a few points each year.

Thousands of Americans call nine-hole courses their golfing homes and, for many of them, nine holes constitute a complete round of golf. In 21 states, nine-hole regulation courses outnumber those of 18 holes or more, sometimes most dramatically. North Dakota, for example, has 80 nines compared to only 13 full-length courses. In South Dakota the difference is 81 and 15, in Maine 75-25, Arkansas 79-58, Oklahoma 93-66, Nebraska 111-33, and in Iowa an astonishing 252-69.

Even those states with a preponderance of full-length courses also have an abundance of nine-hole regulation facilities. New York lists 252, Michigan 243, and Texas 276.

What constitutes a "round" of golf depends upon the preference of the player or whoever is counting. While 18 holes are generally recognized as a full round, it is probable that the majority of golf exercises recorded on weekdays on all courses across the country are nine-hole rounds. Many golfers will play on a long lunch break or rush out for nine after the evening meal. Most league play is geared for nine holes as are men's and women's day events.

Some busy nine-hole courses actually try to discourage 18-hole play by offering no reduced rate for a second trip around the course. The same courses sometimes make little or no provision for working players making the turn into the first tee schedule during busy times, preferring to get as many new players started as possible. While this is not recommended as good business practice, it reflects the attitude of some nine-hole course owners regarding what constitutes a round of golf on their layout.

Boon To the "Boondocks"

Obviously, there are thousands of communi-

ties in the country to which golf would be nothing more than a television show, a newspaper article or just a rumor if it were not for nine-hole golf courses.

National Golf Foundation feasibility guidelines call for at least 25,000 population to support a public 18-hole facility, and as much as 50,000 when that facility is expected to shoulder a large debt service on opening. Smaller population areas simply have to settle for nine holes or nothing.

Fortunately, it does not require half that much population to support a nine-hole facility. It requires just enough interested people to provide the funds for securing 50 or more acres; building the course (sometimes for \$200,000 or less when volunteer labor and donated materials are used); and maintaining the course once it is in play, on an annual budget of as little as \$40,000 in some cases.

Farmers Home Administration encouragement and guaranteed loans to organizations in rural communities were instrumental in adding over 600 golf courses to the American landscape in the 1960's. The vast majority of these were nine-holers, all built in towns of 5,500 population or less, often much less.

The golfers they produced by the thousands, coaxing them off farms and out of village shops and the schools, are not the most sophisticated in the world. But nobody will convince them it takes 18 holes to make a golf course or a round of golf.

In many parts of the country, the nine-hole municipal course is a golfing staple. This is particularly true in the Midwest, where 263 of the 609 regulation municipals in a 12-state area are nine-hole courses, and in the Mountain States, where 96 of 188 are nines. Like the FmHA-backed community club courses, most of these are situated in rural communities or small cities.

There are, however, many nine-hole courses in urban settings. Some of them are par-3 or middle-length adjuncts to 18-hole regulation courses and, as such, are popular with women, seniors and beginners. Most are independent, regulation daily fee facilities which comprise the largest single category of nines, the mom-and-pop or family-owned and operated golf course.

Most of them fit neatly into the marketplace, providing a supplement or alternative to other, fuller facilities. While they may not appeal to all golfers all the time, they are particularly popular with juniors, women and seniors. They are generally recognized as excellent training grounds for the less skilled.

Many persons who fall into these golfing cate-



gories feel less than comfortable at a busy 18-hole course where more serious golfers are trying to move around at a good pace. They prefer to do their learning at a shorter course where pressures are not so great.

A survey of nine-hole municipals in 1979 showed that 19 percent of the play on the average was by women and 13 percent by juniors. Those figures were greater by four and three percent respectively than those recorded for 18-hole municipals in the survey.

Popular Proving Grounds

Nine-hole courses are doing as much or more to launch new golfers into the game as the nation's 18's. And while many nine-hole courses simply do not generate enough traffic to provide a suitable financial opportunity for a PGA professional, many can offer a good teaching pro a steady, rewarding job. Depending upon the type—private, daily fee or municipal—between 35 and 50 percent of the nines employ pros.

The young professional who logs learning time at a nine-hole course, where some of the problems are halved but many others doubled, will

gain experience that will serve him well through his career. This portion of his career probably should be his first head professional position. If he can be an effective promoter of the game, his merchandise and his personal services among the less sophisticated golfers who normally frequent nine-hole courses, then his future in golf is assured. And once he has moved up, he can feel a sense of satisfaction in having served his time at the grass-roots level of the game.

Recent surveys have shown that from 50 percent to 65 percent of the nine-hole courses in various categories employ a golf course superintendent. Here again, the shorter course, usually operating with a shorter staff and tighter budget, offers an excellent training ground for young men interested in turfgrass management. Many of the most successful superintendents in the profession today can look back to apprenticeships at nine-hole courses, either as laborers, summer help, or simply as neophyte superintendents.

Is a nine-hole golf course a good business? It is difficult to answer that question in today's

Continues on page 16

economy. Land and development costs are so great that the prospective golf course owner/operator likely could find a more profitable place to invest his money. However, such golf course brokers as the McKay Realty Co. of Lansing, MI, and the William Sherman Co. of San Rafael, CA, often list bargains in fine nine-hole golf facilities which are much more economical to purchase already built than to build from raw ground. These may not always be sensationally successful properties, but they offer the enterprising would-be golf operator the chance to launch his own business within his means.

Nine-hole golf courses are also available for lease from time to time from such sources as municipalities, real estate developers, or owners who are simply weary of the daily grind. Probably no other avenue to an initial venture in golf course operations, particularly for the untrained, is more advantageous than the leasing of a good nine-hole course. The painful apprenticeship can be completed without major investment.

Rounds of Play Key to Success

Well located and efficiently run, a nine-hole golf course probably will turn an operating profit, but the golf course owner trying to retire a large mortgage could find himself in trouble. It is possible for a busy nine-hole course to generate up to 40,000 rounds annually, although most do not. The 1979 municipal survey showed a national average of 25,000 rounds for nine-hole courses. A 1980 sampling of daily fee nines showed a wide range from 4,000 to 38,000 rounds with a median of 13,500.

Like the golf business anywhere, rounds of play represent the fundamental factor in generating revenue. Added income from such sources as golf car rentals, driving range balls, merchandise sales, restaurant and bar business, etc., obviously will vary with the nature and scope of the facility. But it is the rare golf course of any size which will succeed without a good, predictable volume of play.

For those who would build nine-hole courses from scratch, the cost will vary from region to region and, indeed, from site to site and will continue to escalate. Excluding land costs, a good target figure for construction of the golf course alone might be \$300,000 in the early 80's. This should include a partially automated irrigation system, greens averaging 6,000 square feet and built to reasonably strict specifications, a minimum of bunkering and perhaps a pond or two. Obviously, cost can vary either way, depending upon the nature of the site, architectural features and construction methods.

Developers of real estate projects generally have regarded nine-hole regulation courses as a last choice in golf facilities. Where it is economically feasible, they prefer to build the 18-hole

regulation course, which offers maximum fairway frontage and increases lot costs. For the same reason, many developers have opted for 18-hole executive golf instead of regulation nines when shown that roughly the same amount of land would be used.

As land becomes increasingly expensive and as the trend to more diversified recreational amenities in planned communities, such as tennis and racquetball courts, bicycle and jogging paths, continues, developers may take another look at regulation nines.

Another attraction of the nine-hole course for land developers is the reduced construction cost, smaller maintenance expense, and reduced personnel requirements. Most real estate developers would rather not be in the golf business at all and a reduction in involvement is desirable.

Advantages and Disadvantages

Subjects of an owners' survey several years ago were asked to list advantages and disadvantages of nine-hole golf operations. Only the philosophers among them could find advantages, but in the grand old American tradition, almost everyone found something to complain about.

The most frequently expressed complaint was the difficulty of working in players starting their second nine holes with those beginning play. This can create confusion at the first tee and, when now successfully carried off, cause friction among players. Course operators also lament the difficulty of offering preferred starting times because of problems at the turn.

Nine-hole courses in a competitive location, one operator said, find it nearly impossible to compete on weekends with 18-hole courses, especially if the nine is situated some distance from the population center.

Slow play is a curse on any course, but can be particularly damaging on a nine-hole layout when players waiting to start are stacked up with others making the turn.

Properly regulated play on an 18-hole course can accommodate more than 300 players on a busy day in season. Nine-hole courses are crowded with anything over 150 if many are playing 18 holes.

These same problems, along with the natural preferences of serious golfers, limit the possibilities for nine-hole courses to host tournaments and realize the revenue of group outings. Restricted revenue, one owner said, prevented him from securing the services of a competent, full-time professional.

There are systems that will minimize the crossover problem at the first tee while maximizing the number of players who can be accommodated on a single day.

Some years ago in connection with its Speedy

Continues on page 18

For information, contact:

J & L ADIKES, INC.

Jamaica, N.Y. 11423

JONATHAN GREEN & SONS

Farmingdale, N.J. 07727

NORTHRUP KING CO.

Minneapolis, Minn. 55413

VAUGHAN-JACKLIN CORP.

Bound Brook, N.J. 08805

Downers Grove, Ill. 60515

JACKLIN SEED CO.

Post Falls, Idaho 83854

ROTHWELL SEEDS LTD.

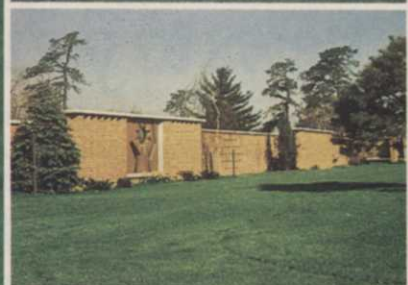
Lindsay, Ont., Can. K9V 4L9

FOR A
THICKER
GREENER
TURF

Adelphi*
KENTUCKY BLUEGRASS

THE GREENER KENTUCKY BLUEGRASS™

*U.S. Plant Pat. No. 3150



Northrup King turf gets trampled, torn, squashed, and scuffed and it still looks great.

But that's not news to you.

The days when turf just laid around looking pretty are long gone. Now your turf has to be pretty—and pretty tough, too. Tough enough to take all kinds of wear and still go on looking terrific.

That's just why so many pros like you specify turf seed from Northrup King. For years, Northrup King has given pros all they need—low maintenance varieties, winter hardy blends, special mixes for specific geographic problems, and expert help in selecting the right one.

And no matter what Northrup King turf seed the pros use, they get turf that's good looking and hard working.

Find out more about quality turf seed from Northrup King. Talk to your Northrup King representative or distributor.

Or talk to someone with great looking turf.

*Northrup King Co., P.O. Box 959
Minneapolis, MN 55440*



Circle No. 136 on Reader Inquiry Card

Nine-Hole from page 16

Golf program, the NGF offered a tee-off schedule for a nine-hole course. It involved the use of the first and fifth tees for the first hour of the day and the closing of the course to additional players for two intervals during the day. Faithfully followed, the system could put as many as 216 golfers around a nine-hole course in 18-hole rounds on a single day.

Obviously, this system would be used only in crush situations such as tournaments or company outings. Other modified systems can alleviate problems on normal days, and strict adherence to reserved starting times will help accommodate all the golfers who wish to play most nine-hole courses.

Imaginative operators can do much to increase the appeal of their courses, even for those golfers who insist upon the challenge of 18 different holes. Many of them provide dual tees or tee settings to change the distances and sometimes the character of the holes from one round to the next. In rare cases, dual pins are used and color-coded for further variety when greens are large enough to permit.

The pro-manager of a Colorado course that has recorded as many as 35,000 nine-hole rounds in a season finds that "keeping most activities of the facility under one manager or professional not only saves money but enables us to treat the public on a friendly, consistent basis.

"In a metropolitan area," he said, "a regulation public nine is hard-pressed to compete with surrounding 18 or 27-hole courses, but good greens care and friendly management are our equalizers."

Nines Have a Future

The future of the nine-hole golf course probably is not far from where its past has been—in the small communities of America. When the FmHA program of assistance to rural area clubs was in force, the 600 courses it helped develop really just scratched the surface. Thousands of other small towns in the country are still without golf courses to call their own. When they get around to building them, chances are most will be nine-hole tracks, at least for the first several years.

Of the 58 new regulation courses opened in America in 1980, 26 were nine-holers. So were all four new executives and five of the six par-3's. Among new courses going into construction the same year, 17 of 53 regulations were of the nine-hole variety, four of six executives and the only par-3 listed.

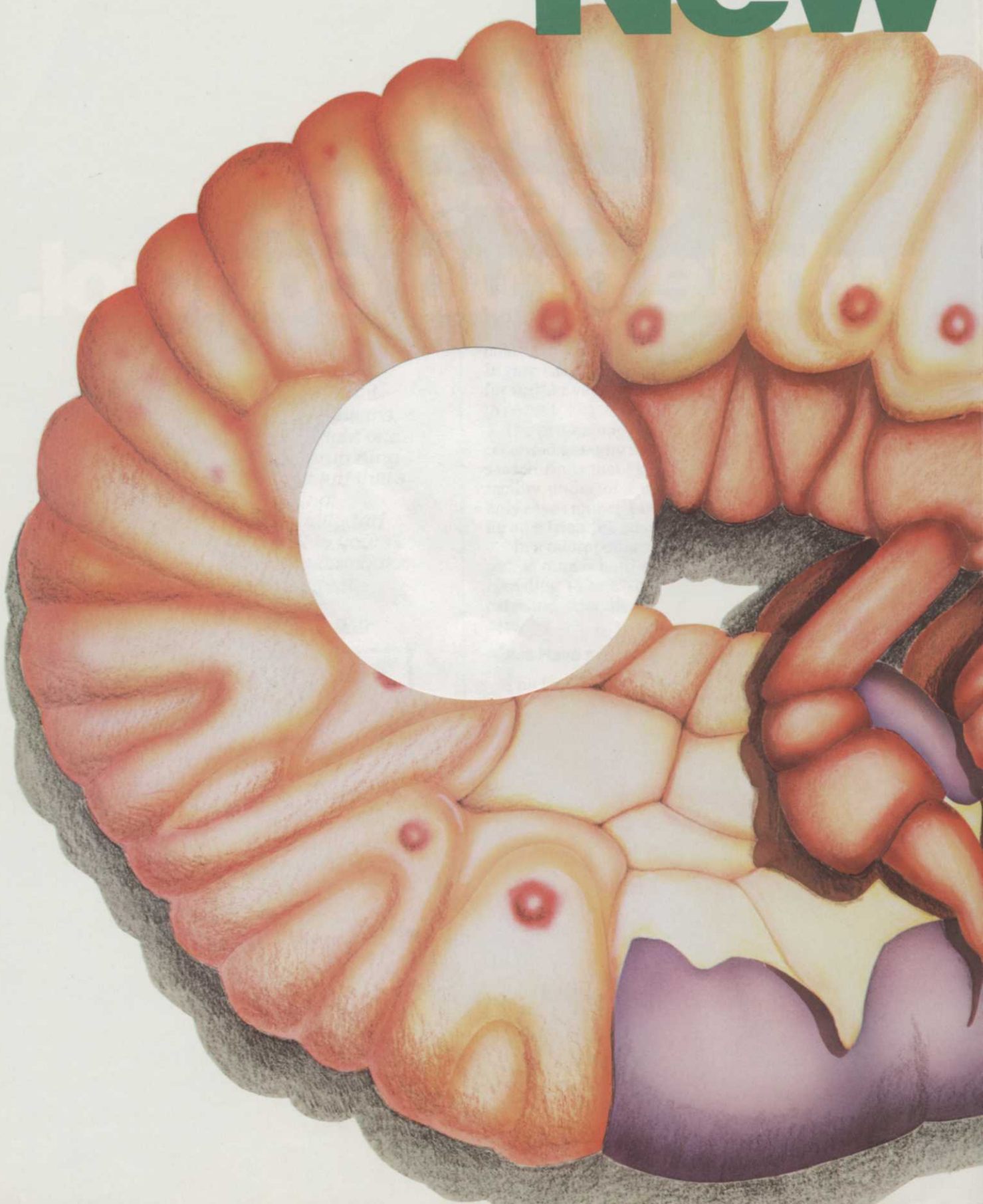
Meanwhile, additions to existing facilities continue to play a large role in golf course development. There were 64 in 1980, of which 53 were of nine holes, usually to create an 18-hole course. At any given time, at least half the nine-hole golf owners questioned will express aspirations for expanding their facilities.

WTT

**Now,
one-shot
white grub control.**



New



OFTANOL[®]

One application controls white grubs from season-to-season.

There's only one insecticide that controls white grubs from season-to-season.

New OFTANOL insecticide from Mobay.

OFTANOL delivers unparalleled residual control of white grubs. In fact, you can expect one application of OFTANOL at the highest recommended rate to control white grubs until about the same time next year.

OFTANOL also offers these additional advantages compared to present white grub materials:

- OFTANOL does not require watering-in.
- OFTANOL does not tie-up in thatch.
- OFTANOL does not require critical application timing.

One application. Once a year. That's the OFTANOL one-shot advantage.



Mobay Chemical Corporation
Agricultural Chemicals Division
Specialty Chemicals Group
Box 4913, Kansas City, MO 64120



**New,
one-shot
white grub
control.**

OFTANOL also controls these major turf insects.

OFTANOL has been proven effective for control of sod webworm, Hyperodes weevil, billbugs and chinch bugs. Consult the product label for the proper timing for control of these pests.

New OFTANOL. For one-shot white grub control and in-season control of other pests. Available from many leading turf chemical suppliers.

The use of OFTANOL for turf pest control is registered in many states. Check with your state extension office for details.



SOD WEBWORM



BILLBUG



CHINCH BUG



HYPERODES WEEVIL



Mobay Chemical Corporation
Agricultural Chemicals Division
Specialty Chemicals Group
Box 4913, Kansas City, MO 64120

OFTANOL and BAYLETON are Reg. TMs of the Parent Company of Farbenfabriken Bayer GmbH, Leverkusen.

MAIL TO: Mobay Chemical Corporation
Agricultural Chemicals Division
Specialty Chemicals Group
Box 4913, Kansas City, MO 64120

Send the new OFTANOL Fact Sheet to:

Name _____

Company _____

Address _____

City _____ State _____ ZIP _____

What are your major turf pests? _____

What are your major turf diseases? _____

Who is your turf chemical distributor? _____

Yes. I would like to receive the [®]BAYLETON Turf Fungicide Fact Book.

FREE
OFTANOL
Fact Sheet

To learn more about OFTANOL, just fill out this card and mail it today. We'll send you the all-new OFTANOL Fact Sheet by return mail.

8181



Printed in U.S.A.

CO-OPING LANDSCAPE STUDENTS PUT EDUCATION INTO ACTION

By Gil Troy, editorial assistant

Managers of Green Industry businesses, although focused on different aspects of landscape preparation and management, share common complaints. Government regulation, inflation, personnel management, and misunderstanding of their work all contribute to the headache and heartache about which managers commiserate. For those who hire college students, there is a common statement to express disdain: "Those smart-assed kids don't know how to work."

Unfair as it is to fresh graduates, this reaction is often justified. They are filled with horticultural intellectualism and microeconomic theories, but act clumsily with a pruner, edger, or set of design prints in their hands. They can't learn everything in college, but they need basic skills to immediately apply to a job. In the summer when they often begin a new or first landscaping job, supervisors are too busy to teach every aspect of the job. Grads may see this lack of help as impatience or disgust. The supervisor says, "another damn college kid."

To cope with this frustration between the manager and college graduate employees, the Associated Landscape Contractors of America (ALCA) worked with the faculty at Mississippi State University to develop a program of cooperative education similar to the type engineering and other academic disciplines had been successfully using for years. Together, the school and professional association developed a model curriculum, which is now used as a base to help other schools with curriculums in landscape contracting. Mississippi State also has a landscape architecture co-op program. Faculty, students, and employers of firms that hire Mississippi State's co-ops laud the program without reservation. "We're marrying theory and reality," says Bob Callaway, assistant professor of landscape architecture.

Co-op Programs

Cooperative education began in 1906, but has only recently become available for landscape majors. Today, 54 of the 165 landscape majors at Mississippi State, almost one third of the entire department, are in the co-op program. The program takes four and a half to five years to complete. The academic year is divided into three semesters—fall, spring, and summer. The student alternates a semester of school with a semester of work. Upon graduating, the student will have worked for three to six semesters, or for one to two calendar years with his co-op employer.

Students are normally employed in pairs, with



Mississippi State students in landscape architecture apply what they have learned in the field to designs.

one working while an alternate studies on campus. Most Mississippi State students are employed by design/build firms and government agencies. Employment with more landscape architecture firms is being sought.

During the work period, the student is evaluated by his employer. The evaluation carries comparable weight to the student's academic marks in assessing his college performance. "The monitoring works extremely well," according to Len Spencer, president of the Spencer Co. in Houston. "The school gets a commitment from the students and holds them to it." Spencer's division managers do the grading, "because they associate with the students the most."

The phenomenal success of Mississippi State inspired the development of a co-op program at Ohio State University. The program is two years old. Last year two students were involved, but this year, explains Assistant Professor James Hiss, the co-op coordinator, after a "heavy-duty sales pitch at the ALCA convention in New Orleans," they placed 14 students in a "variety of firms."

Ohio State is on the quarter system. The students work the summer after their sophomore year, the spring and summer of their junior year, and the summer and fall of their senior year. They graduate in five years with one-and-a-half years' experience.

The Ohio State program, like the Mississippi State program, is trying to expand placement opportunities for landscape architecture students.

Continues on page 25

MERIT

*If they held
an **Olympics**
for Bluegrass,
Merit would
win the **Gold***

That's because this low maintenance variety so often outperforms the biggest names in Kentucky Bluegrass.

The record shows that Merit is consistently rated high in turf quality and color as well as disease-resistance, including good resistance to leaf and dollar spot.

A variety that is praised for its excellent spring color, Merit also holds its own when subjected to minimum irrigation and fertilization.

Look at the record. In 1972 NE-57 trials, in a five-year New Jersey test, in a New York trial, at an eight-year Purdue study, a three-year Ohio trial and in a four-year Missouri test, Merit often outperformed such bluegrasses as Baron, Nugget, Fylking, Adelphi, Glade and Bonnieblue.

Merit ... it's a Kentucky Bluegrass worth looking into.



INTERNATIONAL SEEDS, INC.

P.O. Box 168, Halsey, Oregon 97348 U.S.A.

Telephone (503) 369-2251 • TWX 510/590-0765



Professor Hiss explains that, presently, "most landscape architecture students are working with landscape contractors. It's a problem placing landscape architecture students in landscape architecture offices. Co-op is a new system of hiring. Some firms can't make a commitment, they don't know what their work will be like. Some can't fit it into their schedule of hiring and firing."

Two of the fourteen Ohio State co-ops this year are working in L.A. offices. Professor Hiss wants to use the two in L.A. offices as a starting point, and hopes to gain the confidence of landscape architects at the American Society of Landscape Architects' (ASLA) Convention. "If we can promote it enough, get enough students in L.A. offices, we'll have something to offer the industry."

● "It's the nearest thing we have to old world apprenticeships." . . .

Len Spencer, president, The Spencer Co.

Although establishing the program is "very difficult" and takes a "heck of a lot of time," Hiss feels that it's worth the effort. "Most students love it. They are put to the test and are given a lot of responsibility. They return to school with a heck of a lot more confidence and are better able to put their schooling into perspective."

At California Polytechnic State University at Pomona, the co-op program has more requests from employers for co-op students than willing students. "The students don't want to interrupt their education," says Dr. William Sparks, department chairman of ornamental horticulture. "Also, at Cal Poly we have a unique program which allows students to gain experience while in school."

"The department has a retail nursery operation," Sparks explains. "The students grow and sell plants to the general public. Students can graduate with a minimum of two years experience, and they don't have to go out."

Nevertheless, about half of the 65 students who graduate from the department each year are in a co-op. Cal Poly has both alternating co-ops like Mississippi State and Ohio State, and parallel co-ops in which students work for twenty hours per week and study for twenty hours. Most students and most employers prefer the alternating co-ops. Sparks asserts that, in general, "most employers prefer a longer period of at least six months for co-op students."

Other schools that have co-op programs or provide similar opportunities to work and to study include Lake City Community College, Michigan State University, California Polytechnic State University at San Luis Obispo, New Mexico

State University, Purdue University, and Texas A&M.

Schools that don't have official co-ops encourage students to seek work experiences. Jerry Walkup, assistant professor of horticulture and landscape architecture at Oklahoma State University in Stillwater, says that Oklahoma State started working toward a co-op program for landscape construction, after industry called for it. "We're not sure we can sell the program to the university or to the students. Students are not willing to give up time and stay in school longer." The department encourages summer jobs and internships on a "volunteer basis" and does grant credit for work experiences upon evaluation.

Robert Reinmann, dean of landscape architecture at Syracuse University, says that despite the fact that "students are routinely positive about their work experiences," it's just not practical for his department. There are 300 students in the program and thus "more students than there are employment opportunities," especially in the Syracuse area. Yet concern exists about the "discrepancy between the workplace and the classroom. When we don't have linkage with practicing professionals or the workplace, we get a warped sense of what preparation is needed."

Student Benefits

Co-op students have to overcome the problems of remaining an additional year in school, leaving their friends and relocating, and must find an employer who is willing to hire them. Those who surmount those obstacles support the co-op program wholeheartedly. "I was very doubtful at first," Laura Solano, a junior at Ohio State maintained. "I had been in school for so long, and I didn't want to add another year."

● "The co-op student gets an opportunity to see all the different seasons." . . . Carl McCord, president, Landscape Design and Construction, Inc.

Solano was hired by William Behnke Associates in Cleveland, and has no regrets. She's been working in Cleveland since April 1 and thinks the experience is "really marvelous. I can think of no better supplement for the education of a landscape architect. It makes you realize just what it's all about, and gives you an overview. It's a great professional and educational experience. It's especially good for a student who is doubtful about L.A. or is frustrated by school."

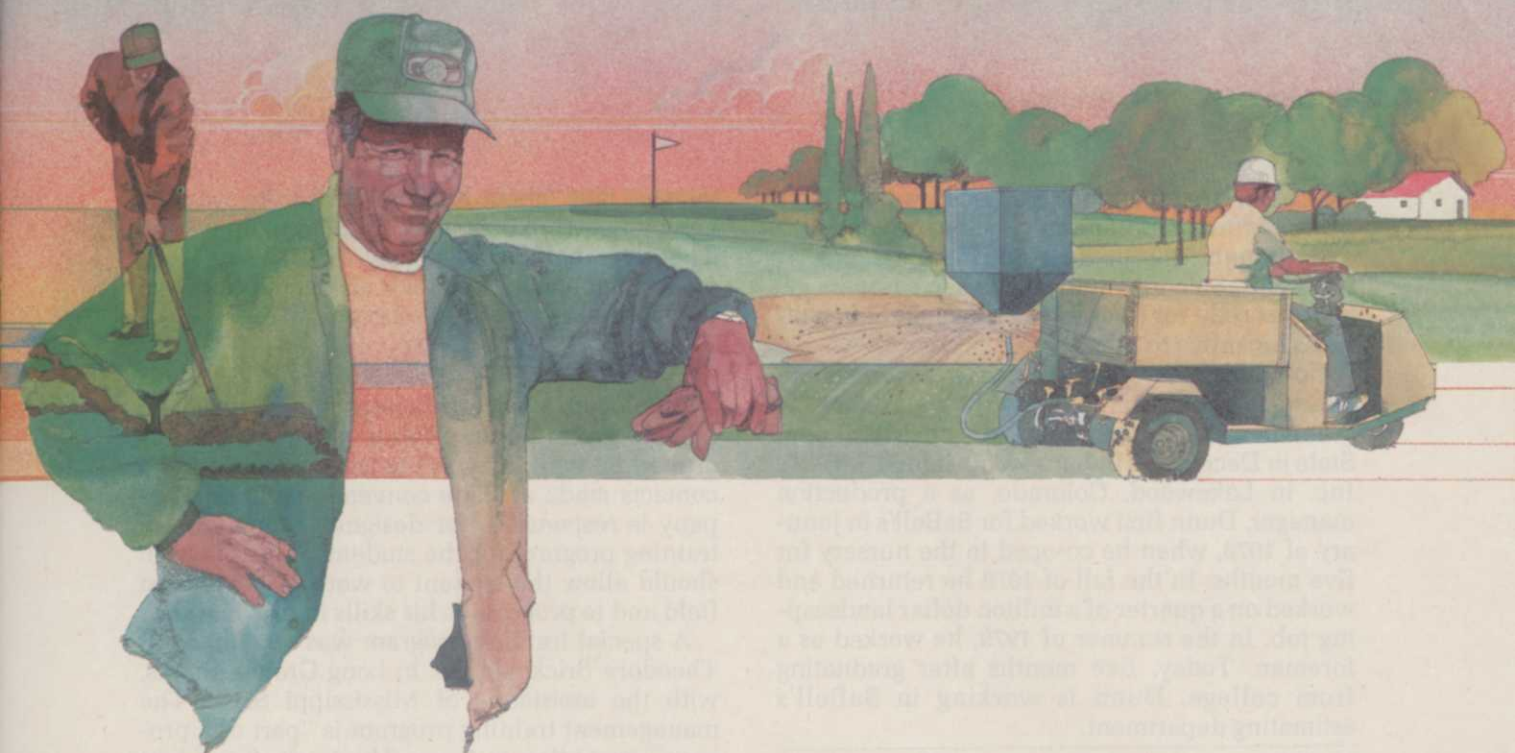
The "nomadic lifestyle" that comes from moving every two weeks doesn't faze Solano. "I was excited by the idea of moving to a different city, of travelling, of being independent." She says

Continues on page 28



Any turfgrass seed works

**RUGBY
KENTUCKY
BLUEGRASS
IS DESIGNED TO
WORK IN THE
REAL WORLD.**



well with constant attention.

RUGBY KENTUCKY BLUEGRASS. IT DOESN'T NEED CODDLING TO LOOK GREAT.

As a turf professional, you know all the tricks to making grass look terrific. You lavish water and fertilizer on it, overseed, apply herbicides, and take great care in mowing.

But times are changing. Increasingly you're finding yourself pinched by escalating costs for materials and labor. And there's a growing movement among environmentalists to lessen dependence on fertilizers.

Rugby Kentucky Bluegrass answers these problems.

YEARS OF TESTING.

Rugby is a new Kentucky bluegrass. But it's not unproven. Before it was ready to be introduced to you, years of extensive testing were performed under a broad range of climatic and soil conditions. Test sites were located not only in the United States, but Canada as well.

The results? Our testing has shown Rugby to be unique. It's a truly *different* variety from anything else on the market, with superior performance.

How is it superior? Read on.

A TRUE LOW-MAINTENANCE TURF.

The most singular advantage of Rugby is its ability to provide high-quality dark green turf when maintained at *low* nitrogen fertility and restricted moisture levels.

Most improved Kentucky bluegrass varieties are *not* low-fertility types. You may be told they performed well in turf trials. Unfortunately, you're *not* told that those trials are often conducted using *optimum* nitrogen levels. So it's no wonder you have to fertilize the heck out of these varieties to get good results.

Not so with Rugby. *You can actually get better results with Rugby than with other Kentucky bluegrass varieties while using less nitrogen fertilizer.*

And you'll also save on the *labor* it would take to apply that extra fertilizer and to do the extra mowing.

A HIGH-QUALITY TURF.

But no matter how much we tell you about the low-maintenance aspects of Rugby, ultimately you look for — and demand — *superior turf*. Your professional standards wouldn't settle for anything less. And we wouldn't want it any other way.

Rugby has a rapid spring green-up rate and excellent fall color. And it

also displays *sustained growth during the mid-summer heat stress period*, even under low nitrogen fertility and restricted moisture.

Moreover, Rugby possesses a high level of resistance to most of the common and current turfgrass diseases. This is another factor which may well result in significant savings in turf management costs.

THE ENVIRONMENTALIST'S GRASS.

Using less water and fertilizer means potential dollar savings for you, of course. But you can also take satisfaction in the fact you'll be using *fewer natural resources*.

By now you're well aware of the increasing social consciousness among the population in this regard. And by making available a Kentucky bluegrass that fits the world of the '80's, we believe we're fulfilling an important need.

For more information on Rugby, write Rugby Kentucky Bluegrass, P.O. Box 923, Minneapolis, MN 55440.

Rugby
KENTUCKY BLUEGRASS
For low-maintenance turf.

that other students don't go because they have other commitments or don't want to travel.

Although the professional experience is sufficient, Solano would like to see co-ops get college credit for their work. "It would help a little as incentive to join."

Co-oping is a valuable experience which can assure the competent student of a job once he graduates. Bill Dunn graduated from Mississippi State in December. In January, he joined SaBell's Inc. in Lakewood, Colorado, as a production manager. Dunn first worked for SaBell's in January of 1978, when he co-oped in the nursery for five months. In the fall of 1978 he returned and worked on a quarter of a million dollar landscaping job. In the summer of 1979, he worked as a foreman. Today, five months after graduating from college, Dunn is working in SaBell's estimating department.

● "They come here primarily as a learning experience. Students go back knowing what they don't know." . . . David Pinkus, vice president, North Haven Gardens, Inc.

"In the beginning, I was a laborer," Dunn recalls. "Once I was in a position of authority, there was some rejection at first. Experienced laborers resented this 'college kid taking over,' but once they learned to understand me, some of them became my closest friends at work.

"You're better off going back to the person you co-oped with. You've worked out many of the bugs. You graduate knowing a lot about the company, and don't have a problem getting oriented." Dunn estimates that students who co-oped start out earning \$1500-\$3000 more than inexperienced graduates who didn't co-op.

Although students are paid for their co-op experience, Dunn cautions that co-oping is not a money-making venture. "If you moved away from school, all you could have saved goes to travel expenses. Mississippi is not that big of a market and most students have to get away. The biggest problem for the co-op student is transportation and living arrangements."

Nevertheless, the benefits outweigh the inconveniences. Co-oping, says Dunn, "lets you get some experience and find out what you want to do. You discover any adjustments in your curriculum you want to make. It makes you realize early on whether you like landscaping or not. I'd rather have somebody come sophomore year to work and then drop out, than have him suffer through school for four years."

Those students who do drop out of the co-op, but remain in landscaping, leave either because of the company or for personal reasons. Dunn

guesses that "about half didn't like the way the company is run; they just couldn't put up with it. The other half decided they didn't want to be away from home, from their girl friends, or from the lush landscape of Mississippi."

Industry Benefits

Employers who hire co-op students are not merely getting cheap labor. Students are recruited by mail, by visits to the campus, and by contacts made at trade conventions. Each company is responsible for designing some type of training program for the students. This program should allow the student to work in his chosen field and to progress as his skills improve.

A special training program was developed at Theodore Brickman Co. in Long Grove, Illinois, with the assistance of Mississippi State. The management training program is "part of a process," according to Bruce Hunt, vice president and general manager of the company. "Students go from one department to another; they work inside and outside. They experience all phases of the business—maintenance, construction, and estimating." Both landscape architecture students and others are exposed to office routine.

"We're pretty selective in our recruiting process," says Hunt. "Unless they're pretty sharp, we won't hire them. We're looking for quality, not just labor." Hunt and his company have been "generally pretty pleased" with the eight students they presently employ from Mississippi State, Ohio State, and Michigan State, as well as the 75-100 students who have worked at the company over the past ten years.

● "An employer gets to groom a person for four years so they can fit into the organization and begin contributing upon graduation." . . . Mike McMurray, landscape architect, Marvin's Garden and Landscape Service.

Most firms look for quality in their co-ops, and are more concerned with their potential than their actual experience or knowledge. "The students come here primarily as a learning experience," explains David Pinkus, vice president of North Haven Garden Inc. in Dallas. "We don't expect them to know a heck of a lot. Sometimes, we're surprised when they know something.

"Students go back knowing what they don't know," says Pinkus. "If you think you know it all, you're really in trouble. Experience shows you what you really need to be more concerned with. You hear a professor say something, or you read it

Continues on page 30

America – Fiesta



A grass team that won't break your budget

You can't control the spiraling costs of chemicals and fertilizer, but you can control the quantities that you have to use by planting improved turfgrasses like America Kentucky bluegrass and Fiesta Perennial ryegrass.

America and Fiesta, a new breed of turfgrasses that have the ideal turf qualities you want along with tolerance to summer and winter stresses and turf diseases. And you get all of this at a reasonable price.

America Kentucky bluegrass and Fiesta Perennial ryegrass — Two great turfgrasses that don't need pampering.

AMERICA
KENTUCKY BLUEGRASS

and

Fiesta
PERENNIAL RYEGRASS

Pickseed also produces

Touchdown
KENTUCKY BLUEGRASS

Produced by

PICKSEED
PICKSEED WEST Inc.

P.O. Box 888, Tangent, OR 97389 • (503) 926-8886

Distributed in Canada by Otto Pick and Sons Seeds Ltd.
Box 126, Richmond Hill, Ontario • (416) 884-1147

in a textbook, and say 'Gosh, I wish I knew that last summer.' It sinks in after having had some experience and working."

In addition to training programs, some employers have implemented procedures for evaluating the co-op's experience. At Landscape Design and Construction, Inc., in Dallas, Carl McCord, president of the firm, "highly recommends that each co-op student write a report on what his experience has been. He can write what he has learned about people, about equipment, what he can do, problems with designing, maintenance, whatever he wishes. Based on what he puts into it, the report is graded on a scale of one to ten. We give him a bonus based on the grade. It gives us a gauge in the interest he had in the job, so we can start paying attention to prospects."

McCord suggests that employers recruit co-ops from a number of colleges. "The student returns as a recruiter with lots of praise or condemnation, if you've been hard on him." Greater variety decreases the chances of getting saddled with a bad or an inaccurate reputation.

He also suggests that professors visit the company. "They should have some sense of what's going on. It's not fair to recommend a place without having been there."

McCord doesn't like his co-ops to stay in the same city or the same branch of his company. He has them move around so they can "see different aspects of the industry."

"The co-op student gets an opportunity to see all the different seasons, the cycle," says McCord. "If a student is interning in the summer,

● "We're pretty selective in our recruiting process. Unless they're pretty sharp, we won't hire them."

... Bruce Hunt, vice president and general manager, Theodore Brickman Co.

that's all he knows. He's not getting experience throughout the year."

Another advantage of co-oping McCord sees is that it "breaks the nine-month syndrome. We've been trained after 12 to 16 years of schooling to live like that. It leads to demands after less than a year for promotion."

Landscape Design and Construction has been hiring co-ops since 1974. McCord estimates retention of co-ops at "60-70 percent, even higher. By the hiring time, they've discarded you or you've discarded them. You get the marriage or the divorce before graduation. Because of that, you can turn the co-op loose in the field faster than the young grad with no experience."

Cooperative education, like all programs, is

not a panacea. It is not problem free. Wally SaBell, president of SaBell's, Inc. has worked with co-op students for five years. Two years ago SaBell's employed 17 co-ops, and last year they employed 12. SaBell arranged to help students find housing, "to encourage students to get field experience. Especially in landscape architecture, before becoming directors of programs, students need field experience to relate to the problems of the contractors. You can eliminate problems due to prethinking, which comes from experience."

But SaBell was disappointed. "The co-op's staying power was not good after they graduated. Only one out of five remained. They don't know what they want to do in college or once they graduate. Many of them expect to start at the top and work their way down. I don't think they really understand the business.

"Some of the boys couldn't adjust to the real world," SaBell said. "The difference between college and industry output is not always smooth. You went and educated yourself, but there are a lot of humdrum, monotonous little events to deal with. Landscaping requires more common sense than just having a degree in your hand."

Another problem SaBell sees is that "we're trying to produce too many designers. Not all people should be landscape architects and horticulture designers—how many designers do you need? We need more superintendents, product managers, and foremen. We need more two year programs rather than four year programs."

SaBell's solution to the problem of the unrealistic expectations which burden the co-op student and their overtraining is not fewer, but more co-ops. "They've got to get more practical experience. You've got to find out what the world's all about."

SaBell is a "190 percent advocate of co-ops. It's best to get a job or co-op with a larger firm where there's a wider range of activity. We look for individuals seriously interested in the industry. Some co-ops have said to me 'we've learned more with you in three months, than in three years in college.' The industry should encourage co-oping. Students should serve—even if it costs them a fortune."

J. Grady Brown, president of Dallas Nurseries and Garden Centers, agrees. His experience with Mississippi State interns over the past several years has been "fairly satisfactory on the job, but unsatisfactory in getting them back." Too many of the students are "home grown folk" who are unwilling to leave home to "derive a living." Brown applauds the recent increases in out-of-state students attending Mississippi State, and is trying to establish co-op programs closer to Dallas at Texas Tech, Texas A&M, and in Steubenville.

"You have to sell a school on a program," Brown maintains. "You have an uphill battle regardless of the merits of the endeavor. You have to buck the administration, and sell the deans and the business end of the university on the idea. So many programs are good, but the wheel that squeaks the loudest gets greased first."

Some employers don't understand the essence of co-op. Others may feel obligated to keep students who don't succeed. At times organizations are not able, or don't think themselves able, to accommodate the beginning student.

"If you have difficulty managing a business, you'll have difficulty managing a co-op program," says Bruce Braunstein, vice president of Environmental Industries in Calabasas, California. "A certain amount of consistency and credibility building is required. Co-oping is a long term program for the benefit of the student and the employer. The co-op is concerned with doing a good job. It's not just a one time experience. The successful co-op will often come work for the company."

● "I'm a 190 percent advocate of co-ops. You can eliminate problems due to prethinking, which can come from experience. But, the staying power of co-ops was not good after they graduated." . . . Wally SaBell, president, SaBell's, Inc.

Co-oping is essential because it allows a student to find out "early in the game" whether he likes landscaping or not, says Len Spencer. One graduate came to the Spencer Co., with a specialty in turf management. "During the summers he had worked in a factory because there was more money involved. He had a fine horticultural education, and asked for a complex job. He started as a probationary Crew supervisor. He decided after two weeks 'this is not for me, it's below my level.' He got a job as a dispatcher for Sears, after four years and \$40-50,000."

Co-oping is the "nearest thing we have to old world apprenticeships," says Spencer. Students who are willing to spend an additional year in school and face the hassles of relocation and discontinuity in their education reap the rewards of experience, maturity, and greater marketability when they graduate. Schools that run the programs help bridge the undesirable gap between the ivory towers of the university and the soiled hands of the real world. As the Mississippi State prospectus explains: a regular graduate is a purchase—a co-op student, an investment. **WTT**

EMERALD

Smaragd Variety

Creeping Bentgrass

THE QUALITY
ALTERNATIVE TO
PENNCROSS BENT . . .
AN IMPROVEMENT
TO SEASIDE BENT

EMERALD OFFERS YOU

- Exceptional uniformity
- Superb texture
- Less maintenance
- A record of performance
- Excellent cold tolerance
- Good density
- Unusual adaptability
- Distinctive color
- A distinct price advantage
- Persistence in hot, humid weather

DISTRIBUTED BY

Vaughan's

SEED COMPANY

CHIMNEY ROCK ROAD
BOUND BROOK, NJ 08805
800 / 942-7706 Inside NJ
800 / 526-3814 Outside NJ
8343 ARDMORE ARDWICK
LANDOVER, MD 20785
301 / 322-8800



For more information call or write



Circle No. 155 on Reader Inquiry Card

Drive disease off fairways too, with Daconil 2787.[®]



Daconil 2787 Flowable Fungicide is the product of choice on tees and greens because it controls more diseases than any other turf fungicide. And in 12 years of continuous use, resistance has never been reported.

You can count on it to perform on fairways, too. To help you achieve a longer, more profitable playing season. A better looking course. More enjoyable play. Plus a better return on course investments already made.

Daconil 2787 controls such turf ravaging diseases as dollar spot, leaf spot, red thread and large brown patch on fairways. Its proven residual effec-

tiveness at recommended application rates, plus the fact Daconil 2787 has a built in surfactant, makes it economical to use.

The 500 formulation of Daconil 2787, introduced in 1978, gives you the additional advantage of fast, easy handling because it flows readily and disperses quickly.

When it comes to disease control, make Daconil 2787 your fungicide from tee to green. Use it on labeled ornamentals around the club house, too. It'll keep your course fit for the masters.



Diamond Shamrock

AGRICULTURAL CHEMICALS DIVISION
1100 Superior Avenue
Cleveland, Ohio 44114

Always follow label directions carefully when using turf chemicals.

Circle No. 112 on Reader Inquiry Card



CULTURAL PRACTICES TO DISCOURAGE POA IN KENTUCKY BLUEGRASS

By A. Douglas Brede, graduate research assistant, The Pennsylvania State University, University Park, PA.

A. D. "Doug" Brede is a graduate research assistant at Penn State, where he is currently finishing a Ph.D. degree in Turfgrass Agronomy. His doctoral research deals with the interaction of perennial ryegrass, Kentucky bluegrass, and *Poa annua*. He is a native of Pennsylvania and is a former golf course assistant superintendent.

How can two neighboring turfs, both of Kentucky bluegrass, contain such different amounts of *Poa*? You've probably read a list of the sins that result in *Poa*: overwatering, compaction, traffic wear, divots, etc., etc. It's common knowledge that these evils will open established turfs to *Poa*.

But have you ever noticed that some stands seem to contain *Poa* right from the start? It's as if the *Poa* came up at planting time. Although a great deal is known about *Poa* invasion of established turf, the problems of *Poa* in the seedbed are unsolved.

Recent studies at Penn State have confronted this dilemma. We've discovered several ways to limit the amount of *Poa* that comes up with a stand. I'm not talking about herbicides or seedbed treatments, but cultural methods that you can use to cut down on *Poa* when you plant.

Cultural methods

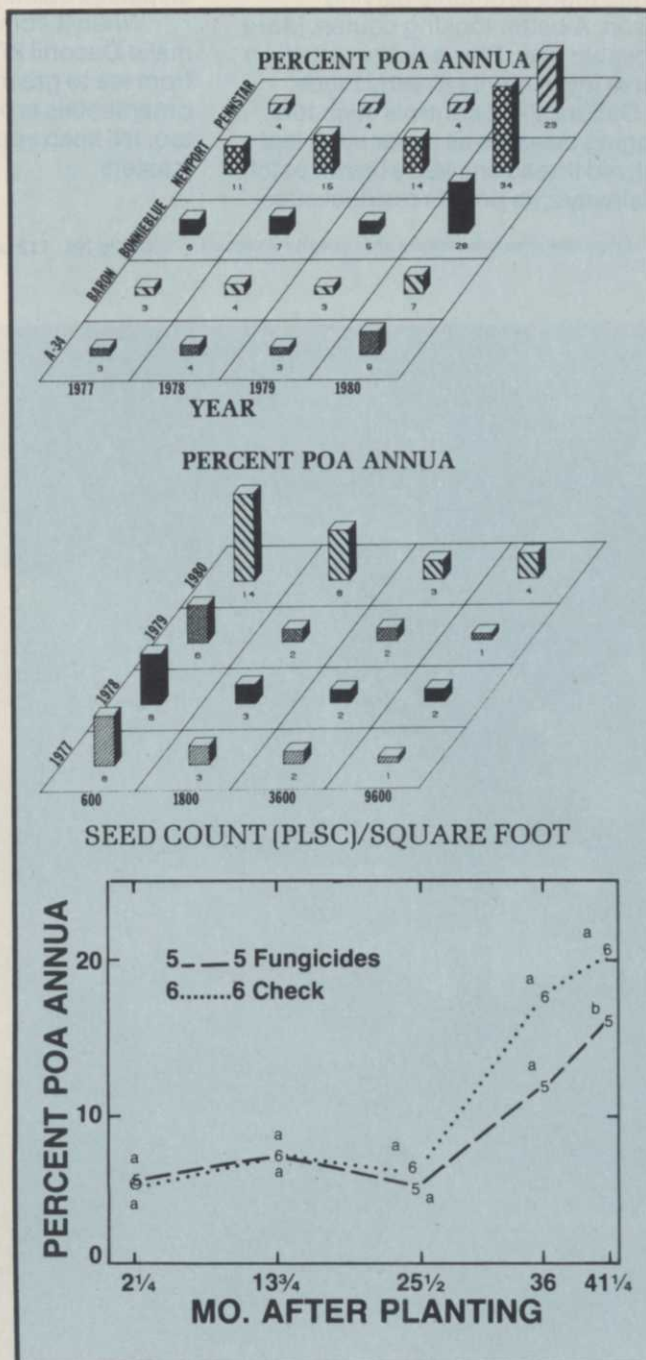
You've probably heard turf managers say, "Raise your cutting height; that'll cut down on your *Poa*." It's been known for years that Kentucky bluegrass fights *Poa* best at higher cutting heights.

We found twice as much *Poa* at 1/2" than at a 1" height. But the remarkable thing was that only a few weeks of close mowing were needed to let in the *Poa*. A two-month-old Newport stand, with only a month of mowing under its belt, had 88% more *Poa* at 1/2" than at 1".

Let's say you're planting a Kentucky bluegrass lawn in an area where *Poa* is a problem. And let's say that you want to mow it at 1". How can you best manage the mowing to limit *Poa*?

First, begin mowing as soon as the grass reaches 1 1/2"; use a 1 1/2" setting on the mower. Then, keep it at that height for about a month. Take an additional month to lower the height, a little bit each time you mow. This will give the desired grass a chance to establish itself. Remember, if you mow Kentucky bluegrass lower than an inch, you're asking for *Poa*.

One of the most important decisions you'll make in planning your new turf area is the cultivar (variety). In our study we tested five popular cultivars to see which ones limited *Poa* invasion. Newport, a less vigorous bluegrass, allowed a large invasion of *Poa* during the first few months after planting. It also kept that



portion of *Poa* for more than three years. A-34 (BenSun) and Baron, on the other hand, prevented *Poa* in the first few months and never did let much in. A vigorous cultivar will not only look good, but it will also work to keep *Poa* out.

So, you've decided on your cutting height and cultivar. The next question is: How much seed to use? Textbooks tell you to seed bluegrass at

Continues on page 36



Roundup helped Dave Portz save a cool 50% on watering costs when the weather was hot.

When grounds superintendent Dave Portz renovated with Roundup® herbicide, he wanted to knock out a near-100% infestation of poa annua without inconveniencing his golfers.

He got what he wanted—and a great deal more.

When Dave renovated 14 fairways at Brookside Country Club with Roundup, the members played as soon as the treated area was dry.* And he now has an 80% ryegrass, 20% bluegrass mix which looks great, stands up in dry weather, AND costs a lot less to manage than the old poa.

Dave saved 50% to 60% on watering costs alone during the hot, dry summer of 1980. He watered only when he absolutely had to, and found that the new turf resists drought much better than poa.

What's more, Dave saved roughly \$5,000 on fungicide treatments (from 12 down to just one), plus more on labor, electricity and wear and tear on pumps. It added up to huge savings.

You can also use Roundup for general cleanup around trees, sandtraps, fence lines, tennis courts—most places weeds are a problem.

For fast, clean, manageable turf renovation—and general weed control work—nothing works like Roundup.

**Nothing works
like Roundup.**



Call 800-643-5599 (in Arkansas, 800-482-9097) to hear Dave Portz tell you why he renovated with Roundup.

ALWAYS READ AND FOLLOW THE LABEL FOR ROUNDUP. Roundup® is a registered trademark of Monsanto Co. © Monsanto Co.1981.
*Apply Roundup to fairway; reseed 7 days after application. While Roundup goes to work, golfers keep playing over treated turf. RUP-SP1-113D

Circle No. 133 on Reader Inquiry Card

Poa vs Kentucky from page 36

1-2 lbs. per 1000 square feet. But is this the right rate for keeping *Poa* out?

To answer this question, we established several plots with seeding rates of 600, 1800, 3600, and 9600 pure-live-seed count (PLSC) per square foot. With the PLSC method, we knew how many viable seeds we were planting per square foot of soil. These rates spanned a range from roughly 1/2 to 10 lbs. of seed per 1000 ft².

The results were surprising. Seeding rate affected the amount of *Poa* for more than three years after planting. Low seeding rates (1 lb. and less) let *Poa* invade during the early months of growth, before Kentucky bluegrass could take hold. After the damage was done, the *Poa* spread. *Poa* seldom relinquishes what it gains.

Vigorous cultivars seem more immune to *Poa* invasion than their weaker cousins, especially at low seeding rates. If they can put up a good struggle against *Poa* in the first few months, they've got it made. Weak cultivars tend to lose the benefit of higher seeding rates as time goes by.

Very high seeding rates (above 4 lbs.) can predispose turf to seedling damping-off diseases. Heavy rates only feed the fungi. Once damping-off hits, you're back to the same problem: A stand full of holes where *Poa* can invade.

We were lucky; damping-off wasn't a problem in our test. You might not be so lucky.

What's a good Kentucky bluegrass seeding rate? 2-4000 PLSC/ft² (see accompanying explanation of the PLSC method).

How do fungicides affect *Poa* invasion?

At the beginning of our experiment, we had equal *Poa* in each of two plot areas. We sprayed one area with fungicides, leaving the other area untreated. We made 5 to 9 applications per year of common turf fungicides in a disease-prevention effort.

Fungicides had a cumulative effect, holding back the amount of *Poa* that invaded the treated area. Maybe the fungicides had some beneficial

effect on the Kentucky bluegrass or perhaps a detrimental effect on the *Poa*. In any event, 3 1/2 years later, there was less *Poa* where fungicides were used.

Of course, fungicides shouldn't be used as a *Poa* control. It would cost you thousands of dollars for only 5% less *Poa*. But if you are using fungicides for disease control, less *Poa* is a side benefit.

Why Poa wins

Poa is botanically a sister of Kentucky bluegrass. The plants look similar. The seeds are about the same size. But if a few *Poa* plants get into bluegrass turf, they take over. This is especially true when the stand is young.

We tried to find some answers by seeding *Poa* and Kentucky bluegrass side-by-side and watching their progress. *Poa* seedlings broke ground two full days before Kentucky bluegrass. Ultimately, 90% of the *Poa* seeds produced seedlings, compared to only 45% of the Kentucky bluegrass, even though lab germination of the two was nearly the same.

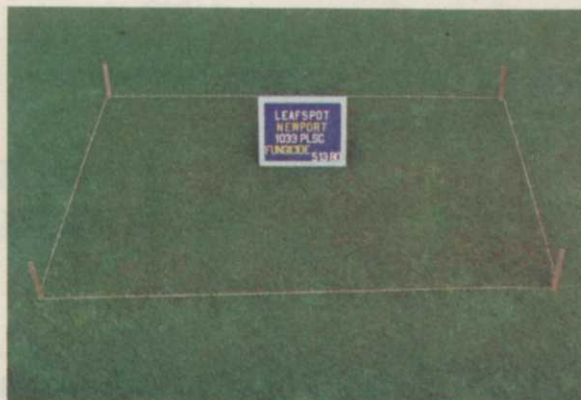
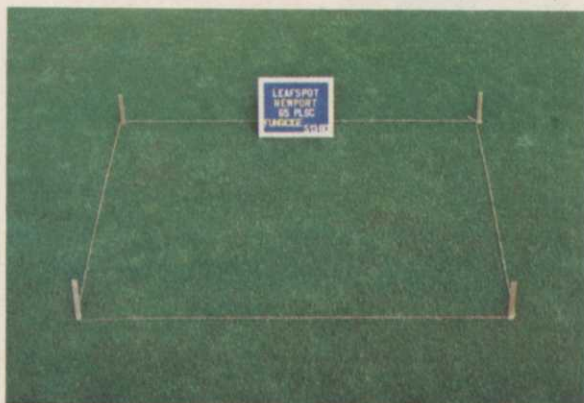
In another experiment, we seeded a mixture of *Poa* and Kentucky bluegrass. Neither grass bothered the other during germination. The takeover by *Poa* came during the month after germination. *Poa* produced twice as many tillers as Kentucky bluegrass and four times as much leaf dry-weight from an equal number of seedlings.

Summary

Poa is a grass that never passes up the opportunity to get involved. In established turf, mistakes in management and wear and tear give *Poa* the chance it needs to get a foothold.

Poa can also be a problem in seedling stands, germinating with the desired grass and later taking it over. Cultural methods can be helpful in limiting *Poa* in a young stand.

Continues on page 38



Newport Kentucky bluegrass shows the effect of seeding rate on *Poa annua* after three years. Photo on left shows seeding rate of 600 pure-live-seed-count per square foot. Photo on right shows rate of 9600 PLSC/sq. ft.

SWITCH HITTER

Shade or sun, Glade's a beauty that grows both ways. When trees and structures throw shadows on your plans, it's time to call in Glade to swing with the hot times and up to 60% shade. Excellent dark green color, fine texture and better disease

resistance make Glade a big hit with crowds in recreation areas, or simply covering home and commercial grounds. Switch to Glade for consistently high scores in sun or shade. At your local wholesale seed distributor.

Glade
Glade

**KENTUCKY
BLUEGRASS**

U.S. Plant Patent 3151
License in Canada No. 2133

Circle No. 121 on Reader Inquiry Card



Another fine, quality-controlled product of Jacklin Seed Company.

When
Others
Won't...



the "Piggyback" Will!

Versatile Material Handler

Princeton's mighty "Piggyback" is the perfect low cost, heavy-duty material handler for all your industrial or agricultural needs. It gets its name from the way it rides suspended behind your truck to and from the job...never needing a trailer or taking up valuable load space. The "Piggyback" is light...strong...fast...durable...and completely stable on the job!

- Will lift and load up to 4500 lbs...yet weighs only 3500 lbs.
- Navigates curbs, logs, and other normal loading area obstructions with ease.
- Powerfully trudges through gravel, sand and mud...but floats over normal soil or sod.

- Turns quickly in its own length.
- Strong and safe, operating on steep grades.
- Powerful, but economical diesel engine provides superior power for all adverse operating conditions. (30-50 hp available.)

For further information or demonstration, write or call collect for the dealer in your area. Dealer/Distributor inquiries invited.

The "New Concept" People



955 West Walnut Street, Canal Winchester, Ohio 43110
Phone: (614) 837-9096



"Piggyback" loaded for transport

Added Versatility with Quick-Mount Options!



Large capacity, hydraulic or mechanical scoop



Hydraulic hole digger (6" to 36" diameter)

Circle No. 142 on Reader Inquiry Card

PURE-LIVE-SEED-COUNT

Seed quality is important, no matter what size area you're planting. If you're undertaking several acres, minor differences in seed quality can add up to major savings.

Many things go into good seed quality: purity, freedom from weed seed, germination percentage, and the number of seeds per lb. You can find that information on your seed label or tab, with the exception of the number of seeds per lb.

Modern bluegrasses vary considerably from the 2.25-million seeds per lb. figure often quoted for Merion. In fact, depending on the cultivar, they can range from 850,000 to 2,000,000 seeds per lb. — a 2X difference! That translates to a possible 2X savings on the cost of seed.

In the PLSC method, first enter the desired PLSC/ft² rate; a value of 2-4000 PLSC/ft² will work nicely. Next, multiply by the number of square feet to be seeded. Divide by the number of seeds per lb. (see list below). Divide by the purity listed on the tag (if the purity is 95%, enter 0.95). Divide by the germination listed on the tag (as a decimal again). Hit the = and you get the lbs. of seed needed to plant your area.

Here's an example. Say you want to plant a 10,000 ft² lawn to a 50-50 blend of Merion and Birka. And you want to seed at 4000 PLSC/ft². That means you'll need 2000 PLSC/ft² of each cultivar.

The seed tag on your Merion lists 99% purity and 92% germination. Your Birka has 95% purity and 80% germination. Thus, because of different seed qualities, you'll need quite different amounts of seed for a 50-50 blend: Merion 11 lbs., and Birka 31 lbs.

The following are seed numbers of several popular bluegrasses, from studies at Ohio State and Penn State:

Cultivar	Seeds per lb.
A-34 (BenSun)	1,500,000
Adelphi	1,300,000
Baron	1,100,000
Birka	850,000
Bonnieblue	1,100,000
Brunswick	1,600,000
Cheri	1,100,000
Delta	1,400,000
Fylking	950,000
Galaxy	1,100,000
Glade	1,200,000
Majestic	1,200,000
Merion	2,000,000
Newport	1,200,000
Nugget	950,000
Parade	1,200,000
Park	1,200,000
Pennstar	930,000
Touchdown	1,300,000
Vantage	1,500,000
Victoria	1,000,000

IT'S OFFICIAL... IT TAKES LESS KOBAN[®] 30 FUNGICIDE TO PREVENT PYTHIUM.

There's a new, approved label rate for Mallinckrodt's KOBAN 30 fungicide. On the basis of Mallinckrodt field research and the working practices of many golf course superintendents, the minimum label recommendation has been lowered to two ounces of KOBAN 30 to five gallons of water per 1000 sq. ft. for preventive treatment of Pythium. Now when you compare brands and prices — compare coverage. KOBAN is

effective and economical for use on fairways as well as greens and, used with the recommended amount of water, control will be improved and tip burn all but eliminated.

FROM THE GREEN GROUP AT...

Mallinckrodt

MALLINCKRODT, INC.
ST. LOUIS
Jersey City • Los Angeles • Montreal

Now also available
in granular form!
Contact your distributor

AN 30 to the spray tank with the agitator. Disperse 2 to 4½ oz. of KOBAN 30 for each 1000 sq. ft. of turf to be treated. /1000 sq. ft. disease incidence to be maintained. /1000 sq. ft. of turf area with a



FOOTING OR BALL RESPONSE: CHOICES IN ATHLETIC FIELD CARE

By Dr. William H. Daniel and Dr. Raymond P. Freeborg, Purdue University, West Lafayette, IN.

Athletics is an important segment of our culture. Societies that are not actively at war need athletic activities to channel the enthusiasm, competitive interest, and aggressive tendencies of its citizens. People of many cultures are motivated by a "cause." The challenge of a contest plus the desire to be for something or to take sides is inherent in human beings. Therefore, the therapeutic value of sports within a society has deep roots in the nature of man. As a result, many games have evolved to challenge and test a player's skill, conditioning, and training.

Sports that demand physical contact have attracted society's plaudits for centuries. The voluminous sports coverage in newspapers, the variety of sports magazines, and the TV time dedicated to reporting sports is indicative of the extensive interest in athletics.

The turfgrass surface of athletic fields is designed primarily for the "footing" of the players with less emphasis on ball response. Football, rugby, soccer, field hockey and lacrosse involve running, falling and body contact, as well as some ball response. The games of baseball, softball, and cricket involve less player contact but increased emphasis on ball response and player footing. Areas for volleyball, deck tennis, badminton and playgrounds receive intensive wear, but the response of the ball is of less concern. The maintenance of polo grounds provide an additional challenge due to the stress on the turf area caused by horses' hooves. However, each of these intended uses creates similar problems of turf growing and management, due to the compaction of soil and intense wear.

The maintenance of athletic facilities presents the turf manager with three major areas of concern: Conditions or health of the **turfgrass**, the firmness and uniformity of footing for the **player**, and the color and grooming of the turf surface for esthetic value to the **spectator**.

Accumulated surface water weakens turf and causes unstable soil. Soil surfaces, even when the turfgrass cover is worn, need to remain smooth and stable (as in basepaths, infields, or the center of football fields). Wear-tolerant turf is necessary for safety and appearance and should be achieved in spite of intense use that reduces quality and quantity of existing turfgrass as the season progresses.

The turf surface is important to the player as he runs, stops, turns, twists, jumps, falls and gets up. The player seldom has a controlled fall, but more likely is tackled, blocked, pushed, piled onto, rolled or stepped on. He may slip, slide or twist. Many athletic injuries are due to body contact

Derived from Turf Manager's Handbook, published by Harcourt Brace Jovanovich Publications, 1 East First Street, Duluth, MN 65802. See book ad in magazine.

between players. As a ball carrier is tackled, there is often extreme pressure on his feet and legs as he tries to advance. The opposing forces create upper body twisting and cause extra stress on the knees. The inherent "give" of natural turf reduces some of this stress.

Maintenance of Athletic Grounds

A dense, wear-resistant turfgrass cover on athletic fields reduces the number and severity of player injuries, provides good footing for better game performance, and presents a pleasing appearance. The use of agronomic principles and good judgement can contribute to a successful maintenance program.

Correct timing of all maintenance operations is of prime importance; each practice needs to be related to the state of turfgrass growth, to varying ground and weather conditions, and to the projected use of the area.

The following concepts of grounds management relate to areas used for football, as well as parks, baseball fields, playgrounds and multiuse areas which have similar demands and requirements. The football player spends many more hours working or playing on practice fields than in the stadium. Therefore, there is a need for the best turf possible on the practice fields.

There are three general levels of athletic field maintenance determined by budget, available equipment and technology. Timing is vitally important; nature's growth processes require time. In general it is better to be early rather than late with management procedures.

Wear Tolerance of Grasses

Currently the improved grass varieties provide increased resistance to wear. Both ryegrass and tall fescue have a high fiber content, which provides increased wearability. Because of seedling vigor, the overseeding of ryegrass can provide a continuous new growth during the playing season. In California pre-germinated seed has been spread on the athletic field prior to a scheduled game. Following the game the field is covered with clear plastic sheeting for 6-12 days, depending on the weather. The young grass is green by the following game time.

Vertical cutting of turf of bermudagrass cultivars, such as Santa Anna, should be done when the conditions are conducive to rapid re-

Continues on page 42

Modern Art

Contemporary favorite and exhibitionist's delight. Wide expanses show off well with artful contours of Fylking providing tasteful balance and form in mixtures. Find pleasing opportunities to flaunt your artistry with land sculptures of this Swedish heritage elite. Its full lush body would never betray how little care it requires and its lower cost. This and its resilience to heavy traffic and disease make Fylking truly art for the masses. Express yourself. Ask for Fylking Kentucky bluegrass at your local wholesale seed or sod distributor.



FYLKING **KENTUCKY BLUEGRASS**

U.S. Plant Patent 2887

Another fine, quality-controlled product of Jacklin Seed Company.

Economy Athletic Field Care

- a. **Fertilize** in early fall (August 10 in Indianapolis). Use 60 pounds of nitrogen on a field or 100 pounds inside the oval track. Examples: 45-0-0 at 120-200 pounds or 16-4-8 at 300-500 pounds.
- b. **Water** as needed. Consider the use of traveling type irrigation equipment with automatic cutoff. These are available in the larger turf-types with 400 feet of cord and 1-inch plastic hose or the smaller lawn types with 100 feet of tape and 3/4 inch hose.
- c. **Mow** often at a two-inch height (as high as practical rather than as low as possible). Maintain adequate leaf surface that will tolerate increased wear and produce energy within plants. Bermudas should be cut closer.
- d. **Overseed** lightly before each home game. Spread 5 pounds of seed with broadcast seeder over the worn areas. Let the cleats push the seed into the soil.
- e. **Mulch** thin areas immediately following the last game of the season with crushed corncobs or other organic material which favors soil aggregation as it decomposes.
- f. **Fertilize** in late winter or early spring (April 1 in Indianapolis) to promote early grass growth.
- g. **Kill broadleaf weeds** and knotweed before they compete with turfgrass (before June 15). Use 2,-4-D and dicamba combined. Follow label instructions.
- h. **Prevent crabgrass**, etc. by the use of preemergent herbicides which can be applied (April) with fertilizer. Apply following the first mowing in the spring.
- i. **Mow often** but with a high cut during the summer. This favors the production of deeper roots and builds reserves of energy in the rhizome.
- j. **Spread wear** as much as possible to protect the center of field. Mark an extended 5-yard line where possible for optional practice (band and team).

Improved Care For Athletic Fields

- a. Use turfgrass fertilizer high in N, low in P, medium in K. (16-4-8, 18-5-9, 24-4-12). When using slow release nitrogen apply two to three pounds N for each 1000 sq. ft. in mid-August.
- b. Prior to August 15 irrigate (heavily) only when wilt starts to show. If in doubt, don't apply more water. After August 15, water lightly and frequently as needed to maintain optimum playing conditions.
- c. Mow at a two-inch height during summer, then one and one-half inches after the first fall home game for bluegrass and ryegrass.
- d. Overseed before each home game. Use newer, more disease resistant varieties of grasses.
- e. Fertilize mid-fall to encourage new plant growth.
- f. Mulch thin areas (immediately following the last home game) with one ton crushed corncobs or other organic material which, as it decomposes, favors soil aggregation and separation. However, additional fertilizer will be required the

following year to offset the nutrients tied up in decomposition.

- g. Fertilize lightly with a soluble nitrogen source to force growth in the early spring.
- h. Kill broadleaf weeds and knotweed as needed.
- i. Prevent crabgrass. See economy field care procedure.
- j. Mow frequently and high.
- k. Cultivate intensely once in mid-summer to loosen the soil, reduce compaction, bury crowns of the plants and aid in surface leveling (rental machines are available). Repeat treatments in one day; greensaire twice, aerify three to six times. Spread fine sand, shread the soil cores, drag, smooth and water as needed.
- l. Extend yard lines to fence for maximum practice area. Use center for pass patterns only. Minimize practice on the field. Mark off 5-yard lines in other turf areas for band practice and wet weather use.

Best Care Program for Athletic Fields

In addition to the "economy" and "improved" care programs there are other maintenance procedures that aid in producing the best turfgrass possible.

- a. Build up levels of N,P and K by the use of slow release fertilizers. Test composite 2-inch soil samples to determine needs. Use lime and gypsum only if needed.
- b. Install an automatic pop-up, padded head irrigation system (consult reliable irrigation suppliers). Consider the use of three rows of full circle, or four rows, including two part circles, for the edges of the field. Use only as needed.
- c. Mow frequently. Vertical cut and selectively thin, particularly at the edges of the field where thatch accumulates.
- d. Repair divots following each game. Overseed before each game with ten pounds of seed. Consider resodding the field to newer disease resistant grasses.
- e. Maintain a high nutrient reserve in the soil.
- f. Use clear, perforated plastic sheeting over the turfgrass area to conserve heat, hold moisture, and reduce freezing.
- g. Fertilize lightly with a soluble nitrogen source to promote early spring growth.
- h. Prevent crabgrass, etc. See economy procedure.
- i. Kill broadleaf weeds and knotweed as needed. Spray for leafspot control (four times a year) or as wet, humid weather dictates.
- j. Mow in alternate direction (football fields) every five yards to produce a contrasting pattern.
- k. Annually power slice as deep as possible; work from sideline to sideline; go up and down the slopes. Apply premixed top-dressing material or washed fine sand following the last game, then aerify and loosen the soil.
- l. To improve appearances the damaged areas of the field may be sprayed with colorants.

Note: It is reported that shorter shoe cleats, soccer types, less than one-half inch, are safer for players and do less damage to turfgrass.

covery (early summer). Cool season grasses may be vertically cut any time during the season in the outer areas of the athletic fields that receive less wear, provided there is time and conditions are favorable for recovery before heavy use or natural dormancy.

The wear tolerance of the turfgrass increases as the green vegetation increases per unit area. Moderate amounts of thatch provide protection to the turf by the cushion effect, which improves wear tolerance. Wear tolerance of turfgrass is favored by application of a moderate quantity of fertilizer rather than an excess, slow release nitrogen rather than soluble, medium moisture level rather than an excess wetness, adequate

potassium supply rather than low, open sunny area rather than shaded, and a balanced nutrient level.

Most turfgrass species have an optimum height at which they should be maintained for maximum quality turf. A turfgrass mowed at one inch (normal for species and conditions) may have several times the wear tolerance of the same grass mowed at one-half inch (stress).

Research by Beard, Anda, and others of Michigan State University, using a wear machine, has contributed information concerning species relationships.

In a specific wear tolerance test of 18 blue-

Continues on page 44

You'll love our Lescosan* 3.6G + Fertilizer

Art Wick
*Fertilizer Products
Manager*



Lescosan* (Betasan-registered trademark of Stauffer Chemical Co.)

(800) 321-5325—Nationwide

(800) 362-7413—In Ohio

A Family of Fine Products

Lescosan 12.5G—Lescorene—Lesco 4—Lescobor—
Lescopar—Lescopex—Lesco Non-Selective
Herbicide—Lesco MSMA—Lesco Thiram 75W—Lescozyme
—Lakeshore Chinch Bug & Sod Webworm Control.

LESCO PRODUCTS

Division of Lakeshore Equipment & Supply Co.
300 South Abbe Road, Elyria, Ohio 44035
(216) 323-7544

Relative Wear Tolerance of Turfgrasses When Grown in Their Respective Regions of Adaptations:

Relative Ranking	Turfgrass Species	
	Warm Season	Cool Season
Excellent	zoysia bermuda bahia	—
Good	—	perennial ryegrass tall fescue Kentucky bluegrass red fescue
Medium	St. Augustine	—
Poor	carpetgrass centipede	creeping bentgrass colonial bentgrass <i>Poa annua</i> <i>Poa Trivildes</i>

grasses (five year old sod), the remaining verdure (green wet weight) ranged from 7.9 to 1.6 grams and the reduction in verdure varied from 18 to 66 per cent.

In areas where compaction is a problem, such as golf tees, centers of football fields, volleyball courts, etc., it is desirable to maintain sufficient crowns and stolons so that regrowth provides continuous and uniform turfgrass cover.

In heavily trafficked areas where the turfgrass is worn enough to destroy crowns of grass, resodding is generally the wise solution. Seedlings seldom survive in areas that are receiving heavy wear.

Topdressing

Many turfgrass areas for athletics are initially constructed with limited resources. As the area is used, demands or requirements for the area increase. Topdressing can be used to improve the surface. Organic materials (peat, manure, crushed cobs, fine barks, hulls or composts) can dilute tight soils and, as they decay, aid in granulation and structural improvement of the soil (when a hard surface is not required).

Apply topdressing materials to

1. protect the crowns of growing grass,
2. level the surface,
3. increase resiliency of the playing surface,
4. improve soil structure,
5. increase water holding capacity of the soil,
6. increase water infiltration and percolation rates,
7. improve the nutrient level of the soil,
8. increase cation exchange capacity of the soil.

Topdressing materials should be spread

evenly over the field or the portion of the field as needed. After the topdressing is spread, the field should be intensely cored. Depending on design, coring machines can be used over an area 2-6 times in one day. The cores should be shredded and distributed by dragging, to aid in smoothing and leveling the surface.

Extra nitrogen fertilizer may be required as the organic matter decomposes, but nitrogen will later be released as the organisms causing decay die.

Soil Warming

Heating the turfgrass from below the soil surface will extend the length of the turfgrass growing season and allow increased use of an area. The benefits include (a) enhancement of root and shoot growth, (b) reduction in frozen soil (c) protection from light frost, (d) aid in snow removal, and (e) improved winter grass color.

Soil warming research began in England and Sweden about 1960, and at Purdue University (Indiana) in 1963. Hot liquids, hot air and electric resistance cable have been used. The resistance cable is preferred since it offers greater convenience in installation and maintenance.

Heating cable providing resistance of 5 watts per foot or 16 watts per meter has been adequate when placed 6 inches (15 cm) deep and one foot (30 cm) apart in the center of an athletic field. Spacings of 18-24 inches are used in the outer portions of the field where the turf wear is less, and a normal turfgrass cover is easier to maintain.

The fields at the Air Force Academy, Colorado, and Lambeau Field at Green Bay, Wisconsin, are two of the earlier installations of soil heating in the United States. More recently heating systems have been installed at Foreman Field, Goshen Indiana; Ross Ade Stadium, Purdue University; Mile High Stadium, Denver, Colorado; Kennedy Stadium, Washington, D.C.; and University of Wisconsin at Milwaukee, Wisconsin. Three Michigan fields also have installed soil heating equipment.

Since some athletic events are scheduled in spite of weather conditions, anything that helps counteract the weather extremes and provides improved playing conditions is beneficial.

In fields that have soil warming equipment, frost action is minimized, playing surfaces remain firmer, snow melts from below and creates less wetness. Roots and crowns of cool season grasses grow when temperatures are above 40°F (5°C), so replacement or growth of plant parts is favored. Seed germination and new sod rooting is also favored.

The increased demand for sports facilities will create a greater need for soil warming. The increasing costs of energy could restrict this.

Continues on page 76

WE SAVE OUR DIESEL FROM DROWNING.

WITH A BUILT-IN LIFE PRESERVER.

Toro stops at nothing to give you the kind of riding rotary mower you want most.

A mower that keeps you cutting. Gets the job done.

The latest example: our new Diesel powered Groundsmaster 72®. It offers you maximum productivity and reduced operating costs as well as remarkably low levels of noise and vibration.



injection pump. And soak you with costly repairs and downtime.

So we built in a Roosa-Master water separator that removes more than 95% of the water. You simply unscrew a plug and drain it out.

And we didn't stop there.

We added other features that keep you cutting. Like a fuel primer pump, start assist glow plugs and a maintenance free battery.

Plus, other advantages you get with every Groundsmaster 72®, gas or Diesel. Such as hydrostatic drive and a Donaldson air cleaner.

Call your Toro distributor. He'll tell you all about Toro riding rotary mowers. Including the newest: our Groundsmaster 72® with Diesel engine.

But we didn't stop there.

We knew that water in fuel can literally drown a Diesel. Destroy its injectors and



THE NEW TORO DIESEL
It's our Groundsmaster 72®
now available with Diesel engine.

TORO

**THE PROFESSIONALS
THAT KEEP YOU CUTTING.**

"Toro" is an exclusive trademark of The Toro Company.
8111 Lyndale Ave. So., Minneapolis, Minnesota 55420.

Circle No. 153 on Reader Inquiry Card

DOW

DURSBAN

INSECTICIDE



WHY 9 OUT OF 10 LEADING LAWN CARE FIRMS USE DURSBAN

When the top 9 of 10 lawn care firms in America all choose DURSBAN* brand insecticides as their predominate insecticides for surface insect control...there has to be a good reason. Or two.

Well there are two.

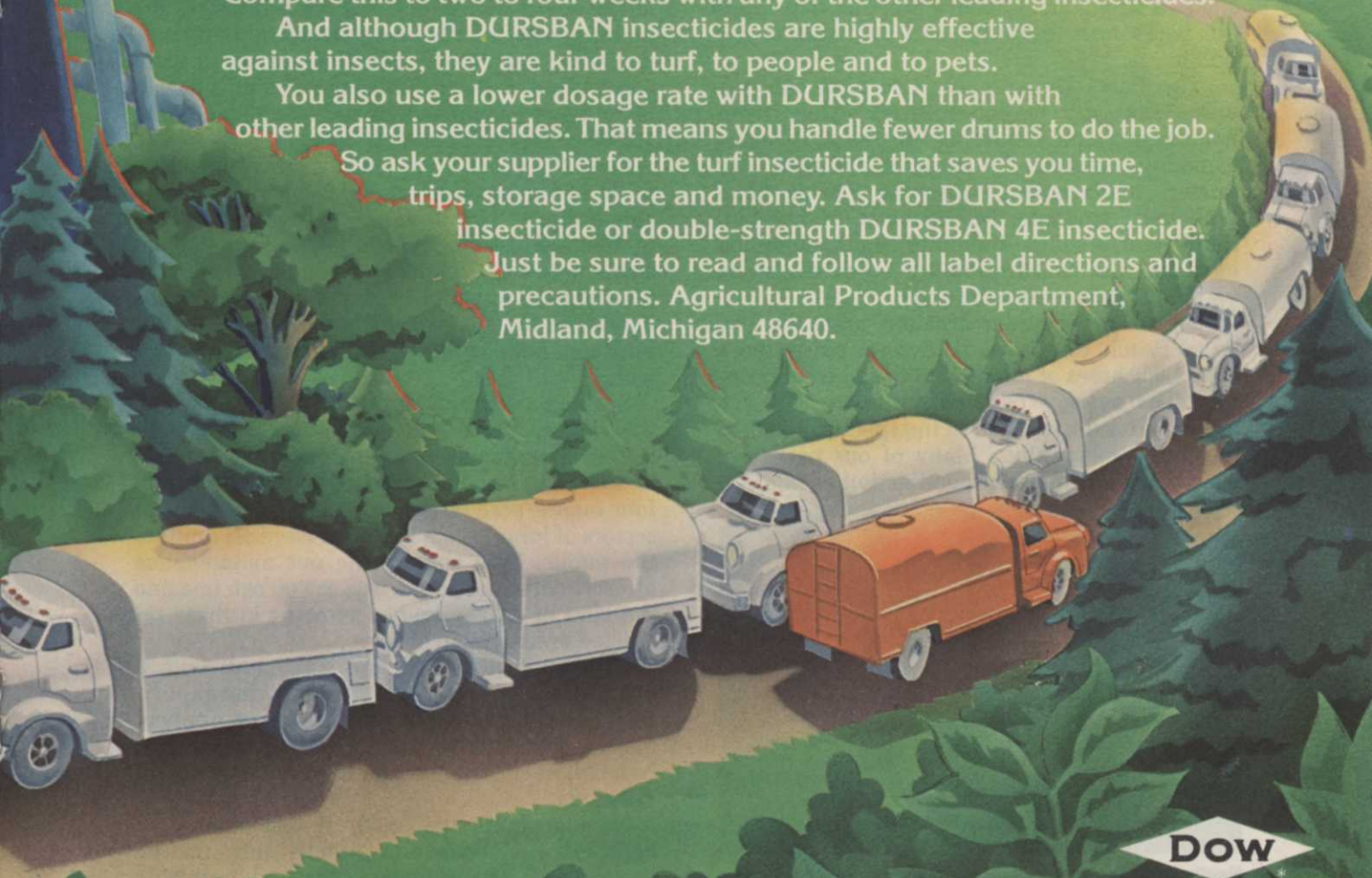
1. DURSBAN insecticides last longest of all leading insecticides.
2. DURSBAN insecticides cost less to use than other leading insecticides.

In fact one application of DURSBAN 4E, $\frac{3}{4}$ oz. per 1,000 sq. ft., costs only about 45¢. Yet with this small amount, you get six to eight weeks of unsurpassed residual control of dozens of turf pests. Compare this to two to four weeks with any of the other leading insecticides.

And although DURSBAN insecticides are highly effective against insects, they are kind to turf, to people and to pets.

You also use a lower dosage rate with DURSBAN than with other leading insecticides. That means you handle fewer drums to do the job.

So ask your supplier for the turf insecticide that saves you time, trips, storage space and money. Ask for DURSBAN 2E insecticide or double-strength DURSBAN 4E insecticide. Just be sure to read and follow all label directions and precautions. Agricultural Products Department, Midland, Michigan 48640.



DOW

DOW CHEMICAL U.S.A.
*Trademark of The Dow Chemical Company

Circle 125 on free information card

AWARD WINNING PARK SYSTEM DEPENDS ON EFFICIENCY FOR GROWTH

The Sunshine State may be a haven for outdoor enthusiasts, but the leisure needs of Palm Beach County's 620,090 residents and 1.6 million annual visitors are met by more than Florida's tropical weather.

Over the last ten years, George Irvin Jr., horticulturist for Palm Beach County Parks and Recreation Department, has helped institute a whole host of programs designed to appeal to the area's diverse, recreation-oriented population. Along with these new programs has come a parallel concern for upgrading and improving the park areas themselves.

"Because we are one of the fastest growing counties in the United States, we have had to do a lot of planning and experimenting, both facility- and maintenance-wise," the native Floridian explains, noting that acquisition and development of publicly-owned land and facilities for recreational use have almost doubled since 1973. "Year-round usage also necessitates a strong maintenance program that keeps the parks lush, beautiful and available to the public.

"The Parks Department is so large and diverse that my responsibilities range from landscaping and resodding, to tree and hedge trimming, running the spray department and nursery management," says the Florida State University graduate. Maintenance of baseball fields, tennis courts, buildings, signs, plumbing and the like is handled by other divisions within the department, he adds.

The 48 parks and recreation areas in The Palm Beach County Park System cover more than 4,000 acres of inland and beach front property. The average park covers about 50 to 75 acres, and is designed to fit the specific needs of the local community. "Many of our parks are geared toward neighborhood activities and are



Neatly groomed area in Japanese garden is maintained year-round by use of chemicals.

comprised of ball fields, play equipment and sitting areas," observes Irvin. "Others, like 1,053-acre John Prince Park in Lake Worth, have full-scale recreational facilities that include boating, tennis, picnic areas, and jogging and bike trails."

Ten New Parks

Maintaining parks for the largest county east of the Mississippi River is a challenge George Irvin has enjoyed for more than a decade. And, it's destined to become even more of a challenge with ten new parks slated for completion within the next five years. This expansion, together with little or no increases expected in his one-million dollar maintenance budget, has made cost efficiency one of George's overriding management considerations.

With an extensive background in professional landscaping that dates back to his ownership of a landscape business, Irvin is well-aware of the importance of an effective program to control undesirable vegetation. "Most of our parks were constructed with unsterilized soil, and I'd estimate every square foot of soil contains close to 10,000 weed seeds," says Irvin.

Over the years, Irvin and his crew have tried more would-be weed remedies than they care to remember. "Hand weeding proved totally ineffective," recalls Irvin, who cites torpedograss as his main weed menace. "We'd have a man out weeding all day, and 24 hours later two weeds had taken the place of the one he removed. We needed a better solution, so we turned to chemicals."

Seeking a different approach to weed control, the County Parks and Recreation Department started experimenting with Roundup herbicide in 1976. The product was applied at the rate of four quarts/acre on several 10 x 10 foot plots in sectors of John Prince Park that were off limits to the public. "We concentrate our maintenance efforts in areas of public use, so you can imagine the kind of jungle we had growing in these restricted areas," Irvin observes.

Using two men and one spray unit with a 300-gallon fiberglass spray tank, he experimented with both spot and broadcast applications, around signs, plant beds, tennis courts, baseball fields, and just about everywhere else in the parks.

Having eliminated much of the expense of hand labor, George Irvin proudly notes that he has cut his department's labor and herbicide costs in half.

Continues on page 50

BIRKA

Kentucky

Bluegrass



Beautiful turf. Even low maintenance.

Birka has consistently proven its ability to maintain an attractive appearance under low maintenance programs in over eight years of testing at research stations in the U.S. and Canada. Birka is a great seed choice for any turf area demanding a combination of hardiness and good looks.

Birka greens up early and keeps its dark green color late into the fall. Even under heavy use, Birka's narrow leaves, excellent creeping ability and dense growth provide a beautiful turf. Another feature: Birka has excellent resistance to leaf spot, stripe smut, mildew and other common turf grass diseases.

Birka. Beautiful turf. Even low maintenance. And protection of professional turf growing reputations.



E. F. BURLINGHAM & SONS
P.O. Box 217 • Forest Grove, OR 97116
(503) 357-2141 • Telex: 36-0274
Cable: Burlingham

Jacklin Seed Company

W. 17300 Jacklin Ave. • Post Falls, ID 83854
(208) 773-7581 • TWX: 5107760582

\$500,000 Nursery

As if the parks weren't enough for Irvin and his staff of 25 full-time employees to handle, his division is also responsible for Palm Beach County's 5-acre nursery. The \$500,000 nursery, one of the largest in southern Florida, is the starting point for such semi-tropical trees as Live Oaks, Black Olives, Pines and various Palms. Also growing in the nursery are such exotic trees as Orchids, Golden Rain, Royal Poincianas, Seaside Mahoes and Roseapples.

Surrounded by natural vegetation, the nursery has long been a catalyst for the proliferation of Irvin's worst weed nemesis, torpedograss. "Every weed that goes to seed is blown into the nursery by the wind. So our weed control program is predicated on eliminating weeds growing alongside the nursery and in the roadways," he states.

This overall maintenance and weed control program has proved successful not only from a cost standpoint, but from a beautification standpoint, as well. The department was a finalist in 1978 and again in 1979 for the National Gold Medal Award, an annual honor bestowed on parks and recreation departments who have es-

tablished themselves within the community and captured the imagination of local residents with unique, well-maintained facilities.

New Park

Obviously, the beauty of the County's parks is not simply in the eye of the beholder. And recent construction of Morikami Museum west of Delray Beach further confirms that observation. The 140-acre spread, donated to the County in 1975 by George Morikami, a Japanese immigrant, is a magical wonderland of Japanese culture. But, as George Irvin points out, it hasn't always been this way.

When construction began in 1975, the first step was to eliminate all the weeds that had overrun

Palm Beach County Parks draws from efficiency to meet growing demand for recreational facilities by visitors and residents.

the park site. "Torpedograss has been growing for so many years the roots were 5-10 feet long. We controlled the weeds by broadcast applying four qts. of Roundup mixed in 20 gallons of water per acre, and set to work building."

Today, the one-time swamp is a tribute to Mr. Morikami's heritage, complete with a cultural museum and tranquil Bonsai gardens. Constructed of materials resembling the rice paper walls and tatami mats traditional to Japanese architecture, the museum gives visitors a sense of having just arrived in the Orient. The newly constructed picnic area—with shelters resembling Japanese tea houses and accompanied by such exotic plant materials as Water Lillies and Cat Tails and such trees as Bamboo, Holly, Silk Oak, Spanish Cherry, Jasmine and Japanese Black Pines—contributes to the theme, as well.

Proud of the beauty of Morikami, George allows himself the pleasure of maintaining the gardens with his crew. Somehow, he manages to find time to constantly prune the trees in strict Bonsai tradition.

"Our growth is based on an ongoing evaluation of the community's interests and needs," he states, adding that five years ago recreational and athletic programming was non-existent. "Morikami is one example of this attitude; another is the recently-constructed Heart Trail in John Prince Park." The trail is one mile long, and features 20 stations that prescribe exercises to benefit the entire body.

With the implementation of \$56 million in bond issue funding, and more than \$20 million in state and federal grants, Palm Beach County parks are rapidly becoming the most utilized and admired in the southeast.

WTT



Flail Mowers can cut your TURF CARE COSTS

Mott Flail Mowers reflect extra value through greater versatility, added production with longer trouble-free life, and safer operation. No other mowing system is as versatile as the flail. With only one mower investment, you can trim fine lawns, shred tough weeds, mulch, renovate, dethatch and scalp. You can work any area that is smooth or rough, clean or trashy, level or steeply banked, dry or "liquid wet". And you can operate with much greater safety than with rotary mowers. Mott Flail Mowers are built to last and can be used with most tractors. Models are available in widths from 38 to 88 inches. In combination, they will handle up to 19 foot swaths.

Contact us today and discover how the extra value of Mott Flails can pay off by cutting your turf care costs.

MOW LAWNS ■ RENOVATE ■ MULCH LEAVES ■ SHRED WEEDS

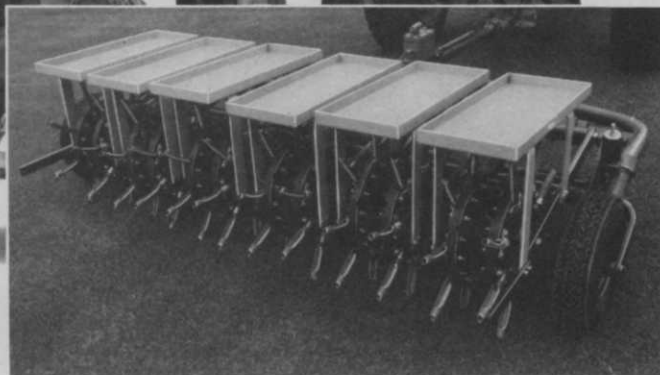
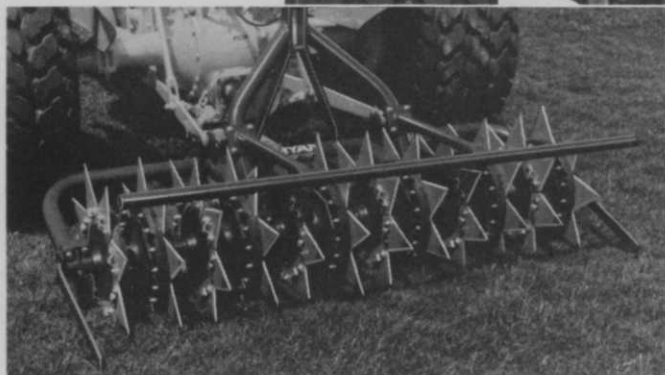
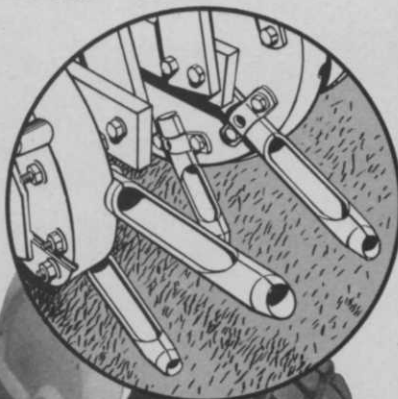


Mott Interstater Cuts 19' Swath.

MOTT CORPORATION 514 Shawmut Avenue
P.O. Box 518, LaGrange, IL 60525 (312) 354-7220

Circle No. 135 on Reader Inquiry Card

Thorough and fast. Built to last.



TRACAIRE® (Shown with slicing tines)

RENOVAIRE® (Shown with coring tines)

That's Ryan aeration.

These Large Area Aerators deliver consistent penetration—and thorough aeration—at speeds of up to 10 mph. And because they're both engineered Ryan-tough, you get dependable results year after productive year.

The **Renovaire** features independently-mounted tine wheels for maximum penetration, even on irregular terrain like golf course fairways or parks. And the Renovaire can be hydraulically raised on its pneumatic tires for quick and easy transporting.

The **Tracaire** is a rigid-frame aerator that's great for athletic fields and other flat turf areas. Its 2½" tubular steel frame holds 12 tine wheels in horizontal alignment, and easily mounts on a standard tractor 3-point hitch.

Both rugged aerators give you a full six-foot swath and interchangeable tines—coring, slicing or open spoon—to match your soil conditions. And either can be outfitted with an optional 12' dragmat for breaking up cores.

So if you're looking for a hardworking aerator that will cover a lot of ground—for a lot of years—take a hard look at the Renovaire or Tracaire from Ryan.

To find out more about the results Ryan Large Area Aerators can deliver for you, complete and return this coupon, today.

81-CUR-2

RYAN®
TURF-CARE
EQUIPMENT

*Day-In, Day-Out
Performance.*

2005 Cushman, P. O. Box 82409
Lincoln, NE 68501 Call: 402-435-7208

The Renovaire & Tracaire Aerators

Ryan, show me what your large aerators can do on my turf.

Name _____ Title _____

Company _____

Address _____

City _____ State _____ Zip _____

Circle No. 145 on Reader Inquiry Card

ACCUTROL™
Surfactant.

BANVEL® XG
A 10% dry formulation for spot treatments.

BANVEL® CST
Convenient, low-cost, ready-to-use herbicide
for cut surface or tree injection application.

BANVEL® 520
Oil-soluble combination of Banvel and 2,4-D
for dormant, basal and low-oil applications.

BANVEL® 720
Water-soluble formulation of Banvel and 2,4-D.
Aquatics clearance in some states.

BANVEL® 4-W.S.
A 4-lb. dicamba formulation.

Banvel® Industrial Herbicides...

Just what the Industrial Vegetation Control Specialists ordered.

Economy. Efficacy. Environmentally sound. That's what these industrial vegetation control specialists said they wanted in brush and broadleaf control herbicides. So we offered them a complete line of Banvel® Herbicide industrial products. Here's what they had to say...



Gordon Baker, plant control biologist, Florida Water Management Group.

Gordon Baker has been involved with industrial vegetation management for over ten years: "Our project is second only to TVA in size. We have between 1400 and 1500 miles of interconnecting canals to cover. Over the last six years, we've used Banvel 720 for ditchbank brush control because of its economy. And, because it's right up there at the top for effectiveness."



Ed Ingle, landscaping engineer, North Carolina Department of Transportation, Division of Highways.

Ed Ingle recommends vegetation control herbicides for construction projects and highway maintenance in a seventeen county area: "We have used Banvel for three years and found it was an economical and safe chemical. We've had good results with it where we have a lot of kudzu and multiflora rose. There's really no comparison with 2,4-D alone."



Darryl Fendley, founder/owner, Certified Services, Cleveland, Tennessee.

Darryl Fendley has provided industrial vegetation control work for utilities and industrial facilities for over three years: "We use Banvel 720 for vines and brush control. It does a pretty good job, particularly around sensitive areas, because it doesn't have the soil persistency of some other materials. And, when you compare price, you can use a bit more Banvel than you can with some other products. So my preference is Banvel 720."

These specialists get all they ask for with the Banvel line of industrial products. Shouldn't you? Contact your Velsicol salesman and see how Banvel industrial herbicides can work for you.

For the salesman in your area, call or write:

Velsicol IVM
341 East Ohio Street
Chicago, Illinois 60611
312/670-4962

Circle No. 156 on Reader Inquiry Card

Velsicol reminds you, before using any pesticide, please read the label. Banvel® is a registered trademark of Velsicol Chemical Corporation.

VELSICOL®

Velsicol Chemical Corporation
World Headquarters • 341 East Ohio Street
Chicago, Illinois 60611
Velsicol is an operating company of Northwest Industries, Inc.



MAINTENANCE, ENERGY CONCERNS INCREASE APPLIED TREE RESEARCH

By Douglas J. Chapman, Horticulturist, Dow Gardens, Midland, MI

Applied tree research is a particularly fertile area today. There exists a need for greater plant diversity (tree and shrub) in the landscape.

This could be accomplished by introducing new trees and shrubs, be they native or imported from such areas as the People's Republic of China and the development and introduction of superior cultivars. Regional cultivar introductions propagated by asexual methods, cuttage and/or tissue culture, grown under accelerated growth, should lead to more efficient production. A high degree of emphasis must be placed on stimulating local nurseries to introduce and propagate their own adapted cultivars of trees and shrubs. Traditional forestry has a similar need, yet diversity means developing a practical production technique for seedlings—determining what plants are photoperiodic responsive and breeding programs which will result in plants developed specifically for biomass, disease tolerance, and lastly, clones or cultivars for specific uses or grown under unique conditions, e.g. Sugar Maple and hickory for wet sites.

When considering landscape trees, the selection, production, and introduction of regional clones or cultivars is paramount to the development of the nursery industry. One in Europe would not expect trees to grow everywhere in the European landscape. We in this country should not expect plants developed and introduced in the Great Lakes to thrive throughout the United States. For example, the native range of *Acer rubrum* is from Michigan's Upper Peninsula to Florida. Yet Florida's *Acer rubrum* would not be hardy in the Great Lakes region and a Northern Michigan Red Maple would collapse in Florida. With continued efforts towards asexual production by cuttage or tissue culture or combinations of the two, the industry can expand the introduction of regional cultivars. High on the list of plants to propagate should be selected cultivars chosen for their environmental adaption, e.g. drought tolerance, disease resistance, and desirable aesthetic qualities (outstanding fall color, flower color, or habit of growth). In the development of new selections, one may want an *Acer rubrum* with scarlet or yellow fall color, light or dark bark, and eco-types for droughty as well as poorly drained soils. These selections will be developed and grown in areas where they are native, e.g. the Great Lakes States, the Northeast, or the Southeast.

Propagating these clones by cuttage or tissue culture will mean that the resulting tree will continue to express phenotypically all of the desirable characteristics for which it was originally

chosen with no problem of graft incompatibility or incongeniality. Further, since trees native to northern latitudes are more photoperiodic responsive, we can further reduce the time needed for production by growing them under continuous light, thus the tree remains vegetative and growth continues, accelerating the production schedule of *Acer rubrum* liners from three years to one full growing season.

Another method of propagation which could play a major role in the development of regional cultivars is tissue culture. Where applicable, it can result in the propagation of a large number of individuals in a short period of time. Thus, providing the nursery industry with stock plants for additional propagation. Sink at Michigan State University has been a leader with the development of tissue culture for shade trees, specifically *Acer rubrum* cultivars. His techniques, combined with propagation by cuttage, could speed up the production cycle, making regional cultivars a reality within five to six years. Meyer at the University of Illinois, working with tissue culture, has been successful in the propagation of iris *Hosta Lily*, and rhododendron (*Rhododendron* c. 'Nova Zembla').

Why consider asexual propagation of trees and the development of regional cultivars? During the past eight to ten years, a disturbing phenomena has been observed. With increasing frequency, grafts of Red Maple (*Acer rubrum* cultivars 'October Glory,' 'Red Sunset,' and 'Schlesinger'); White Ash (*Fraxinus americana* 'Autumn Purple' and 'Rosehill'); European Ash (*Fraxinus excelsior* 'Hessei'); Pin Oak (*Quercus palustris* 'Soveriegn'); and London Planetree (*X Platanus acerifolia* 'Bloodgood') are showing graft incompatibility or incongeniality. Researchers, including Davidson at Michigan State University, feel this incongeniality is a provenance situation, that is the root system on which producers are trying to graft these hardy cultivars is adapted to the Pacific Northwest and not the Great Lakes States or other areas.

During the early development of these cultivars, incompatibility was not a problem because 90% of the trees were propagated and grafted on native seedlings by large local nurseries, e.g. Coles, and production was not concentrated in a small geographic area. However, with the advent of Lady Bird Johnson's Beautification of America campaign, rapid propagation and production of shade trees became paramount. At this point, production shifted to the Pacific Northwest where producers could more rapidly produce a

Continues on page 56

All premium ryegrasses aren't alike. Here's the Regal difference

While a select few turf-type perennial ryegrasses are rated as "premium" varieties, Regal is a standout on several counts.

For example, Regal is one of the darkest of all ryegrasses. That's why it is often mixed with the improved bluegrasses and fine fescues to produce a rich, uniform turf.

Most turf experts agree that Regal has better heat and humidity tolerance than any other turf-type perennial ryegrass. It was the best in this regard in trials at Beltsville, Maryland and Arkansas.

Regal also demonstrates good overall disease-resistance to the major ryegrass diseases as well as the numerous diseases which often plague some bluegrass varieties.

To top it off, Regal germinates in a matter of 5-7 days, quickly develops a strong root system and holds its color during the chill days of winter.

Regal — it's the turf-type perennial ryegrass that's different.

P.V.P. Application No. 7700110



INTERNATIONAL SEEDS, INC.

P.O. Box 168, Halsey, Oregon 97348 U.S.A.
Telephone (503) 369-2251 TWX 510/590-0765

REGAL



straight liner. Since that time, incompatibility of scion and understock have become a problem, resulting in many landscape trees collapsing either soon after propagation or after reaching 3 to 4 inches in trunk diameter. Propagation by cuttage is one way to circumvent this problem.

Why haven't shade tree cultivars been propagated by cuttage in the past? The answer is tradition. Pomologists, specifically European, have grafted or budded apple trees for over 200 years. This tradition then inhibited change and/or research in new propagation techniques.

Recently Dow Gardens initiated research with the goal of propagating shade trees by cuttage. Working with several maple species (*Acer campestre*, *A. ginnala*, *A. platanoides*, *A. rubrum*, *A. saccharum nigrum*) two linden cultivars (*Tilia cordata* 'Greenspire' and *Tilia americana*), and several crab apple cultivars (*Malus*), we achieved 70 to 98% success.

We found that cuttings of *Acer rubrum* should be taken from spring wood that is no longer actively elongating (late May through mid-June). Usually these plants have completed their rapid growth (elongation) and lateral meristem or cambium seems more active, resulting in better

rooting. Cuttings taken earlier in the season show a high tendency toward rotting. The cuttings are treated with Hormodin #3, placed in intermittent mist, and usually root within three to four weeks. Hedge Maple (*Acer campestre*), Amur Maple (*A. ginnala*), and Norway Maple (*A. platanoides*), lindens *Tilia* c. 'Greenspire' and *Tilia* a. 'Redmond,' and 'Snowdrift' Crab Apple were found to root successfully when taken during mid-July through early August. Coincidentally, this is a period of high cambial or meristem activity as reported by Hart and, again, Shigo. These rooted cuttings can be placed in cold storage or grown on and planted out the following spring. The most efficient production techniques must be worked out for each area.

Forestry has a similar problem. They must be researching ways to speed up their production cycle without increasing energy needs (pesticide application). This speed up in production cycle may be accomplished by accelerated growth of seedlings. Why seedlings? Seedlings remain particularly important as they provide genetic variation needed so that insect and disease control is not required or run rampant. Extensive disease and insect control on a scale required in traditional forestry would make the growing of trees almost prohibitory, be it for biomass, pulp, or lumber. New production techniques, resulting in 12 to 18 inch trees at the end of the first growing season, would greatly alleviate problems of the early years in establishment.

For northern areas, work by Hanover, Michigan State University, clearly has shown that accelerated growth concept can speed the production cycle. This accelerated growth is nothing more than using the inherent photoperiodic response (low energy). Plants are put under continuous light shortly after the seedlings germinate during the growing season, keeping them vegetative, i.e. in a state of almost constant cell division and elongation. Thus, we have seedlings 18 to 20 inches in height and ready for rapid establishment. The seedlings can be from collected sources which show genetic resistance or special environmental adaption needed for specific production goals. This combined with the above-mentioned asexual propagation for urban trees could improve the quality while reducing maintenance costs of tomorrow's landscapes. One should expect to see only disease resistant crab apples, sycamores resistant to anthracnose, Shagbark Hickories tolerant of urban soil; further, readily-available plants which are easy to transplant yet are competitive with turf, e.g. Bur Oak and Shagbark Hickory. Some of today's dreams and needs will be available for tomorrow's landscapes because of this type of applied plant physiology or horticultural research. **WTT**



The Professional's Choice

Mow smoothly and pick up clippings in one pass! The rugged, versatile Lawn Genie thatches lawns, verti-cuts greens, tees and fairways, sweeps leaves and mows through tall weeds. Hopper empties easily from tractor seat. Change to thatching knives or replace blades in seconds with M-C's patented spring-loaded hangers! There is a tough Lawn Genie model sized for any job in your choice of engine-driven or PTO, lift-type or pull-type and cutting widths of 36", 48", 60" and 72". It's the three season pick-up mower that thatches, mows and sweeps.



Change blades to thatching knives, or combination of both styles, in seconds.



Mathews Company

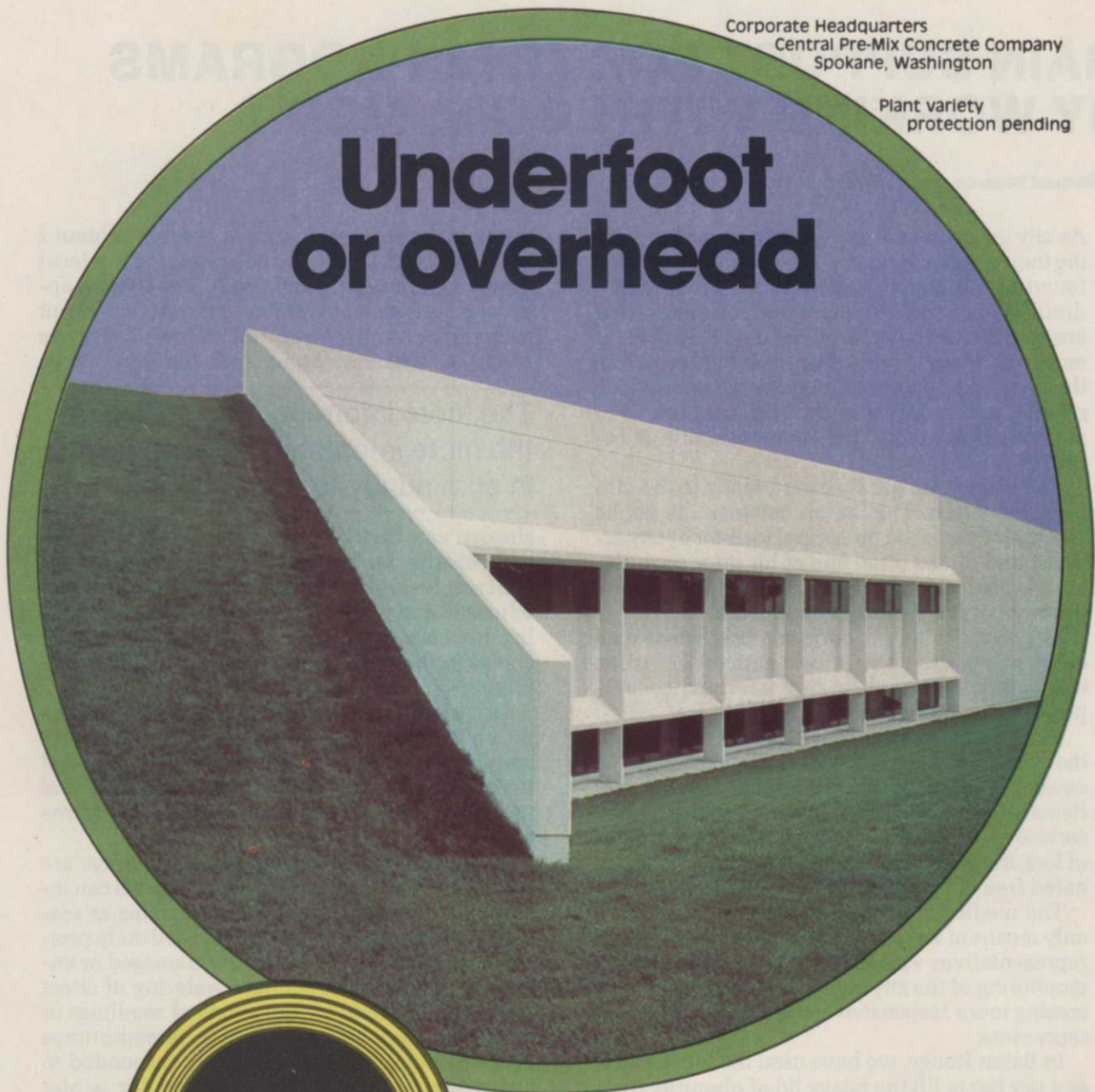
P.O. Box 70, Crystal Lake, IL 60014 / 815-459-2210

Circle No. 130 on Reader Inquiry Card

Corporate Headquarters
Central Pre-Mix Concrete Company
Spokane, Washington

Plant variety
protection pending

Underfoot or overhead



OUTSHINES THEM ALL

Dense Eclipse sod beautifies the walls and roof of this energy-efficient office building and eliminates the need for complex heating and air-conditioning systems.

Chosen for beauty and for performance, Eclipse Kentucky bluegrass excels in sun and shade. In tests from coast to coast, for disease resistance, shade tolerance, low fertility, or overall performance, Eclipse is a star.

Lower growing, dark green—Eclipse has improved resistance to Fusarium blight, powdery mildew, and dollarspot. Heat and cold tolerance are excellent. Whether your base is California, Michigan, Maryland, or New Jersey; whether sod, athletic field, or lawn—if you want the best, specify Eclipse.

ECLIPSE Kentucky bluegrass seed available exclusively from:

COWBELL SEEDS, INC., 1093 129th St., Bradley, Mich.
850 N. Old 23, Brighton, Mich.

GARFIELD WILLIAMSON, INC., 1072 West Side Ave., Jersey City, N.J.

JACKLIN SEED COMPANY, W. 17300 Jacklin Ave., Post Falls, Idaho

NUNES TURFGRASS, INC., 2006 Loquat Ave., Patterson, Calif.

TWIN CITY SEED COMPANY, 500 30th Ave., N.E., Minneapolis, Minn.

ROTHWELL SEEDS (IN CANADA), P.O. Box 511, Lindsay, Ontario

GAIN SUPPORT FOR TREE PROGRAMS BY WORKING WITH LOCAL MEDIA

By Michael Searce, consulting arborist, Baton Rouge, LA.

As city governments grind along toward providing their priority services, public tree care is often found at the bottom of the stack. Street repair, drainage, new construction, and refuse disposal are usually the top order of the day. However, as more and more of our urban trees tumble before the heavy equipment of progress the ones which remain gain in importance. The less there is of any one commodity, the more valuable it becomes.

The remaining public trees belong to the citizens; the voters. The liaison between the public and their trees is the municipal forester or city arborist and all too often one of his most powerful tools is neglected. That tool is not a spray rig or a power saw. It's the local news media!

Just as a chain saw performs best when well oiled, so does the public best support an urban tree care program when kept informed as to its problems and successes.

The municipal arborist will almost always find the local print and broadcast media eager to cover his story. In Baton Rouge, La. the city Beautification division has never had a public service announcement turned down. As a matter of fact, the accompanying photo was shot and donated free of charge by WAFB TV.

The media is, in essence, the private citizen's only means of keeping abreast of how his elected representatives spend his tax dollars. Regular monitoring of the city council can result in its becoming more responsive to the desires of those it represents.

In Baton Rouge, we have used the local media as a pry bar to lift the heavy lid of obscurity from

municipal tree care. A regular weekly column I call "Out On A Limb" has been running in a local newspaper for a year and a half. The column approach provides continuous information about such topics as how trees function, what stresses occur in urban environments and how those

The more informed a person is, the more interested he becomes in community tree programs.

stresses can best be dealt with. Pertinent do-it-yourself tips for the interested homeowner are well received, also. We have found that the better educated and more involved a person is concerning his own trees, the more interested he becomes in the health and appearance of his community's public trees.

Occasional feature stories in local magazines or newspapers help acquaint readers with specific tree care programs, let them know what their urban forester is trying to accomplish, and most importantly, keep the concept of public tree care fresh in their minds.

Both print and broadcast media coverage are useful for "spot request" type stories. This can include the introduction of such programs as seasonal volunteering, neighborhood self-help projects, requests for the reporting of damaged or unhealthy public trees, summer watering of street trees, and requests for donations of seedlings or mulching materials. Response is sometimes overwhelming. One lady recently responded to our request in the local newspaper for winter mulch by donating 500 bales of hay!

Local T.V. and radio talk show hosts seem to be quite receptive to devoting shows to municipal tree care whether in the format of an interview with the city's tree specialist or having him/her field questions from the public by telephone. We are planning weekly radio call-in type shows with high expectations. A regularly scheduled local ½ hour home owner's T.V. show in Baton Rouge has expressed interest in doing a show concerning various aspects of public/private tree care, ordinances and legalities, and power line clearing problems.

Television public service announcements can be invaluable for rallying the public hue and cry over important tree care issues as they come up before the city council. In Baton Rouge, we have found that nothing elicits response from the public better than T.V. news coverage of a vandalized oak or the saving and transplanting of a mature Palm tree.

WTT



News coverage is not difficult to get. Support is largely derived from public knowledge of tree programs.

If you're not using ProTurf® High Density Fairway Fertilizer, chances are you're wasting time and money.

Because High Density Fairway Fertilizer is designed by Scotts® to meet your specific needs. In fact, two out of five superintendents use ProTurf products to help maintain their golf courses. And a third of them use High Density Fairway Fertilizer. That's proven performance and dependability at work.

Just look at all the benefits you'll get:

- Quick green-up when you want it
- A great-looking fairway that stays thick and green for up to two months
- Fewer bags to handle and apply for savings in labor and storage
- Less time and fewer trips required to treat your fairways
- Reduced fuel costs
- Fewer worries about burning the grass

You can count on High Density Fairway Fertilizer to give your turf a uniform feeding because *each* granule has the same analysis of primary nutrients. Controlled release nitrogen means sustained effectiveness. And it's non-burning, when applied as directed. Plus, you can cover a typical three-acre fairway in about 10 minutes with a Lely spreader, thanks to its fast, easy spreadability.

ProTurf High Density Fairway Fertilizer gives you the results you want fast and keeps your fairways at their best for weeks and weeks. While it saves you both time and money. No wonder 1,759 golf course superintendents used it last year.

You can see how effective High Density Fairway Fertilizer really is by calling your local ProTurf Tech Rep and letting him make a demonstration application on your course. Or call, 513/644-0011 and ask for ProTurf.



© 1981, The O. M. Scott & Sons Co., Marysville, Ohio 43041. All rights reserved.

VEGETATION MANAGEMENT

By Roger Funk, Ph.D., Davey Tree Expert Co., Kent, Ohio

Q: What herbicide(s) can we use to remove crabgrass from bentgrass greens which will not injure the bentgrass? (Tennessee)

A: Pre-emergence herbicides such as Betasan can be used, but repeated use may reduce stress tolerance and increase disease incidence. Postemergence herbicides such as DSMA have also been used, but the potential for injury is high, particularly at high temperatures.

Perhaps the best solution is to remove the crabgrass by hand and improve the growing conditions to favor bentgrass growth.

Q: At what height should bermudagrass be mowed on a football field, and when should it be cored? (South Carolina)

A: Hybrid bermudagrass is mowed at one-half inch; common bermudagrass, at one inch. Core cultivation should be done after bermudagrass begins growth in the spring.

Q: When is the best time to control oxalis?

A: Any broadleaf weed can be controlled best when the weed is actively growing.

Q: Is it possible for a tree to be injured by lightning and not have any external symptoms such as strips of bark burned or peeled off?

A: Yes, internal tissues in the trunk and roots may be severely burned without external evidence. Symptoms of injury may not become apparent until several months after the tree is struck by lightning.

Q: What precautions should be taken when using oil sprays? We burned some trees last year.

A: Summer oils should have 85% of the unsaturated hydrocarbons removed; dormant oils, 65% to 75% of the unsaturated hydrocarbons removed.

Dormant oils should not be applied if the temperature is below 40°F. or will approach freezing soon after application. Some evergreens may show injury symptoms if freezing temperatures occur within three weeks following application. Dormant oils applied after October 1 may increase cold damage to some trees.

Summer oil may also cause injury if applied when the temperature is 90°F. or greater and should not be applied during hot, dry weather or when plants are stressed.

Oil sprays should not be used on sugar maples, hemlock, larch, cryptomeria, Japanese maples, beech, hickory, walnut, butternut, mountainash, redbud, coco palms and maidenhair ferns. Oil may injure Douglas fir flower beds and remove the blue color from blue spruce.

Q: Can nematicides be applied by home owners or do they have to be applied by certified applicators? (Florida)

A: Sarolex can be applied by home owners, but it will probably not give satisfactory control of lance and stubby root nematodes which can cause serious injury to turfgrasses.

Q: How can we best maintain turf within student pathways that cut across campus? (New York)

A: Students have a way of finding the most direct route between two points, which architects should consider when they include sidewalks in the design. Possibly the best solution would be to pave the paths. If this is not practical in your situation, shrubbery and certain ground covers can help direct foot traffic and confine it to existing walkways.

The primary problem with foot paths is compaction, which leads to turf thinning and potential erosion on slopes. Periodic aerification will help the turfgrass develop a deeper root system and increase resistance to wear. Higher mowing heights and high potassium levels also reportedly increase wear tolerance.

Q: What herbicides will control the weeds that were controlled with Silvex?

Are there other herbicides available to replace 2,4-D if it is removed from the market? (New York)

A: Dichlorprop (2,4-DP) in combination with 2,4-D will control many of the same weeds controlled by Silvex. Spurge can be controlled with DCPA and bromoxynil.

As an alternative to 2,4-D, MCPA is reportedly a viable substitute as are a few experimental compounds. However, I do not feel we should allow the 2,4-D turf registration to be cancelled without giving it a fair trial; I have yet to see any scientific data that supports the claims being made against it. Support the Professional Lawn Care Association of America's campaign to save 2,4-D. Their address is 435 North Michigan Avenue, Suite 1717, Chicago, Illinois 60611.

Q: Where can I obtain a compound called Anhydrite? It is used as a soil amendment.

A: Check with supplier of gypsum. Anhydrite is anhydrous calcium sulfate.

Send your questions or comments to: Vegetation Management c/o WEEDS TREES & TURF, 757 Third Avenue, New York, NY 10017. Leave at least two months for Roger Funk's response in this column.

FERTILIZE WITH ENVIRONMENTALLY RESPONSIBLE NITROFORM.[®] UREAFORM NITROGEN

Overapplications of water soluble nitrogen may constitute a major source of nitrates in ground-water. This is called to your attention because golf courses and other ornamental turf are the single largest "crop" in many states.

AVOID NITRATE RUN-OFF.

Use fertilizer formulations with slow-release Nitroform 38%N to help reduce the problem of nitrate contamination. Use it not only on your greens and tees, but your fairways too. You can apply Nitroform less often, which saves labor and fuel. It also reduces costs.

NITROFORM[®] IS ECOLOGICALLY TRUSTWORTHY.

Nitrogen in Nitroform is held in reserve until turf can use it. Then it is released by bacterial action that increases as soil moisture and temperature increase. This is when turf needs and can use it. Nitroform should be an important element in every well-planned turf fertility program because it assures sustained, high-nitrogen feeding when used consistently.



THE LONGEST FEEDING HIGH ANALYSIS ORGANIC NITROGEN.



INCREASE LATERAL GROWTH.

In recent tests on athletic fields, slow-release nitrogen increased lateral growth of turf rather than vertical growth. This increased turf density and resulted in fewer athletic injuries.

NO SALT BUILD-UP.

Water soluble nitrogens build up the salt level in your soil, which can eventually make it sterile. Nitroform will not build up the salt level.

LITTLE OR NO LEACHING.

University tests suggest that although water-soluble nitrogens may be cheaper on a pound-for-pound basis, it may be more economical to use slow release nitrogen products on turf because of leaching or volatilization of the water-solubles.

BE ENVIRONMENTALLY RESPONSIBLE. SPECIFY NITROFORM[®] IN YOUR TURF FORMULA... OR APPLY DIRECT.

Use Blue Chip[®] for dry applications; Powder Blue[™] for liquid. Good for shrubs and trees, too. Call your turf supplier or write for more information.

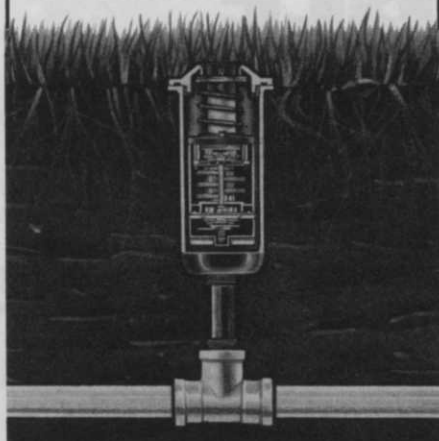
BFC Chemicals, Inc. 4311 Lancaster Pike, Post Office Box 2867, Wilmington, Delaware 19805

© 1981 — BFC Chemicals, Inc.

Circle No. 104 on Reader Inquiry Card



**Underneath it all...
Weather-matic,
the hidden secret
of beautiful
landscaping.**



**Quiet, Cost-effective
operation for medium
range with our
G Series sprinklers**

- Rotary pop-up with sealed gear train.
- Minimal pressure and flow required to pop-up and seal.
- Self flushing action removes particles.
- Full and part circle sprinklers can be valved together.
- Easy to service above ground.
- Arc size field-adjustable from 70° to 340°.
- Arc location adjustable during sprinkler operation.
- Housing, gears and components of highest quality, space-age plastics.
- Optional features: rubber covers, vandal resistant screws, range adjustment on G40F and G40PC.

For additional information about our G Series rotary sprinklers, send the coupon below.



MAIL TO:
Weather-matic Division
TELSCO Industries
P.O. Box 18205
Dallas, Texas 75218

Send information on:

- G Series Sprinklers Catalog
 Distributor Directory TURF IRRIGATION Manual

NAME _____
COMPANY _____
ADDRESS _____
CITY _____ STATE _____
ZIP _____ PHONE () _____

Circle No. 150 on Reader Inquiry Card

SOD PRODUCER NEWS

Jacklin's acquisition fuels company's growth

The Jacklin Seed Company, a division of the Vaughan-Jacklin Corporation, continued its rapid expansion by acquiring certain assets of the Jenks-White Seed Company. Jenks-White reported more than \$6 million in seed sales last year. This was the second sizable asset acquisition in two months for the Post Falls, ID, seed firm.

Jacklin's new facility, in Tangent, OR, will be operated as the Jenks-White division of Jacklin Seed Company. Jim Jenks, Howard Jenks and Dick Bailey of Jacklin's Salem, OR office, will manage the new division. The North Coast Seed Company and other related companies of Jenks-White Seed Company are not involved in the purchase.

Two months ago Jacklin acquired the operating facilities of the Gold Coast Seed Company in Nez Perce, ID. Jacklin grows, processes and markets proprietary and patented varieties of Kentucky bluegrass, environmental, reclamation and other grass seed. It is one of several divisions of Vaughan-Jacklin Corporation, a nationwide wholesale distributor, manufacturer and grower of professionally used horticultural products and home and garden supply items.

Word from the seed companies—

Lofts Pedigreed Seed says that two erroneous statements were included in the January-December (Volume 8) of the Official Journal of the USDA's Plant Variety Protection Office. Contrary to the journal's statements, both Baron Kentucky bluegrass and Ram I Kentucky bluegrass are fully protected turf varieties.

The company also states that its tall fescue, Rebel, will be used as 90 percent of the mixture in the new driving range built for the Congressional Golf Club, host of the Kemper Open. The remaining 10 percent was Baron Kentucky bluegrass.

Jacklin Seed says that perennial

ryegrass has come a long way in the past ten years from its use in pastures to fine turf areas. It is not only beautiful but quite winter hardy and almost as widely adapted as Kentucky bluegrass. Whatever way perennial ryegrass is used, the versatility of the new varieties such as Jackpot, Citation, and Elka guarantees good results with so little bother that lawn making and repair requires little effort, says Jacklin.

The company also announces purchase of the Nez Perce, Idaho, operating facilities of Gold Coast Seed Company Officials at Post Falls, ID, Jacklin's headquarters, said it would be operated as a department of that division. Jim Henderson, currently the general manager of Nez Perce, will continue in this capacity for Jacklin.

International Seeds is now marketing 'Scenic' Kentucky bluegrass (*Poa pratensis*), which is hardy, grows and spreads rapidly, and has about the same density as Merion. It is slightly less prostrate in growth habit than Merion, with finer leaves and darker green leaf color. It holds its green color well even under conditions of low soil fertility, and it is quite drought tolerant.

Television viewers exposed to sod, promotion

Approximately 120 public television stations broadcast a sod installation demonstration in early July. The segment was part of a Public Broadcasting System television series "This Old House," which describes all the phases involved in restoring a house.

The half hour episode was mostly concerned with landscaping and had a seven minute segment detailing the installation process and informing the viewers about the instant beauty of sod. Chris Beasley, of Tuckahoe Turf in Rhode Island installed the sod and explained how sod ties in with landscaping in general.

The American Sod Producers Association helped promote the show and encouraged local ASPA member to advertise in their local newspapers and television guides.



Roundup® makes him a one man army to fight weeds.

One man with Roundup in a backpack sprayer can handle many weed control jobs that once took several people.

General weed control. Edging. Trimming. Small renovation jobs. Roundup® herbicide helps make all of these a one man job.

Sprayed on the foliage of tough, actively growing weeds, Roundup goes right down to the roots, controlling the entire plant. Treated weeds won't grow back. So there is less need for repeat treatments, mowing and hand weeding.

One man can do the work of several, and in less time. This can mean a savings for you in time, labor and maintenance costs.

Reach for Roundup today, and put your own one man army to work.

Nothing works like Roundup.



FOR LITERATURE
CALL TOLL-FREE
1-800-621-5800
In Illinois, 1-800-972-5858.

ALWAYS READ AND FOLLOW THE LABEL FOR ROUNDUP.
Roundup® is a registered trademark of Monsanto Co.
RUP-SP1-114D © Monsanto Co. 1981

Circle No. 134 on Reader Inquiry Card

on the south wall is minimal, so a roof overhang will do a better job than a shade tree of keeping the direct sunlight from entering the home. If a tree is used, it should be deciduous, so the sun can shine through the branches in winter.

4. Vines are an alternative to shade the walls of a home. They can grow directly on brick walls, but for frame houses they should be grown on trellises to protect the wall surface from moisture damage. Trellises should be removable so the wall can be reached for painting when needed.

5. The north wall of a home seldom needs shading but may need wind protection in the winter. An evergreen windbreak is usually recommended because it doesn't lose its leaves in winter. The zone of protection is 20 times the height of the plants; thus, a 10-foot-high evergreen windbreak will screen the wind for 200 feet.

6. Where space won't permit an evergreen windbreak, use a slat—not solid—fence. A solid fence creates high-pressure effects that make the wind more vicious. A slatted fence

slows down the wind, allowing some air to penetrate.

7. An alternative to a fence is an earth berm, a contoured mound of earth, that can be used to channel and direct the wind. Berms are best used during the construction of a new home, before the site has its grading finished.

8. Lawns can be effective in reducing air temperature. Grass is 10 to 14 degrees cooler than exposed soil. During the summer, exposed soil near a house will retain radiated heat, thus interfering with cooling.

9. Be careful in using gravel, stone, and paving materials. Gravel and stone mulches, for instance, retain heat and should not be used close to the home. Asphalt also retains heat. Wood, concrete, and brick do not retain as much heat and so are better suited for use close to the house.

10. For additional cooling of a home in summer, plantings on the south and west sides will help. They cool the air while channeling it through open doors and windows.

More detailed information is available in a pamphlet called "Designing

An Energy-Efficient Home Landscape" (Circular 1178) by William Nelson Jr., extension landscape architect, Cooperative Extension Service, College of Agriculture, University of Illinois, Urbana-Champaign, IL.



University and industry leaders in horticulture were initiated as honorary national members into Pi Alpha X, a fraternity of floriculturists and landscape and ornamental horticulturists. From left to right are: Dale Kester at Cal Poly-San Luis Obispo, Davis, CA; Henry Mollgaard, Snohomish, WA; Robert Weidner, Encinitas, CA; and George Oki, Sacramento, CA.

COMPANY NEWS

Janke, Cosper, Rackley, Shepersky

E.P. Janke has been appointed president of Gravely Division of McGraw-Edison in Clemmons, NC. Janke, who has 30 years experience in the outdoor power equipment industry, replaces James Fischer, who has been promoted to vice president, Planning and Development, Commercial and Industrial Group, McGraw-Edison Company, at the corporate headquarters in Rolling Meadows, IL.


Also in North Carolina, Thomas C. Cosper, Jr., has been named director, Lawn/Garden, for the Homelite Division of Textron Inc., Charlotte. Cosper, who has been regional sales manager, North, since 1977, will assume overall marketing responsibility for Homelite's new lawn/garden operation organized following the merger of all consumer products from the Jacobsen Division of Textron Inc.

Anderson H. Rackley has been named business manager of phenoxies

Continues on page 66

**the grass is greener
on your side**


**with Bowie's
HYDRO-
MULCHER**



For fast, easy turf establishment—the Bowie Hydro-Mulcher is the answer. The one-step operation of a Bowie Hydro-Mulcher plants, seeds, sprigs, fertilizes, waters, sprays and mulches. And with a Bowie Hydro-Mulcher, you can seed over three acres in fifteen minutes. That saves you valuable time and money! Order the Bowie Hydro-Mulcher—you'll have the best and greenest—on your side!

write for free catalog

BOWIE INDUSTRIES, INC.
P.O. Box 931 Bowie, Texas 76230 • (817) 872-2286



Circle No. 105 on Reader Inquiry Card



What do turfgrass experts say about Pennant* ryegrass?

The Turf Trial results speak for themselves. Pennant is a champion. Rigidly controlled, comparative testing involving Pennant and competing varieties of perennial ryegrasses were conducted by turf experts across a broad region of the U.S.—the Pacific Northwest, the Southwest, the Northeast.

Pennant topped many of its competitors in these tests, including overseeding and heat tolerance trials in the Southwest. Some of the expert's findings are illustrated below.

Warm and cool season average turf score, Southern California first-year tests, 1979.

	Poor	Best
PENNANT	[Green bar]	
PENNFINE	[Green bar]	
DIPLOMAT	[Green bar]	
YORKTOWN II	[Green bar]	
MANHATTAN	[Green bar]	
CITATION	[Green bar]	

Pennant was best among 12 varieties tested for red thread disease (*Corticium fuciforme*) in 1-year average, 1979-80. Western WA. (Low score = Best).

PENNANT	20.7%
CITATION	23.6%
DERBY	26.3%
PENNFINE	30.4%
MANHATTAN	40.4%
YORKTOWN II	47.8%

Percent winter injury, Adelphia, N.J. March 1978. (10 of 26 varieties tested showed no significant injury.)

PENNANT	0%
MANHATTAN	0%
CITATION	11%
DERBY	14%
PENNFINE	18%
LINN	38%

Average Turf Performance scores, February 1980. Southern Arizona turf overseeding on Tifgreen Bermuda. Sixteen entries seeded October 1979. (10 = Best).

PENNANT	7.7
PREMIER	7.3
REGAL	6.3
CBS	5.7
DERBY	5.5
ANNUAL	2.3

Turf performance scores, North Brunswick, N.J. 1975-78. (9 = Best).

YORKTOWN II	6.4
PENNANT	6.3
CITATION	5.9
DERBY	5.4
PENNFINE	5.4
MANHATTAN	5.2

Reaction to brown patch disease (*Rhizoctonia*), Adelphia, N.J., 1978. (9 = least damage)

PENNANT	7.5
YORKTOWN II	7.0
CITATION	7.0
REGAL	6.3
DERBY	6.2
PENNFINE	5.8

Pennant was best among 57 varieties tested for sod webworm tolerance (lawn moth - *Crambus* spp. of the order Lepidoptera), Adelphia, N.J., August, September, October 1980.

	Poor	Best
PENNANT	[Green bar]	
PREMIER	[Green bar]	
REGAL	[Green bar]	
DIPLOMAT	[Green bar]	
CITATION	[Green bar]	
FIESTA	[Green bar]	
PENNFINE	[Green bar]	
YORKTOWN II	[Green bar]	
CARAVELLE	[Green bar]	
DERBY	[Green bar]	
LORETTA	[Green bar]	
MANHATTAN	[Green bar]	
LINN	[Green bar]	

At Adelphia, N.J., Pennant showed the best performance under low fertility and drought stress. We call it "The Trophy Turf". We think you will, too.



For additional information regarding Pennant's truly remarkable Turf Trial performance, contact: Agriculture Service Corporation, 5240 Gaffin Rd., Salem, OR 97301, Telephone: (503) 581-8899.

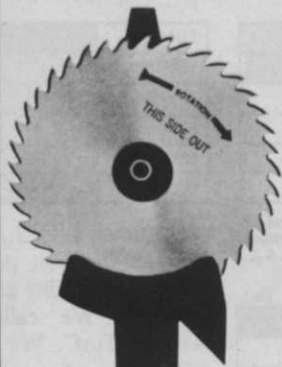
* Plant variety protection pending and anticipated

Circle No. 101 on Reader Inquiry Card

DON'T CUT OUT QUALITY.

DO IT RIGHT, WITH STANLEY.

Quality, by our standard, is something which goes a lot further than making tools. To Stanley, it means: a full line of tree trimmers for every job; the best warranty in the business; complete parts backup; and distributors to help you anywhere in the country. It's also the efficiency, safety and dependability of hydraulic power. We don't trim on anything so that you're able to do your trimming faster. Stanley Hydraulic Tools: 3810 S.E. Naef Road, Milwaukie, Oregon 97222. Phone (503) 659-5660. Telex 360771. Write or call.



STANLEY

®

Circle No. 148 on Reader Inquiry Card

for the Agricultural Chemicals Division of Diamond Shamrock Corporation. As a result of the recent acquisition of the Fallek-Lankro Corporation's phenoxy herbicide plant in Tuscaloosa, AL, Diamond Shamrock is now putting increased emphasis on its phenoxy business.

In addition to Rackley's promotion, Diamond Shamrock also announced that Dr. Leonard L. Welch has been promoted to the position of business manager of herbicides and Ted L. Kabat has been named as product manager.

Keith Shepersky, formerly district manager for Rain Bird Sprinkler Mfg. Corp.'s western Turf Sales Division, has been appointed manager of training and marketing services for the Turf Division. In his new role, Shepersky

will take responsibility for technical and product educational training programs and the development of sales supporting product comparison and feature benefit presentations.

Mallinckrodt, Inc. has announced that William W. Rhymes, sales executive for its Specialty Chemicals Division, will concentrate his activities exclusively on the specialty agricultural segment of the Division's business.

James R. Coson, president of Royal Coach/Buckner, announces personnel changes and expanded production facilities for the Fresno, CA-based manufacturer of sprinklers, valves, and automatic controllers. Vince Nolletti has been appointed vice president of the company. Nick M. Dvorak has become vice president, sales and marketing.



First Readex Award is presented to P.B.I. Gordon Senior Vice President A.T. Pambechy (center) by Jim Brooks, national sales manager of Weeds Trees & Turf. On the right is Charles Eatough, agency representative for Gordon and creator of the advertisement that won.

Outstanding Seed Bed Prep

ELIMINATES HAND RAKING!

You can rake rocks, roots, trash while you level and pulverize all with
1-Step — 1-Machine The
HARLEY LANDSCAPE POWER RAKE

Contact **GLENMAC** 1-800-437-9779
(701-252-9300)

Also — **STONE PICKING** — Unequaled
by any other machine - **Harley Stone Pickers**

Circle No. 116 on Reader Inquiry Card



**On the greens, the fairways...all around the links,
inside the clubhouse and under all the sinks**

DURSBAN 2E is the one insecticide that works. DURSBAN* 2E Insecticide is ideal for broad spectrum, multi-purpose insect control everywhere around the club. Outside, DURSBAN 2E gives you unsurpassed control of turf pests like chinch bugs, sod webworms and cutworms, plus ticks, chiggers and mosquitoes. It even wipes out bagworms and many other ornamental plant pests. In-

side, it cleans up the toughest roach problems, and keeps working to rid your buildings and restaurant areas of insect pests. Ask your supplier about the one insecticide that really works, DURSBAN 2E. Just be sure to follow all the directions and precautions on the label. Agricultural Products Department, Midland, Michigan 48640.

DOW CHEMICAL U.S.A.

*Trademark of The Dow Chemical Company



Bookstore

TURF MANAGER'S HANDBOOK

by Dr. William Daniel & Dr. Ray Freeborg

This specially designed manual by leading turf specialists is a comprehensive, organized approach to turfgrass science and care. An easy-on-the-job reference for planning, purchasing, hiring, construction and plant selection.

\$18.95 hardback \$14.95 paperback



Tree Farm Business Management



TREE FARM BUSINESS MANAGEMENT

by James Vardaman

A guide to help you increase profits from tree farming. Major problems confronting large and small tree farms and how to meet them including recommendations for seeking out accountants, lawyers and other professionals. \$20.50

HANDBOOK OF LANDSCAPE ARCHITECTURAL CONSTRUCTION

A practical how-to reference on landscape construction. Published by The Landscape Architecture Foundation, the book carries the expertise of more than 25 landscape professionals. \$48.50



GUIDE TO TREES

by Simon & Schuster

Beginner and experts reference to 300 trees with 350 full-color illustrations. This authoritative guide supplies you with a full description of size, color, shape, leaves, flowers, fruit and seeds; information on habitat, propagation and growth conditions PLUS a hardiness zone maps, glossary and index. \$19.95 hardback \$8.95 paperback



SOILS & SOIL FERTILITY

by Thompson and Troeh

Fourth edition. Comprehensive textbook and reference guide for the study of soil fertility and soil science. Several chapters devoted to specific soil amendments, soil management and conservation. \$20.00



MODERN WEED CONTROL

by Alden S. Crafts

Deals exhaustively with the botany, chemistry, plant physiology and ecology involved in modern weed control technology. Contains lists and classifications of herbicides and an abundance of illustrative material that will help the reader visualize the varied aspects and forms of weed control. \$16.00



DISEASES OF SHADE TREES

by Terry Tattar

Because shade trees require specialized maintenance rarely used in the forest, this text seeks to aid the arborist in providing necessary care to maintain vigor and prevent shade tree diseases. An in depth look at infectious and non-infectious tree diseases. Plant pathology not necessary. \$23.50



THE GREENHOUSE ENVIRONMENT

by John W. Mastalerz

Covers principles and practices of greenhouse flower crop production, emphasizing response of flower crops to greenhouse environmental factors. General coverage of factors determining these conditions with illustrations. \$28.95



FUNDAMENTALS OF ENTOMOLOGY AND PLANT PATHOLOGY

by Louis L. Pyenson

Limited to the study of insects, related forms, nematode and plant pathogens. Discusses nature and control of these pests in a simple and concise fashion. \$21.00



Diseases & Pests of Ornamental Plants

5th Ed.

Pascal P. Pirone

DISEASES & PESTS OF ORNAMENTAL PLANTS

This standard reference discusses diagnosis and treatment of diseases and organisms affecting nearly 500 varieties of ornamental plants grown outdoors, under glass or in the home. Easy to understand explanations of when and how to use the most effective fungicides, insecticides and other control methods. \$26.50



INSECTS THAT FEED ON TREES AND SHRUBS

by Johnson and Lyon

Essential information for identifying more than 650 insect pests and the injuries they cause. More than 200 color illustrations. \$38.50

TREE MAINTENANCE

Pascal Pirone

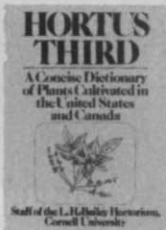
The fourth edition of this guide for anyone involved in the care and treatment of trees. Special sections on tree abnormalities, diagnosing tree troubles, non-parasitic injuries and assessing the suitability of different trees. \$27.50



HORTUS THIRD

from Cornell University

A 1,300-page concise dictionary of plants cultivated in the United States and Canada. A reference which every horticultural professional should have. \$99.50



SOILS AND OTHER GROWTH MEDIA

by A.W. Flegmann, Raymond George

Presenting a modern view of the chemical and physical aspects of soils as the environment of plant roots on a molecular scale, together with an up-to-date evaluation of field soils and currently used growth media. \$10.00



EXOTIC PLANT MANUAL

by Alfred Byrd Graf

A pictorial reference for plant identification of the best in cultivated tropicalia. Plants are grouped into growing locations and uses. \$37.50

Exotic Plant Manual



TREE CARE

by John M. Haller

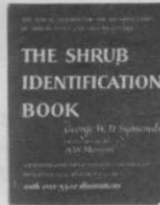
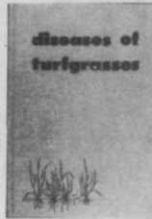
Urban trees are subjected to every kind of environmental stress and abuse requiring continuous attention to keep them healthy. This book gives you the how-to's of planting, feeding, pruning, repairing and defending trees against their enemies with special coverage of environmental damage and miscellaneous troubles. \$9.00



Bookstore

DISEASES OF TURFGRASSES

by Houston Couch
Reference for identification and control of fungus and nematode-incited diseases. This 2nd edition features new varieties of potentially hazardous turfgrass diseases, also pesticide regulation changes and more efficient fungicides on the market.
\$27.00



SHRUB IDENTIFICATION

by George Symonds
Pictorial key to identify shrubs. Contains more than 3,500 illustrations to check specimens. Popular and botanical names are given for each shrub with handy index tabs for quick reference.
\$18.00 hardback \$8.00 paperback



TREE SURGERY

by P.H. Bridgeman
This practical guide to the know how and equipment required and operation methods attempts to give an up-to-date picture of the modern industry. Includes illustrative photographs and detailed line drawings.
\$17.00

MANUAL OF WOODY LANDSCAPE PLANTS

by Michael Dirr
A teaching text and reference on ornamental deciduous trees, shrubs, ground cover and vines. Provides identification characteristics with ornamental and cultural features all in one volume.
\$19.00



TREE IDENTIFICATION

by George Symonds
Pictorial reference to identifying trees by checking leaves, buds, branches, fruit and bark. Like its sister publication, Shrub Identification, popular and botanical names are listed with index tabs for easy reference.
\$9.00 paperback



WEED SCIENCE

by Glenn C. Klingman, Floyd M. Ashton
Source for those concerned with weeds. Thoroughly indexed, tabled and illustrated. Effective classroom aid and research reference. Explains more than 100 herbicides, their uses. Includes chapters on soil sterilants and total vegetation control.
\$24.00



TURF IRRIGATION MANUAL

by James Watkins
A guidebook for engineers, architects, designers and contractors. Keeps pace with the latest developments in turf and landscape irrigation. Specific chapters devoted to rotary sprinkler design systems, golf course design systems and expanded engineering and reference material.
\$19.50

HOME LANDSCAPE

by Garrett Eckbo
Provides designs, examples and current innovations and refinements to older traditional designs. Covers all aspects of residential landscape planning.
\$16.00



WESTERN HOME LANDSCAPING

by Ken Smith, LA
Illustrations and descriptions of western landscape plants and structures for your design idea file. Covers foolproof plants, irrigation, patios and decks, walls, pools, and shelters.
\$5.95



THE PRUNING MANUAL

by Everett P. Christopher
Latest information on pruning fruit and shade trees, ornamental shrubs and roses. 100 diagrams and photographs. Sections also devoted to forestry, grafting, root pruning, wound treatment and tools.
\$12.95

ADDITIONAL TITLES

- TURFGRASS MANAGEMENT — \$16.95
- TURFGRASS SCIENCE & CULTURE — \$22.95
- WESTCOTT'S PLANT DISEASE HANDBOOK — \$32.50
- WYMAN'S GARDENING ENCYCLOPEDIA — \$25.00
- GARDENING IN SMALL PLACES — \$7.95
- HOW TO GROW HEALTHY HOUSEPLANTS — \$5.95
- FUNDAMENTALS OF SOIL SCIENCE — \$25.95
- GREENHOUSE OPERATION & MANAGEMENT — \$17.95
- HORTICULTURAL SCIENCE — \$22.00
- PLANT PROPAGATION — \$21.95

Mail this coupon to: Book Sales
Harcourt Brace Jovanovich Publications
One East First Street, Duluth, MN 55802

Name _____
Address _____
City _____ State _____ Zip _____
Signature _____ Date _____

Please send me the following books. I have enclosed a check* for the total amount.

Title	Quantity	Price	Total Price

*Please add \$2.50 per order, and if ordering multiple copies, also add 25¢ per additional copy for postage and handling costs.

(postage & handling)

Please allow 6-8 weeks for delivery.

Total Enclosed _____

WTT

EVENTS

The current issue of **WEEDS TREES & TURF** carries meeting dates beginning with the following month. To insure that your event is included, please forward it, 90 days in advance, to: **WEEDS TREES & TURF Events**, 757 Third Ave., New York, NY 10017.

International Society of Arboriculture Convention, Boyne Mountain Resort,

Boyne Falls, Michigan, **Aug. 9-12**. Contact E.C. Bundy, ISA, PO Box 71, 5 Lincoln Square, Urbana, IL 61801, (217) 328-2032.

Central Plains Turf Foundation/ Kansas State University Turf Field Day, Manhattan, KS, **Aug. 12**. Contact Dr. Robert Carrow, Kansas State University, Dept. of Horticulture, Waters

Hall, Manhattan, KS 66506, 913/532-6170.

Maine Nurserymen's Association summer meeting, Western Maine Forest Nursery Co., Fryeburg, ME, **Aug. 12**. Contact Rick Churchill, Executive Secretary, Plant & Soil Dept., S.M.V.T.I., So. Portland, ME 04106, 207/799-7303.

Residential Landscape Design Course I, Marriot North, Dallas, TX, **Aug. 12-14**. Contact ALCA, 1750 Old Meadow Road, McLean, VA 22102, 703/821-8611.

Massachusetts Nurseryman's Association summer meeting, Stewart's Nursery, Turners Falls, MA, **Aug. 19**. Contact Deborah Fanning, Executive Director, Massachusetts Nurseryman's Association, 715 Boylston Street, Boston, MA 02116.

Irrigation Association of New Jersey 7th annual field day, Reed's Sod Farm, Princeton Pike, Princeton, NJ, **Aug. 20**. Contact Linda Errickson, Administrator, P.O. Box 138, Dayton, NJ 08810, 201/329-6003.

American Association of Botanical Gardens and Arboreta midwest chapter, Dow Gardens, Midland, MI, **Aug. 20-22**. Contact The Dow Gardens, 1018 W. Main St., Midland, MI 48640, 517/631-2677.

Dollar Management Seminar, Executive Inn, Seattle, WA, **Aug. 21-22**. Contact ALCA, 1750 Old Meadow Road, McLean, VA 22102, 703/821-8611.

International Garden Centre Congress, Disneyland Hotel, Anaheim, CA, **Aug. 24-30**. Contact Pat Redding, GCA, 230 Southern Bldg., Washington, DC 20005.

Grower's Tour, Aug. 25. Contact Richard Staples, Program Administrator, California Association of Nurserymen, 1419 21st Street, Sacramento, CA 95814, 916/448-2881.

Southern Containerized Forest Tree Seedling Conference, Hyatt Regency Hotel, Savannah, GA, **Aug. 25-7**. Contact Dick Guldin, Southern Experimental Station, USDA Forest Service, 2500 Shreveport Highway, Pineville, LA 71360.

USDA Turfgrass Research Field Day, Beltsville Agricultural Research Cen-

Is your golf course golfed out?

Start your turf today on its way to a longer prime of life with Milorganite.

That tired, worn out look can be caused by an overdose over the years of synthetically produced fertilizers.

The synthetically produced fertilizers are OK for awhile...for a quick spurt, but turfgrass professionals are discovering the hard way that the synthetics are not as effective over the long run as naturally organic Milorganite. Turf tires and develops a golfed-out look.

Start your turf today on its way to a longer prime of life with Milorganite.

Naturally organic Milorganite provides all the nutrients needed for healthy, strong turf...just the way you want to keep it always.

The golf course choice.



*does not burn
and is almost impossible
to over-apply*



DO NOT USE ON EDIBLE CROPS

MILWAUKEE METROPOLITAN SEWERAGE DISTRICT,
735 N. WATER ST., MILWAUKEE, WI 53202

Circle No. 131 on Reader Inquiry Card



Cut Overseeding Rates Up To
50% with a Great *Poa trivialis*

SABRE

There's no other turf grass quite like it.

One of the first domestic varieties granted a Plant Variety Protection Act Certificate, Sabre is a dark green, fine-bladed turf grass that creates an absolutely superb green when overseeded on dormant turf such as Bermuda.

A rapid germinating variety, Sabre is a perfect overseeding companion for the turf-type ryegrasses and fine fescues. In an overseeding mixture Sabre has the additional advantage of reducing the seeding rate by as much as 50%.

Normal overseeding rate for either the turf-type ryegrasses or fine fescues is 35-40 lbs. per 1,000 square feet.

However, the seeding rate of either a ryegrass or fine fescue overseeding mixture which includes 20% Sabre (by weight) can be reduced to 18 lbs. per 1,000 square feet.

An extremely shade tolerant grass, Sabre is an ideal component in an overseeding mixture because it will disappear very rapidly when the hot weather arrives, thus clearing the way for the emerging Bermuda grass to come on.

You can also count on Sabre to be free of *Poa annua*.



SABRE—add it to your overseeding mixture and you'll be amazed at the beauty you have created. (Sabre - P.V.P. No. 7700104)



INTERNATIONAL SEEDS, INC.

P.O. Box 168, Halsey, Oregon 97348
Telephone (503) 369-2251 • TWX 510/590-0765

Events from page 70

ter-West, Beltsville, MD, **Aug. 26.** Contact Jack Murray, USDA-SEA-BARC, Bldg. 001, Rm. 333, Beltsville, MD 20705, 301/344-3655.

University of Rhode Island Turfgrass Field Day, Kingston, RI, **Aug. 26.** Contact C.R. Skogley, University of Rhode Island, Dept. of Plant Science, Woodward Hall, Kingston, RI, 02881, 401/792-2570.

Northern Michigan Turf Managers Association meeting, Acme, MI, **Sept. 15.** Contact C. E. "Tuck" Tate, President, NMTMA, 1147 Santo, Traverse City, MI 49684, 616/947-9274.

Ornamentals Northwest Seminars, Oregon State University, Portland Memorial Coliseum Portland, OR, **Aug. 28-29.** Contact Dr. James L. Green, Oregon State University, Dept. of Horticulture, Corvallis, Oregon 97331, 503/754-3464.

Farwest Show, Memorial Coliseum, Portland, OR, **Aug. 28-30.** Contact Dan O. Barnhart, Show Manager, Farwest Show, 0224 S.W. Hamilton, Portland, OR 97201, 503/221-1182.

ILD Interior Landscape Conference, Hyatt Hotel, Atlanta, GA, **Sept. 9-12.** Contact ALCA, 1750 Old Meadow Road, McLean, VA 22102, 703/821-8611.

Michigan State University Turfgrass Field Day, Robert W. Hancock Turf Research Center, East Lansing, MI, **Sept. 10.** Contact Dr. John Kaufman, Department of Crop and Soil Sciences, Michigan State University, East Lansing, MI 48824, 517/355-2033.

Oregon Association of Nurserymen Annual Convention, Kah-Nee-Ta Lodge, Warm Springs Indian Reservation, OR, **Sept. 10-13.** Contact Dan O. Barnhart, Executive Director, Oregon Association of Nurserymen, 0224 S.W. Hamilton, Portland, OR 97201, 503/221-1182.

Garden Industry of America Conference & Trade Show, Pittsburgh Convention/Exposition Center, Pittsburgh, PA, **Sept. 10-12.** Contact GIA, Box 1092, Minneapolis, MN 55440.

Alabama's Annual Turfgrass Conference, Auburn, AL, **Sept. 14-15.** Con-

tact K. M. Sheffer, Extension Hall, Auburn University, AL 36849, 205/826-4985.

International Garden Trade Fair, Cologne, Federal Republic of Germany, **Sept. 13-15.** Contact Koln Messe, Messeplatz, Postfach 21 07 60, 5000 Koln 21, Federal Republic of Germany, Telex: 8 873 426 a mua d, Telegram Address: INTERMESS Koln, Telephone: (0221) 821-1.

Tree Foreman Training, Kent, Ohio, **Sept. 14-25.** Contact Richard Abbott, Davey Environmental Services, 117 S. Water St., Kent, OH 44240, (216) 673-9511.

Northern Michigan Turf Managers Association meeting, Acme, MI, **Sept. 15.** Contact C. E. "Tuck" Tate, President, NMTMA, 1147 Santo, Traverse City, MI 49684, 616/947-9274.

Virginia Tech Turfgrass Field Days, Blacksburg, VA, **Sept. 15-17.** Contact Dr. John Hall, 421 Smyth Hall, Virginia Tech, Blacksburg, VA 24061, 703/961-5797.

International Exhibition of Groundsmanship, Royal Windsor Racecourse, Windsor, Berkshire, England, **Sept. 15-17.** Contact Institute of Groundsmanship, P O Box 243 (Wolverton), Milton Keynes, Buckinghamshire MK12 2YG England.

National Lawn and Garden Distributors Association annual conference, Opryland Hotel, Nashville, TN, **Sept. 15-18.** Contact Nancy Irving, NLCDA, 1900 Arch St., Philadelphia, PA 19103, 215/564-3484.

Management Information System Seminar, Los Angeles, CA, **Sept. 16-17.** Contact ALCA, 1750 Old Meadow Road, McLean, VA 22102, 703/821-8611.

Management Information System Seminar, Executive Inn, Seattle, WA, **Sept. 18-19.** Contact ALCA, 1750 Old Meadow Road, McLean, VA 22102, 703/821-8611.

Living Plant Growers Association Annual Foliage Seminar, Queensway Hilton, Long Beach, CA, **Sept. 22.** Contact Lanny Walker, LPGA, 1419 21st Street, Sacramento, CA 95814, 916/448-2898.

Pacific Horticultural Trade Show, Long Beach Convention Center, Long Beach, CA, **Sept. 23-25.** Contact Lanny E. Walker, California Association of

Continues on page 74

WATER PENETRATION AQUA-GRO®

YOUR KEY TO EASIER PREPARATION FOR
WINTER AND NEXT SPRING



Improved water movement with Aqua-Gro gives better drained soil profile.



Better fall color and uniform turf in Aqua-Gro treated plot.

Aqua-Gro gives excellent dew and frost control • Extends playing season, greater club revenues
• Improves Fall insecticide application • Enhances drainage, means less chance of winter injury
• Speeds seed germination for renovated areas • Builds and maintains root system resistance to cold and drought.

AQUA-GRO is available in liquid concentrate or spreadable granular.
For free illustrated brochure call toll free 800-257-7797 or write to;

 **AQUATROLS CORPORATION
OF AMERICA, INC.**

1432 Union Ave., Pennsauken, New Jersey 08110 (609) 665-1130

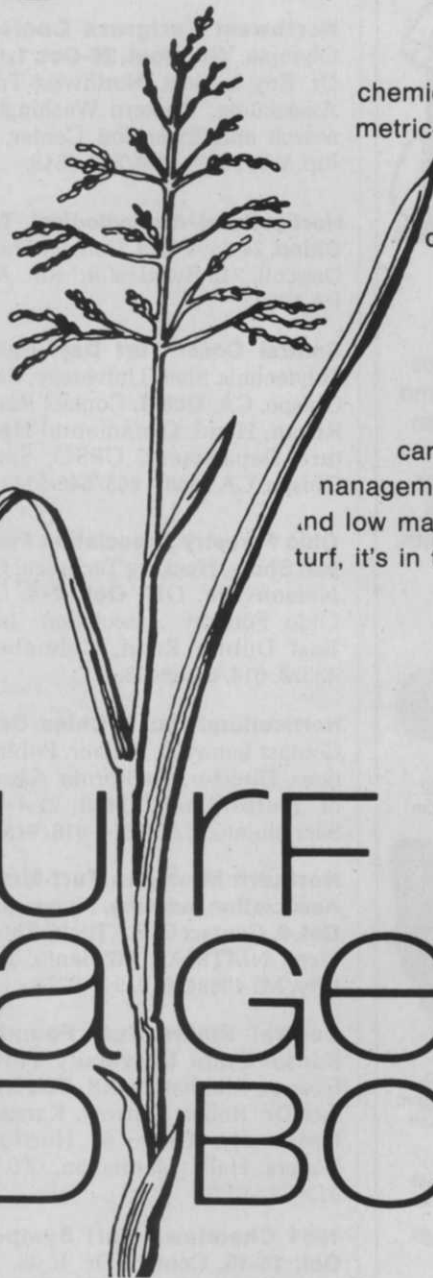
Circle No. 103 on Reader Inquiry Card

Finally, An Aid For Teaching Turfgrass

Superintendents, Contractors, Lawn Care Managers, New, On-the-Job Reference.

The Turf Managers' Handbook is a comprehensive, organized approach to turfgrass science and care. It has been designed and written by leading turf specialists from Purdue, Dr. William Daniel and Dr. Ray Freeborg, for on-the-job reference and as a text for students.

The book contains 150 illustrations and 96 color photographs. Data includes 240 tables and forms. Included are specifications for rootzones, employment, calculations for



chemical applications, and extensive metric-imperial conversion. Business

and technical aspects of turfgrass management are covered in this 424-page book.

Planning, purchasing, hiring, construction, and plant selection are put together for easy on-the-job reference.

Markets covered include lawn care, sod production, golf course management, cemeteries, athletic fields, and low maintenance areas. If it concerns turf, it's in the Turf Managers' Handbook.

TURF managers' HANDBOOK

Ordering Information

Please send _____ copies of the hardback (\$18.95* ea.)
_____ copies of the paperback (\$14.95* ea.)

*Please add \$2.50 per order, and if ordering multiple copies, also add 25¢ per additional copy for postage and handling costs.

A check or money order for _____ is enclosed.

I understand that delivery may take six to eight weeks.
Quantity and bookstore rates available upon request.

Signature _____

Name (Print) _____

Address _____

City _____ State _____ Zip _____

Send to:

Book Sales
Harcourt Brace Jovanovich Publications
One East First Street
Duluth, MN 55802

HBJ

GO HYPRO ALL THE WAY!



You get reliable pressure at the nozzle with Hypro sprayer pumps and accessories. That means time savings and application precision that can help you make more money. And Hypro dependability will keep your sprayer on the job, season after season. Get the facts. See your Hypro distributor or write us today.

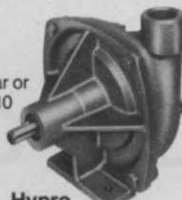
Hypro Series 6500 Roller Pumps.

PTO or engine drive. Choice of rollers, seals and housings. Strong 6-roller performance, low maintenance. Outputs to 22 gpm. Pressures to 300 psi. Speeds to 1200 rpm.



Hypro High Speed Centrifugal Pumps.

Belt drive. Models also available for hydraulic, gear or engine drive. Outputs to 210 gpm. Pressures to 170 psi. Speeds to 6000 rpm.



Hypro Series 5200 Piston Pump.

Two sizes: 6 gpm or 10 gpm, both with 400 psi power. Two cylinder. Electric motor, gas engine or PTO drive. Speeds to 800 rpm. Other Hypro piston pumps with outputs to 26 gpm.



Hypro Accessories.

Complete line of gauges, strainers, agitators, ball valves and couplings, valves and fittings to make your job easier.

Circle No. 117 on Reader Inquiry Card
Send for your free Hypro catalog today.

Hypro
A DIVISION OF LEAR SIEGLER, INC.
347 Fifth Ave NW, St. Paul, MN 55112 • (612) 633-9300

Events from page 72

Nurserymen, 1419 - 21st Street, Sacramento, CA 95814, 916/448-2881.

Northwest Turfgrass Conference, Olympia, WA, **Sept. 28-Oct. 1**. Contact Dr. Roy L. Goss, Northwest Turfgrass Association, Western Washington Research and Extension Center, Puyallup, WA 98371, 206/593-8513.

Horticultural/Archaeological Tour to China, 24 days, **Oct.** Contact Thomas R. Driscoll, 718 Swedesford Rd., Ambler, PA 19002.

Central Coast Turf Day, California Polytechnic State University, San Luis Obispo, CA, **Oct. 1**. Contact Ronald D. Regan, Head, Ornamental Horticulture Department, CPSU, San Luis Obispo, CA 93407, 805/546-0111.

Ohio Forestry Association Paul Bunyan Show, Hocking Technical College, Nelsonville, OH, **Oct. 2-4**. Contact Ohio Forestry Association, Inc., 665 East Dublin Road, Columbus, OH 43229, 614/846-9456.

Horticultural Tour to China, **Oct. 5-18**. Contact Lanny E. Walker, Public Relations Director, California Association of Nurserymen, 1419 21st Street, Sacramento, CA 95814, 916/448-2881.

Northern Michigan Turf Managers Association meeting, Pinconning, MI, **Oct. 6**. Contact C. E. "Tuck" Tate, President, NMTMA, 1147 Santo, Traverse City, MI 49684, 616/947-9274.

Central Plains Turf Foundation/Kansas State University Turf Conference, Manhattan, KS, **Oct. 6-8**. Contact Dr. Robert Carrow, Kansas State University, Dept. of Horticulture, Waters Hall, Manhattan, KS 66506, 913/532-6170.

1981 Chemlawn Turf Symposium, **Oct. 14-15**. Contact Dr. B. G. Joyner, Plant Diagnostic Lab, Chemlawn Corporation, 6969 Worthington-Galena Road, Suite L, Worthington, OH 43085.

Southern California Turfgrass/Landscape Equipment & Material Educational Exposition, Costa Mesa, CA, **Oct. 14-15**. Contact Ed McNeill, Southern California Turfgrass Council, 1000 Concha Street, Altadena, CA 91001, 213/798-1715.

Southwest Turfgrass Association Annual Conference, Albuquerque, NM, **Oct. 15-16**. Contact Arden Baltensperger, Southwest Turfgrass Associa-

tion, New Mexico State University, Agronomy Dept., Box 3-Q, Las Cruces, NM 88003, 505/646-3138.

International Society of Arboriculture, New England Chapter, Annual Meeting, Sheraton-Wayfarer Inn, Bedford, NH, **Oct. 18-20**. Contact Oscar Stone, Editor, 84 Daniel Drive, New Haven, CT 06513.

Florida Turf-Grass Association 29th Annual Conference and Show, Orlando, FL, **Oct. 18-22**. Contact Beth Eyman, FTGA, 1520 Edgewater Drive, Suite E, Orlando, FL 32804.

New England Chapter International Society of Arboriculture Annual Meeting, Sheraton Wayfarer Inn, Bedford, New Hampshire, **Oct. 18-20**. Contact Oscar Stone, 84 Daniel Drive, New Haven, CT, 06513.

1981 National Safety Congress, Fertilizer and Agricultural Chemical Section, Blackstone Hotel, Chicago, IL, **Oct. 19-22**. Contact G.E. Harlan, Corporate Manager of Safety, Indiana Farm Bureau Cooperative Association, Inc., 120 East Market Street, Indianapolis, IN 46204, 317/631-8361.

California Association of Nurserymen Annual Convention, "Seaside Celebration," Ventura Holiday Inn, Ventura, CA, **Oct. 20-22**. Contact Program Administrator Richard Staples, C.A.N. Office, 1419 21st St., Sacramento, CA 95814, 916/448-2881.

Planning & Budgeting Seminar, Executive Inn, Seattle, WA, **Oct. 23-24**. Contact ALCA, 1750 Old Meadow Road, McLean, VA 22102, 703/821-8611.

Interior Plantscape Association Third Annual Conference & Trade Show, Radisson Hotel, St. Paul, MN, **Oct. 28-30**. Contact IPA National Headquarters, 11800 Sunrise Valley Drive, Reston, VA 22091, 703/476-8550.

Professional Grounds Management Society Annual Conference and Trade Show, Marriott Hotel, Portland, OR, **Oct. 31-Nov. 4**. Contact Allan Shulder, Executive Director, Professional Grounds Management Society, 7 Church Lane, Pikesville, MD 21208, 301/653-2742.

Professional Grounds Management Society Annual Conference and Trade Show, Portland, Oregon, **Nov. 1-5**. Contact Allan Shulder, PGMS, 7 Church Lane, Pikesville, MD 21208, (301) 653-2742.

New Trailblazer™ cleans up to 7¼ acres per hour Sweeps turf/hard surfaces

At last! A rugged all-terrain sweeper that can clean both your turf and hard-surfaced areas. Provides productivity undreamed of before. TENNANT® Trailblazer™ sweeps up to 3 acres of turf or 7 acres of hard surfaces an hour.

This tough, versatile sweeper combines the "lifting action" of a powerful vacuum with the "grabbing action" of a brush or paddle—to pick up paper litter, sand, cans, leaves, sticks, pine needles, even loose thatch. Has more pickup power than any turf machine. Cleans a 60" path



Cleans turf, hard surfaces. Climbs curbs to sweep hard-to-reach areas.

Circle No. 151 on Reader Inquiry Card



Pressure-packs debris to maximize hopper capacity.

(up to 92" with optional dual side brushes).

Climbs curbs—to clean hard-to-reach places. There's no faster way to sweep a variety of surfaces—turf, synthetics, concrete and asphalt—with a single machine. Its highly-efficient, ground-hugging sweeping is ideal for uneven surfaces too. Offers great maneuverability through articulated design. Solidly built—yet puts less PSI to the turf than lighter, less durable units.

A jet stream of air propels litter, pressure-packs it into the hopper.

Dumps its load at any point from ground level to 6 ft.—directly into containers or dump trucks. A 500 sq. ft. filter system provides nearly dust-free operation.

Optional cab enclosure and pressurizer for optimum operator comfort. Vacuum wand/blower available for cleaning along parking curbs, fences and other areas that might ordinarily require a separate specialized machine. Choice of gas or diesel engine. For a free, colorful brochure, write: Tennant Company, 701 N. Lilac Dr., P.O. Box 1452, Minneapolis, MN 55440.



Dumps from ground level to 6 ft.—directly into containers, dump trucks.



TENNANT®

Call Toll Free: 800-328-5727 Ext. 768K

CONWED HYDRO MULCH® 2000 FIBERS TEST-PROVEN EFFECTIVE IN PREVENTING EROSION

Conwed® Hydro Mulch 2000 fibers were **six times more effective** in controlling erosion than other fiber mulches in an impartial university test. That could mean six times more protection for your investment in seed, fertilizer, and labor, so you can minimize costly post-job repairs and redos.

As the chart below confirms, Hydro Mulch 2000 fibers were test-proven to have superior soil holding power.

PRODUCT	"APPARENT" EROSION RATE (Soil Loss)	
	Pounds/Minute*	Equivalent Tons/Acres/Hour
CONWED HYDRO MULCH 2000 FIBERS Mulch applied at 1600 pounds per acre	0.14	2.35
AVERAGE OF OTHER MULCHES Mulch applied at 1600 pounds per acre	0.96	16.08
BARE SOIL (control plot)	1.99	33.34

*Testing was done on a 2:1 slope. After soil preparation, the plots were seeded and mulched in one operation and allowed to lay overnight. Simulated rain controlled at the rate of four inches per hour was applied until a targeted deterioration of the surface occurred. Product effectiveness was evaluated by "apparent" rate of erosion which was calculated by dividing the total time until deterioration by the weight of the material eroded.

This natural wood fiber mulch is **premixed** with a highly effective soil stabilizing tackifier for convenient **one-step application**. It's ideal for hydraulic seeding everything from front lawns to strip mines. And, once it's down, Hydro Mulch 2000 fiber enhances germination by protecting seeds from temperature fluctuations and evaporation of soil moisture.

So, when your reputation is riding on each job, use Conwed Hydro Mulch 2000 fiber, for a job that's done right the first time.

For information, write Conwed Corporation, Fibers Division, 444 Cedar Street, P.O. Box 43237, St. Paul, Minnesota 55164. Or phone (612) 221-1190.



CONWED

innovative products for better environments

Circle No. 110 on Reader Inquiry Card

Athletic from page 44

Vented Field Covers

Raising the temperature of the interface between the cold air above and the warm soil below may greatly improve the rate of turfgrass growth under marginal weather conditions. Vented field covers made of clear plastic sheeting (¼ inch perforations spaced 6 inches apart) have proven useful in increasing the temperature below the interface. These covers are easy to apply, can be left on the turf for long periods of time, and allow rain to enter the rootzone. The covers can increase the growing season by 30-60 days in late fall and early spring.

Numerous "raincoat" coverings have been used to protect soil from excess rainfall prior to game time. However, moisture tends to condense under the surface of the solid plastic sheets which results in a wet playing surface, and any holes or loose edges that allow the entry of rain water tend to cause excessively wet spots. Further, the heavy covers require considerable manpower and time to spread.

At least 16 of the major stadia in Sweden have powered rollers by which the plastic field covers are removed. These are stored within one section of the soccer fence during the games and throughout the summer months. A plastic covering used for this purpose may last three to six years, depending on the ultraviolet light inhibitors incorporated. Plastic sheeting, without perforations, must be removed during bright warm days to prevent killing of the turfgrass.

Covers reinforced with nylon or of other woven fibers provide increased strength and resistance to tearing. Experience with plastic sheets perforated at 2, 6, and 8 inch intervals indicates that the 6 inch spacing is most satisfactory. The 6 inch perforations allow some venting, permit water to enter and reduce the adverse effects of wind on the large sheets.

Colorants

Latex based colorants are widely used on athletic fields. The white spray paint has largely replaced the lime dusts for official line markings. The logos of teams and stadia are emblazoned in colors in the endzones. The sidelines are color coded for player information. Entire fields (especially those of dormant bermudagrass) have been sprayed green. Green sawdust has been added to bare areas for color effect. Entire fairways have been sprayed prior to television coverage of winter golf. Home lawns of zoyosia or bermuda are sprayed in the fall following the first frost, then retouched in early spring for added color.

Trade names of turfgrass colorants on the market include Everbright, Greenstuf, Greenzit, Sta-Green, Stayz-Green, Vichem Green, Vitalon dark—zoyosia, Vitalon light—bermuda, and Winterlawn.

WTT

Birka boots the competition in the transition zone.

Birka's kicking up quite a fuss with attractive appearance, low maintenance and consistent hardiness in Kentucky bluegrass adaptation areas of the U.S. This dark green, narrow-leafed variety overcomes adversity without dominating the mix. Birka is ideal for use in Maryland and Virginia.

In addition, Birka has shown a healthy resistance to leaf spot, Fusarium, stripe smut, and rust during many years of trials. Birka: a gorgeous answer to reduced maintenance costs. At your local wholesale seed distributor.

Birka

Kentucky bluegrass

Jacklin Seed Co.

W. 5300 Jacklin Avenue
Post Falls, ID 83854
(208) 773-7581 • TWX: 5107760582



E.F. BURLINGHAM & SONS

P. O. Box 217 • Forest Grove, OR 97116
(503) 357-2141 • Telex: 36-0274
Cable: Burlingham

U.S. Plant Patent 4165

Circle No. 124 on Reader Inquiry Card

Banvel[®] + 2,4-D = Turf (minus 29 of the toughest kinds of weeds)



All it takes is one application, and your weed control job is done for the season. And so are 29 of the hardest-to-kill varieties of broadleaves.

BANVEL plus 2, 4-D is a versatile combination you use anytime from early spring to late fall. It kills by penetrating both leaves and roots, so weeds can't come back.

Mixes quickly, stores well. Use it according to directions, and your weed worries are over for the year.

Ask your Velsicol distributor about BANVEL 4S, too. Or write Velsicol Chemical Corporation, 341 E. Ohio Street, Chicago, IL 60611.



Before using any pesticide, read the label.

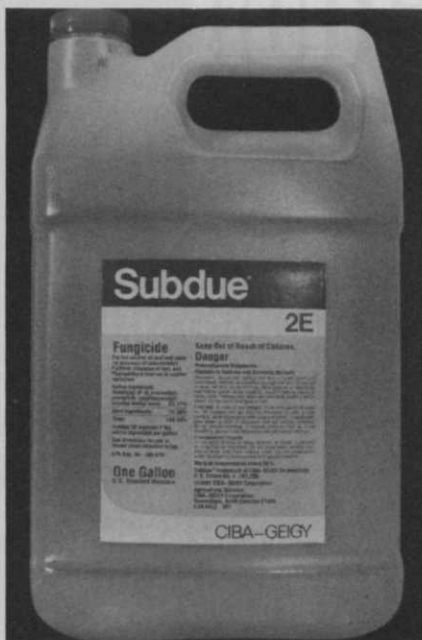
Velsicol

©Velsicol Chemical Corp., 1981

Circle No. 157 on Reader Inquiry Card

WT&T PRODUCTS

Three-week control of disease is now possible with Subdue 2E from Ciba-Geigy. It will control pythium blight in established turf when applied as a preventative treatment at a rate of 1-2 ounces in 3-5 gallons of water per 1,000 square feet. In newly seeded areas,



Subdue will control pythium damping off and pythium blight with the same amount in 5-10 gallons of water. One use is ryegrass overseeding on bermudagrass greens for transition. Research for the product was performed by Houston Couch of VPI, Blacksbrug.

Circle No. 166 on Reader Inquiry Card

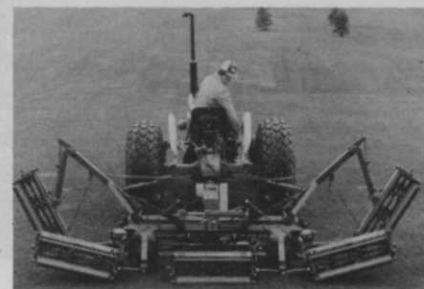
Amdro fire ant insecticide achieves up to 90 percent kill of the dreaded fire ant when applied at the recommended

rates. The insecticide, developed by American Cyanamid Company, has received EPA registration for use on pasture and range grass, lawns, turf and non-agricultural land. Amdro is still undergoing tests for residue in crops.

Amdro is a slow-acting stomach insecticide, formulated on a corn grit using soybean oil as the bait, which attracts the fire ants. It works by becoming part of the ant food chain when carried back to the colony by worker ants. Either mound-to-mound or broadcast application is acceptable, but not more than 1½ lbs. of Amdro should be applied per acre. Amdro is now available in 1 lb. and 25 lb. packages.

Circle No. 167 on Reader Inquiry Card

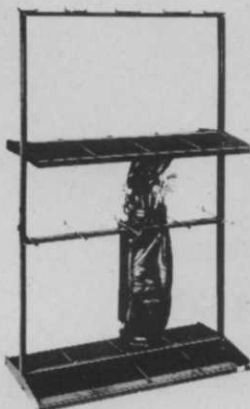
Hydraulic lift PTO mowers from Brower Turf Equipment Limited mow evenly and provide a smooth and even grass finish. They eliminate tractor



wheel marks and reduce mowing frequency. Available in three, five, and seven gangs, all pieces can lift together. Mowers adapt to any tractor equipped with external hydraulics.

Circle No. 168 on Reader Inquiry Card

Continues on page 82



INCREASE EARNINGS, SERVICE & SPACE Remodel your present storage space, update with NEW *Stafford* VERTICAL BAG RACKS

- Wear and tear of golf bags is completely eliminated
- Damp bags dry faster — no mildew
- Faster, easier storage
- Provides a neat appearance
- Easy to install and add more as needed

Your members will like the extra convenience and care. Your pro shop profits from 40% more space these racks make available. Double unit shown holds 16 bags, size 2' x 4' x 6'-6" high, gives 12" x 12" space for bags. Single unit holds 8, size 1' x 4' x 6'-6" high. Sturdy steel. Bags set solid on tapered shelves. Send us your floor measurements, we will plan a layout and quote you — no obligation. U.S. and Canadian patents. Send for folder.

The A.G. STAFFORD Co.

2000 Allen Ave., S. E.
Box 8877, Canton, O. 44711
Phone 216/453-8431

Circle No. 147 on Reader Inquiry Card

Circle
the
Reader
Service
numbers
of those
items of
interest
to you.

Inquiries serviced for 90 days from date of issue. For those countries outside the U.S., please apply appropriate postage before mailing.

READER SERVICE INFORMATION CARD

8-81 2

For more information on products or services mentioned in this issue, circle the corresponding numbers below, fill in appropriate information and mail today.

101	115	129	143	157	171	185	199	213	227
102	116	130	144	158	172	186	200	214	228
103	117	131	145	159	173	187	201	215	229
104	118	132	146	160	174	188	202	216	230
105	119	133	147	161	175	189	203	217	231
106	120	134	148	162	176	190	204	218	232
107	121	135	149	163	177	191	205	219	233
108	122	136	150	164	178	192	206	220	234
109	123	137	151	165	179	193	207	221	235
110	124	138	152	166	180	194	208	222	236
111	125	139	153	167	181	195	209	223	237
112	126	140	154	168	182	196	210	224	238
113	127	141	155	169	183	197	211	225	239
114	128	142	156	170	184	198	212	226	240

- 0050 CEMETERIES/MEMORIAL GARDENS
 0055 HOSPITAL/HEALTH CARE INSTITUTIONS
 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
 0115 CUSTOM CHEMICAL APPLICATORS (GROUND)
 0120 TREE SERVICE COMPANIES/ARBORISTS
 0125 LANDSCAPE ARCHITECTS
 0130 EROSION CONTROL COMPANIES
 0135 EXTENSION AGENTS/CONSULTANTS FOR HORTICULTURE
 0140 IRRIGATION CONTRACTORS
 OTHER CONTRACTOR OR SERVICE (PLEASE SPECIFY) _____

Your primary business at this location is: (check one only in A, B or C)

A. LANDSCAPING GROUND CARE 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
 0035 SHOPPING CENTERS, PLAZAS AND MALLS
 0040 PRIVATE/PUBLIC ESTATES & MUSEUMS
 0045 CONDOMINIUMS/APARTMENTS/HOUSING DEVELOPMENTS/ HOTELS/RESORTS

C. SUPPLIERS:

- 0205 SOD GROWERS
 0210 EQUIPMENT DEALER/DISTRIBUTOR
 OTHER SUPPLIER (PLEASE SPECIFY) _____

Approximately how many acres of vegetation do you maintain or manage? _____

What is your title? (please specify) _____

NAME _____

BUSINESS NAME _____ ADDRESS _____

CITY _____ STATE _____ ZIP _____ TELEPHONE () _____

AREA CODE

I WISH TO RECEIVE (CONTINUE RECEIVING) WEEDS, TREES & TURF EACH MONTH YES NO

SIGNATURE _____ DATE _____



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY CARD

FIRST CLASS PERMIT NO. 665 DULUTH, MINNESOTA

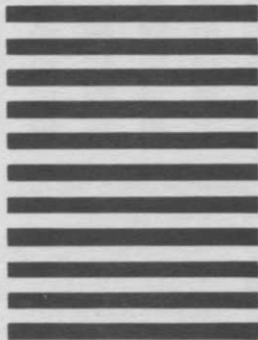
POSTAGE WILL BE PAID BY ADDRESSEE

READER SERVICE DEPARTMENT

WEEDS TREES & TURF

POST OFFICE BOX 6049

DULUTH, MINNESOTA 55806



**GET
MORE
FACTS**

More Muscle, Pound for Pound!

And more machine! The 3210 is a medium sized, 30-HP-class machine that outweighs its competitors by close to a ton. All muscle. From rigid one-piece frame, to drive train and transmission, many of its components are rated for 40- and 50-HP-class units. With your choice of diesel or gasoline engines, it matches the muscle of larger machines.

As a Modularmatic[®], the 3210 can be equipped with a wide range of modules. Select the options you need for a variety of jobs.

Ask your Ditch Witch dealer for more details. You'll see that pound for pound, you get more machine, and more muscle!

The Charles Machine Works,
Inc., P.O. Box 66, Perry,
Oklahoma 73077



**Ditch
Witch**

BUCKET TRUCKS AND DIGGER DERRICKS



ASPLUNDH

Curt Ogden Equipment Company has serviced the Tree Industry for the past twenty years. We carry every brand of bucket and truck with working height ranging from 40' to 110'.

Most of our units are completely reconditioned mechanically and cosmetically.



HI-RANGER

For more information call us Toll Free at
800-325-9990.
Missouri and Illinois residents: 314-343-5000

CURT OGDEN EQUIPMENT CO.

500 S. Highway Dr.
Fenton, MO 63026

Circle No. 137 on Reader Inquiry Card

Does the condition of your turf make you see red?

Switching to Pennfine Perennial Ryegrass could color your outlook. It's long been the standard of quality against which other varieties are compared. Why not simplify your life? Go with the most widely used fine-leaved perennial ryegrass in the nation. By the way, if you have trouble finding Pennfine, just ask the turf pro with the best-looking turf around. Chances are he's already using it. Pennfine Perennial Ryegrass, P.O. Box 923, Minneapolis, MN 55440

Circle No. 140 on Reader Inquiry Card

Products from page 78

Front mounted flail mowers by Vemco in 48" and 60" widths have been released. These new additions to the line, powered by a front P.T.O. or electric clutch P.T.O., have 360° front mounted



caster wheels which allow easy turning and mower height adjustment.

There are three different blade styles—rock dodger, fine cut, and dethatching—to choose from.

Circle No. 169 on Reader Inquiry Card

Banol Turf fungicide, which showed highly effective Pythium blight control when tested on turfgrass, is now available for professional use on golf courses and lawns as the result of an EPA approved Experimental Use Permit. Marketed by TUCO Agricultural Chemicals, a division of the Upjohn Company, Banol Turf fungicide is a water soluble liquid concentrate with Propamocarb hydrochloride as its active ingredient.

Approved label use includes application of 1.3 to 4 oz. of Banol in 2-5 gal. of water per 1,000 sq. ft. as a preventive treatment when weather conditions favor development of Pythium blight. A repeat application may be made in 7-21 days if weather conditions remain favorable for disease development.

Circle No. 170 on Reader Inquiry Card

Tandem-drive utility truck from West Point Industries will haul payloads as large as 1,200 pounds. The A-500 Utility Master has a 27 cubic foot bed and a tandem drive that delivers power through all four rear wheels. An 8 h.p. engine, equipped with electric starter, alternator, and 12-volt battery, powers the little truck.

Continues on page 85



BUILT STRONGER TO LAST LONGER.

A chain saw that won't start, or cuts out in the middle of a job is no good to anybody. Job after job, year after year, you need a saw that will last. Whether you want a small saw that's super efficient or a big saw that can take the roughest handling, you need a Stihl.[®] Because Stihl saws are built stronger to last longer.

Stihl saws are made with longer wearing parts. Built-in advantages like automatic oiling. Engine components that reduce friction and wear. And the power it takes to get through any cutting job.

They're tested for more endurance than
ter what, they'll last longer than

When you rely on a saw
counts for a lot. So count on
it's the strongest saw
you can buy.

you'll ever demand, so no mat-
any job you'll ever take on,
to help you make a living, that
a Stihl. Because in the long run,



The World's Largest Selling Chain Saw.

See Stihl's complete line of commercial power tools including brushcutters, hedge trimmers, earth augers, sprayer/blowers, and Cutquiks.[®] For sales and service, see Yellow Pages under "saws." For your local dealer's name, call toll-free 1-800-528-6050, Extension 1430. In Arizona call 1-800-352-0458, Extension 1430.

Big mover?

Looking for a machine that can make the big delivery for your tree-moving operations . . . up to 8" diameter trees? You can dig them with the new TS-84 Tree Spade from Vermeer. It's the largest tree-moving machine in the Vermeer line. Digs a gigantic 84" diameter tree ball, down to 54" deep. Over 8,000 lbs., transplanted in minutes! And, the best part? It's a one-man

operation. Six powerful "spades" lift both tree and root ball hydraulically. Ideal for developers, landscapers, large nurseries.

Too much machine for your operation? Vermeer makes four other models — on truck, tractor or trailer mountings — to fit your tree moving or "tree packaging" operations. Ask your Vermeer dealer for a demonstration today.



VERMEER TS-84 TREE SPADE: Digs tree ball 84 inches diameter, 54 inches deep. Hydraulic Controls. Self-locking rear assembly. 91-inch transport width.
FOR COMPLETE INFORMATION: Call Toll-free (800) 247-2347. In Iowa call collect at (515) 628-3333.

Get a taste of
**Vermeer
Quality**



**THE DIGGIN'
DUTCHMAN**

8808 New Sharon Road • Pella, Iowa 50219

Products from page 82

The hauler is highly maneuverable with a single front wheel and small overall dimensions. The turning radius is just 8 feet and the A-500 can slip through spaces as narrow as 58 inches.

Standard features include variable speed automatic transmission, disc brakes, a parking brake, welded all-steel frame, and steel box bed with exterior plywood inserts. Options for the A-500 include a selection of flat bed, dump bed, let-down metal loading ramps, lights and turn signals.

Circle No. 171 on Reader Inquiry Card

Quick-mount scoop options are now available with the Piggyback Material Handler by Princeton Manufacturing Company. The optional hydraulic or mechanical scoops have a 15 cu. ft. bucket capacity and are sturdily built with hardened, abrasive-resistant steel. The hydraulic scoop is apron mounted and recommended for more difficult or prolonged jobs. Special quick-mount hydraulic adaptors allow complete attachment in less than ten minutes. The mechanical scoop can be apron or fork mounted. Fork mounting



can be accomplished in a matter of seconds. Powders, scrap, sand, loose soil, chemicals and other bulk materials can be handled with the scoop, making the Piggyback forklift quite flexible.

Circle No. 172 on Reader Inquiry Card

Utility Scoop attachment for Excel's Hustler grounds maintenance tractors can carry up to 600 pounds of materials when used on 1981 Hustler tractors, with the exception of the model 261, which can carry 300 pounds. The Scoop is 60-inches wide with a 3/16 inch-steel scrapper blade that can be replaced easily. Volume of the scoop is 11.2 cubic feet.

The scoop is easily attached and adjusted to the tractor's "quick hitch" tool bar. Moving a clevis pin on the dump arm tube adjusts bucket curl. The operator controls the scoop using two levers to the right of the seat. An attachment lift lever is used to hydraulically raise or lower the scoop. The auxiliary hydraulic valve control lever is used to tilt and dump the bucket.



Drive wheel steering allows for operator control, and the weight of the machine is centered over the drive wheels to enhance ground traction. The scoop can be used for dirt, snow removal, grain, fertilizer, mulch, debris, or other material handling.

Circle No. 173 on Reader Inquiry Card

WILT PRUF®

ANTI-TRANSPIRANT



EXTRA PERCENTS mean EXTRA PROFIT DOLLARS
**1981 EARLY ORDER
 FALL INCENTIVE PROGRAM**

DISCOUNTS • EXTRA BONUS • PROFIT OPTIONS

40% plus **3%** bonus*
 Order before October 15th

QUANTITY DISCOUNTS mean MORE PROFITS

Order minimum 5 cases . . . you get **EXTRA 1%**

Order minimum 10 cases . . . you get **EXTRA 2%**

Order minimum 15 cases . . . you get **EXTRA 3%**

*On 5-Gallon, 30-Gallon and 55-Gallon drums: 40% plus 6% bonus

plus 50/50 Co-op Advertising Allowance

Ask your distributor for further details

Visit us at Booth #1938 National Hardware Show

Wilt-Pruf Products, Inc.

P.O. Box 4280 • Greenwich, Connecticut 06830

LETTERS

Tree injection rebuttal

Dr. Funk's reply to "Pennsylvania" (WTT, June, 1981) reflected a narrow, misleading, uninformed view of Mauguet injections. None of the "data" Davey refers to has been published, has it?

1. Mauguet has advocated for the past two years in the N.E. the use of a *predrilled injection site* (11/64" diameter 3/8" deep into the xylem) as preferred to the insertion tool method of injection as demonstrated by published data (J. of Arbor. 6 (8) 1980).

2. Mauguet for the past three (3) years had *NOT* advocated "trunk injection" but rather *Rootflare Micro-injection* sites. There is a vast difference. These data have been published (J. of Arbor. 6 (8) 1980).

3. The "distribution and uptake" of chemical by 40 psi method is *not* advocated by many scientists. We do *not* require more than 6-8 psi in the Mauguet system to achieve very satisfactory "distribution and uptake."

4. Mauguet has had EPA label expansion for the use of Inject-A-Cide B to effectively manage the Bronze Birch Borer in Birch in the N.E. since 1978. Its continuing studies with dogwood borer are most encouraging as are studies with scales. They anticipate label clearance for both of these pests.

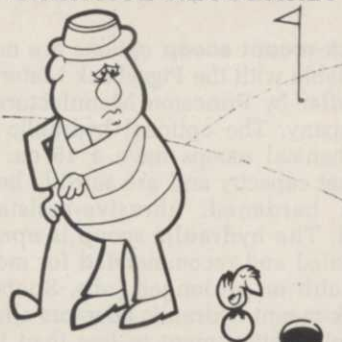
5. Dr. Funk failed to respond to the reader's question concerning "convenience" and "expense." There is no more "convenient," safe, labor efficient technology than the Mauguet method. Relative to costs — my results with the Mauguet Stemix-Hi Volume fertilizer via rootflare micro-injection average one third (1/3) *LESS* than conventional "soil fertilizing." Biological efficacy obtained is superior to conventional fertilizing especially with urban trees.

In Davey's "continuing research" on "trunk injections" I would strongly urge them to evaluate the Mauguet technology modified to use a drill and making injection sites in the root-flare of the tree. Davey has the opportunity to

refute the above statements or at the very least to move into a fuller understanding of the changing world of "tree injection" to allow better balanced answers to your readers.

Sincerely yours,
Arthur C. Costonis, Ph.D.
Systemics, Inc.
Westwood, Mass.

**Protect Your Heart
EXERCISE REGULARLY**



Give Heart Fund
American Heart Association

Ryegrass

Now Has An Added Dimension Emergence of the highly successful, exceptionally handsome turf-type ryegrasses lends further credence to the historic claim that "ryegrass is the world's most widely used grass."

For years annual and perennial ryegrass have found a home where there is need for a fast-germinating grass which quickly forms a strong root system and forms a durable, inexpensive, easy-to-maintain turf.

Now added to the product line are the finer-bladed turf-type ryegrasses which rival the best of the fescues, bentgrasses and bluegrasses for turf quality.

They not only mix well with these varieties, the ryegrasses germinate in a matter of 7-10 days, mow beautifully and never need pampering.

That's why ryegrass — now more than ever before — is called "the versatile grass."

Ryegrass is truly the all-round performer.

Oregon Ryegrass Commission, Salem, Oregon

CLASSIFIEDS

RATES: 70 cents per word (minimum charge, \$15). Bold face words or words in all capital letters charged at 80¢ per word. Boxed or display ads charged at \$60 per column inch (one inch minimum). Agency commissions will be given only when camera-ready art is provided by agency. For ads using blind box number, add \$5 to total cost of ad. Send ad copy with payment to Dawn Anderson, WEEDS, TREES & TURF, 1 East First Street, Duluth, MN 55802.

BOX NUMBER REPLIES: Mail Box number replies to: WEEDS, TREES & TURF, Classified Ad Department, 120 W. 2nd St., Duluth, MN 55802. Please include box number in address.

WANTED

Wanted—A Jacobsen 524-100 and a 548-100 seeder. In excellent condition. Call evenings (301) 896-3238. 9/81

Wanted: Used Stainless Steel Combines, that aerates, rolls, sprays liquid, as formerly used by Lawn-A-Mat dealers. Write: Conestoga Golf & Country Club., Conestoga, Ontario N0B 1N0 or call 1-(519) 664-2234. 9/81

WANTED: 75 Case 450 loader. Unit tool-flecko brush rake with clamps. 2460-stump grinder. Good condition for resale. G.M. 453 with clutch and PTO assembly. Edwards Tree Service Inc., 49090 Cooper Foster Park Rd., Amherst, Ohio 44001. (216) 988-4477—1/3 Mile East of Baumhart. 8/81

USED EQUIPMENT

AERIAL BUCKETS call P. C. Gould Sales Company Essex, Conn. (203) 767-1636. New and Used brush chippers, Vermeer stumpers, sprayers, Hydro-Ax's available for immediate sale. Or write P. C. Gould Sales Company, Plains Road, Essex, Conn. 06426. 8/81

Finn Straw Mulcher with asphalt applicator, powered by 4 cyl. Wisconsin engine Model VG4D. Green Valley Turf Farms Inc., Canfield, OH. (216) 533-3354. 8/81

For Sale. Brouwer Sod Harvester mounted on Moline tractor. Hadfield automatic sod pick-up and loading conveyor. Ryan sod cutters. All in A-1. (513) 424-5722. 8/81

7 gang Jacobsen Fairway Mowers with hydraulically powered reels, 1 year old, excellent condition. Mizu Fumigator, 10 ft., new 1980, never used. John Deere 2040 Tractor, front end loader and detachable backhoe, 2 years old, excellent condition. Floriturf, Inc., Kissimmee, FL. (305) 348-5906. 8/81

HI-RANGER BUCKET TRUCKS, 54' and 51', Flatbed and chip box mits - Merrill brush chipper. Allied Enterprises, Inc., W. 204 N. 11509 Goldendale Rd., Germantown, WI 53022. (414) 255-6161 anytime. TF

HI-RANGERS AERIAL BASKETS 65', 57', and 53'. Skyworkers aerial baskets 65', 50', 40'. Vermeer stump cutter 1560, 6. Vermeer tree spade 66, TS 44. Asplundh bucket and brush chippers. Bean sprayer, 9 ton trailer. Parkway Tree Service, 12026 W. Cherry, Wauwatosa, Wisc. 53226. (414) 257-1555. TF

COMMERCIAL ROTARY MOWERS — 32" to 84". New — Like New — Used — Reconditioned. Yazoo, Excel Hustler, Howard Price Turf Blazer, Toro, Jacobsen, Simplicity, Bob Cat. Some demonstrators available. All sales on a first come, first serve basis. Call or write for current list. KEI, 3630 E. Munkwitz Ave, Cudahy, Wisconsin 53110. (414) 744-7646. 9/81

Yanmar 24 hp tractor, 233 hours, turf tires; 72" cut Danhussen mower, three point hitch, used one season; Ryan sod cutter walk behind, chop off, older model, used once, kept inside; two 72" cut Hustler 285's, 24 hp Koehler; Snow Blower/cab, mounts on 285; Yazoos: 16 hp Briggs 48", 18 hp Wisconsin 60"; two 8' Western snow plows, used one season; Meyers salt spreader, fiberglass hopper. Inquire Motz, 6749 Main Street, Cincinnati, OH 45244. (513) 271-5296. 8/81

TREE SPRAYER, Trailer mounted, 200 gal tank, John Bean 20/20 pump, 12 HP elec start motor, 785 spray gun, approximately 150' hose w/reel. H&H Tree Service, Box 2007, Jonesboro, AR 72401. (501) 932-9987. 8/81

SPYDER FORKLIFT, with Trailer \$10,500. Excellent condition. (214) 465-6606 or (214) 465-8550 after 6 p.m. 8/81

1978 Hodges self-propelled stump grinder. 80 hours, stored inside, good condition, delivery possible. \$1850.00. Rossville, IL (217) 765-3041. 8/81

For Sale—A Lely turf shaper. 5-foot. Less than 30 hours. Very good condition. \$4350. Call evenings (301) 896-3238. 9/81

For Sale: Vermeer 665 Stump Grinder; Wayne 12" Brush Chipper; Skyworker 50' Bucket Truck; Bombadier Track Brush Cutter; Kershaw 10' Wide Brush Cutter; Windham Self-propelled Log Loader. Call (404) 323-0428. 8/81

For Sale—Four Morris Slurry Centrifugal Pumps, Type 2JC11. Suction Port—3", Exhaust Port—1½", with or without a Cross hydraulic motor and coupling. Extra parts, new and used. For further information, please contact: David Allen, c/o W.S. Connelly and Company, Inc., P.O. Box 88, Salem, VA 24153. (703) 389-9677. 8/81

FOR SALE: TS-44 VERMEER TREE-SPADE on 1977 4-Wheel Drive D-400 Dodge with extras. In great working condition. Shadetrees, Inc., Rt. 5, Box 429, Starkville, MS 39759. (601) 323-2568 before 7:00 am or after 6:00 pm. 9/81

TREE REMOVAL TRUCK. 1958 Chev. Viking—60, 5 yd dump with Prentice cable-loader. All in good appearance & mechanical condition. Replaced by new. \$4500.00. Phone week-ends before 9:00 A.M. (608) 539-2891. 9/81

FOR SALE: Vermeer stump grinder #2460. Ready to go to work. Excellent Condition. \$7,000. For more information, call Floyd's Tree Service (804) 420-6396. 8/81

MISCELLANEOUS

LAWN SEED. Wholesale. Full line of top quality grasses. Improved bluegrass varieties, fine fescues and fine bladed ryegrasses. We specialize in custom mixing. Olinger Seed Company, 2705 Wingate Avenue, Akron, Ohio 44314. Call collect (216) 753-2259. 1/82

LANDSCAPE DESIGN KIT, 37 rubber symbol stamps, ink pad, \$38.50 postpaid. California add \$2.16 tax. Stamps kit brochures available. American Stamp Co., Box 741, Dept. WT, Reseda, California 91335. Phone (213) 881-2808. TF

Increase your profits this year with "Garden Tips" the monthly customer newsletter with your company name/phone. Proven response . . . cements customer relations, gets them to spend more, opens new doors expertly in new expansion areas. Low cost, effective profit building. Call today (516) 538-6444, we'll send complete information or write: Garden Tips, Box 117, Garden City, NY 11530. TF

BUSINESS OPPORTUNITIES

EROSION CONTROL business. Excellent opportunity for MBE Contractor work under contract is twice asking price. St. Louis, MO. Phone (314) 838-4794. 8/81

WANT TO BUY OR SELL a golf course? Exclusively golf course transactions and appraisals. Ask for our catalog. McKay Golf and Country Club Properties, 15553 N. East Street, Lansing, Michigan 48906. Phone (517) 484-7726. TF

HYDRO SEEDING BUSINESS — Limited number of franchises available in the Baltimore/Washington area. Write WTT Box 273. 9/81

Specialty Chemical Corp. seeking independent agents to call on golf courses, sports stadiums, grove services, manufacturing plants, municipal governments. Protected accounts, mail order credits, training program, no fees. EXCITING LINE. Write Ducor Chemical Corp., P.O. Box 13298, Orlando, Florida 32809 (305) 859-4390 8/81

FOR SALE

COLORADO NURSERY—This 10 year established business has snowplowing in the winter, nursery and landscaping in the summer. Assets over \$200,000. Sales ½ million with high growth potential. Equipment includes 3 loaders, 2 dump trucks and 8 pickups with snowplow blades. Price: \$350,000, \$150,000 down. Balance at 15% over 3 years. Volitar Nursery, 1030 So. Frontage Rd., P.O. Box 881, VAIL, COLORADO. (303) 476-3047.

Continues on page 88

Classifieds from page 87

Florida—West Coast—Profitable and extremely well organized **lawn service business**. Excellent written top contracts with top commercial clients grossing **\$200,000** per year with high net. Good opportunity for couple wishing to move South. Owners will provide training and ensure smooth take-over. Florida State Business Brokers, Inc., 1321 U.S. 19 South, Clearwater, Florida 33516. (813) 536-0444. 9/81

FOR SALE — Garden Center and Landscape Business in Central Ohio. Located at the ideal site in medium sized community. Price of \$215,000 includes property, buildings, all landscaping equipment. Inventory valued at \$45,000. Present owner willing to stay as manager. Partial (50%) purchase option available also. Write WTT Box 272. 8/81

For Sale — 2 Billion Turf Seeders, 10-foot pull type, 1-Ashland Land Leveler, 3-Foxcroft Spider Forklifts. Terms: cash. For more information contact: Roger Hoffman, Small Business Administration, 373 Collins Road N.E., Cedar Rapids, Iowa 52402. (319) 399-2571. 8/81

For sale or rent — 78 in. Big John Tree Mover mounted on C-90 Chevy. 30,000 miles both new in October 1978, not used in 1980. Excellent condition. Many extras. Phone (517) 627-6200. 9/81

Completely overhauled and dielectrically insulated 45' Sky-Workers—For Sale and Rent. 90 day guarantee on sales. Call Aerial Lift, Inc., Milford, Conn. (203) 878-0694. TF

HELP WANTED

CAREER OPPORTUNITIES with the sod industry leader. Due to the rapid on going expansion of our North American sod production capability, The Manderley Corporation is looking for management personnel. If you are interested in a career in agricultural management with an aggressive, fast moving company, we want to hear from you. Apply in writing to: The Manderley Corporation, R.R. #3, North Gower, Ontario K0A 2T0, Canada. Attention: Director of Personnel. 10/81

Help-Wanted — Landscape Foreman — Large commercial landscape contractor needs several top notch Planting Foremen for our commercial work. Year round work, salary negotiable. Good benefits. Long term opportunity. Call Landcaster Landscapes — Area Code (202) 471-4310 or send resume to: Landcaster Landscapes, Route 1, Box 397, Leesburg, VA 22075. 8/81

Wanted: Landscape designer with garden center experience. Salary commensurate with experience. Please send resume to: Edwards Tree Service, Inc., 49090 Cooper Foster Park Rd., Amherst, Ohio, 44001. (216) 988-4477 — 1/3 Mile East of Baumhart. 8/81

CHALLENGING CAREER. Above average pay; Two year associate in applied science degree in Golf Course Operations/Landscape Technology. Financial assistance available. Write Western Texas College, Snyder, TX., 79549. (915) 573-8541. 9/81

BRANCH MANAGER: Chemical Lawn Care firm is accepting applications for Managerial position. Must be experienced in route and service type business, responsible for sales personnel and administration. Must be willing to relocate in Ohio, Indiana or Kentucky areas. Write WTT Box 270. 11/81

AGRICULTURAL, HORTICULTURE INSTRUCTOR—Full-time permanent position (173 days). Salary—\$13,649 to \$21,824, depending on education and experience. Starts 9/14/81. Bachelor's Degree in Horticulture, Agriculture or Biological Sciences required. Contact Clark College Personnel Office, 1800 E. McLoughlin, Vancouver, WA 98663, (206) 699-0105, prior to August 20, 1981. 8/81

POSITION WANTED

Golf Supt.—Experienced in all phases of golf operations in northern and southern turf. Resume on request. Phone (813) 542-7326. 8/81

ADVERTISERS

Adelphi Kentucky Bluegrass.....	17
Agriculture Service Corp.	65
Andersons.....	73
Aquatrols Corp. of America.....	72
BFC Chemicals, Inc.	61
Bowie Industries, Inc.	64
Brouwer Turf Equip. Ltd.	5
Burlingham & Sons, E. F.	3, 49
Case, J. I.	1
Conwed Corporation.....	76
Deere & Company, John.....	12, 13
Diamond Shamrock/AG Chem.	32, 33
Ditch Witch Equipment.....	81
Dow Chemical U.S.A.	46, 47, 67
Glenmac, Inc.	66
Hypro Division/Lear Siegler Inc.	74
International Seeds Inc.	24, 55, 71
Jacklin Seed Co.	37, 41, 57, 77
Jacobsen.....	COVER 3
Lakeshore Equip. & Supply Co.	43
Lofts Pedigreed Seed Co.	COVER 4
Mallinckrodt, Inc.	39
Mathews Company.....	56
Milwaukee Metro Sewerage District.....	70
Mobay Chemical Corp./Ag Chem. Div.	19 - 22
Monsanto.....	35, 63
Mott Corporation.....	50
Northrup King.....	18
Ogden Equipment Co., Curt.....	82
Oregon Ryegrass Commission.....	86
Pennfine Perennial Ryegrass.....	82, 88
Pickseed West.....	29
Princeton Mfg. Co.	38
Rainbird Sprinkler Mfg. Corp.	COVER 2
Rugby Kentucky Bluegrass.....	26, 27
Ryan Turf-Care Equipment.....	51
Scott & Sons, O. M.	59
Stafford Co., A. G.	78
Stanley Hydraulic Tools.....	66
Stihl, Inc.	83
Telsco Industries.....	62
Tennant Company.....	75
Toro Company.....	45
Trans-Tree Corporation.....	4
Van Waters & Rogers.....	7
Vaughan's Seed Co.	31
Velsicol Chemical Corp.	52, 53, 78
Vermeer Mfg. Co.	84
Wilt-Pruf Products.....	85

This index is furnished for the readers' convenience. However, the publisher can not guarantee its accuracy due to circumstances beyond our control.

Does your turf's appearance make you feel blue?

Then it's time you started using Pennfine Perennial Ryegrass. Pennfine has proved itself for nearly a decade with the toughest customers of all: Thousands of turf pros all across the nation. It's used consistently on many of the nation's most prestigious turf areas. It should be on yours as well. Pennfine, the best-selling fine-leaved perennial ryegrass available. Pennfine Perennial Ryegrass, P.O. Box 923, Minneapolis, MN 55440

You just can't buy a better mowing tractor.



It's been proven time and again, day after day, acre after acre. You just can't buy a better cutting mowing tractor. For a very convincing demonstration, call your Jacobsen Distributor.

JACOBSEN
TEXTRON

Jacobsen Division of Textron Inc.

Jacobsen: You just can't buy any better.

Circle No. 114 on Reader Inquiry Card



The Palmer Overseeding Method

Arnold Palmer and Jim Ellison, Bay Hill's Superintendent, are very careful when choosing an overseeding mixture. Some of the world's top golfers have played at Bay Hill in Orlando, and they've come to expect certain standards.

To help maintain the Bay Hill image, Palmer and Ellison use Marvelgreen. And so do some other prestigious courses:

- Pinehurst, NC
- Harbour Town, Hilton Head, SC
- The Princess Hotel, Bermuda
- Rio Piñar, FL
- Country Club of Birmingham, AL
- Olive Branch Country Club, MS
- Pass Christian Isles Golf Club, MS
- New Orleans Country Club, LA
- Champions Golf Club, TX
- Quail Valley Golf Club, TX

Marvelgreen is available in four different blends: Marvelgreen Supreme, Marvelgreen 3+1, Marvelgreen + Sabre, and Marvelgreen Shady.

Palmer is very proud of Bay Hill. And rightly so. You can have as much pride in your course.

Follow the Palmer Overseeding Method . . . use Marvelgreen.



2055 Tucker Industrial Road
Tucker, GA 30084
(404) 491-1311

Marvelgreen is a product of Lofts Pedigreed Seed, Inc. sold through Sunbelt Seeds, Inc. and distributed by the following:

Tieco, Inc.
AL, FL, KY, TN

Watson Distributing Co.
All stores, TX

Anderson Chemical & Turf Supply
Westminster, CA

Richmond Power & Equipment
Richmond, VA

Lofts/Maryland
Landover, MD

Valley Seeds, Inc.
Phoenix, AZ