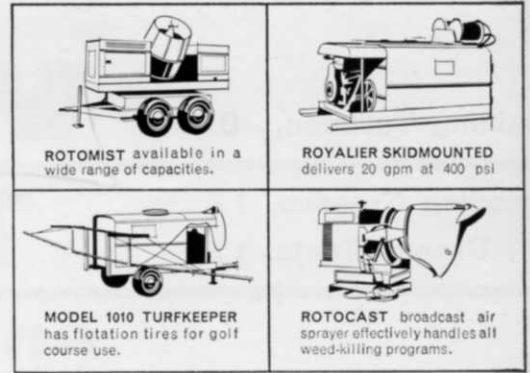


This Rotomist® sprayer has the greatest "rate-of-work" capacity ever developed for shade tree work. It is a design that provides a *controlled air pattern*, all the way to the top of the tallest trees. This means adequate coverage, as well as more efficient use of your chemicals. It means versatility, because the Rotomist pivots 110° vertically, rotates through 360° horizontally. Which means you can put your spray material—either dilute or concentrate—anywhere you want it. Up in trees. Over an embankment. Down, to windrow leaves. And, of course, John Bean makes many Rotomist models to match your requirements. They all mean business.



The Business end, In every way!

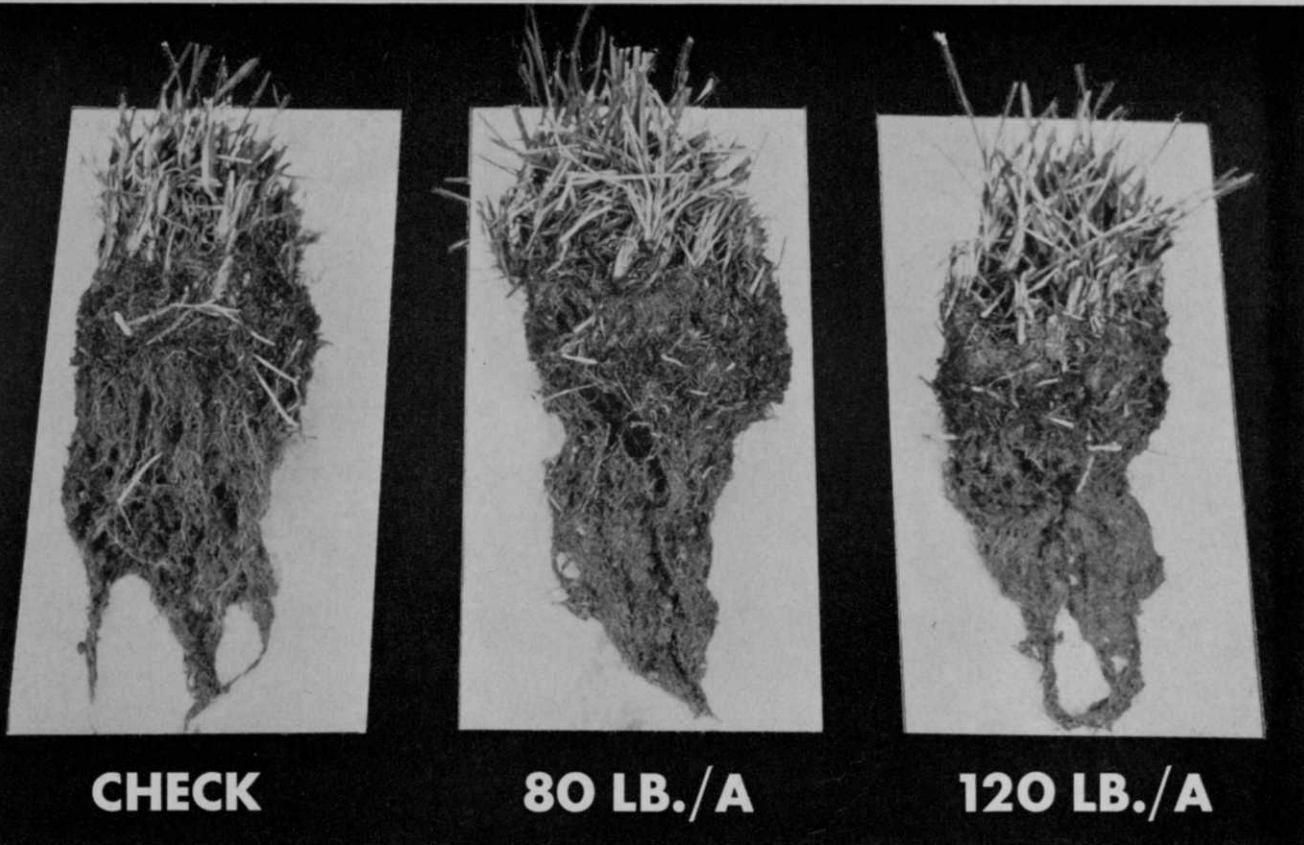


POWER SPRAYING EQUIPMENT

JOHN BEAN

DIVISION

Lansing, Mich. - Orlando, Fla. - San Jose, Calif.



Here's proof that repeated yearly applications of "Tupersan" do not injure the root systems of many established cool season turf grasses, even when "Tupersan" is used at extremely high rates. The Kentucky Bluegrass turf cores shown at the middle and right were taken from plots that were treated with "Tupersan" for three

straight years at the rates of 80 and 120 lbs. per acre. The Kentucky Bluegrass turf core at the left was taken from an adjoining plot that was not treated. Note that there is no difference between the treated and untreated cores. Similar results were obtained in plots of fescue and certain strains of bentgrass.

Control crabgrass without injuring turf (cool season grasses) with Tupersan[®]

SIDURON WEED KILLER

Du Pont "Tupersan" is a unique, highly-selective pre-emergence weed killer for the control of crabgrass (smooth and hairy) and certain other annual weed grasses in turf. "Tupersan" offers a high degree of safety to turf. It can be used on newly seeded areas without causing injury to germinating seeds of cool season grasses, as well as on established turf.

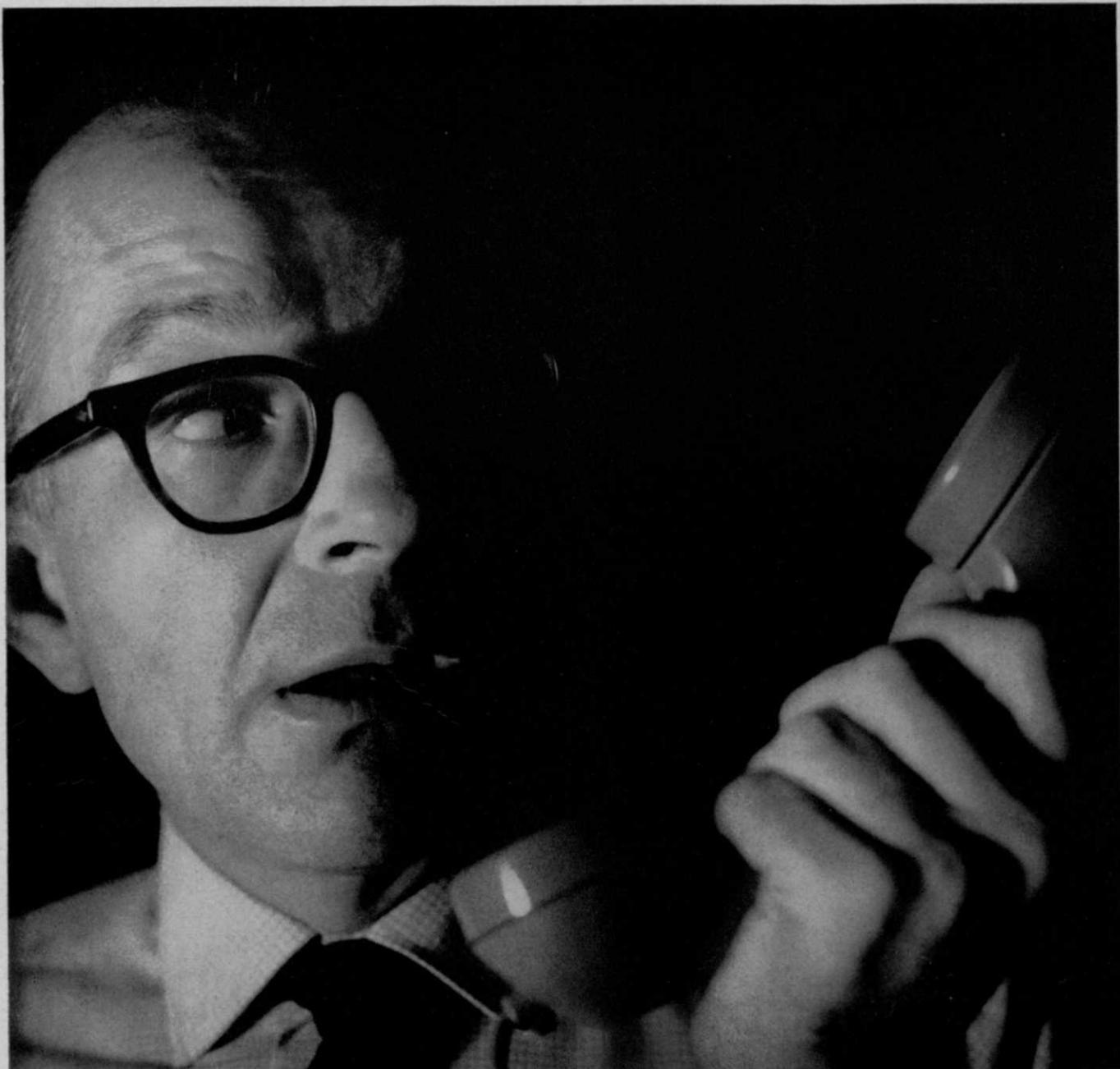
You can seed and treat the same day with "Tupersan". It prevents crabgrass—but lets the desirable grass grow. For full information on "Tupersan", consult your golf course supplier—your service agency.

With any chemical, follow labeling instructions and warnings carefully.



Better Things for Better Living... through Chemistry

When Writing to Advertisers Please Mention WEEDS TREES AND TURF



Want to hear from your customers less often? Use Geigy herbicides.

You'll hear from your customers less often in this case for only one reason. And that's because they'll be getting positive long-term weed control that Geigy industrial herbicides deliver with just a single application.

This, of course, will help you to eliminate time-consuming and unprofitable call-backs. So you'll be free to take on new customers or expand the maintenance services you offer.

Each Geigy industrial herbicide has special features to solve specific problems. As a group, they can handle just about any annual and perennial weed problem customers can toss your way.

So it will definitely pay you to find out more about these Geigy herbicides: Atrazine 80W wettable powder, Simazine 80W wettable powder, Pramitol™ 25E emulsifiable solution, Pramitol™ 5P pellets, and Atritol™ 8P pellets.

Remember, each one has its place in a fully effective weed control program. So you might need them all in order to solve most of your customers' weed problems.

Write us today to find out more about Geigy industrial herbicides.

Geigy Agricultural Chemicals,
Division of Geigy Chemical Corporation,
Ardsley, New York 10502.

Geigy

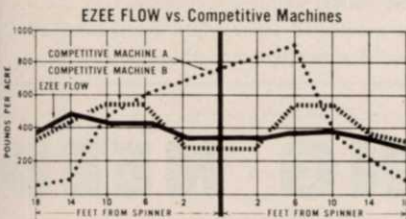
CREATORS OF CHEMICALS FOR MODERN AGRICULTURE

DEPENDABILITY!
Best uniform
spreading at low
maintenance
cost! EZEE FLOW



Model 111 Spinner Spreader—2-ton capacity. Spreads granular, semi-granular or pelleted materials *accurately and uniformly* in patterns up to 56 feet wide! Handles all fertilizers, seed, dry chemicals, rock salt, sand, etc. Can be reduced to 6 to 8 foot wide patterns for special spreading. Patented metering device and PTO-driven auger delivers the exact amount of materials to the spinner to insure the most accurate *uniform* spread regardless of ground speed.

Check the superior spread pattern of EZEE FLOW vs. other spinner machines.



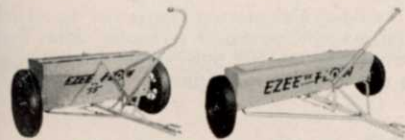
Best uniformity on the market!

Easy operation—Spread rate table gives dial settings for width of spread and lbs. per acre. After the regulator dial is set for the desired spread, the operator merely opens and closes the shutter.

Low-cost maintenance—Rugged construction and fewer moving parts give you long, dependable service—virtually eliminate costly downtime!

Big wheels on a single axle makes maneuvering easy—gives excellent flotation and prevents ruts and “tearing.”

Special . . . for turfed areas



EZEE FLOW Olympia line

Two models (5' and 8' wide) with 3" port spacing and adjustable scatterboards for “no streak” turf feeding.

For dependable, *uniform* spreading at low maintenance cost...rely on EZEE FLOW spreaders.

PRODUCTS OF **Avco CORPORATION**

For complete information, write to EZEE FLOW Division, Department 11, 3428 North Harlem Avenue, Chicago, Illinois 60634.

EZEE FLOW

WEEDS
TREES
and TURF
FORMERLY WEEDS AND TURF

February 1967
 Volume 6, No. 2

Features:

Survey '67: Turfgrass Management Training, Part I..... 8
 Breeding Improved Turfgrasses
 By J. A. Long.....12
 VPI's Putting Greens Test Modified Soils
 By R. E. Schmidt.....17
 Vertical Mulching Boosts Root Growth
 By Wayne C. Morgan.....20
 Richlawn's "Turfmaster" Eases Sod Harvesting.....26
 Effective Communications, Promotion Needed by
 Weed Control Industry, Ilnicki Tells Jan. NEWCC.....30

Departments:

Editorial: WTT Joins Homestate Network..... 6
 Meeting Dates32
 Know Your Species: Purslane Speedwell.....37
 Insect Report44
 Classifieds45
 Advertisers Index45
 Trimmings46

Advertising Sales Offices:

National Headquarters—1900 Euclid Ave., Cleveland, Ohio 44115, 216+771-4169;
Chicago, Ill. 60601—Peck & Billingslea, Inc., 185 N. Wabash Ave., Suite 1809, 312+332-0292; **Shawnee Mission (Kansas City), Kansas 66202**—6811 W. 63rd St., 913+722-5900; **New York City 10017**—Billingslea & Ficke, Inc., 420 Lexington Ave., 212+532-1632;
Rosemont, Pa. 19010—1062 Lancaster Ave., 215+525-1874; **Columbus, Ohio 43212**—1350 W. Fifth Ave., 614+486-9638; **East Lansing, Mich. 48824**—322 Abbott Rd., 517+332-3521; **Los Angeles, Calif. 90005**—The Eschen Co., 3142 Wilshire Blvd., 213+382-8391; **San Francisco, Calif. 94104**—The Eschen Co., 57 Post St., 415+781-7440.

JAMES A. NELSON
 Editor and Publisher

JOSEPH R. CORNER
 Assistant Editor

KENNETH H. CONSTANT
 Vice President, Advertising

D. BUNKIN
 Circulation Supervisor

WEEDS TREES AND TURF is published monthly by Trade Magazines Division, Home State Farm Publications, Inc. Executive, editorial, and advertising offices: 1900 Euclid Ave., Cleveland, Ohio 44115.

Single Copy Price: 50 cents for current issue; all back issues 75 cents each. Foreign \$1.00.

Subscription Rates: U.S. and possessions, 1 year \$3.00; 2 years \$5.00. All other foreign subscriptions 1 year \$4.00; 2 years \$7.00. **Change of Address:** Three weeks advance notice is necessary for change of address. Both old and new address must be given. Post Office will not forward copies. Third Class postage is paid at Fostoria, Ohio.

Contents of this Issue © Trade Magazines Div., HSFP, 1967

WTT Joins Home State Network

As subtle as it may appear to be, there's a big behind-the-scenes change in this issue of WTT. You might call it a case of disappearing Inc. As a matter of fact, Trade Magazines, publisher of WTT, is now a division of Home State Farm Publications, a Cleveland-based publisher of leading farm magazines in five states, having a combined circulation of over 500,000.

Announced January 10, the acquisition makes WTT the junior partner, in terms of age, in the network of seven magazines. Home State's publications were all founded between 1843 and 1862, and our companion publication, *Pest Control*, was begun in 1933. This, we believe, is as it should be.

Dr. J. A. Long, Director of Biochemical Research for O. M. Scott & Sons Co., points out in this issue (page 12) that much of the current interest in turfgrasses is of very recent origin. It's only been about 20 years since agriculture began to move into urban environments.

We think of the swiftly growing interest in turfgrass culture as an urban agricultural phenomenon. And this is equally true of other areas covered by WTT: noncropland weed control, industrial spraying, tree service, landscape maintenance, sod production. All are relatively junior partners in an urban phenomenon with an almost unlimited potential for future growth. And we intend to grow and expand with the industry.

We should emphasize that our joining the larger network will not alter WTT's editorial policies or the scope of our coverage. By permitting our Inc. to disappear in favor of Div., we are deepening our grassroots in the field of vegetation maintenance and control. We're looking forward to greater contact and expanded service to our readers.

We think this is only the beginning of a new era of growth for the urban/industrial vegetation industry and for those who serve it. To expand along with the industry, we'll need the services and backing of a larger organization with offices throughout the country. Now we have it. But Home State Publications offers more than this; our new parent organization has stature and a reputation that makes us proud—pardonably we hope—to join them as their urban/industrial arm. (See photo, page 46).

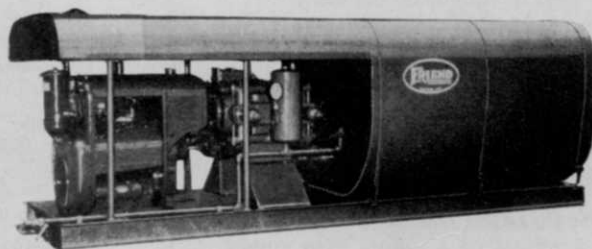
WEEDS TREES AND TURF is the national monthly magazine of urban/industrial vegetation maintenance, including turf management, weed and brush control, and tree care. Readers include "contract applicators," arborists, nurserymen, and supervisory personnel with highway departments, railways, utilities, golf courses, and similar areas where vegetation must be enhanced or controlled. While the editors welcome contributions by qualified freelance writers, unsolicited manuscripts, unaccompanied by stamped, self-addressed envelopes, cannot be returned.

FOR EVERY SPRAYING NEED



TracTank

For all-round use on golf courses, parks, cemeteries, recreation fields, etc. Epoxy-lined 100 gal. tank (mechanical agitation); Friend Commander 2 or 4 cyl. pump; 6.5-12 gpm at up to 400 psi; three-point hitch.



MAINTENANCE SPRAYER

The finest high-pressure sprayer on the market for use with hand-guns or booms. Tank: steel (epoxy-lined), capacities up to 1500 gal.—wood, capacities up to 600 gal.; pump capacities up to 50 gpm. at 1000 psi.

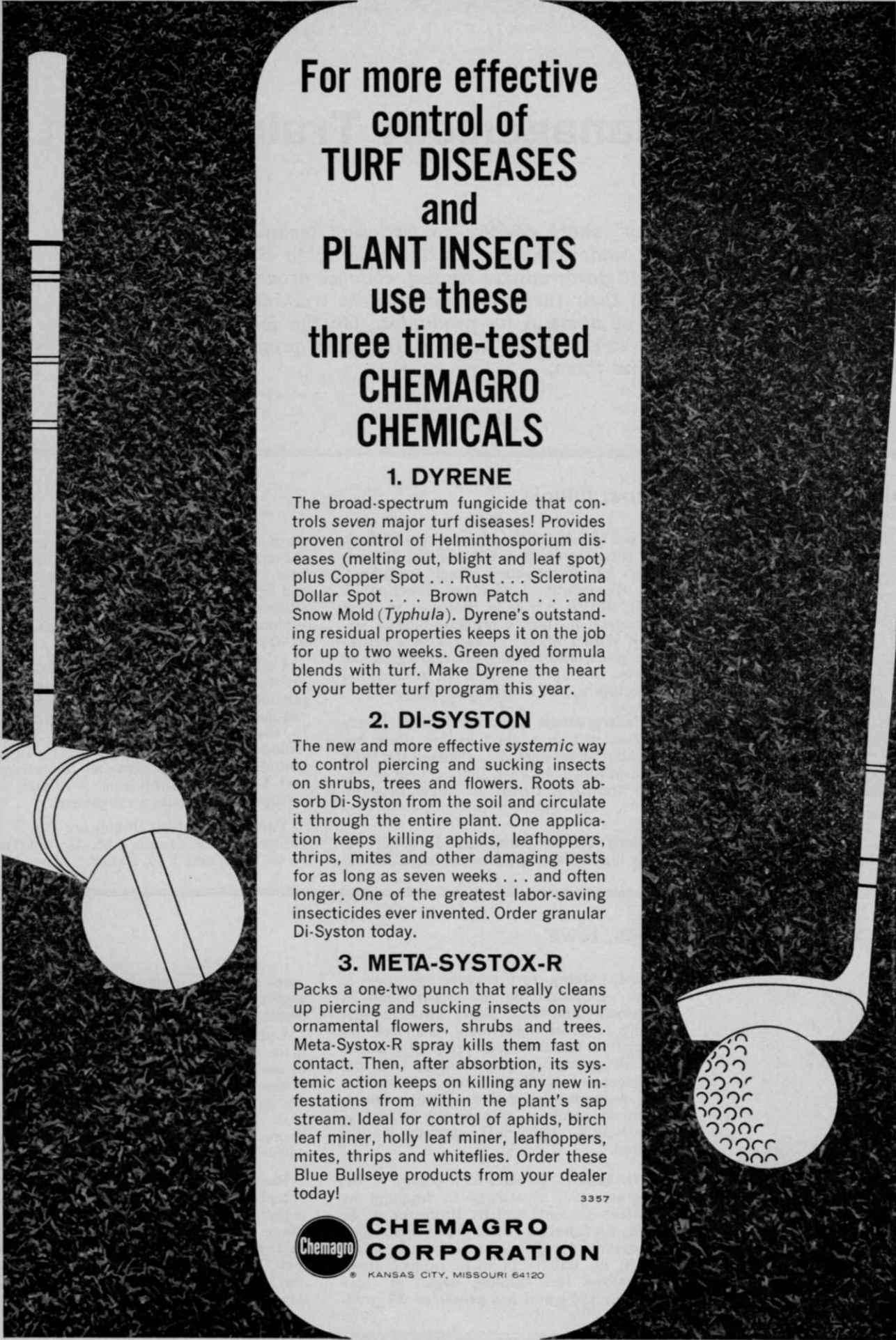


HY-RIDE

The **only** triple-arm, fully articulated high clearance road-side sprayer. Full hydraulically operated boom clears signs, posts; delivers effective spray pattern up to 50-ft. for thorough coverage of interchanges, back-slopes, etc.

For further details write:

FRIEND MFG. CORP.
GASPORT, NEW YORK



For more effective
control of
TURF DISEASES
and
PLANT INSECTS
use these
three time-tested
CHEMAGRO
CHEMICALS

1. DYRENE

The broad-spectrum fungicide that controls seven major turf diseases! Provides proven control of Helminthosporium diseases (melting out, blight and leaf spot) plus Copper Spot . . . Rust . . . Sclerotinia Dollar Spot . . . Brown Patch . . . and Snow Mold (*Typhula*). Dyrene's outstanding residual properties keeps it on the job for up to two weeks. Green dyed formula blends with turf. Make Dyrene the heart of your better turf program this year.

2. DI-SYSTON

The new and more effective *systemic* way to control piercing and sucking insects on shrubs, trees and flowers. Roots absorb Di-Syston from the soil and circulate it through the entire plant. One application keeps killing aphids, leafhoppers, thrips, mites and other damaging pests for as long as seven weeks . . . and often longer. One of the greatest labor-saving insecticides ever invented. Order granular Di-Syston today.

3. META-SYSTOX-R

Packs a one-two punch that really cleans up piercing and sucking insects on your ornamental flowers, shrubs and trees. Meta-Systox-R spray kills them fast on contact. Then, after absorption, its systemic action keeps on killing any new infestations from within the plant's sap stream. Ideal for control of aphids, birch leaf miner, holly leaf miner, leafhoppers, mites, thrips and whiteflies. Order these Blue Bullseye products from your dealer today!

3357



CHEMAGRO
CORPORATION

© KANSAS CITY, MISSOURI 64120

Survey '67:

Turfgrass Management Training, Part 1

From "brushup" short courses to two-year technical programs, from four-year undergraduate courses leading to B.S. degrees to research-oriented postgraduate studies, colleges around the country are stepping up their turfgrass management training programs in the face of heavy demand for graduates. On the following pages, and in coming issues, WTT surveys turfgrass programs and the specialists behind them.

University of Illinois, Urbana, Illinois



Dr. J. D. Butler: In the past few years we have added turf study to our curriculum and have begun giving it major emphasis.

Turf training at the University of Illinois is a cooperative effort between the Departments of Horticulture, Plant Pathology, and Agronomy. Under the direction of J. D. Butler, Assistant Professor in Turf Management, Illinois' program offers a six-week Winter Short Course, with a certificate given, and a four-year undergraduate course leading to a B.S. in ornamental horticulture, turf management major.

Undergraduate study has evolved over a 10-year period, while graduate study began about five years ago. Planned for 1968 is an advance six-week short course to update trained turfmen in latest developments.

Short Course enrollment is about 18, with high school graduation required and

work in the turf field preferred. In 1967, the course began Jan. 30 and runs until Mar. 10. Information on future courses can be obtained from the Director of Short Courses, College of Agriculture. Course tuition is \$35 for Illinois residents and \$140 for nonresidents.

Undergraduate students in turf management currently number 10. Admission is possible several times during the year, and requests for information should be directed to the Registrar, University of Illinois. Tuition and fees for the four-year program amount to \$135 per semester for residents and \$425 for nonresidents. Graduate admission is by special arrangement.

Turf instructors at Illinois are Drs. T. K. Hodges, D. P. Taylor, M. C. Shurtleff, F. W. Slife, and J. D. Butler.

Iowa State University, Ames, Iowa



Dr. Eliot C. Roberts: Opportunities for turf graduates are excellent. We are able to fill only 25% of openings referred to us.

Iowa State's turf training program is jointly sponsored by the Departments of Agronomy and Horticulture. Students majoring in either department can elect this specialty. The four-year program grants a B.S. in agronomy or horticulture with turf management as a Specialized Training Option requiring 14 credits. Though undergraduate study is emphasized, work towards M.S. and Ph.D. degrees is also offered.

Dr. Eliot C. Roberts is in charge of the program, and is assisted in teaching by graduate students and by Professor A. E. Cott, Extension Turfgrass Specialist. Courses in agronomy and horticulture are taught by staffers in these subject areas. Specialized turf training began at Iowa State in 1959 and has produced 35 grad-

uates with B.S. degrees, seven with M.S. degrees, and now has two candidates completing Ph.D. requirements.

Undergraduate enrollment usually varies from 20 to 30 students, with five to eight in each class. Iowa State is on a quarter system; students can enter the course at the start of any quarter: first week in Sept., Nov., Mar., and June. Applications should be made well ahead of anticipated starting dates—two quarters is recommended.

Requirement for entering the program is acceptance at the University. Tuition and registration fees for an academic year (three quarters) come to \$345 for Iowa residents and \$930 for nonresidents. Contact Dr. Roberts for general information and the University's Registrar for entrance details.

University of Maryland, College Park, Maryland



Dr. Elwyn E. Deal: Opportunities for turfgrass management graduates are outstanding for all phases of turf work in Maryland.

Two-year and four-year undergraduate programs, as well as graduate study are offered by the University of Maryland. Four-year and graduate programs are administered by the Department of Agronomy; two-year program by the Institute of Applied Agriculture.

Dr. Elwyn E. Deal directs Maryland's four-year turf training, which leads to a diploma, and also graduate study towards M.S. and Ph.D. degrees. Newer two-year course, offering a certificate on completion, is directed by George D. Quigley. Maryland's undergraduate turf studies began about 1956, while graduate training was instituted in 1964.

Two-year training began in 1965, and currently there are seven sophomores (the first class) and 14 freshmen enrolled. The

Institute of Applied Agriculture, designed to provide technical agricultural training beyond the high school level, also offers programs in Arboriculture and Park Management, and Horticulture and Landscape.

Dr. Deal teaches graduates and four-year undergraduates, Douglas T. Hawes (turf management) and Breck Debnam (agricultural engineering) handle teaching of two-year students. Tuition for all Maryland undergrads, including fees, totals \$346 for two semesters to residents. Assistantships for graduate study are available. Entrance to four-year course calls for high school diploma and entrance exams. Diploma and approval of Director are needed by two-year students.

Address four-year and graduate inquiries to Dr. Deal, two-year inquiries to George D. Quigley.

Michigan State University, East Lansing, Michigan



Dr. James B. Beard: Trained professional turfmen are in great demand in all management areas with salaries well above average.

Michigan State's Department of Crop Science offers two-year technical training in turf management, four-year undergraduate study, graduate work for M.S. and Ph.D. degrees, and short courses. Dr. James B. Beard directs turf education, with John King coordinating the two-year program.

Four-year graduates receive a B.S. majoring in turfgrass management. Students may specialize in the science, business, or general aspects of turf, preparatory to graduate study, sales-oriented careers, or field work. Graduate study has been offered since 1945, four-year study since 1965, and two-year technical training since 1966. Short courses began in 1930.

Entrance to two-year program requires a high school diploma and carries tuition

costs of \$118 per quarter for Michigan residents and \$340 for nonresidents. Yearly starting date is Sept. 20. Dr. Harold Ecker can provide additional information on this program, which has a current enrollment of 15.

High school grades, rank, and courses taken determine admission to the four-year undergraduate program. Tuition is \$108 per quarter for residents and \$290 for nonresidents. For information on 1967-68 admission, write Dr. Beard. Professor Leyton Nelson is contact man for MSU's short course.

Turfgrass teaching responsibilities are shared by Dr. Beard, Dr. Paul E. Rieke, John King, and others in supporting departments.

Purdue University, Lafayette, Indiana



Dr. W. H. Daniel: It is reported that Purdue's graduating turf majors have the highest initial pay of any undergraduate group.

Dr. William H. Daniel, Professor in Agronomy, directs turf training at Purdue University, where undergraduate work has been an outgrowth of research and graduate study that dates back to 1943-45. Four-year undergraduates work toward a B.S. in Agriculture with a major in turfgrass management. This program was initiated in 1952 and has graduated more than 50 students.

Purdue's courses are designed to prepare students for positions as turf superintendents, sod nurserymen, agricultural salesmen, grounds supervisors, and related lines of work. Undergraduate enrollment currently stands at 20; there were five graduates in last year's class. Turf teaching is done by Dr. Daniel. Graduate enrollment usually numbers four students.

Entrance requirements of the University must be met by students in the turf program. Tuition for Indiana residents is \$165 per semester; details are outlined in the catalog, which can be obtained from the Registrar, Purdue University. Early application for enrollment is advised, with Aug. 1 the practical deadline.

Students in turf management at Purdue are encouraged to gain experience in turf research and practical field work prior to graduation. Work during at least one school year in the research program and one or two summers spent in some management and maintenance activity are expected of undergraduates.

Contact Dr. W. H. Daniel, Turf Specialist, Department of Agronomy, for more information on Purdue's turf program.

Rutgers University, New Brunswick, New Jersey



Dr. Ralph W. Engel: Salaries for turf graduates are very good, commensurate with experience, attitude, ability, and education.

Rutger's four-year undergraduate program leads to a B.S. from the College of Agriculture and Environmental Science. Students follow the plant science curriculum and take their electives in turf management subjects. The program is directed by the Office of Resident Instruction, with Dr. Ralph Engel, Professor of Turf Management, as principal teacher and student advisor.

A short course, consisting of one ten-week program a year for two years, is also offered for professional turfmen, landscapers, and others. This program began in 1960 with other, shorter courses initiated in 1928. A certificate is awarded those completing the ten-week technical program, which is already underway for 1967. Plans for 1968 call for an early

January starting date.

Four-year turf study at Rutgers began some 30 years ago. Current enrollment is eight, with college entrance examination and favorable high school standing required for admission. Yearly tuition is \$400 (\$200 per semester). Rutgers also offers graduate programs in turf management leading to M.S. and Ph.D. degrees.

Undergraduate course of study includes such subjects as soils and their management, land planning and utilization, lawn management and fine turf production, plant breeding, principles of weed control, etc. Numerous staff experts cooperate in teaching turfgrass management students.

Requests for information and admissions can be directed to the Office of Resident Instruction, Rutgers University.

Texas A & M University, College Station, Texas



Dr. George G. McBee: There are unlimited opportunities in this area for graduates who are trained as turfgrass managers.

Turf training at Texas A&M comes under the Soil and Crop Sciences Department of the College of Agriculture. Students can enroll in agronomy or plant and soil science curriculums with a major in turf management. Turf and related courses are then worked into the program, which offers a B.S. on completion.

Directing turfgrass training at Texas A&M is Dr. George G. McBee, Assistant Professor. Initiated more than 20 years ago, the Texas program also offers studies towards M.S. and Ph.D. degrees. Curriculums for advanced studies are individually outlined.

Enrollment in turf is currently eight. The course has produced approximately 25 graduates in the past 10 years, with three graduating in the last class. To enter the

turf program, students are required to meet University entrance requirements and have an interest and desire to work in the turfgrass field. On-the-job training can be, and generally is, included as an undergraduate requirement.

Starting dates in 1967 and 1968 fall in Feb., June, and Sept., and early application is suggested. Requests for general information or admission data can be directed to Dr. McBee or to the University's Registrar. Tuition costs come to \$50 for each full semester, not including fees and other expenses.

Several professors in Texas A&M's Department of Soil and Crop Sciences teach subjects relating to the turf program. Cover photograph shows the Plant Science Building, where much of the turf training is conducted.

Virginia Polytechnic Institute, Blacksburg, Virginia



Dr. R. E. Schmidt: Virginia Tech cannot supply the state demand for trained turf ecologists. It is an opportune and challenging field.

Study options in science (for those anticipating graduate work), technical aspects, and business are offered four-year undergraduate students in Virginia Polytechnic's turfgrass management program. Under the direction of Drs. R. E. Blaser and R. E. Schmidt, Professor and Assistant Professor of Agronomy, the VPI program is conducted within the Department of Agronomy, with the Departments of Plant Pathology and Physiology, and Horticulture cooperating.

Four-year undergraduate and graduate programs are offered, leading to B.S., M.S., and Ph.D. degrees in agronomy with a turf ecology option. Graduate degrees are basically research degrees, and the course of study is selected primarily on student interests.

VPI's turf program was started in the late 1950's, with the first formal course being offered in 1961. There have been about 10 graduates; enrollment now stands at 14. Admission to Virginia Tech. is required for turf study, and students must be high school graduates who have satisfactorily passed college entrance exams.

Starting date for 1967's class is Sept. 13. Applications are accepted any time, but to assure favorable consideration, they should be made six to nine months ahead of anticipated attendance date. Tuition, paid only by nonresidents, is \$140 per quarter. On-the-job training is included as an undergraduate requirement.

Requests for particulars on Virginia Tech.'s program should go to Dr. H. L. Dunton, Head, Department of Agronomy.