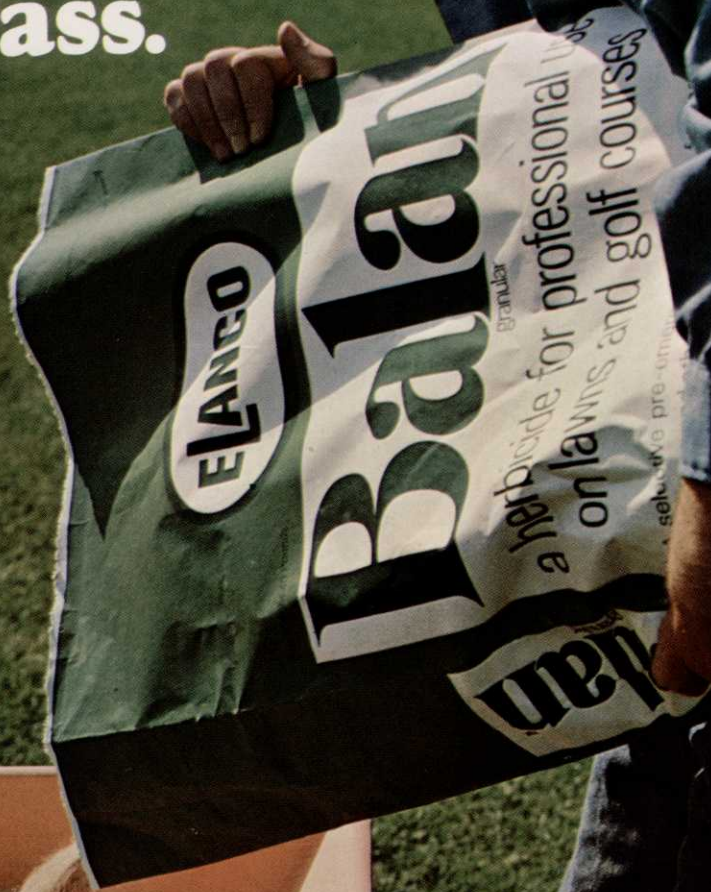


Now eliminate crabgrass.



Caution: Keep out of reach of children.
ELANCO PRODUCTS COMPANY • A DIVISION OF ELLI LLY AND CO.

THE CRABGRASS PROBLEM. Crabgrass and other annual weedgrasses just don't belong in your desirable turf. They'll ruin its appearance. Even close mowing won't keep crabgrass from looking uneven and being an unsightly summer problem. Worse yet, it browns out and dies come fall. This leaves bare spots next spring to be filled in by more crabgrass. It's a vicious circle.

THE CRABGRASS SOLUTION. You're ready for the third step in professional turf management. Complete your turf care program with pre-emergence Balan Granular. Applied to established turf in the spring, anytime before annual weedgrasses sprout, it kills the seeds as they germinate. Weedgrasses can't brown out, can't leave bare spots. Because they don't show up, to begin with.

REASONABLY PRICED. With Balan, all-season annual weedgrass control costs as little as

\$15-\$30 an acre, depending on your climatic zone. (For southern, warm season turfs, two applications may be required because of the longer growing season.) Balan's economy fits even a modest grounds maintenance budget.

DEPENDABLE PERFORMANCE. Balan can be counted on to control crabgrass and other annual weedgrasses even when there are heavy rains or repeated irrigations. Waterproof Balan clings to soil particles and stays put to do its job for you. More than likely your local university has tested Balan and recommends it. Top golf courses in your area know Balan. (And who'd have a greater appreciation of its performance?)

You'll like Balan's convenient granular formulation, too. It's easy to handle and easy to apply with your present equipment. Ask your turf supply and equipment distributor about Balan this week.



(Balan™—benefin, Elanco)

One of Elanco's
dependable
weed-control
crew.

Your first 100 sq. feet are on Elanco!



Free sample! A 4½ ounce shaker tube of Balan Granular. Enough to keep 100 square feet of turf clean of weedgrasses for months.

Return the postage-paid card for full details on Balan, along with the name of your nearest distributor, plus your free sample. Then shake out the sample evenly over an area approximately 10' x 10'. Do this shortly before crabgrass and other weedgrasses germinate. Or weeks before. See how your turf grows thicker, healthier without having to compete with weedgrasses for sunlight and moisture. Balan makes the difference.

OTHER MEMBERS OF ELANCO'S DEPENDABLE WEED CONTROL CREW:

TREFLAN®—dependable, long-lasting pre-emergence herbicide to control weeds and grasses in nursery stock or established ornamental shrubbery and flower beds.

DYMID®—versatile pre-emergence herbicide to control weeds and grasses in ornamentals, dichondra, or ice plant ground covers. Particularly effective against certain winter-germinating weeds.



(BALAN™—benefin, Elanco)



ELANCO PRODUCTS COMPANY
A division of Eli Lilly and Company
Indianapolis, Ind. 46206, U.S.A.



(Balan™—benefin, Elanco)

**MAIL THIS
COUPON TODAY!
WE PAY
THE POSTAGE!**



ELANCO PRODUCTS COMPANY

I'd like to know more about Balan Granular pre-emergence herbicide. Please send me the free sample and complete information, including where to buy it.

I'm interested in treating a total area of _____ acres.

I presently do do not
use a pre-emergence herbicide.

NAME _____ TITLE _____

ESTABLISHMENT _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

**MAIL THIS
COUPON TODAY!
WE PAY
THE POSTAGE!**



FIRST CLASS
PERMIT NO.
723
Indianapolis, Ind.

BUSINESS REPLY CARD

No postage necessary if mailed in the United States

postage will be paid by

ELANCO PRODUCTS COMPANY

P.O. Box 1968

Indianapolis, Indiana 46205

Attn: Dept. E-455

killing such unwanted "weed" trees in central Pennsylvania forests according to Dr. Robert D. Shipman, Pennsylvania State University.

Dr. Shipman described methods and costs for removing undesirable trees. He claimed removal of low-grade "weed" trees will increase the growth and vigor of desirable hardwoods. The most effective herbicide, he said, measured in terms of total defoliation at least cost, was liquid 2,4,5-T plus 2,4-D, he reported. Although pelleted fenuron killed trees equally well as 2,4,5-T (87 percent), the average cost per tree was five times greater with the fenuron. Bromacil pellets and liquid picloram produced 67 and 66 percent kill, respectively.

Pelleted herbicides were applied by hand to the soil surface at the base of each tree. The liquid chemicals were injected directly into the tree bole using a tree injector tool. Herbicides were applied in June, 1968, and were evaluated about three months after treatment.

All four herbicides used in these trials, when applied according to the manufacturer's recommendations leave only slight soil and plant residues. "In fact," Dr. Shipman stated, "they are capable of being 'tailored' to specific soil, water, plant and wildlife situations with negligible contamination in our forests."

Dr. Arthur Bing, Cornell, New York reported on some of the methods he found to be safe and effective for controlling annual weeds in ground cover plantings. Granules of trifluralin (Treflan) raked into the soil before planting Carpet bugle (Ajuga), English Ivy, Japanese spurge (Pachysandra), myrtle (Vinca), and stonecrop (Sedum) gave good control of annual weeds, he said. Treatment after planting with granules of diphenamid plus simazine is also very effective



Panel on pesticide registration policies and trends, left to right, are: Warren C. Shaw, ARS, USDA; Robert E. Hamman, Geigy; Fred H. Dale, Div. Pesticides Registration, Dept. of Interior; L. L. Ramsey, Bureau of Science, Food and Drug Administration; and H. W. Hays, ARS, USDA.

for controlling annual weeds.

Quackgrass Kill

Oscar S. Johnson, Massachusetts County Agent-Manager and Regional Nursery Agent reported that experimental plot work at three nurseries in Massachusetts, controlled quackgrass in certain established plants for one year or more through an application of Dichlobenil (Casoron).

Six pounds per acre of actual ingredient (150 lbs. of 4% granules) applied just prior to freeze up in early winter on the weed stubble, on established nursery stock, gave control. No injury to any of the nursery species tested was observed. Grower applications on large acreages have been equally successful, Johnson said.

Two scientists from the National Marine Water Quality Laboratory, West Kingston, Rhode Island, reported that it is unlikely that sulphate, phosphate or nitrate in seawater normally limit winter blooms of *Skeletonema costatum*, the most abundant unicellular algae of North American coastal and estuarine waters.

Drs. J. C. Prager and R. L. Steele demonstrated that by us-

ing pure laboratory cultures grown in chemically synthetic seawater, these microscopic plants responded to less nitrate and phosphate than is present normally in inshore waters.

The Federal scientists believe that more subtle chemical factors, such as the activity of trace metal ions in seawater, play a more important role in determining whether nuisance algae or species beneficial as food organisms for fisheries will dominate a bay or estuary. Their studies are part of a Federal program to identify and measure chemical factors which govern the abundance and distribution of important plankton species in normal and polluted inshore marine environments.

The West Kingston Laboratory, a newly established Department of Interior—Federal Water Pollution Control Administration research station, is responsible for gathering information which can be used to set water quality criteria for the protection of fish and other aquatic life in the marine environment. The West Kingston Laboratory is staffed by some 40 biologists, chemists, biochemists and technicians.

Drift-Free Spraying

Amchem Products, Inc., Ambler, Pa., has taken a giant step toward total drift prevention by producing a unique helicopter spray boom called the Microfoil.

The new boom, designed to spray uniform droplets with a minimum of hazardous satellites (fines), uses conventional carriers such as water, oil or emulsions of the two. Thickening agents or invert emulsions are not needed. In one case concerning a public utility, straight herbicide concentrate at 3 gallons per acre was used — a far cry from the 15 to 24-gallon per acre applications common today — and resulted in excellent brush kill.

The Microfoil's length can be varied from 10 to 26 feet, accomplished by bolting 3 or 5-foot boom sections together to achieve the desired length. The boom — its nozzles shaped like airfoils — is similar to the wing of an airplane. This design provides a minimum of air turbulence directly behind the nozzles — where the droplets are formed.

Fifty-two 6-inch nozzles are mounted along a 26-foot boom, and 60 hypodermic-like needles protrude from the trailing edge of each nozzle. Therefore, the total number of orifices on a 26-foot boom amounts to no less than 3120. From these openings, the tiny streams of liquid chemicals are emitted. (At the present time, droplets with mass mean diameters of 800 and 1700 microns are produced). Properly trimmed in flight, the Microfoil produces a pattern much like a white sheet.

The manner in which droplets are formed and introduced into an air stream is the key to their



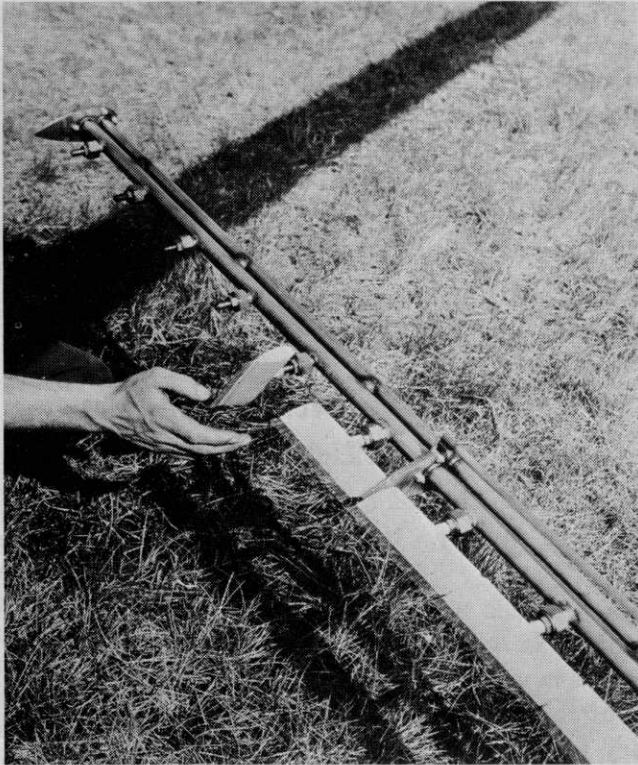
John Kirch, marketing manager, industrial chemicals, Amchem, Ambler, Pa., left, and J. H. Henley, Aerial Agricultural Services, McAlester, Okla., check Microfoil boom at Las Vegas, Nev., demonstration.

uniformity and stability. By keeping liquid pressures low and positioning the nozzles directly into the airstream as the helicopter moves forward, uniform droplets are produced. When droplets in a spray pattern are the same size, their lateral drift per foot of fall in winds of any velocity can be predicted . . . a factor impossible to calculate before the Microfoil. Amchem is confident, therefore, that its new boom offers the pesticide industry its first real opportunity to accurately place aerially applied chemicals on target.

Potentials of the Microfoil are many and varied, according to Amchem. With drift control as

the boom's primary advantage, the need for state and federal restrictions on pesticides could be eliminated. The invention also greatly increases the utility of aircraft, especially the helicopter. Longer flying hours, safer and cleaner flight operations and no need to thicken or invert pesticide carriers have already made the Microfoil popular with spray pilots, says Amchem.

Its potential in the field of brush control is great. On utility, pipeline, railroad and highway rights-of-way the advantages of controlling drift, using conventional carriers and holding volumes down to 10 gallons or less per acre are obvious.



Each microfoil nozzle is six inches long and contains 60 needle-like orifices which protrude from the trailing edge.



Microfoil properly trimmed in flight produces pattern above with appearance of a white sheet. Shot taken at Winter Park, Fla.

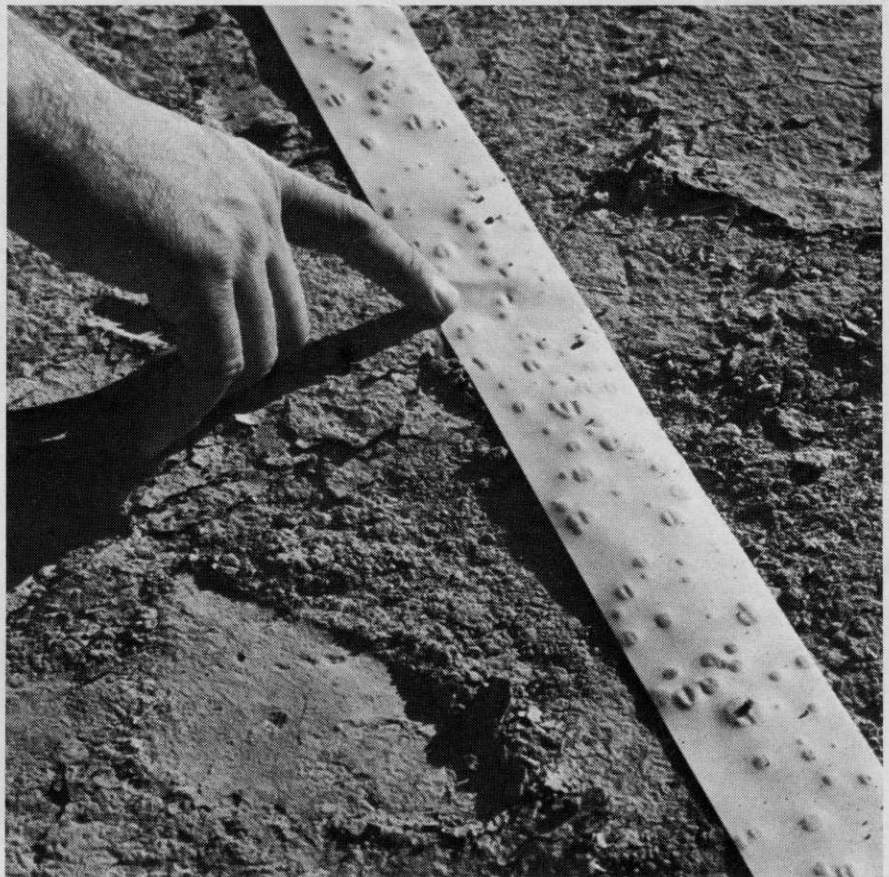
Federal agencies involved in water hyacinth control have reported favorably on the boom's performance. Citrus growers have found the boom to be the best solution to their miles of cattail-infested drainage ditches. By shortening the boom to 10 feet and flying 15 feet above ground, a 12-foot swath of spray was applied directly on the weeds with no deposit outside the ditches, Amchem revealed.

Drainage canals throughout the Mississippi, Missouri and Ohio River Water sheds also offers a tremendous market for the Microfoil. Foresters, too, feel that the helicopter-Microfoil combination has done an outstanding job in conifer release work.

Only a limited amount of work has been done to introduce the boom into the field of pesticide application to crops. This area will, however, be intensively investigated this year, Amchem said. Research into other areas where drift is a problem will also be continued.

The company plans to lease a number of the Microfoil units to qualified aerial applicators during 1969.

Spray droplet pattern from microfoil delivers series of droplets which are nearly uniform in size.



Anti-Pesticide Suit Reaps Need For Double Dieldrin

Court action to prevent the Department of Agriculture from using pesticides to control Japanese beetles in southwestern Michigan has ironically resulted in the present need to treat twice as much land with double the dose of dieldrin that was originally prescribed, according to "The Voice of M.A.N.," the official publication of the Michigan Association of Nurserymen, Inc.

A federal court decision from Grand Rapids last fall denied an injunction against the use of dieldrin but came too late to allow 2800 acres of Japanese beetle-infested Berrien County—one of the nation's largest producers of fruit, vegetables and nursery stock—to be treated with 2½ tons of the granular soil residual insecticide.

This fall, reports "The Voice of M.A.N.," court action started in Wisconsin and transferred to Michigan again failed to produce an injunction, but this time the decision came in time to permit the treatment of 4800 acres with 5 tons of dieldrin.

This doubling of land and insecticide could have been avoided, say department officials, if the lesser amount on the smaller acreage could have been applied last year. Due to lack of control agents, the beetle population in the infested Michigan area grew considerably.

The infested area includes a great deal of brushland as well as residential properties in wooded terrain. Control of the infestation was necessary to prevent the beetles from spreading to adjoining agricultural lands. Aerial spraying covered over 4200 acres

of infested land, while more than 500 acres were treated by hand.

Opposition to the spraying by an out-of-state group stemmed from the fear of endangering wildlife and adding to the contamination of Lake Michigan. The dieldrin treatment was finally approved, however, because it was the only way to effectively control the destructive beetles.

Van Wormer Gives Tips On Lightning Protection

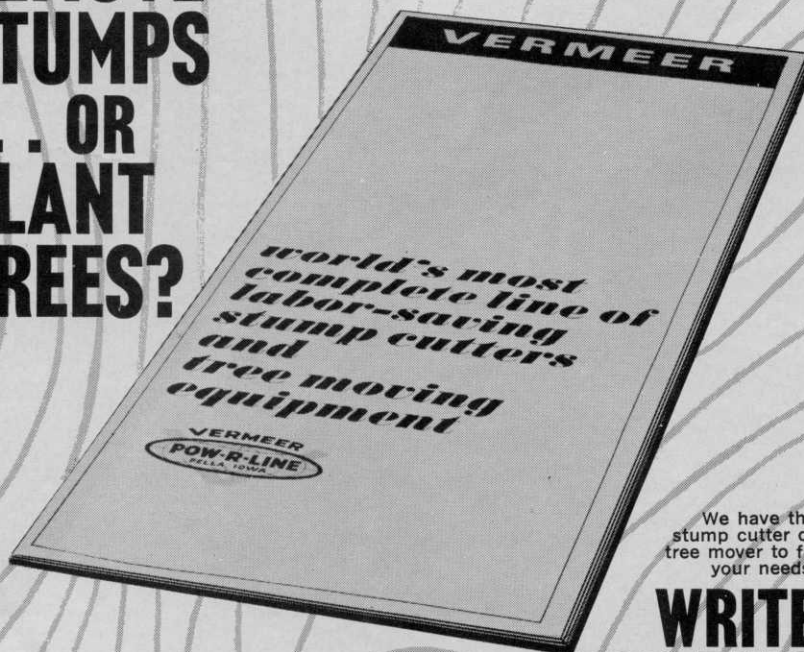
Concern regarding the importance of lightning rods to trees and the potential danger of underground wires leading from homes to driveway lamp posts has been voiced by H. M. Van Wormer of the Van Wormer Tree Service Co., Richmond, Va.

Van Wormer reports that lightning seems to follow a well-defined pattern. One seldom-mentioned occurrence, he says, is the tree-to-lamp post-to-underground wiring cycle. Any tree that is at least 40 feet tall and within 50 feet of a lamp post should be rodded, he believes.

He cites five cases in one summer alone in which lightning, after striking a tree, jumped the distance to the light fixture and then entered the underground wiring system, burning out a good deal of the house wiring. A strike last summer, he reveals, involved lightning that struck a pine growing close to a house. After damaging 20 feet of the pine's top, it jumped over the house and traveled down one of a cluster of oaks. Several of these trees, connected by plastic clothes lines, were damaged. From there the lightning went into the inside wiring of the garage.

"On a recent restoration job," Van Wormer reports, "I made a survey of the trees that had been struck along a driveway one mile long, or two miles of trees. Evidence of strikes was

WANT TO REMOVE STUMPS ... OR PLANT TREES?



We have the
stump cutter or
tree mover to fit
your needs.

WRITE FOR THIS FOLDER



VERMEER MFG. CO.
7202 W. Washington, Pella, Iowa 50219

For More Details Circle (111) on Reply Card

found in 17 trees. Over the estate, 29 trees were wired for protection; yet, where the power line, coming from the rear meadows went underground, a large walnut, 100 feet beyond the pole, was severely damaged. This was in a hollow and was the continuation of the built-up charge going straight beyond the last pole."

John Bean Puts Out New Sprayer-Duster Catalog

Eleven small power sprayers and thirteen models of hand sprayers and dusters are illustrated and described in a new 8-page catalog available from John Bean Division, FMC Corporation.

The small compressed air sprayers and dusters are offered in popular sizes and capacities for a wide range of home or nursery application tasks, says John Bean. The brochure also features the division's new Viking 20-gallon economy sprayer that delivers 1½ g.p.m. at up to 200 lbs. pressure.

Write for Brochure S-04, John Bean Div., 516 Dearborn St., Tipton, Ind. 46072.

Oak Wilt Control Looks Promising, Says Nair

University of Wisconsin plant pathologist V. M. G. Nair recently revealed that a well-known weed chemical looks promising as a control of oak wilt — a fungus disease that kills forest and ornamental oaks by causing water vessels to plug.

Nair's technique involves injecting an oak with TCPA — a "growth regulator" that changes the type of wood cells — before the tree has been infested with the wilt fungus. Use of herbicides rather than fungicides to control plant diseases is a fairly new concept.

Oaks treated with TCPA don't develop normal xylem or water-

conducting vessels; instead other cells are formed and take over the water transport in the tree. Treated oaks, having no water vessels to become plugged, are not affected by the fungus, says Nair.

The treatment, he explains, does not stop the wilt fungus from entering the tree but restricts its spread and prevents a lethal response by the tree. The oak lays down new sapwood, which buries the fungus and isolates it in the tree.

Cytokinins have also prevented disease development in infected oaks, according to Nair. In this case, he explains, systemic trunk infections arrest the plugging of water-conducting vessels; therefore, water transport continues through the infected tree, and it is able to survive the disease.

New Seed Packaging Plant

Pacific Supply Cooperative has opened a new grass seed packaging plant in Tangent, Ore., that will mix and package several million pounds of seed annually. Fenn Emerson, manager of the operation, estimates that 98 percent of the packaging will involve seed for lawn grass. The new facility will serve growers of the Willamette Valley in particular, Pacific Northwest people in general.

Britain Has New Seeder

A mobile tanker unit developed by Colman and Co. (Industrial) of Sudbury, Suffolk, England, quickly and efficiently seeds land along highways. Inside the tanks, which hold from 700 to 2000 gallons the water/seed mixture is constantly agitated to ensure even coverage, according to the company. Although the unit is normally supplied as a trailer, it can also be built as a self-propelled spraying unit.

Find out how little it really costs for quality saw chain



ASK YOUR DEALER FOR

SABRE

when you replace saw chain!

THE PROFESSIONAL-QUALITY CHAIN!
SABRE is the chain that gives you true economy—it costs you less when you buy it, and gives you long life on the job. It is a tough, precision-made saw chain for all popular saws. Sabre is the *only* saw chain with a no-time-limit warranty.

SABRE

the saw chain people



SABRE SAW CHAIN, INC.,
840 SENECA ST.,
LEWISTON, N.Y. 14092

Write Dept. P for complete literature about Sabre Saw Chain and accessories for your saw.

For More Details Circle (107) on Reply Card

KEEP
AMERICA
BEAUTIFUL



"The Pioneer in Foliar Feeding"

Honored by American Horticultural Council "for demonstrating in a practical way that plants could be fertilized through their leaves; for being the first to develop and market an effective plant food for foliar feeding; and for opening the way to a new cultural practice in horticulture."

RAPID-GRO



Key speakers at Turf Conference educational sessions were Dr. Ray A. Keen, Kansas State University, Manhattan, left, and Dale Kern, president, Seed Technology, Inc., Marysville, Ohio.

◆ New officers for 1969 are: Robert Rieman, Ohio Line Co., Woodville, O., president, seated; and left to right, standing, Gene Probasco, Lakeshore Dist. Co., Columbus, O., treasurer; Charles Tadge, Mayfield Country Club, South Euclid, O., past president; and Richard Craig, Chemargo Country Club, Cincinnati, O., 1st vice-president.

Ohio Turf Foundation Sponsors

2nd Annual Turf Conference

Ohio's Turfgrass Foundation staged its second annual show and conference in early December. Though it is a state event, it has been developed to serve the industry on a national basis. The initial show last year brought in 870 participants from across the country. Attendance was up this year to 950 despite the flu epidemic at the time.

Robert W. Miller, Ohio State University agronomist and executive-secretary for the group, reports that the golf course superintendents, sod producers, landscape contractors, nurserymen, turf specialists and others attending represented 22 states and Canada.

The conference is jointly sponsored by the University, its experiment station, and the Foundation. The 22 speakers were from industries and university research departments in Ohio, Pennsylvania, Michigan, Virgin-

ia, Illinois, Indiana, Wisconsin, Kansas, and Minnesota. Extra booth space was made available this year and 124 exhibit booths filled. Last year some would-be exhibitors failed to get space since only 100 were available.

Six Ohio State University turf majors all from Ohio were awarded scholarships by the Foundation as follows: F. Alan Garten, Cincinnati; Michael J. Nicora, Youngstown; Thomas A. Urbansky, Wellington; Tommy

Visiting during Conference session are: Dr. William H. Daniel, Purdue University, left, and Dr. J. R. Watson, Toro, Minneapolis, Minn.

