

planting seasons according to the theme adopted for the time. In 1961, we featured athletics, with the idea that the home gardener could take advantage of the grass chosen by the professionals and by their methods. The Long Island Garden Show was still being sodded with Merion in every garden.

#### Television Promotion Began

In 1962, a new television project was inaugurated—to augment the successful radio promotion. This took the form of a script and illustrative material for the program director to employ with ease; a similar technique continues with variations that have had film and color slides for illustration to take advantage of the increased number of color TV sets. Summarizing the years of promotion, the "Merion Motivation" brochure was issued for trade distribution. A larger fall budget was again adopted.

The next year we found it necessary to change recommendations in cultural practices. "The Greatest of the Grasses" was again revised after checking the changes with turf experts in different parts of the country. That was the year when the White House lawn was sodded and we had some extraordinary publicity coverage. The Mets Shea Stadium adopted Merion—a good grass, but a poor club then. Model home promotions were instituted by Jacobson Mfg. Co. and we cooperated in the project.

#### Famous Lawns Covered

In 1964 an acme of publicity was reached — *LIFE* Magazine had a spread on the White House lawn and quoted the White House gardener on his practices with Merion. As you can imagine, this was well merchandised. Then the New York World's Fair adopted the grass as the grass of the Fair; this became the theme of our activities. In fact, we did a radio broadcast right from the grounds, and the Fair scenes were featured in the television offering. Up to this point, activities were centered on the promotion of seed; a change in policy is now beginning to include sod. Assistance was given to the development of the first sod farm literature, and sod was being mentioned along with seed for model home promotions and other projects.

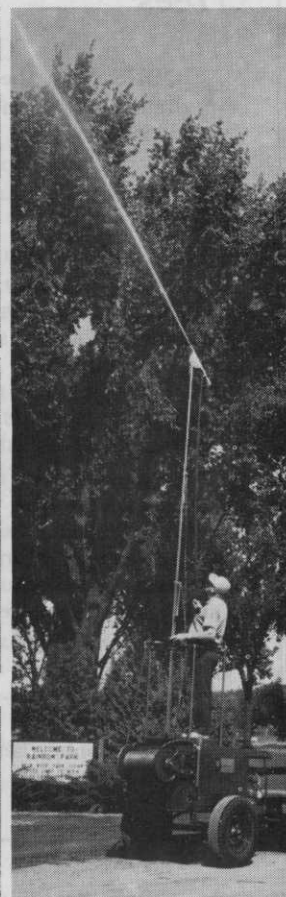
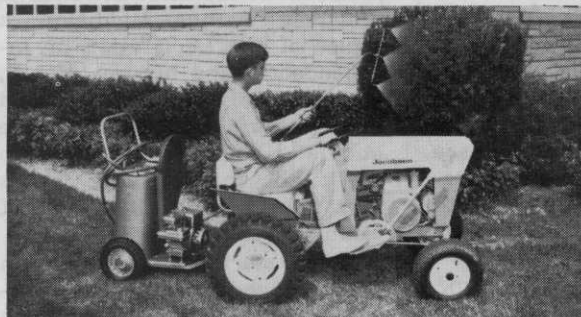
We have now come to 1965, the second year of the fair. Miss Merion Bluegrass, the hydroplane, was named and became a part of the promotion. A quiz kit was produced for clubs and schools including

slides, a recording, script and booklet material. Eleven years have passed in this chronicle during which time there had not been a noticeable increase in production. Suddenly this prima donna of a grass produced a heavier crop. We always operate on the money raised from the previous year, and careful appraisal had to be given to the program. The budget also had to include sodding promotion. The first booklet was then produced on Merion Bluegrass sod after consultation not only with turf experts, but also

with sod experts. This was a mammoth job—to coordinate all of the regional differences in opinion and performance.

#### Sod Boom and Seed Quality

In 1966, the editorial material now pertains to seed and sod. New advertising mats on sod were offered to the trade. There was a most spectacular increase in crop production. This was also the year of the drought, and when it was discovered that Merion was so drought resist-



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## Nursery Plants Acorns From Famous Trees



**A** CORNS from the famous Middleton Oak are being cultivated in a Texas nursery. The progeny will be sold under the registered trademark, "Heritage Oak."

On a visit to Charleston, S. C., last spring, nursery owner Wash Storm, Jr., and his wife visited Middleton Place to see the stately tree—a landmark in America's oldest landscaped gardens—estimated to be near its 1,000th birthday by the Charleston Museum.

"We read a description of the Middleton Oak and wanted to see it. We've been interested in selecting acorns from trees with historical significance for some time," the Storms explained.

Among the approximately 150,000 trees growing on their tree farm, there are off-spring of the Davy Crockett tree at the Alamo in San Antonio, Tex.; the Goose Island Oak, Goose Island State

Park, Texas, and "Oak Alley" in Vachery, La.

Historically, the Middleton Oak can hold its own. It was an Indian Trail Tree long before Columbus discovered America. In later centuries, it gave shade to successive generations of the Middleton family and their guests—including Henry Middleton, president of the First Continental Congress; Arthur Middleton, a signer of the Declaration of Independence; and his son, Henry, a governor of South Carolina and Ambassador to Russia. Since Middleton Place was opened to the public in the 1930s, it has been admired by thousands of visitors each year.

Storm started his nursery in 1938, suspending operations during World War II. He served in the Air Force for 4 years. In 1969 he sold more than 12,000 trees primarily to nurseries and landscapers. Orders for 1970 are even

greater with one shipment earmarked for the LBJ Library at the University of Texas. Other famous buyers are Disney World in Orlando, Fla., Six Flags Over Texas and the Texas Governor's Mansion in Austin.

Since opening the nursery, Storm has experimented with methods to produce fast-growing oaks. He relies on careful selection rather than hybridizing methods. He raises several varieties of oak as well as other trees and shrubs, but his concentration is on the live oak.

Discussing the growth potential of the live oak, Storm estimates that a fledgling with a trunk measuring one and one half inches in diameter may—within a decade—grow to a height of 15 to 20 feet and have a diameter measuring eight to 10 inches, but "only if the tree is properly planted and cared for."

An example of Storm's success with live oaks stands in the yard of Mr. and Mrs. Walter Carroll of Premont, Tex. Storm planted the tree in 1941. Today it has a circumference of almost seven feet near the base and a trunk diameter of nearly 28 inches.

The Middleton Oak acorns, he reports, are doing very well at this stage of their growth. Another shipment, gathered by high school students, will soon go into the fertile Texas earth. Some of the acorns are planted in fields, the others in four-inch pots. The young trees will be sold to beautify landscapes hundred of miles from their Ashley River home.

ant, this theme was played up.

The following year, going back to our authorities, it was confirmed that Merion was still the No. 1 grass. More new grasses were appearing on the market, and we needed this research information to carry on an effective campaign. Merion became the grass of Expo '67 in Montreal, as it had been at other fairs. The sod boom was on, more and more stadiums were installing Merion sod, and our TV featurette played up sod in color. Our boat "Miss Merion Bluegrass" had its play when it won the Orange Bowl Regatta and was seen on network television.

As a result of the research of the previous year, the booklet "Merion Still First" was conceived and widely distributed. Our members and

growers needed pepping up and the Merion seal program was adopted. Foreign seed was coming in that contained poa annua; it became necessary to call attention to the superiority of Northwest-grown seed in various ways, including carrying the message to golf course architects. Color slides were used for the first time in the television featurettes.

In 1969, special mailings were directed to the sod growers. A second sodding booklet going into aspects of maintenance became necessary, due to the large amount of mail on that subject. Competition was increasing from other new grasses; a study was begun on the best mixtures with Merion and these new grasses. Our crop this year had returned to a lower figure; but the

all-time sales figure of a disappearance of more than five million pounds had been achieved. The spring theme became a tie-in with National Lawn & Garden Week, a promotion instituted by the U. S. Department of Agriculture.

And now we are approaching the present. Before this, competition had been with other natural grasses. Suddenly the Houston Astrodome and artificial turf came into the news. As a public service, the Association has just published a booklet on the advantages and disadvantages of artificial turf and real grass; copies are available.

The complicated subject of regional adaptation of mixtures is still before us. But one thing is certain, "Merion is Still First."

industry people  
on the move



**KOHLER COMPANY**, Kohler, Wis., has named E. L. Fisher to the newly created position of director, engine and electric plant service. Three promotions are: Lowell R. Johnson to service manager, engines; Edward W. Dumann to service manager, electric plants, and Frank L. McNamara to manager, technical publications.

\* \* \*

**RONALD W. FREAM** has joined the firm of Robert Muir Graves, golf course architect at Lafayette, Calif.

\* \* \*

**DR. ALVIN L. KENWORTHY**, Michigan State University professor of horticulture is the 34th president of the American Society of Horticultural Science.

\* \* \*

**HERBERT F. HORNER** has been named chief engineer for Ryan Equipment Co., Minneapolis.

\* \* \*

**GENE ROBERTS** of Dallas, Tex., is a new district sales manager for the municipal sales division of Wayne Manufacturing Co., Pomona, Calif.

\* \* \*

**T. A. BAER** has been elected vice-president for field supervision for The Davey Tree Expert Company, Kent, Ohio.

\* \* \*

**MATT DEES** is the new branch manager of the San Antonio, Tex., sales office of Thompson-Hayward Chemical Co., Kansas City, Kans.

\* \* \*

**DR. B. LAMAR LEE** has been named staff scientist, entomology, for the insecticides, miticides, nematocides unit of the plant health research unit of TUCO, Division of The Upjohn Company.

\* \* \*

**PHILIP L. AYERS** has been promoted from western district manager to field sales manager, nationwide, for Root-Lowell Corporation, Lowell, Mich.

\* \* \*

**GLENN ROBE** has been appointed to the new position of chief engineer, test and development, by Jacobson Manufacturing Co.

\* \* \*

**WINFIELD TUCKER** of Slocum, R.I., is the new president of the New England Sod Producers Association.

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Cal-Turf Trials Show

## WHAT A MOWER NEEDS TO CUT HYBRID BERMUDA



AS THE SOD PRODUCTION industry matures, more growers are taking a look at how their product is performing and how it is being cared for after it leaves the farm. The reason is clear; no matter the cause, if the purchaser is unhappy with the grass, the word gets around. And that's how bad images and declining sales can get started.

Some growers are issuing fertilizing and watering instructions, weed and disease control information, and mowing frequency tips.

On the subject of mowing, Cal-Turf of Camarillo, Calif., probably has conducted the most extensive test program so far to indirectly support the sales effort of one of its turf products.

Total lawn acreage of hybrid bermudagrass is on the increase, including home lawns. A major difficulty that has cropped up with these dense grasses is the extreme difficulty encountered in mowing them properly with the presently available home lawn mowers.

Cal-Turf, working with California Polytechnic Institute at Pomona, undertook a study of home lawn mowers being used on hybrid bermudagrass. The objective was to investigate factors that would enable the homeowner to groom his lawn

with success and without having to purchase extremely expensive equipment.

Following is a summary of the mowing trials Cal-Turf conducted. Copies of the entire study are available by special request from Cal-Turf, 5417 Santa Clara, Camarillo, Calif. 93010. Phone 805/485-6757.

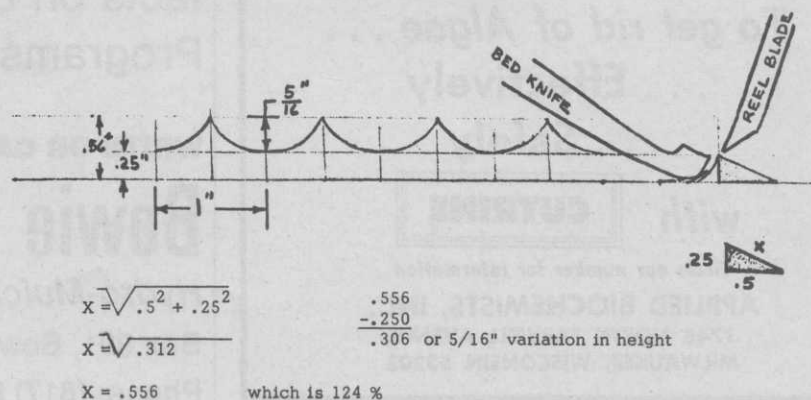
### Types of Mowers

Presently, the three basic types of mowers available to the homeowner at relatively reasonable costs are the rotary, rear discharge reel, and front-throw reel.

The rotary mowers use a high velocity whipping action for mow-

ing, which tears the grass blade rather than cutting it cleanly. For an effective mowing action, the grass blades should be vertical—the bermudagrass blades and stems are not. Field experience over the years indicates rotaries can't be expected to mow the bermudas in an adequate manner.

Reel mowers utilize a clipping or scissors action in mowing the grass, and the low travel of the bedknife allows the clipping of many semi-horizontal stems and blades found in the bermudas. The rear discharge reel mowers are designed with two wheels forward and a roller to the rear with the bedknife under the



forward set of wheels. The grass catcher is suspended behind the rear roller; when clippings fill the catcher, weight is removed from the bedknife, which encourages flotation over the tough bermuda turf.

Front-throw reel mowers have four to eight wheels or rollers which allow for even and constant weight distribution on the turf. These mowers are generally sturdy and relatively heavy, permitting a more even forward movement of the bedknife. Wide experience indicates this type of reel mower has the best potential for properly mowing hybrid bermudagrass turf.

#### Organization of Trials

Cal-Turf obtained on loan from four manufacturers a total of eight front-throw, homeowner mowers. Three varieties of hybrid bermudagrass turf were sodded into an area at Cal-Poly in Pomona. The area was sanded, leveled and eight mowing strips were set up in such a way that each mower had its own strip and each strip cut across Tifdwarf, Tifgreen and Tifway, under identical conditions.

The mowing trials were headed up by Dan Neff, a senior student at Cal-Poly. Neff performed the weekly mowings himself, and compiled the data. Most of the statistical evaluations, as well as concepts in testing, stemmed from Tobias Grether, president of Cal-Turf.

Constants of the eight mowers included: (1) All were front-throw reel types, readily available to homeowners; (2) The bedknife was set to touch the floor when the mower was positioned on a level concrete surface. (3) All mowers were brand new and were well maintained throughout the trials.

Variable factors between the eight mowers included: (1) Weight of mower at the bedknife; (2) Bedknife design; (3) Clip rate (fre-

quency of cut); (4) Number of blades in the reel; (5) Engine horsepower; and (6) Form of power transmission.

#### Clip Rate and Turf Ribbing

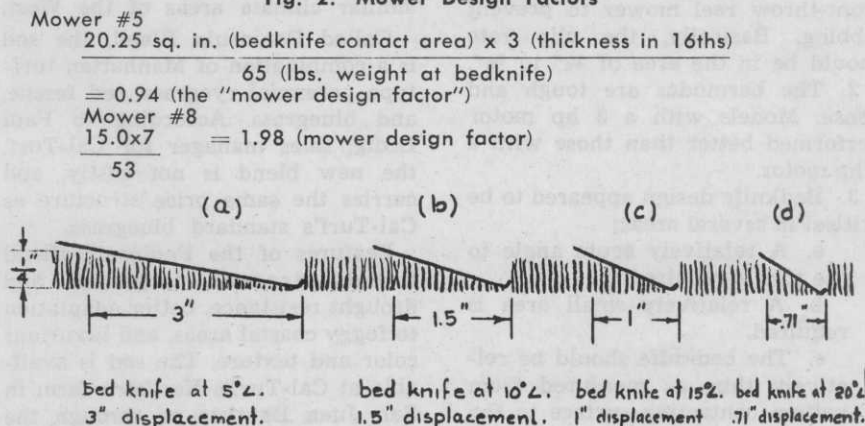
The hybrid bermudagrasses must be maintained a low mowing heights (1/2-inch or less) for best appearance and performance. Under many maintenance situations, they show a ribbing or marcelling that somewhat detracts from the turf appearance. This ribbing stems from the relationships between cutting height and frequency of cut, or "clip rate." When the clip rate is greater than the cutting height, ribbing occurs; if the clip rate is equal to or somewhat less than the cutting height, a smoothly mowed surface may be achieved. Fig. 1 shows a mower with a one-inch clip rate (quite common), mowing at one-half inch height (as demanded by the bermudas), and causing a 124% variation in mowing height of individual blades, or severe ribbing.

#### Mower Design Factors

After several weeks of observation of the trials and study of the individual mowers in the trials, a "mower design factor" was computed mathematically. It is calculated as the area of bedknife contact at 1/4" cutting height, times the bedknife thickness expressed in 1/16-inch increments, divided by the mower weight at the bedknife. These appear to be critical factors in successful mowing of the dense bermudas. Fig. 2 shows two examples.

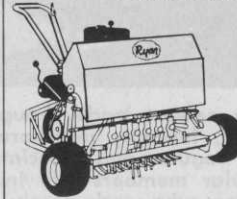
In theory, the best mowing job would be done with the mower having the lowest mower design factor, other things being equal. This would include the weight per square inch of bedknife to press into the

Fig. 2. Mower Design Factors



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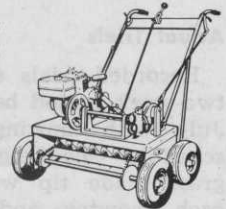
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The golf industry's newest trade group, the Golf Course Builders of America, formally incorporated in November. Directors approved regular and associate classifications of memberships. Regular members will include general golf contractors and others who work closely with them, such as irrigation specialists, fumigators, and turf contractors. Associate memberships are available to the suppliers in golf course construction. Associate members will be entitled to three voting members on the nine-member board; and each will have a one-third vote at general membership meetings. Officers who gathered at the National Press Club for the

special meeting in November are from the left: James J. Kirchdorfer, Kirchdorfer Irrigation, Louisville, Ky.; Vice-President Robert Vincent, Jr., Robert Vincent Co., Benton, Pa.; Richard W. D. Jewett, Jr., Hyper-Humus Co., Newton, N.J.; Executive Director Harry J. Lambeth, Washington, D.C.; President David Canavan, Moore Golf, Culpeper, Va.; Secretary-Treasurer J. James Shipe, Turf Industries, Bel Air, Md.; Robert E. Chakales, Chakales & Associates, Richmond, Va.; Floyd F. Hendrix, Hendrix and Dail, Greenville, N.C.; and Parker Shirling, Princeton Turf Farms, Centreville, Md.

heavy and stiff bermuda stems and help prevent thatch buildup from mower flotation. The angle of the bedknife to the turf is critical, as a sharper angle would decrease the bedknife contact area. Fig. 3 illustrates.

#### Actual Trials

Recorded trials extended over a two-week period beginning in mid-July with mowing on a weekly schedule. The height from soil to grass blade tip was measured at each mowing and a cushion or thatch measurement was made at the close of the trials. An increase in the height measurement indicated inability of the mower to maintain the low level desired which, in turn, would allow thatch to build up. The thatch or cushion accumulation was measured by stacking one-inch steel cubes on a spindle and measuring the depression in the turf as each pair of additional cubes was added to the stack. Heavily cushioned turf will resist penetration of the bedknife to a high degree, thus, this measurement was critical in evaluating actual mower performance in reducing or preventing thatch buildup.

Data from the field trials showed that the least cushion buildup occurred in the strip mowed with the mower having the lowest "mower design factor." Both the height and the cushion depression measure-

ments bore out the mathematically computed notions of mower design and construction. Visual observations of color, scalping and overall appearance showed severe scalping on this strip the first few weeks of the trials, but, upon recovery, the visual ratings were consistently high. It might be well to point out that the trials were not an attempt to pit one machine against another, but rather to discover some of the essential elements in a front-throw mower adapted to mowing hybrid bermudas under a home lawn situation.

#### Conclusions

1. For mowing the hybrid bermudas, it is essential that a high speed reel or more than the traditional five blades be used in the front-throw reel mower to prevent ribbing. Basically, the clip rate should be in the area of  $\frac{1}{4}$ " to  $\frac{3}{8}$ ".

2. The bermudas are tough and dense. Models with a 3 hp motor performed better than those with a 2 hp motor.

3. Bedknife design appeared to be critical in several areas;

a. A relatively acute angle to the turf is required.

b. A relatively small area is required.

c. The bedknife should be relatively thin, as measured from bottom contacting surface to the actual cutting edge.

d. As the area of the bedknife increases, the downward weight on the bedknife must also increase.

4. The mower should be dependable, well-constructed and easy to start.

5. It would be hoped that relatively minor modifications in mower design and construction would not put the final product beyond the financial reach of the average homeowner.

## Cal-Turf Announces New Sod Blend

A new sod blend has been developed by Cal-Turf, Inc., specifically for use in Northern California and similar climate areas of the West.

Called Peninsula Blend, the sod is a combination of Manhattan turf-type perennial ryegrass, red fescue, and bluegrass. According to Paul Ledig, sales manager for Cal-Turf, the new blend is not costly, and carries the same price structure as Cal-Turf's standard bluegrass.

Features of the Peninsula Blend include greater toughness and drought resistance, better adaptation to foggy coastal areas, and luxurious color and texture. The sod is available at Cal-Turf's Northern farm in San Juan Bautista or through the Cal-Turf lawn center in San Jose.

# Biological Control of Thatch Under Study in Connecticut

Is biological control of thatch to improve the health of lawns and golf greens possible?

The search for the answer to this question is being made by Dr. Jay S. Koths, an associate professor in the Department of Plant Science at the University of Connecticut.

This research was initiated by him in the summer of 1969 with the aid of an \$8,800 grant from the Connecticut Research Commission. It is being continued for the next two years under an \$8,000 grant from the Green Section of the U.S. Golf Association.

Thatch is normally degraded by its microbial inhabitants. The problem of thatch occurs when rotting of dead plant parts does not occur rapidly enough. It is important to maintain an ecological balance between the addition of grass parts and degradation by the microbes.

The thatch layer may impede water penetration so that the turf may dry out, causing browning. An application of fertilizer may remain on top of the thatch and be of no use to the grass. Finally, if the grass dies, reseeding will be difficult because the seeds do not germinate readily.

To investigate the processes causing this degradation, a description of the microbes living in thatch is being undertaken by Dr. Koths. He is hoping that knowledge of the role of these inhabitants will lead to the manipulation of conditions within the thatch that will enhance degradation.

To sharply change the activity of thatch-degrading microbes, Dr. Koths made some tests involving radical changes in the environment. Covering the turf with a closed polyethylene greenhouse was found to be too severe. Applying sugar solution in a mist increased microbial counts but did not hasten thatch disappearance. Fertilizer applied in the mist improved grass growth but did not speed thatch degradation.

Attempts by Dr. Koths to establish thatch decomposers in turf were partially successful. Efficient thatch-rotting organisms were isolated and grown in the laboratory. Introduced to turf, they became established and could be reisolated. But this approach will not be pursued because the thatch did not disappear faster.

The thickness of the thatch cycle varies in the season of the year. Dr. Koths found that the minimum depth occurred in late August, when the effects of the high temperatures on microbial activity resulted in a maximum thatch degradation. From this, it might be concluded that treatments should be directed toward this mid-summer period to achieve maximum control of thatch with microbes.

Dr. Koths said that the most effective treatment to control thatch thus far is top dressing the turf with soil mixtures. Golf course superintendents sometimes spread a mixture of sterilized loam, peat and sand lightly over the greens to control thatch. "It would appear," Dr. Koths says, "that replacing these partially sterile mixtures with a compost containing thatch—collected from golf greens and fairways and lawns—would contain microbes more adept at rotting thatch."

In this continuing study, being undertaken as part of the research program in the Storrs Agricultural Experiment Station, Dr. Koths is concentrating on differences in thatch-degrading microbes found in composts prepared in various ways. From these efforts, he hopes to find a more efficient method for biological control of thatch in turf.

## Chlordane Booklet Available From Velsicol Chemical Corp.

A booklet containing years of in-depth study and experience regarding chlordane insect control chemical is available from Velsicol Chemical Corporation. It's designed to give readers a more complete understanding of the critical issues concerning all pesticides. The booklet gives data and references that do not support a conclusion that its registered uses have a deleterious effect on the environment or any facet of human health. To the contrary, such uses are shown to be safe and beneficial. Booklets concerning heptachlor and endrin, two other Velsicol insecticides, will be available in the near future. To get free copies of the chlordane booklet, circle 719 on the reply card.

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**Diamond Shamrock Chemical Company**

# North Central Weed Control Conference Report

## PESTICIDES & WILDLIFE

## ALGAE & WATER

**C**HEMICAL PESTICIDES are very necessary tools man needs to manage the environment, and wildlife is not vanishing because of their use, an ecologist told scientists attending the North Central Weed Control Conference in December.

Dr. Donald A. Spencer of the National Agricultural Chemicals Association and conference keynoter said the U.S. is producing more game animals on fewer acres than at any time in the past.

While a few species have disappeared in the past 50 years, he said that disappearance of endangered species, threatened by civilization and habitat changes, has been slowed.

According to Spencer, wise use of herbicides to change plant cover can benefit both man and game animals. Herbicides can be used, for example, to create wildlife habitat by opening up intensive plant growth on rangeland and arresting the closing in of natural forest regeneration in game management areas.

"Despite the mishaps and the adjustments in dosages and methods of application that have become necessary as unwanted side effects became apparent, the overall effect of their use has been one of benefit," said Spencer. "Wildlife in general and game in particular have maintained, and in many cases increased, their populations where pesticides are one of the land management tools."

Operation of fish hatcheries and fish and shellfish culture, he continued, would be difficult, if not impossible, without herbicides and algicides, which serve as the "plow" in water resources.

### Water Quality Standards by '73

Another general session speaker said water quality criteria would be developed within two years to comply with the Federal Water Pollution Control Act of 1970.

Quentin H. Pickering of the Federal Water Quality Environmental Protection Agency said the criteria would indicate the effects on health and welfare that could be expected from the presence of pollutants.

"Water quality criteria for aquatic life can best be determined on the

basis of continuous-flow, chronic toxicity studies," he said. "Exposure should be for at least one generation and mortality, growth and reproduction parameters should be studied."

### Knake Elected President

Some 400 persons attended this 25th weed control conference, Dec. 8-10 at Lexington, Ky. Dr. Ellery Knake, agronomy department, University of Illinois, was elected president. Second vice-president is Dr. Jim Williams Extension agronomist at Purdue University. William Meggitt, professor of soil and crop science, Michigan State University, was named second vice-president. The new editor of NCWC is Larry Mitich, Extension agronomist at North Dakota State University. M. K. McCarty, agronomist from the University of Nebraska, remains secretary-treasurer.

Next year's conference will be Dec. 7-9 in Hotel Muehlebach Kansas City, Mo.

### Algae Control Results

Three speakers discussed results of recent tests on algae control methods.

Copper sulfate is an effective control material, said Robert G. Hiltibran of the Illinois Natural History Survey, but two safer forms of copper are Cutrine, a liquid formulation, and Algaacidex, a powder. Both are less toxic to fish than copper sulfate, he said. In his research report, Hiltibran cited these results:

- A mixture of equal volumes of diquat and a liquid copper sulfate solution containing 8.5% of copper as copper triethanolamine complex eliminated curlyleaf pondweed in a 5,000 sq. ft. test area. The rate of diquat cation was 0.25 ppmw, half the usual suggested rate for diquat for curlyleaf pondweed.

- Di (N, N dimethylalkylamine) salt of endothall and Mono (N, N dimethylalkylamine) salt of endothall at a rate of 0.5 ppmw (endothall content) eliminated curlyleaf pondweed.

- Two pounds of 80% WP, diuron were applied to 2.6-acre body of water containing 9 acre feet of water for the control of filamentous algae. The algae were completely

eliminated and the leafy pondweed was reduced to an extent that further weed control was not necessary in 1970.

- One-half pound of 80% WP diuron, applied in July to a 0.7-acre pond with about 4.3 acre feet of water eliminated duckweed.

Walter Weber of the Indiana Farm Bureau Cooperative Association, Inc., gave a preliminary report on a 10-county algae control test in his state.

Hydrothol-47, a granular formulation, was selected because it would contact the filamentous algae during application and then the herbicide would be released as the granules settled on the bottom. The biodegradable material is relatively safe to fish and is registered with USDA for algae control, he said.

The treatment was 17.5 pounds of Di (N, N dimethylalkylamine) salt of endothall (100 pounds Hydrothol-47) per surface acre.

Except for a few fingerlings in one pond, no largemouth bass, bluegills or yellow bullhead catfish were killed, he reported.

Dennis L. Vedder of Marine Biochemists, Inc., Waukesha, Wis., using a striking example, spoke of the advantages of using Cutrine over copper sulfate for the control of planktonic algae.

Between 1958 and 1968, 254-acre Lake Delton in Wisconsin was treated with a yearly average of 1,115 lbs. of copper sulfate pentahydrate, including 284 lbs. of metallic copper, and applied at an average spraying time of 5.7 hours. For the years 1969 and 1970, Vedder said, the average treatment with Cutrine was 82 pounds, including 62.7 lbs. of metallic copper, in 2.5 hours of spraying time.

Similar results were obtained, he said, on 2,072-acre Lake Delavan.

### Hyvar XL for Brush Control

Hyvar XL at the ratio of 2 gals. per 100 gals. of water is an effective basal stem application to control a broad range of tree species, reported C. B. Harris, Jr. of DuPont Company.

Applications up 16 inches on saplings from two to four inches in diameter were successful on species such as wild cherry, red maple, elm, sassafras, walnut, redbud, ash, mulberry, dogwood, willow, cottonwood, poison ivy, hickory, among others, he said.

Soil type and season did not alter effectiveness, he continued. For spraying at temperatures below 32 degrees, Harris said 6 gals. of methanol were added to the solution.



## USDA Asks for Comments On Uses of Mercury

The U.S. Department of Agriculture has asked for views on the importance of uses of mercury pesticides in order to determine essential uses as distinct from other less vital uses which might be withdrawn to minimize hazard to the environment.

Although this action was initiated by USDA, evaluation of the comments received and final determination of which uses should be retained and which uses should be withdrawn will be made by the Environmental Protection Agency. Authority for registration of pesticide products under the Federal Insecticide, Fungicide, and Rodenticide Act was transferred from the Agricultural Department to the new environmental agency on Dec. 2.

Mercury use in pesticides in 1959 declined 10% from the record high of 1968. More than 986,000 pounds or slightly over 16% of the total U.S. mercury consumption was used for pesticides manufacture. Current information on levels of mercury in the environment led to the cancellation by USDA of certain registered mercurial pesticide uses as seed treatment, as algacides or slimicides, and in commercial laundries earlier this year.

Areas of particular concern include uses of mercury on ornamental shrubs, trees and turf.

Written data, views, or arguments regarding the proposed cancellation should be submitted in triplicate to: Director, Pesticides Regulation Division, Environmental Protection Agency, Washington, D.C. 20250.

All submissions must be made no later than 60 days after publication in the Federal Register (Dec. 3). All written submissions will be made available for public inspection.

## Dairy Mulch for Turf Works Like Hair Restorer

You can't grow grass on that piece of hard ground out back? Call your nearest dairyman.

This may not be as far-fetched as it sounds, say Ventura County, California farm advisers Richard Baldwin and Ervin Bramhall.

Turf expert Baldwin and dairy expert Bramhall have found that washed dairy manure worked like a "miracle hair restorer" in at least one instance.

Groundkeepers at Olivas Golf

Course, Ventura, were having a lot of trouble with bald spots caused by excess salinity. Almost as soon as they spread grass seed, the seedlings would curl up and die.

Bramhall and Baldwin decided to try washed-and-dried dairy manure as a mulch. They suspected that salt was killing the grass. Since fluffy manure mulch has had most of the salts washed out of it, they figured it might help the grass grow.

They seeded the saltiest spots they could find. Then they arranged for several truckloads of dairy mulch to be delivered from the Chase Brothers dairy at Oxnard.

They spread the mulch at three rates of thickness: 3/16, 3/8, and 3/4 of an inch. They left one seeded area bare of mulch.

Within nine days the mulched grass had sprung up, vigorous and green. Initially the best growth was where the mulch was 3/8-inch thick. Later the thickest mulch treatment looked as good or better.

"Apparently," said farm adviser Baldwin, "the mulch held moisture at the surface of the ground. This kept whatever salt rose to the surface from being concentrated

through evaporation. The salt, in other words, remained in a dilute state. It didn't become strong enough to kill the germinating grass.

"At least, that is our theory of what happened. It could also be a result of keeping the grass seed from drying out."

## No Merger, Says Nunes, New Company Instead

An article in the November issue of WEEDS TREES and TURF was misleading, writes John F. Nunes, Jr., of Nunes Turfgrass Nursery, Inc. There was no merger, he said, of Nunes Turfgrass Nurseries, Inc. and Jacobsen Turfgrass Nurseries. Instead, "a new corporation was formed to service the southern portion of California," he explained. The name of the new firm is Nunes-Jacobsen Sod, Inc., with offices at Tehachapi. "Nunes Turfgrass Nurseries, Inc., is still in existence, and is no way involved with the new organization," he added. "And Mr. Jacobsen is no way involved with Nunes Turfgrass Nurseries, Inc."

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## USDA Announces Measures to Prevent Parathion Mishaps

The U.S. Department of Agriculture has announced new measures designed to prevent accidental human poisonings from the highly toxic pesticide parathion.

Measures include a container label substantially altered to emphasize safety factors, special tags on all parathion containers to warn customers of the dangers involved in the use of the chemical, recording of parathion sales by dealers, eliminating glass parathion containers, and joint action by USDA and the states to avoid parathion injuries.

These steps are being taken with the cooperation of the pesticide industry and as part of the nationwide pesticide-use management program being developed jointly by USDA and state agencies.

Dr. Ned D. Bayley, Director of Science and Education, said the new parathion label will feature a large, bold, red stop-sign with skull-and-crossbones to indicate the high

toxicity of the product. Small silhouettes—an innovation in safety for pesticide labels—will appear on the label to graphically illustrate that the chemical can be lethal if consumed, inhaled, or spilled on the skin.

Manufacturers will ask dealers to make sure that every purchaser of the pesticide knows the dangers involved in its use. Dealers are to keep records of who buys the material and to have the purchaser sign a card indicating he is aware of the safety requirements.

The completed cards will be forwarded by the dealer to a designated state official who will also keep a record of such purchases.

Another step to combat accidents will be the requirement that all parathion labels recommend the posting of fields treated with the chemical for crop protection. The placards for posting the treated fields will be made available by pesticide manufacturers to dealers for free distribution to parathion purchasers.

Parathion is the first pesticide included in the memorandum of understanding signed by the U.S. Department of Agriculture and state regulatory agencies to avoid incidents of poisoning with highly toxic pesticides. In addition to the specific measures outlined above, the memorandum as it relates to parathion recommends that:

—Physicians through appropriate associations be made aware of areas in their state where parathion is likely to be used. Efforts will be made to acquaint doctors with tests for parathion poisoning and to encourage them to have the appropriate tests made.

—The state cooperate with pesticide manufacturers, dealers, and others to develop an educational program to acquaint the concerned public with problems associated with the use of this chemical.

## Illinois Study Tells How To Improve Pesticide Labels

A two-year study on the adequacy of pesticide labels, sponsored by the U.S. Department of Agriculture, reveals how the comprehension and legibility of these labels can be improved.

The study, conducted by communications scientists of the University of Illinois, Urbana, under contract to USDA's Agricultural Research Service, was designed to measure the adequacy of registered pesticide labels and establish guidelines for making these labels more effective in communicating use and precautionary information to the user.

Nearly 350 pesticide labels were analyzed for factors affecting legibility and comprehensibility.

The study pointed out that while today's pesticide labels are far from ideal, potential as well as actual pesticide users generally understand most label terms in common use. However, the reading-ease score of the labels (57.03—fairly difficult to read) could be improved since only those with at least 10 years of formal education are able to comprehend the average pesticide label.

Suggestions for improving pesticide labels included: improving their legibility; printing precautionary information and directions for use in 11-point type, regardless of label size; using color combinations ranging from black-on-yellow to black-on-white; testing label messages for reading ease; and including information about proper pesticide storage and disposal of empty containers.

The Illinois scientists recommended retaining "POISON-DANGER" and the skull and crossbones warnings printed in red for highly toxic pesticides.

Pesticide labels currently in use and new labels being submitted are now being checked for inadequacies pointed out by the Illinois study.

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## Shaw Heads Florida Spraymen's Association

Joseph C. Shaw of Shaw Nursery and Landscape Co., South Miami, is the new president of the Horticultural Spraymen's Association of Florida. Other officers include three regional vice-presidents: Earl Walderman, Port Orange; Craig Anderson, Fort Lauderdale; and Walter Ferguson of Winter Haven. Directors at large are Joe Trapp, Cape Coral; John Abbott, Miami; Larry Hatcher, Lake Worth; and Larry Nipp, Fort Lauderdale.

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