

One Method For Upgrading Turf

By Robert W. Schery

Director, The Lawn Institute, Marysville, Ohio

EARLY spring and autumn are two times of the year when something can be done about upgrading the lawn through introduction of choice varieties. Since a cultivated seedbed gives a new seeding its best chance, results are surest if the old lawn is plowed up, with unwanted vegetation perhaps first knocked out by arsonate or paraquat. Especially prized turfs, such as a golf green, may merit the expense of soil sterilization, as with methyl bromide.

But not everyone cares to invest in so complete a renovation, especially in spring when a badly disturbed lawn would hardly complement freshly budded ornamentals. Instead mechanical treatment of the old turf might offer a less drastic, inexpensive approach. It provides something of a seedbed for new seed at the same time that it sets back weedy growth in the old sod.

Some reports suggest that coarse bunchgrasses such as tall fescue may be repressed while rhizoming grasses such as Kentucky bluegrass and the fine-leaved fescues gain ground, following severe mechanical attrition of a mixed sod. Fresh sprouts from rhizomes are only a few days in appearing, and if adequate moisture prevails bolster seeding is not much longer in getting started. Maceration of the bunchgrass yields space to competing species, and should reduce stooling of the clumps. It is well to have completed mechanical renovation before the soil warms enough for crabgrass to germinate, or else a suitable crabgrass preventer should be used, (products containing siduron can be used at the same time Kentucky bluegrass, fine fescue

and Highland bentgrass are seeded, but not with bermudagrass).

Variety In Equipment

A number of machines useful in mechanical renovation are on the market. Aerifiers designed to loosen soil by punching holes have only limited usefulness, but the so-called vertical mowers for thinning, set deep enough to reach the soil, really stir things up. The intensity of treatment can be varied with the weediness of the turf. Most machines have the vertical slicing discs spaced about an inch, and thus make striations this distance apart when used one time over. If you want to really chew up the surface of the old lawn, mow vertically several times in various directions.

At least one machine on the market has three interchangeable reels for differing objectives. Besides the typical vertical slicing blades, there are flexible tines to comb thatch gently out of erect grasses such as Kentucky bluegrass and fine fescue with a minimum of bruising. And for a severe bludgeoning of the old sod, flails much like a hammermill literally beat the vegetation to pieces. Where the lawn is little else than coarse grass clumps the flail might be used first, possibly followed by soil slicing to provide lodging sites for new seed.

Of course there is no guarantee that the varieties newly provided by overseeding will gain the upper hand or even prosper. But at least you will have introduced select grass with the possibility of upgrading the lawn. Mechanical renovation certainly affords seed a better chance for gaining a toehold than if simply

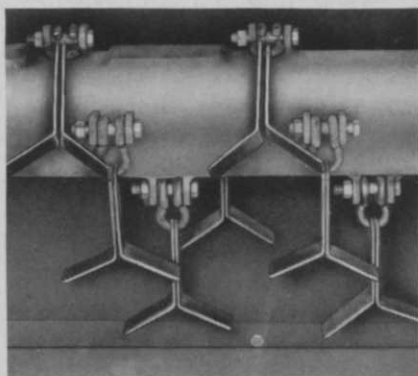
cast upon untreated turf. And in breaking up whatever thatch there may have been, fertilization is made more efficient. The granules are thus more easily accessible to soil and rootzone.

Tailored Grasses

Incidentally, there are many new varieties of fine turfgrass, often tailored for a particular kind of performance. Fylking 0217 brand, low-growing bluegrass out of Scandinavia, is first becoming available in quantity this year; it may prove useful as a companion for Colonial bentgrass in closely mowed fairways and for disease-resistant sod. Where well adapted, Merion still reigns as queen of bluegrass varieties, although, like Windsor, it suffers stripe smut in certain regions. Old-line natural bluegrass from Kentucky is now certified as Kenblue, while Arboretum is a similar mixed population out of Missouri. Park, famed for fast-sprouting is a composite from Minnesota. Prato is another attractive European selection while Newport and Cougar are workhorse varieties originated in our own Northwest.

There are new lawn fescues, too, Chewings, Illahee, Pennlawn and Rainier being joined by Highlight, Oasis, and others. Seeded bentgrasses are rather few, with Penncross the favorite creeping type, and Highland the most used of the Colonials (Astoria and Exeter are other recognized names). Kingstown is a velvet bent for meticulously kept speciality turf. These are but a few of the specially bred fine turf possibilities your seedsman might recommend for introducing new blood into the lawn during its mechanical renovation.

**ASK ABOUT OUR
WORTH-MORE FEATURES**



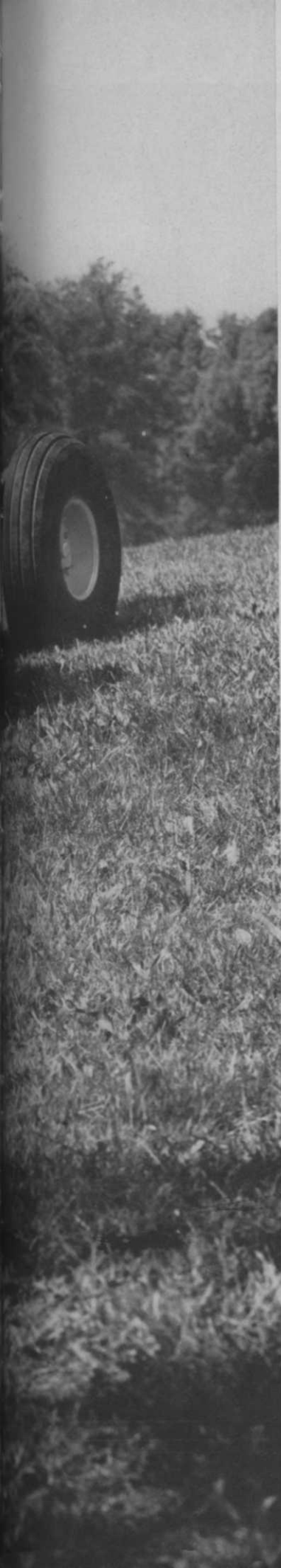
Reversible, double-edge knives

Reverse them to double their life. Knives can be resharpened individually; Does a better mowing job than a cutterbar mower even with dull knives. Cutting height is adjustable from $\frac{3}{4}$ to 5 inches.



Heavy rubber safety curtain

So safe with thrown debris that many purchasing agents insist on a flail-type mower. And you get the aggressive cutting action of a rotary cutter with the safety of a reel mower.



Quiet. Safe. Thrifty. What a mowing team!

New International 2444 tractor and 70 flail mower.

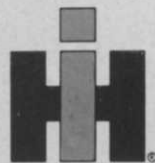
Quiet tractor. New 2444 shushes along. Won't bother the operator or others. *Quiet mower.* No noisy, vibrating housing. It's contour-formed to the heavy frame. Then continuous bead-welded to the frame to last.

Safe tractor. New 2444 has great sidehill stability. A low center of gravity. A low profile. Big, wide grass tires. A differential lock reduces wheel spin, turf gouging, tractor drifting. 8.5-foot turning radius with 70-inch wheelbase and easy hydrostatic power steering. *Safe flail mower.* Knife action throws debris straight to the ground, not out. Rugged rubber (not canvas) safety shield won't rot, rip, shred. For added safety, the universal joint is shielded.

Thrifty team! Choose your transmission. Standard hi-lo with 8 speeds forward, 2 reverse. Or optional 8 and 8. And save on mower maintenance. One man can change any flail blade individually without removing every knife in the row. See your dealer for additional worth-more features and an International 2444 tractor demonstration—with a 5 or 7-foot 70 flail mower. His finance plan can help you write this new equipment into the budget.

INDUSTRIAL EQUIPMENT

Wheel and crawler tractors • loaders • backhoes
dozers • forklifts • mowers • special duty tools



International is a registered trademark of International Harvester Company, Chicago 60611.



Col. Harry C. Eckhoff



New GCSAA officers, left to right, are: John J. Spodnik, vice-president; Walter R. Boysen, president-emeritus; and James W. Brandt, president.

39th Annual International Turfgrass Conference and Show Report

Golf Courses Become Integral Part of Plans For New U.S. Communities

Few conventions match the spectacular staged by golf superintendents at the San Francisco Hilton, Feb. 18-23. Even fewer give their members as complete exposure to new methods and equipment at these annual

Program Moderator Dr. Marvin H. Ferguson, Mid-Continent Director, USGA Green Section, opens afternoon session.



events as does the Golf Course Superintendents Association of America.

Meeting for their 39th International Turfgrass Conference and Show, members needed to cover some 42,000 square feet of floor space in order to visit the 258 exhibit booths plus the meeting sessions. Practically every type of equipment available for turf care and golf course maintenance was on display. Conference sessions featured leaders in the field and offered the equal of a comprehensive course in course management for benefit of the delegation of almost 3000

9 Million Golfers In '67

Trends in the business proved a highlight of both formal and hallway sessions. Colonel Harry C. Eckhoff, facility development consultant, National Golf Foundation, in discussing these trends

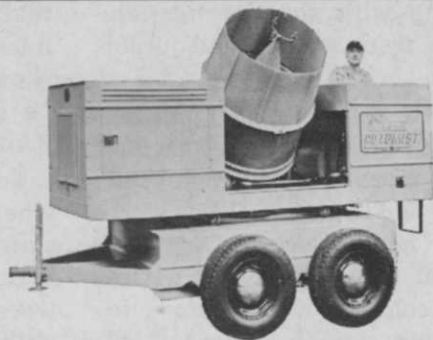
said that an interesting golf course is now considered an integral part of newly planned communities.

Eckhoff reported that 9 million persons in the nation now play the 9000 existing courses. Further, golfers are increasing at a rate of 10% yearly. Estimated cost to maintain the nation's golf courses last year amounted to \$245 million. But golf related expenditures of such items as equipment, apparel, refreshments, and other items of cost makes golf spending a billion dollar business.

Public courses comprise only 14% of the total courses in the country. But these public courses receive about 40% of the total golf play. Semi-private courses account of 35% of the play and the remaining 25% play is on private country club courses. Eckhoff reported that play on many 18-hole public courses averages 250 to 300 rounds every

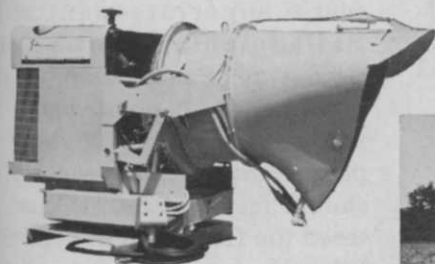


MODEL 100G ROTOMIST® shade tree, sanitation, mosquito control, leaf windrowing. 29" fan delivers 28,000 CFM at 100 mph.



MODEL 303T ROTOMIST biggest performer among mist-type shade tree sprayers. 40" fan, 60,000 CFM air volume.

when it's shrubs or trees,



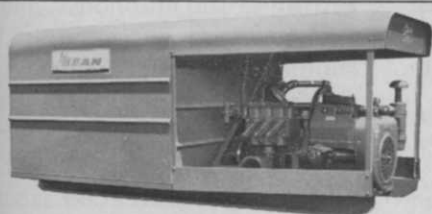
ROTOCAST® specially designed for roadside weed control. Teardrop discharge head provides reach plus close-in coverage.

CONTOUR-MATIC boom provides maximum flexibility to follow roadside ground or brush line configurations.



TURFKEEPER handles high pressure spraying applications of liquid fertilizer, weed or brush control chemicals. 17-nozzle, 3-section boom, wide flotation tires.

roadside spraying or any other spraying job



SKIDMOUNTED ROYAL heavy-duty high-pressure sprayer models. 25, 35 and 60 GPM @ pressures to 800 PSI. Plus Royalette and Royalier models.

MODEL 1010G SPRAYER designed for golf course operation on a Cushman. 13-nozzle hinged boom, 100-gallon Fiber Glass tank, full-flotation tires.



...select JOHN BEAN

John Bean sprayers offer the widest selection, in air-type or high-pressure models, each one is job-designed for maximum efficiency. Send for free product catalogs, Dutch Elm and mosquito control kits.



POWER SPRAYING EQUIPMENT

JOHN BEAN

DIVISION

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

day during the season. Play is booming with the big increase coming from women and junior golfers.

Despite a growth in facilities, Eckhoff said that courses are becoming more crowded each year. A total of 437 golf facilities were opened for play in 1967. These included 278 new regulation length courses, 114 additions to regulation length courses, 40 new par-3 layouts, and 5 additions to par-3's. Leading states in new facility development were: California, 39; Pennsylvania, 27; Ohio, 26; New York, 25; Michigan, 24; Florida, 22; and Texas, 17.

New Junior Courses

Of interest was the opening of 2 junior courses. The Lincoln Junior Golf Course, a 9-hole par-3 municipal operation was opened at Lincoln, Neb., by the city's Park and Recreation Department at a cost of \$58,000. A 4-hole, 335 yard layout for children only was also opened at Bangor, Me. Three other known junior courses, at Minneapolis, Minn., Syracuse, N. Y., and Hershey, Pa., are in operation.

Both new course openings and facility starts were down in 1967, Eckhoff said, largely because of a shortage of available mortgage money at reasonable rates. With an easing of the money market, Eckhoff indicated that this downward trend will shortly reverse itself. Golf, he said, continues to attract players from every economic level. It is a sport played by persons of all ages throughout their lifetimes. Further, he said, golf facilities benefit a community in many ways. Civic pride is stimulated, new business created, open space increases property values, new industry is attracted, and healthful recreation is provided.

Trees require the same good management for growth which is needed for turf. Carl F. Whitcomb, horticulturist at the Uni-

versity of Florida, Gainesville, told superintendents that experiments at the Florida Station showed that trees and turf can be grown together successfully if managed properly.

Turfgrass, Whitcomb said, when maintained in a healthy state is a vigorous competitor. It can successfully compete with weeds, and can compete as well with trees, to the detriment of the trees, unless steps are taken to select the right type trees and then protect them.

Whitcomb reported that Florida tests showed that established bluegrass was not hurt by tree competition when light, water, and nutrients were adequate. Foliar growth, stand density, and root development proved normal.

However, the bluegrass did influence tree root development. Shallow rooted trees such as silver maple suffered from grass competition. Honey-locust, a deep rooted tree did not. Whitcomb listed other shallow rooted trees such as sweet gum, cottonwood, willow, and Australian-pine which should not be planted near greens or tees. If they survive, they will eventually create severe root problems. Deep rooted trees such as the honey-locust and Kentucky coffee tree are less likely to cause a maintenance problem.

Customer Service Important

Manufacturers today expect and encourage customers to use warranty services. So, Thomas E. Ames, manager of field service for Toro Manufacturing, Minneapolis, Minn., told superintendents. Makers of equipment, he said, like to have problems taken care of early. This is important from the standpoint of customer satisfaction and as a product indicator to the manufacturer. Ames listed the following services to which a customer is entitled after purchase: (1) services of a competent company specialist; (2) analysis of a cus-

tomers' production goals, labor, and operating problems; (3) willingness to demonstrate; (4) pre-delivery assembly and adjustment; (5) post-delivery field adjustment and instruction; (6) responsibility for satisfactory performance; (8) an adequately equipped repair shop staffed with factory-trained personnel; and (9) periodic service after expiration of the warranty at the customer's expense.

Your Front Door

The friendliest gesture man can extend is an invitation to enter the "front door." This is the thinking of Warren Bidwell, golf course superintendent at the Philadelphia Country Club, Gladwyne, Pa. Speaking to the group, Bidwell pointed out, the moment a member or daily fee player enters club property, he should feel that he has just entered the front door of your club. Literally speaking, Bidwell told superintendents, your members should feel your very presence as though you are there to greet him personally. "This is done by your handiwork of fine grooming and finesse," he said. Here, Bidwell was referring to the entrance to the club, the actual setting of the clubhouse, and the grounds that surround it. This should make the so-called entrance hall appear as a classic piece of landscape architecture for the game of golf, and for all the other recreation facilities found at the modern day club.

Landscaping architecture, Bidwell believes, should be likened to a giant mirror that ultimately reflects the personality of the superintendent. If used properly, it can serve as an introduction to the individual member. The "front door," Bidwell said, can be a great image builder for the superintendent. A good job of projecting this image can remind members that the superintendent is responsible for the beauty and enjoyment which members receive at the club.

Determine Nitrogen Use Carefully In Tree Care

Nitrogen is the most important element in a "complete fertilizer" when determining fertilizer cost and rate of application.

Of the three basic components in a "complete fertilizer," nitrogen is the most expensive and has the greatest potential for burning a plant. It is, however, used in the greatest quantities and is the element to which woody plants respond most.

Jack Wikle, Davey Tree Expert Co., Kent, O., says that application rate of a "complete fertilizer" should be established on the number of actual nitrogen per unit area. It should not be based on amount per plant or inch of trunk area. This might cause damage to smaller plants or plants in areas where the root system is confined.

Wikle suggests an annual use of 4 to 6 pounds of nitrogen (from a high nitrogen fertilizer) per 1,000 square feet. This should be divided into 1 to 2 applications for trees, 2 to 3 for shrubs, and 3 to 4 for non-woody plants. If a woody low nitrogen mulch is used, such as sawdust or wood chips, the annual rate of nitrogen should be doubled.

On the practice of fertilizing trees and shrubs at planting time, Wikle reports he has not found concrete experimental data to support doing this. He suggests, only, that 3 to 5 pounds of super phosphate per 100 square feet be mixed with planting soil or back fill. Nitrogen or potassium should not be added until 6 to 8 weeks after planting.

Wikle presents four reasons for properly fertilizing landscape plants. They are: improvement of plant growth and vigor resulting in less dieback, more roots and more and darker green foliage; reduction of drought damage because of reduction in water requirement; reduction of disease damage due to increased

resistance to disease pathogens and insects which attack unhealthy tissues; and reduction of winter injury. An excess of fertilizer can increase damage.

Turf Care Now Ranks 2nd in Pa. Agri. Business

Turfgrass has become a \$164 million business in Pennsylvania. According to a recent survey, turfgrass is now the second largest agricultural enterprise in the state.

Money, according to the survey, was spent to establish and maintain new turf areas. It included costs for hired labor, seed, sod, lime, fertilizer, irrigation equipment, and chemicals for control of weeds, insects and diseases.

H. Burton Musser, executive secretary of the Pennsylvania Turfgrass Council, says the survey, by the State Department of Agriculture, showed the turfgrass industry second only to the dairy industry.

Musser says golf course managers are the only turf specialists who make adequate use of chemical weed control. Neither herbicides nor fertilizers are used to their fullest benefit by most homeowners, Musser said.

The survey showed fertilizer costs for Pennsylvania home lawns to be \$5 million. Musser claims it would cost \$26 million annually to supply the minimum amount of fertilizer needed to maintain the turfgrass in good condition.

The survey also showed golf courses spent about \$14 per acre annually on weed control. The average for other areas like parks and home lawns was only \$1.60 on a per acre basis. Expenses were low for use of both insecticides and fungicides on general turf areas, including home lawns.

Hypro Pumps

for applying weed and turf chemicals

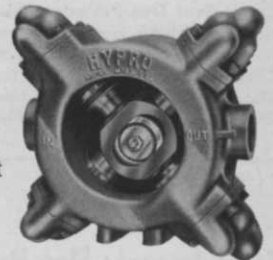
PISTON PUMPS



Series
C5210
BIG TWIN
10 gpm (at 600 rpm)
400 psi pressure
also available with gas engine

Series
5400
4-CYLINDER
PUMP

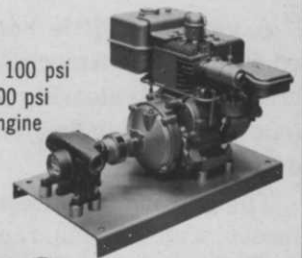
25 gpm output
at 600 psi



ROLLER PUMPS

Series
GN6310R

6.9 gpm at 100 psi
5 gpm at 200 psi
with 4-hp engine



Series 7560
8-ROLLER PUMP

Output 12 gpm
(at 540 rpm)
Pressure to 300 psi.



Series 1500
6-ROLLER PUMP

Output 30 gpm
(at 540 rpm)
Pressure to 150 psi.

Choice of rubber or nylon rollers
Write for complete pump catalog or request pump recommendation for your need!



Hypro, Inc.

A subsidiary of Lear Siegler, Inc.

347 Fifth Ave. N.W., New Brighton
Saint Paul, Minnesota 55112



Connecticut Tree Protective Association, Inc., elected officers at its recent annual meeting at the Hartford Hilton Hotel and began preparations for an active year. Shown seated, from left: Treasurer Bernard Wright, Danbury; Vice-president Thomas J. Williams, Cheshire Tree Service, Cheshire; President Kenneth L. Grimm, Walgren Tree Experts, Inc., West Hartford, and Secretary Charles Meli, Park Department, Hartford. Standing: J. Baylis Earle, park superintendent, Glastonbury (left) and Dr. Philip Rusden, Greenwich, editor.

State Imports Flea Beetle For Alligator Weed Control

A voracious little bug imported from South America has been credited with clearing an obnoxious stream-clogging weed from a Florida river.

The bug is a flea beetle, a tiny insect which feeds rapidly and exclusively on alligator weed, one of several plants which plague Florida lakes and streams.

The flea beetle is about the size of a common ladybug. It devoured almost all alligator weed along a 45 to 50-mile stretch of the Peace River in Florida's Polk and Hardee counties.

Forrest Ware, fishery biologist for the Florida Game and Freshwater Fish Commission, said the weed had spread across as much as two-thirds of the river's width as recently as last spring.

"It's very impressive," Ware said. "The flea beetle hasn't been 100 percent effective in all areas in which it has been tried, but it

sure has worked in the Peace River."

The insects were brought into the United States by biologists involved in aquatic weed control programs of the U.S. Army Corps of Engineers.

After careful screening and testing by the Corps as well as the USDA to make sure insects were damaging only alligator weed, colonies were released at several weed-infested locations.

One was Lake Parker at Lakeland, in central Florida, where flea beetles were turned loose on unwanted aquatic growth during the spring and summer of 1966.

Last spring, Ware was placed in charge of a program designed to restore the Peace River from damages brought about by pollution from a slimepond break at a phosphate plant.

"That's when we saw the lush growth of alligator weed," he said. "Then, later, we saw the foliage turning brown. We investigated and found flea beetles were eating it."

Ware said he surmises the insects migrated south to the Peace from Lake Parker. None had been released directly on the river.

The biologist said alligator weed had previously been very difficult to control. Chemicals provided the primary method of attack.

The plant takes root anywhere from the edge of a lake or stream to a depth of about two feet. Stems grow to the surface and then move horizontally, intertwining to form a thick, almost impenetrable mat.

The plant breathes through growth extending some 12 to 18 inches above the water surface, and this is where the flea beetle comes in. He and his mates completely devour everything above water. The plant, in effect, drowns.

There has been no evidence anywhere in Florida to indicate the insect is attracted to or associated with any other plant, Ware said.

GET A HEAD START
ON
GROUND MAINTENANCE

with **OREGON GROWN** fine leaf RED
FESCUE

- FINE TEXTURED—Companionable with other grasses.
- DURABLE—Resist heavy traffic.
- WIDELY ADAPTED—More tolerant to adverse conditions.
- PRODUCE DENSE SOD—Inhibits weed growth.
- DEEP ROOTED—Drought resistant.
- ECONOMICALLY MAINTAINED—Slow growing.
- LESS DEMANDING—On fertilizer requirements.

Information & Sample Packets Available on Request.

OREGON FINE LEAF FESCUE COMMISSION
605 Weatherly Bldg. Portland, Ore. 97214

Relieves congestion

All clogged up with water weeds? ORTHO Diquat Water Weed Killer quickly clears up weedy congestion in still or slowly-moving water. Swimming and boating areas. Ponds and lakes. Residential water-fronts. Drainage canals and commercial waterways.

Spray Diquat on the surface of the water. Diquat is quickly absorbed into plant tissue, where it disrupts the vital photosynthesis process. Weeds die, sink to the bottom and disintegrate. Diquat is effective

against a wide variety of floating and submerged water weeds. Like water hyacinth, water lettuce, milfoil, elodea, coontail and many others.

When it's used as recommended, Diquat doesn't harm fish. And the water can be used for swimming or irrigation 10 days after application.

Clean up beach and swimming areas. Open up boat landings and channels. Or do a complete job on small bodies of water. A single application can give seasonal control under many conditions.

Application equipment is simple and easy to operate. (Be sure to read and follow label directions.) In

some areas, custom application service is available.

Just sit on the bank and watch the water weeds die. With ORTHO Diquat.



CHEVRON CHEMICAL COMPANY
ORTHO DIVISION
San Francisco, California 94120
Part of the great group of Chevron companies



ORTHO Diquat

Water Weed Killer

Revision of Trees Book Now Available At OSU

A 127-page illustrated revision of the booklet "Ohio Trees" is now available. It is authored by F. W. Dean, L. C. Chadwick and William Cowen. The new revision covers more than 150 tree species, giving a species key and descriptions of genus and species. For information write to Dr. K. W. Reisch, 1827 Neil Ave., Columbus, Ohio 43210.

Greater Drift of Spray With Small Droplets

Large spray droplets and calm weather are musts if contamination by spray drift is to be reduced.

Large drops naturally fall faster and more directly to the ground. Small droplets fall slowly and breezes carry them laterally. This causes the common damage problems.

Orrin Berge, agricultural engineer, University of Wisconsin, has pinpointed drift factors. He says that droplets the size of light rain will fall 10 feet in 2 seconds. These can be carried sideways only about 8 feet in a 3 mph wind. But particles the size of mist take a full 10 seconds to drop 10 feet in a 3 mph wind. These smaller droplets can drift 44 feet laterally in the 10 seconds they are airborne. Even smaller droplets, those the size of water vapor or fog need 17 minutes to drop 10 feet. This lets them drift almost a mile in a 3 mph wind.

Larger droplets are possible by use of a 10-gallon per acre nozzle size, rather than the 5-gallon size. Reducing the spray pressure will also increase the particle size. A pressure of 30 pounds per square inch is adequate for almost all weed and insect control work.

Berge cited other drift reduction procedures. He suggested lowering booms on sprayers to 2

feet above the ground and use of non-vaporizing sprays when possible. The ester forms of insecticides and herbicides are the most volatile. They are most likely to drift farther than the amine forms of chemicals. Whenever a choice is possible, the amine form should be used.

Spraymen Assume Liability When Mixing Own Chemicals

Liability is assumed by the sprayman of a herbicide mixture if the mixture is not registered and labeled by a company. Conversely, if a manufacturer secures a government registration for a mixture he then becomes liable.

A sprayman may legally mix and apply a herbicide mixture containing chemicals which are registered individually, but he must then accept liability. Without a label, the sprayman will find difficulty in obtaining information on the rate of each herbicide and when to apply the mixture.

According to Dr. Richard Behrens, plant scientist, University of Minnesota, the advantages to be gained from mixtures are several. These include control of a larger variety of weeds, consistent weed control under various weather conditions, less chance of herbicide residue in soils, lower herbicide costs, and increased herbicide effectiveness.

New Fruitless Olive Tree Imported From Australia

Horticulturists at the University of California, Davis, have adapted an ornamental "fruitless" olive tree. Grafting wood of the tree will be given to nurseries this summer for propagating purposes.

Foliage of the tree is the same as commercial varieties grown in

California. The underside of the leaves has the desirable gray coloration but the young stems are a little angular in shape instead of round.

Cuttings of the tree are difficult to root so propagation will be done by budding or grafting onto rootstock plants. Distribution of the grafting wood will be done by the Foundation Plant Materials Service Dept. of Viticulture and Enology, University of California.

The tree is to be named "Swan Hill" after the town in Australia where the original was found. Scion wood from this lone "fruitless" olive was brought to this country in 1960 by Hudson T. Hartmann, professor of pomology, UC.

Herbicide Buildup Not Serious In Nurseries

A recent survey shows no serious buildup of herbicide residues in nurseries. Large herbicide buildups which might be expected from repeated applications did not materialize.

Leroy Holm, University of Wisconsin scientist, reports the continued use of simazine in a Connecticut nursery showed no harmful effects on yews and Euonymus shrubs. These shrubs had been used as indicator plants for 5 years. The use of a single chemical such as simazine, however, did invite the buildup of perennial weeds such as bindweed and vetch.

Established plants of Euonymus can have chemicals like simazine, diuron and neburon applied around them without hurting the plants. If they are removed and new plants placed in the herbicide-treated soil, the new plants may develop injury.

Sensitive plants such as Douglas fir, Arborvitae and Con-toneaster were not harmed when planted in a nursery in Wisconsin. In this case, the soil had been