

area operators figure they get about 100 yards per man day in sodding. In a seeding operation, they figure on 200 yards per man day.

How does the landscape contractor prepare the homeowner to keep the new lawn? Juchartz says there is also a great variation here. And it's at this point that he feels contractors need to get together and agree on recommendations, that is, for the area they serve. Good use could be made of a garage sheet or leave piece of some type containing instructions which would help insure success of the new job. Recommendations given for this area by the operators replying usually called for daily watering the first 10 to 20 days and then gradually tapering off, monthly fertilizing, mowing at a 1½-inch height, and no use of weedkiller.

Biggest problems in doing the job were listed as the same for both seeding and sodding. These were obtaining proper grade, fighting compacted soil, and getting the homeowner to spend enough money to do the job right.

Thinking of the contractors about what the industry needs most centered on two major points. First, more education for the public. And secondly, state inspection of sod to insure standards.

Chemical Residues Leave Soil by Various Routes

Contract applicators concerned about chemical residues in the soil—as an aftermath of spraying for weed or insect control—have a number of natural forces working in their favor, it is reported by the Institute of Agriculture, University of Minnesota.

One of these forces, and a primary one, is microbial decomposition. Tiny soil microorganisms attack virtually all chemical molecules in one way or another.

There are other ways in which pesticides are lost or inactivated. Some are lost through vaporization (volatilization). Some residues leach down into the soil where they cause no further problem.

Some disappearance is due to

plant removal or the breakdown of pesticide molecules as they are taken up by plants. Finally, there is some chemical breakdown of pesticides, although very little has been proven by research to occur.

Since soil microorganisms are so important, they have long been in the scientific limelight where the residue problem is concerned. According to Russell Adams, Jr., soil chemist at the University, there seems to be no pesticide molecules that will not be attacked eventually by some soil microorganisms.

Considerable concern has been voiced about adding unnatural organic compounds to soil. However, recent research has shown that chlorinated hydrocarbons can undergo breakdown through action of soil microorganisms.

Microorganisms Can Adapt To A Pesticide

Apparently, microorganisms can adapt themselves to a pesticide. In one study, organisms were subjected to 2,4-D, and a lag period elapsed as the compound was slowly and then more rapidly attacked as the metabolizing organism developed.

Then, later additions of 2,4-D were more quickly decomposed.

There is some scientific controversy over how this adaptation develops—whether it is due to formation of enzymes or mutations. In any case, once an organism becomes able to break down a pesticide, it retains this ability for some time.

Do insecticide or herbicide chemicals affect microorganisms? At normal field applications, research shows, there is rarely any effect. In some cases, small quantities of pesticides actually stimulate microbial activity.

Another important factor in pesticide residues is sorption, or the process by which soil takes up and holds the chemical. Importance of sorption—adsorption or absorption—of molecules depends on the type of soil.

Organic residues disappear most quickly from sand, but develop strong bonds with clay, particles of which have charged sites on the surface. Pesticides

Meeting Dates



Nebraska Program on Selection and Handling of Pesticides, University of Nebraska, East Campus, Lincoln, Apr. 3-4.

Western Aerial Applicators Short Course, Landis Auditorium, Riverside City College, Riverside, Calif. Apr. 3-4.

Western Aerial Applicators Short Course, Caravan Inn, Sacramento, Calif., Apr. 5-6.

Canadian Chapter, International Shade Tree Conference, Annual Convention, Holiday Inn, Ottawa, Ontario, Apr. 27-28.

Florida Turfgrass Trade Show, Diplomat Hotel, Hollywood By The Sea, Fla., Apr. 27-29.

Western Chapter, International Shade Tree Conference, Annual Meeting, Hotel Coronado, San Diego, Calif., Apr. 30-May 3.

Florida Nurserymen and Growers Association, Annual Convention, Robert Meyer Motor Inn, Orlando, May 25-27.

The Hyacinth Control Society, Annual Meeting, Holiday Inn, Fort Myers, Fla., June 18-21.

American Association of Nurserymen, Annual Convention, Americana Hotel, Bal Harbour, Fla., July 8-13.

Third National Grassland Field Day and Conference, University of Nebraska, Lincoln, July 12-14.

Miss Lark Trade Show and Convention, Convention Auditorium, Hot Springs, Ark., Aug. 10-12.

Penn State 1967 Field Day, Pennsylvania State University, University Park, Aug. 16-17.

Nursery and Garden Supply Show, Texas Association of Nurserymen Annual Convention, City Auditorium, Austin, Aug. 20-23.

International Shade Tree Conference, 43rd Annual Convention, Marriott Motor Hotel, Philadelphia, Pa., Aug. 27-31.

Texas Fertilizer Association's 1967 Agricultural Exposition, KoKo Inn, Lubbock, Nov. 9-10.

which are taken up to these charged sites are *adsorbed*, and are thus inactivated.

However, molecules taken up in such a way are a constant source of the pesticide in the soil solution.

Insect Report

WTT'S compilation of insect problems occurring in turfgrasses, trees, and ornamentals throughout the country.

Turf Insects

A CHINCH BUG (*Blissus insularis*)

Texas: Adult feeding noted in several lawns at Houston, Harris County. This early emergence probably due to unseasonably warm weather but could result in early buildups in advent of warm, late winter.

A MEALYBUG (*Chorizococcus rostellum*)

California: Locally medium on Bermuda grass at La Mesa, San Diego County.

Ornamentals

APHIDS

Alabama: Overwintering *Eriosoma lanigerum* heavy on roots of several flowering crab apple trees in Lee County. **Arizona:** *Macrosiphoniella sanborni* increased on and damaged ornamentals in Phoenix area of Maricopa County. *Myzus persicae* heavy on ornamentals in all areas of Maricopa County. **California:** *Myzocallis arundinariae* nymphs and adults heavy on bamboo at Santa

Barbara, Santa Barbara County. **Oklahoma:** *C. tujaefilina* continues light to moderate on evergreens in Payne County and moderate in Cleveland County.

BAGWORMS

Alabama: Numerous bags of *Thyridopteryx ephemeraeformis* observed throughout State contained large numbers of eggs. Parasitism appears low. **California:** *T. meadi* medium on native greasewood at Apple Valley, San Bernardino County. **New Mexico:** "Bags" of undetermined species very abundant on junipers at Portales, Roosevelt County. Some pupae parasitized.

GRANULATE CUTWORM (*Feltia subterranea*)

Arizona: Larger than normal populations damaged ornamentals in the Phoenix area of Maricopa County.

A PYRALID MOTH (*Herculia intermedialis*)

Illinois: Larva collected from juniper in Champaign, Champaign County; adult was reared. This is a new state record.

ARMORED SCALES

Maryland: *Unaspis euonymi* heavy on euonymus at location in Silver Spring, Montgomery County.

COCONUT SCALE (*Aspidiotus destructor*)

Pennsylvania: Heavy on blue spruce at Havertown, Delaware County. This is a new state record.

Tree Insects

ARBORVITAE APHID (*Cinara tujaefilina*)

California: Nymphs and adults heavy on juniper at Huntington Beach, Orange County.

A PINE APHID (*Cinara* sp.)

Oklahoma: Heavy on pines in many areas of McCurtain and Pushmataha counties in mid-February. Trees checked this period show parasites and birds completely destroyed most infestations.

PINE BARK APHID (*Pineus strobi*)

Maryland: Light to medium on young white pines at Laurel, Prince Georges County.

A BARK BEETLE (*Phloeosinus* sp.)

California: Adults heavy on cypress at Lucerne Vally Park, Lucerne, San Bernardino County.

BLACK TURPENTINE BEETLE (*Dendroctonus terebrans*)

Oklahoma: Infesting occasional pine trees near America, McCurtain County.

EASTERN TENT CATERPILLAR (*Malacosoma americanum*)

Kentucky: A statewide egg-mass survey was conducted in portions of Letcher, Morgan, Menifee, Powell, Bath Montgomery, Marion, Taylor, Casey, Green and Adair counties. Intensity of damage may increase compared with 1966.

DOGWOOD CLUB-GALL MIDGE (*Mycodiplosis alternata*)

Alabama: Galls heavy on native dogwoods throughout State.

A SPIDER MITE (*Eotetranychus libocedri*)

California: Eggs and adults infested juniper at Highland, San Bernardino County.

CALIFORNIA OAKWORM (*Phryganidia californica*)

California: Larvae heavy on oak trees at St. Helena and Yountville, Napa County. Larvae about one-third grown. Early occurrence of larvae indicates another year of severe defoliation unless virus disease currently present in some specimens becomes effective.

AN ARMORED SCALE (*Phenacaspis heterophyllae*)

Florida: Collected on loblolly pine at Melrose, Putnam County. This is a new county record.

EUROPEAN ELM SCALE (*Gossyparia spuria*)

California: Medium on elm at Escondido, San Diego County.

A WHITEFLY (*Aleuroplatus gelatinosus*)

California: Nymphs heavy on oak trees at Fresno, Fresno County.



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Compiled from information furnished by the U. S. Department of Agriculture, university staffs, and WTT readers. Turf and tree specialists are urged to send reports of insect problems noted in their areas to: Insect Reports, WEEDS TREES AND TURF, 1900 Euclid Ave., Cleveland, Ohio 44115.

Limnological Aspects of Recreational Lakes

by K. M. Mackenthun, W. M. Ingram, and R. Porges, Public Health Service Publication No. 1167, Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402, 1964, 176 pp., \$1.25.

Aquatic weed controllers, alert! THE book has finally been written. Biologists and water purity experts of the Robert A. Taft Sanitary Engineering Center in Cincinnati, Ohio, a division of the Public Health Service, have gleaned information from many previous and scattered works on aquatic weeds and pests which affect water supplies. They've put it together in a volume slanted toward the future needs of society which demands clean recreational waters.

In a nutshell, L. A. R. L. is not a how-to-do-it handbook, but rather a how-to-figure-out-what-to-do treatise. It is designed for anyone who must, says the Foreword, "interpret biological phenomena of recreational lakes." This includes commercial weed controllers, extension agents, water pollution inspectors, water commission agents, and lake managers. The book is simply written, and can be understood with a minimum of biological background. Terms are well defined in the text and there is a 3-page supplementary glossary.

The authors examine physiochemical factors in "healthy and unhealthy" lakes. They discuss productivity in terms of animals, plants, and weeds. Factors causing excessive weeds are clearly explained.

There is an excellent section on specific weeds, well illustrated with 29 plates, and including keys to important species of algae and higher weedy plants.

A chapter on animals which affect water use discusses such pests as midges, mosquitoes, leeches, swimmers' itch organism, and snails.

An important chapter tells about sampling and testing techniques used by the PHS and others to determine chemical, physical, and energy factors influencing lake conditions. This

section gives valuable insight into weed problems.

Weed growth of a lake is part of its productivity. When excessively fertile, or for other reasons, a lake may overproduce, and if the water has an intended use which the weed crop hampers, the extra growth must be controlled. Authors point out the uses of various chemicals, their effects and side effects. There are seven mechanical and chemical spray rigs pictured in this chapter on control. Plans for a spray outfit are included.

A quick look at the voluminous references in each chapter shows how much source material was used, and gives many leads for readers' edification.

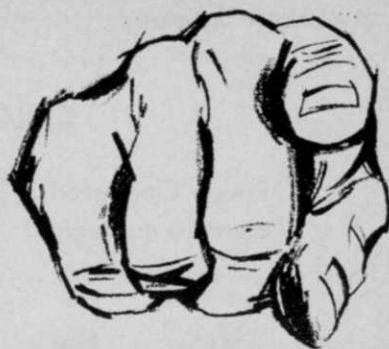
In our opinion authors Mackenthun, Ingram, and Porges have done an admirable job on this much-needed book. An aquatic weed controller couldn't make a better investment for \$1.25.

Arps PTO Stump Cutter For One-Man Operation

Only one man is needed to operate the new "Stump Master" stump cutter from Arps Corp., according to the maker. Designed for mounting on any hydraulically equipped 3-point hitch tractor of 40 hp. or more, Stump Master can be controlled by four hydraulic levers located on the driver's panel so he does not have to leave the tractor.

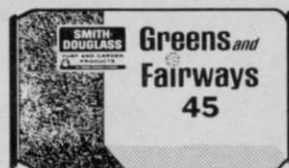
A heavy-duty ball clutch power shaft connected to the rear PTO of the tractor powers the 36-in.-diameter steel cutting wheel. Carbide-tipped cutting teeth are said to be capable of reducing a cubic foot of wood per minute.

Easy maneuverability marks Stump Master, Arps maintains. A pivot allows the hydraulic cylinder to swing the entire cutting unit through an arc of 30°, increasing the cutting range and eliminating excessive tractor maneuvering. Safety-shielded, the Stump Master can be used in limited spaces and is designed for highway and forestry departments, municipal maintenance, landscape contractors, etc. Arps Corp., New Holstein, Wis. 53061, offers illustrated data on this new cutter.

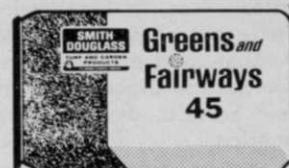


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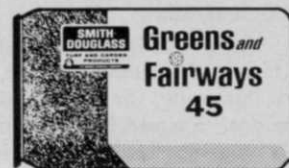
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CINQUEFOIL

Rough Cinquefoil
(*Potentilla norvegica*)



Upright Cinquefoil
(*Potentilla recta*)



Rough cinquefoil, sometimes commonly called barren strawberry or tall five-finger, is an annual, winter annual, or biennial. It spreads by seed. Normally this weed is found along roadsides, waste areas, in meadowland or pastures. It frequents dry soils. Plants are able to withstand drought and thrive from June until October, and are found in eastern two-thirds of the United States from Mason-Dixon line northward into Canada. It was introduced from Eurasia, though some forms appear to be native to North America.

Rather stout stems are rough, hairy, and can be semierect or spreading. Note base of plant and roots (1). Leaves are palmately divided and resemble strawberry plants with 3 leaflets (2). Small flowers grow in clusters at tips of branches (3). Petals are yellow. Seeds are about $\frac{1}{32}$ inch long and light brown (4). Plants grow 1 to 3 feet tall.

Upright cinquefoil or sulphur cinquefoil like the rough cinquefoil is also a dry weather plant. It thrives from June through August on dry, gravelly, or stony soils. Is most troublesome in limestone regions. Eastern half of Minnesota and Iowa, and most of Missouri form western boundary of infestations. Plant ranges eastward over same area as rough cinquefoil. It was originally introduced from Europe.

Leaves are alternate and palmately divided with 5 to 7 coarsely toothed leaflets (5). Shallow root system (6) can be destroyed by cultivation. Plant, with erect or spreading and hairy stems, grows 1 to 3 feet tall (7). Flowers about 1 inch (8), are perfect, regular and found in many-flowered, compact, and almost leafless cymes. Calyx is hairy. Plant is a perennial and reproduces by seed (9).

Both types of cinquefoil are susceptible to 2,4-D at rates of 1 pound per acre. Clean cultivation or mowing when flowers first appear are also claimed to control this weed.

(DRAWING FROM NORTH CENTRAL REGIONAL PUBLICATION NO. 36, USDA EXTENSION SERVICE)

Cables, Braces Help Shade Tree Survive Violent Storms

Installation of cables and braces to give branches additional strength is decidedly useful in preventing storm damage to the tree, repairing injuries, and as a safety measure when large limbs overhang buildings or other property.

In some trees, either as an inherent characteristic or because of improper pruning when young, major branches develop from a narrow-angled, V-shaped crotch. As the branches increase in diameter they become tightly appressed, but the bark in the crotch below the point of apparent junction acts as a barrier that hinders or prevents the growth of uniting wood fibers. As a result of this weak union, splitting at the crotch is likely to occur during a storm or even from the weight of abundant foliage. Often the splitting is so severe that the tree is damaged beyond satisfactory repair.

Since these structurally weak crotches develop gradually over a period of years and are obvious long before splitting occurs, there is ample opportunity for protective treatment. If the tree is young and vigorously growing, often one of the two branches may be removed without permanently impairing the shape and beauty of the tree.

In mature trees where branches growing from tight crotches are of equal importance, the National Arborist Association recommends that mechanical support be provided. Usually this consists of installing one or more brace rods at the crotch and placing a system of flexible wire cables high in the crown of the tree, thus "tying" the major branches together. In repair treatment where crotch splitting has occurred, the branches are drawn together with block and tackle until the crack closes; then the brace rods and cables are installed.

In aged trees that stand near a house, large branches of great weight frequently overhang the roof. While these branches may appear perfectly sound, there is

always the danger that they may break during storms and cause extensive damage to the building. This danger may be substantially reduced by properly installed supporting cables.

In attaching cables to branches, screw hooks with lag threads are generally used; never is the cable wrapped around the branch. Skill and experience are needed to locate the cables in the tree so they will function most effectively.

Dowpon Chemical Lawn Edger

A chemical can now be used to accomplish one of the more difficult chores of lawn management, reports J. P. Fullmer, Clemson University horticulturist. Checking on the use of Dowpon as a lawn edger, Fullmer finds users are said to be highly pleased with this herbicide.

"Edging with Dowpon is now one of the easiest jobs," Fullmer says.

To chemically edge unwanted grass from walks, driveways, trees, and flower beds, a compressed air knapsack sprayer is used. This sprayer should be used exclusively for herbicides since residual weedkilling chemicals remaining in the sprayer could injure or kill plants if you were to use it for other spraying jobs later.

Mixing two tablespoons of Dowpon for each gallon of water makes an effective solution. Direct spray on unwanted grass enough to wet the leaves and avoiding runoff, Fullmer recommends.

Two applications are required to give a satisfactory kill. A second spraying 7 to 10 days following the first will give good results. Applications may have to be repeated during the growing season.

Dowpon may be used to edge grass around some trees and shrubs. But since the material does injure some plants, Fullmer makes no blanket recommendation. Applicators can obtain more information about Dowpon by writing to The Dow Chemical Co., Midland, Mich.

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Uniform granular herbicide or fertilizer application is said possible with the Evergreen spreader introduced by Evergreen Helicopters Inc., McMinnville, Oregon.

Helicopter Device Makes Dry Aerial Spreading Possible

Fast, uniform, and economical applications of granulars by air is possible for the first time with its newly patented spreading device, Evergreen Helicopters Inc., McMinnville, Ore., claims.

Dry chemicals and fertilizers for the first time can be broadcast from the air with uniform material flow at rates ranging from 10 to 1,000 lbs. per acre, according to Delford M. Smith, president of the pioneer commercial helicopter-operating firm.

"Although the need for such a device by helicopter operators has been long standing, because certain conditions demand dry rather than wet chemicals, the only efficient systems marketed to date are for spraying liquids," Smith said.

The new device is said to handle up to 800 lbs. per minute. Helicopters can spread full payloads of fertilizer in 60 seconds covering ground with a maximum 120-foot swath.

Inherent characteristics of the Evergreen spreader include: forward broadcast so the pilot has visual control; immediate re-

sponse to on-off control; and no caking problems because of a method of chemical transfer to slinger, the firm reports.

For brush control, Evergreen has found the device provides customers with a total service package.

More information about the helicopter spreading system is available at Evergreen Helicopters, Inc., P.O. Box 382, Municipal Airport, McMinnville, Ore.

Use Right Chemical Tool For Weed Control (from page 23)

emergence treatment for broad-leaf weed control would still be required.

Another example: if a lawn or turf area contains mixed stands of dandelion, plantain, sheep sorrel, and common chickweed, the standard 2,4-D treatment would not be satisfactory because of the presence of two 2,4-D-tolerant species. A dicamba-2,4-D combination would be a better choice. Again, if prostrate knotweed were present beyond the seedling stage, the inclusion of dicamba or comparable material would become essential.

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with **Dacthal**® herbicide you get pre-emerge control of these weeds and grasses:

Annual bluegrass	Foxtail
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with **Dacamine**® you can kill these weeds once and for all:

Bindweed	Nettle
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Mustard . . . and many, many other	hard-to-kill weeds.

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Sclerotinia dollar spot
Rhizoctonia brown patch
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Curvularia and Helminthosporium leaf spot

Blights—
Going out
Fading out
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All-out control of weeds and disease, all season long, from one source—Diamond Alkali Company, Agricultural Chemicals Division, 300 Union Commerce Building, Cleveland, Ohio 44115



Diamond Chemicals



Daconil 2787 being applied on greens at Kirtland Country Club, Kirtland, Ohio

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Dacthal®—best crabgrass preventer you can buy. Also prevents many other weeds and undesirable grasses. Apply early for excellent pre-emergent control. Use in ornamentals, too!

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Geigy Markets Atratul 8P, New Granular Weedkiller

A pelletized herbicide, whose broad-spectrum weedkilling range is said to include both deep-rooted broadleaf and grassy weeds, is now being marketed by Geigy.

This new atrazine formulation, Atratul 8P, is recommended by Geigy for use around plant sites, rights-of-way, lumberyards, petroleum storage farms, and similar areas. Atratul 8P may be applied on all types of soils either before or after weeds emerge, regardless of the amount of rainfall in the area, according to the company. A single application will kill tough perennials as well as most annual weeds and grasses and also prevent new growth for a full season or more, it claims.

For control of annual broadleaf weeds and grasses, Geigy says apply 1/4 to 1/2 lb. per 100 sq. ft. of soil surface, while a rate of 1/2 to 1 lb. per 100 sq. ft. is advised for perennial weeds and grasses. In areas of high

rainfall, long weed growing seasons, and where extended residual control is desired, the higher rate is suggested.

For details on Atratul 8P, write Geigy Agricultural Chemicals, Division of Geigy Chemical Corp., Ardsley, N. Y.

McCulloch Offers New Chain Saw, Claims 30% More Power

McCulloch Corp. has just introduced the MAC 4-10, a lightweight chain saw, claimed to be 30% more powerful than previous models in the MAC-10 series.

Designed for the power-conscious user, MAC 4-10 has 30% higher torque and a 30% larger fuel tank. Other innovations include a larger displacement for more power, new double carburetor for a better fuel mixture, larger exhaust port for power, and a fully automatic chain-oiling system with manual override for complete chain lubrication at all times.

For full data and prices, contact McCulloch Corp., 6101 W.

Century Blvd., Los Angeles, Calif. 90045.

J. I. Case Adds Trencher to Line

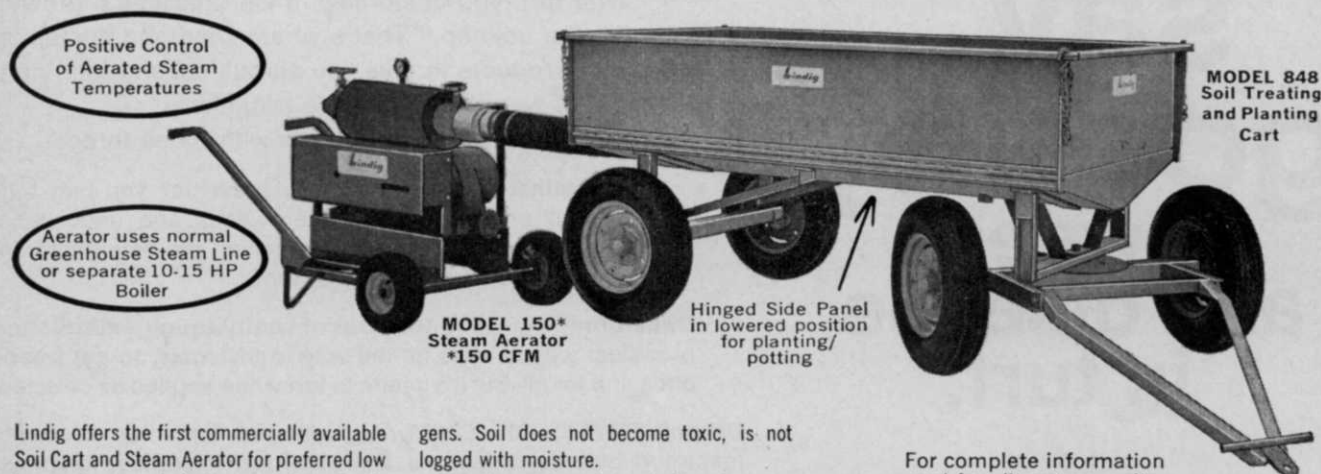
J. I. Case Co. has added a new, heavy-duty, rear-mounted trencher to its line of attachments and implements. The new trencher, model 1200, is designed for use with Case's model 190 compact tractor, and is said to meet requirements of contractors, utilities, and municipalities for digging water and drainage trenches.

With speeds up to 21 ft. per minute, trenching widths and depths can be adjusted in a range from 4" wide by 5' deep to 12" wide by 2 1/2' deep, Case says. Digging boom can be raised and lowered hydraulically from the operator's seat, according to the company, which sells the equipment through all its tractor dealers.

Specifications and other information on the new trencher are available from the J. I. Case Co., Racine, Wis.

Treat Your Soil Right!

New LINDIG Low-Temperature Aerated Steam System



Lindig offers the first commercially available Soil Cart and Steam Aerator for preferred low temperature aerated steam treating of soil.

This fast, efficient system fills the demand for low-cost safe control of plant-damaging micro-organisms, insects, virus, and weed seeds in soil mixes. When soil materials are heated to 145°-165° F. for a period of 30 min. most harmful elements are destroyed, but beneficial bacteria retain their vitality and capability to suppress mold causing patho-

gens. Soil does not become toxic, is not logged with moisture.

Less than an hour is needed to raise temperature and treat cart capacity of 48 cu. ft., using normal steam line pressure. Aerator can also be used to cool soil after treating. Treat large quantities by setting up continuous system with one aerator and several carts. Aerator available in 350 CFM size. Cart Cover and 18" probe type Temperature Gauge available as accessories.

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NATIONAL MANUFACTURER of lawn and garden products is adding a salesman in Philadelphia-New Jersey area. Nationally known name. Good salary, commissions, benefit programs. Write in confidence to Box 25, Weeds Trees and Turf magazine. (An Equal Opportunity Employer)

AGRONOMIST OR BOTANIST. If you have B.S. or M.S. in either of above fields, then we would like to talk to you about our industrial weed control service. Send complete resume to Western Soil Management Corp., 3909 Baltimore Ave., Philadelphia, Pa.

OPPORTUNITY. Man to assist owner as landscape foreman and management of established nursery, garden shop, and landscaping operation in Indiana. Requirements: pleasant personality, ambitious, understanding of plant material. Excellent wages, paid vacation, yearend bonus, fringe benefits, plus opportunity for industrious man to acquire ownership. Please reply to Box 24, Weeds Trees and Turf magazine.

WANTED TO BUY

HIGH-PRESSURE sprayers, skid or truck mounted, prefer 500-1500 gal. tank capacity. Paul Kucik, 17207 Archdale, Detroit, Mich. KE 3-8589.

Cushman Introduces Four Utility Turf Vehicles

Four new utility vehicles for golf course, park, cemetery, and estate turf work have joined Cushman Motors' Turf-Truckster. Largest is the 18 hp. Hydraulic Dump Body Turf-Truckster, which can be used for such dumping tasks as applying top dressing to greens, gravel to paths, sand to traps, etc.

Truckster's hinged tailgate opens from top, or driver can open it from the bottom by use of a lever near his seat. Or, its tailgate can convert into a seat for carrying extra personnel. The "Minute-Miser" is a lightweight unit for quick, convenient transportation. Cushman's "Lobster" features a front-mounted

cargo bed for carrying equipment and supplies.

The 8-hp. Turf-Truckster offers a load capacity of 1,000 lbs. for hauling fertilizer and heavy supplies, such as hand mowers. Illustrated brochures describing these new turf vehicles can be obtained by writing Cushman Motors, Lincoln, Nebr. 68501.

Literature you'll want

Here are the latest government, university, and industrial publications of interest to the readers of *Weeds Trees and Turf*. Some can be obtained free of charge, while others are nominally priced. When ordering, include title and catalog number, if any. Sources follow booklet titles.

1963 Dutch Elm Disease Report and Conference Summary, Wisconsin Dept. of Agriculture, Plant Industry Division, 448 W. Washington Ave., Madison 3, Wisconsin, 39 pp.

Better Lawns—Establishment, Maintenance, Renovation, Lawn Problems, Grasses, Rev. 1962., 32 pp. il., Catalog No. A. 1.77:51/4. Superintendent of Documents, U. S. Govt. Printing Office, Washington, D. C. 20402, 15¢.

Cornell Recommendations for Trees and Shrubs, 32 pp. il., Agricultural Extension Service, Cornell University, Ithaca, N. Y.

The ABC's of Good Lawns, Extension Circular 115, Agricultural Extension Service, University of Delaware, Newark, Delaware.

Lawn Insects—How To Control Them, Rev. 1964, 24 pp. il., Catalog No. A 1.77:53/2, Superintendent of Documents, U. S. Govt. Printing Office, Washington, D. C. 20402, 15¢.

Tree Diseases, Description and Control, Bulletin No. 74, Agricultural Extension Service, University of Delaware, Newark, Del.

The Dutch Elm Disease and Its Control, Rev. 1964, 12 pp. il., Catalog No. A 1.75:193/2, Superintendent of Documents, U. S. Govt. Printing Office, Washington, D. C. 20402, 10¢.

Fungicides for Lawn Disease Control, Bulletin BP-7-4, Agricultural Publications Office, Agricultural Experiment Station, Purdue University, Lafayette, Ind., 5¢.

Checklist of Native and Naturalized Trees of the United States (Including Alaska). Catalog No. A 1.76:41, 1957, 472 p., \$3.00, Superintendent of Documents, Government Printing Office, Washington, D.C.

Pruning Deciduous Shrubs and Woody Vines, Publication No. F 281, 1965, Agricultural Experiment Station, University of Michigan, East Lansing, Michigan.

Advertisers

INDEX TO ADVERTISERS	
Amchem Products, Inc.	36, 37
AG-KING, Subsidiary of Tidewater AG Systems	4
John Bean Div., FMC	31
The Borden Chemical Co., Smith-Douglass Div.	43
Diamond Alkali Co.	2a, 2b, 46, 47
E. I. duPont de Nemours & Co., Inc.	21
Fairfield Chemicals, Niagara Chemical Div., FMC....	7
Fitchburg Engineering Corp.	45
Geigy Agricultural Chemicals ...	29
Harder Arborist Supply	23
Hardie Sprayers	39
Hercules Incorporated.....	22, Back Cover
Hooker Chemical Corp.	17
International Harvester Co....	10, 11
Jacklin Seed Co., Inc.	38
Jacobsen Manufacturing Co.	35
Lindig Manufacturing Co.	48
Merck Chemical Div., Merck & Co., Inc.	27
Miller Distributor, Inc. ...	2nd Cover
Piro Research & Development Corp.	40
B. G. Pratt Co.	42
Ryan Equipment Co.	38
Seymour Smith & Son, Inc.	32
Stone Conveyor Co., Inc.	6
Thompson-Hayward Chemical Co. 3 Union Carbide Corp., Chemicals Div.	8, 9
Universal Metal Products Div....	5

Ground Covers for Highway Slopes—An Annotated Bibliography. Investigation No. 615, June 1965, L. E. Foote, Agricultural Engineer, Minnesota Department of Highways, St. Paul, Minn. 55101.

Calibration of Pesticide Applicators. Circular No. 275A, Mail Room, Rolfs Hall, Agricultural Extension Service, University of Florida, Gainesville, Fla.

Using Phenoxy Herbicides Effectively. Catalog No. A 1.9:2183, 1962, 24 pp. il., 15¢, Supt. of Documents, U. S. Government Printing Office, Washington, D. C. 20402.

Waterweed Control on Farms and Ranches. Catalog No. A 1.9:2181/2, Rev. 1965, 22 p. il., 15¢, Supt. of Documents, U. S. Government Printing Office, Washington, D. C. 20402.

Chemical Control of Brush and Trees. Farmers' Bulletin No. 2158, Nov. 1964, Office of Information, U. S. Dept. of Agriculture, Washington, D. C. 20250.

The Elm Leaf Beetle. Leaflet No. 184, Rev. Aug. 1962, Office of Information, U. S. Dept. of Agriculture, Washington, D. C. 20250.

Lawn Diseases, How to Control Them. Home and Garden Bulletin No. 66, Rev. Aug. 1962, Office of Information, U. S. Dept. of Agriculture, Washington, D. C. 20250.

Roselawn St. Augustinegrass as a Perennial Pasture Forage for Organic Soils of South Florida. Bulletin No. 689, Mail Room, Rolfs Hall, Agricultural Experiment Station, University of Florida, Gainesville, Fla.

Common Trees of Puerto Rico and the Virgin Islands. 1964, 548 pp. il., cloth, \$4.25, Supt. of Documents, U. S. Government Printing Office, Washington, D. C. 20402.

Suppliers Personnel Changes

Allis-Chalmers Farm Equipment Division, Milwaukee, Wis., has named William L. Barber merchandising manager. With responsibility for the introduction, promotion and sales of the farm equipment line, Barber succeeds Raymond C. Doggett, who moves to Dallas, Tex., as manager of the division's branch there.

Amchem Products, Inc., Ambler, Pa., reports that M. B. Turner has been designated general manager of its Agricultural Chemicals Division. He will direct all phases of the division's operation, including sales, research, and production.

The Ansul Co., Marinette, Wis., announces three executive appointments and two additions to the marketing staff of its Chemical Products Division. Henry E. Arkens becomes division marketing manager; Robert E. Lucas is now market manager for plant control chemicals; and Franklin W. Wedge has been named manager of special sales of agricultural and industrial chemicals. Thomas D. Powers and John R. Fernandez join Ansul's marketing staff. Powers will serve as marketing specialist in agricultural chemicals based in Houston, Tex., and Fernandez is slated to specialize in international marketing for Ansul's chemical products.

Armour Agricultural Chemical Co., Atlanta, Ga., has selected Mike W. Tustian as national accounts sales manager for lawn and garden products. A turf chemical specialist, Tustian will direct sales and service for Armour's Vertagreen plant foods and chemical products.

John Bean Division of FMC Corp., Lansing, Mich., reports Charles E. Taylor has recently joined John Bean as district agricultural sales manager for Illinois.

The Dow Chemical Co., Midland, Mich., has consolidated all plant science development functions under the management of Dr. Mark G. Wiltse, who will direct field development groups and product technical specialists.

Elanco Products Co., division

of Eli Lilly and Co., Indianapolis, Ind., has added two sales representatives to its agricultural chemical division, and has promoted Joel H. Stonecipher to field sales manager. Stonecipher will direct agricultural chemical sales in the north-central states and will headquarter in Omaha, Nebr. New sales representatives are Henry A. Holdman, temporarily assigned to a Texas territory, and Evan G. Purser, who will cover Washington and part of Oregon.

Dow Introduces New 'Copter Spray System

Pilot-operated herbicide flow control gives the new Dow Chemical Co. helicopter spray system ability to adjust swath width as much as 25 feet while in flight.

Flying above a right-of-way, a pilot can vary spray swath from a maximum of 50 ft. to a minimum of 25 ft. Cockpit controls also allow the pilot to vary volume between 5 and 10 gals. per acre.

The system, for treatment on utility rights-of-way, was developed for use with Tordon herbicide formulations. Dow research and development men said a limited number of the new helicopter units will be used this year by approved applicators as part of a continuing field development program.

Instead of a spray boom, four spray nozzles mounted under the helicopter nose dispense herbicide. Each nozzle can be adjusted 45 degrees in flight. For safer operation, nozzles extend only slightly beyond the toes of the helicopter landing skid. Spray tanks centrally located in line with the helicopter main rotor mast contribute to balance and center-of-gravity values of the helicopter.

Dow engineers say more than 8 years of experiments with various types of equipment preceded this spring's limited commercial introduction. More information on the new spray system can be obtained by writing Bioproducts Div., The Dow Chemical Co., Box 512, Midland, Mich. 48641.

Trimming

Historic elm lost. University of Washington's historic 67-year-old Washington elm in front of Lewis Hall has become a victim of Dutch Elm disease. It was a direct descendant of the tree under which George Washington stood to take command of the continental Army in 1775. The original tree on the Harvard University campus died in 1923 at an estimated age of 200 years. Original cutting for the University of Washington elm was taken in 1899 by Arthur F. Collins, a Harvard graduate student. It was taken west for planting three years later. On the bright side, cuttings have been made from the UW elm and tradition will be served by placing one scion in a prominent position on campus. Interesting sidelight is that Harvard secured a clipping from the UW elm for its campus when its original elm died more than 30 years ago. Previously a scion from the UW tree was planted at the nation's capitol at Washington, D. C. Cordwood from the old elm has gone for use at UW residence halls and to the UW College of Forestry for research. Decision to remove the tree was made by Prof. Charles Driver, UW department of forest pathology, Prof. Richard Walker, Chairman of the UW botany department, Eric Hoyte, landscape architect, and Brian Mulligan, Arboretum director, after the 75-foot giant was first damaged by lightning in 1963 and then became infected with fungi spores.

* * *

Peat-Based Lawns. Why not here? Hungarofruct, a Hungarian trade group, is exporting to Austria sod grown on plastic covers on a peat base. Peat is laid down on plastic covers and seeded, followed by plentiful watering. Within two months, a smooth grass lawn is said to be ready for tying roadbanks or embankments, grassing parks, embellishing gardens, turfing groves and for use in cemeteries. The peat base is easy to cut into any shape desired. Costs are somewhat higher than with production of conventional sods but the same area can be used three times per season. Sod is reported to take root very quickly.

* * *

Tax break for saving trees? We like Harry J. Banker's thinking regarding Iowa Senator Jack Miller's bill S 3776. Senator Miller's bill would permit a tax reduction for expenses incurred for work to prevent the destruction of trees infected or infested with diseases or insects. Banker, president of the New Jersey Society of Certified Tree Experts, believes care and maintenance of trees on private property is vitally necessary in every community of the United States if residential areas are to retain their pleasing character and not be permitted to slowly degenerate into slums. Tangible financial relief from this particular maintenance expense can go a long way in helping maintain more than just a minimum tree population in our cities.