

March 1965

CONFERENCE REPORTS!

Int'l Turf Pg. 18 Aquatic Pg. 26 Calif. Weed Pg. 20



January and February were conference months. These leading arborists gathered for the 36th Annual Ohio Short Course in horticulture at Columbus in January. Left to right are: F. Lewis Dinsmore, Dinsmore Tree Service, St. Louis, Mo.; Joseph A. Dietrich, park superintendent, Greenwich, Conn.; Dr. L. D. Chadwick, Ohio State Univ. Dept. of Horticulture; and Winston E. Parker, certified tree expert, Moorestown, N.J. Dietrich is president of the International Shade Tree Conference, of which Dr. Chadwick is the longtime executive secretary. Story on pg. 34.

Update on Herbicides for Ornamentals pg. 12

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March 1965 Volume 4, No. 3

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The High Road to Profits

It's possible that vegetation maintenance and control contractors will hit the high road to profits in the managed economy which lies ahead of us. No less a person than the *New York Times* columnist James Reston indirectly pointed this out in one of his recent columns.

Reston was discussing the persistent millstone of unemployment which thrives even in our nation's unparalleled prosperity. Reston feels that even though we apparently have learned to regulate the economy sufficiently to preclude inordinate highs and lows, the problem of unemployment will remain with us. Among the possible solutions the *Times* writer proposed, was greater expansion of service industries into the burgeoning areas of affluence which exist now, and which will doubtless grow. He even singled out "garden services" as one of these industries.

While his concept of "professional gardening" for well-heeled suburbanites was mentioned only in passing and was not elaborated on, it suggests a good potential for aggressive managers who wonder where they will be tomorrow.

No business will progress long, as will no nation, without a master plan which considers the general direction of the economy at large. And all indications are that the future will continue to bring us an increase of homeowners who (1) don't want to be bothered working around their

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HOSE

home grounds when the time can be spent making more money, or enjoying recreational pursuits with money already made; and (2) have the means to pay a service firm to handle, with skilled dexterity and responsible performance, the multitude of jobs which are necessary to achieve an attractive and healthy environment.

Opportunities, then, for turf maintenance enterprises, for tree companies, or for contractors who offer a complete line of these activities, will abound. To make the most of them, however, requires first an awareness that the potential does indeed exist, and second the fortitude to go out and educate these customers-to-be that they can afford, and should afford, to pay a professional to look after their lawns, shrubs, and trees.

Living in a society which is as complex in every way as ours, is itself not easy. Running a profitable business is even harder. But those who adjust to the new way of American life, especially service-oriented companies which thrive on the consumer's well-being, will grow in the next decade as they have never grown before!

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

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Without the root knots and lesions caused by nematodes, water and soil



A Nemagon spray knocks out nematodes fast, and thoroughly. Turf isn't disturbed. And nearby plants won't be injured.

nutrients can pass freely through roots. Turf can respond fully to fertilizer and irrigation. Risk of stunting, poor appearance and dead patches is eliminated. So is the risk of a reseeding or



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Nemagon is easily drenched into soil following a spray application. There's no need for special equipment and grass isn't disturbed. Easy-to-follow directions are printed on every package.

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Full details on using dieldrin for



This root-chewing white grub can kill turf or make it look sick. So can a host of other grubs and soil insects. Dieldrin stops them all.

control of soil or surface insects are on every package label.

Nemagon and dieldrin are both available as branded products of wellknown manufacturers and sold where you normally buy insecticides, and other turf maintenance products.

For more information, write Shell Chemical Company, Agricultural Chemicals Division, 110 West 51st St., New York, New York 10020.

Follow label directions carefully when using any pesticide.



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200 Wagaraw Road, Hawthorne, N.J.

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Boosts Professionalism

I am very pleased to note the editorial in the November, 1964. issue of Weeds Trees and Turf. "Setting A Good Example." This, it seems to me, is good advice for many of our horticultural activities. I like, very much, your emphasis on professional status of the industry. We in the nursery industry could use a little more of this feeling, both within our industry, and in creating the image of professionalism among our clients. It has been discussed at great length at some recent meetings of the American Association of Nurserymen Education Committee.

I am also very much pleased to see, in the same issue, the reporting of the Minnesota Shade Tree Conference, held recently at the University of Minnesota St. Paul campus. You have done a good job in reporting this and I think the conference has helped to stimulate an awareness on the part of park superintendents, golf course operators, and others, that there are several species that are well adapted to the area. This is a good article.

Vincent K. Bailey J. V. Bailey Nurseries St. Paul, Minn.

Plastic Weeds for Study?

Would it be impractical for some manufacturer to reproduce weeds in plastic—in color—and sell them to schools, golf courses, parks, cemeteries; every place where weeds are studied or there is a weed problem?

H. R. Rubendall Freeport Country Club Freeport, Ill.

This idea has so many possibilities in weed education programs that we present it here for all to read.—Ed.

Needs a Lift

Please furnish us with the names and addresses of manufacturers and/or distributors of the following described equipment: A one-man, mobile, selfpropelled unit with personnel boom. Used in tree pruning, thinning, spraying, fruit picking, etc. Also the trademark name of equipment, if known. *R. M. Huntley*

Advertising Manager Weed Control Service, Inc. P.O. Box 6527

Portland, Oregon, 97223

We regret we cannot help on this, but we publish your request here in the event that our readers may know of equipment of this type and will share the information with you. — Ed.

Correction

We have noticed on Page 34 of the December, 1964, Weeds Trees and Turf that Armour Agricultural Chemical Company is listed as handling our product, "Milorganite."

We feel that a retraction would be in order on this, in that Milorganite is handled exclusively by The Milwaukee Sewerage Commission and its exclusive franchised distributors.

Charles G. Wilson

Sales Manager and Agronomist Milorganite Turf Service Sewerage Commission of the City of Milwaukee Milwaukee, Wis.

Weeds Trees and Turf sincerely regrets the error.—Ed.

Wants WTT Expanded

You do an excellent job and I approve the inclusion of "Trees" as part of your new name. Spraying ornamentals, fertilizing, and general care, including pruning, is my main interest, although a good portion of my work deals with pest control of indoor plants.

I'd be delighted to see you expand your magazine to include more on maintenance of plantings around homes.

James H. McNally 1255 Galvez Drive Pacifica, Calif.

A rather extensive article on new herbicides for use in ornamentals appears on page 12. Also, articles dealing with subjects closely allied to ornamental spraying will appear throughout the year. — Ed.

Weeds Trees and Turf welcomes expressions of opinions from its readers. Send ideas and comments briefly as possible to Charles D. Webb, Editor, Weeds Trees and Turf, 1900 Euclid Ave., Cleveland, Ohio 44115.

At the Powelton Club, Grass Stops Growing.



Newburgh, New York: This summer acres of grass stopped growing at the Powelton Golf Club of Newburgh, New York. The grass was treated with MH-30*T by Powelton's Golf Course Superintendent, William Smart.

Mr. Smart reports: "MH-30T pays for itself in the first 14 hours of labor you save. If you have an acre of rough hillside, you'll break even the first time you don't have to mow. Every mowing you skip after that is pure savings. And you get the bonus of having the grass look neat all the time instead of for just a few days at a time. I will use MH-30T again this spring. About 10 gallons will do my needs."

Read about a revolutionary chemical that controls the growth of grass without harming it in any way.

cally reducing the expense of cut- to be cut once or twice a year. ting grass throughout the country. Three times if you're extra fussy. This chemical is called MH-30T.

A single spraying of MH-30T controls the growth of grass for an entire season. Here's how it works:

MH-30T temporarily stops cell division (this is what makes grass grow). It does not affect cell expansion. This means, grass gets thicker, lusher, and often greener, instead of taller.

The effects of MH-30T gradually And the grass grows slightly.(The actual amount of growth varies

An amazing chemical is dramati- from region to region.) It may have

Thousands of acres of highway grass in Connecticut have been treated with MH-30T. Now, mowing costs each year are \$20 an acre instead of \$70 in hard-to-mow areas. MH-30T is also controlling grass at cemeteries, parks, golf courses, military bases, and airports all across the country.

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TECHNICAL CHEMICALS DEPT., NIAGARA CHEMICALS DIVISION, MIDDLEPORT, NEW YORK

WHEREVER ornamentals are grown, weeds present big maintenance problems. Costs of hand labor for weed removal in nurseries in the Northeast, for example, may average close to \$200 per acre per year where the weeds are systematically removed. Where weeds are unduly neglected, the cost of a single hoeing can approach this figure. Although costs of weed control by hand or mechanical methods in parks or estates are not well known, it is reasonable to assume that they represent a substantial portion of the maintenance budget.

It has been demonstrated in many nurseries that replacing hand methods of weed removal with chemical weed killers alone faster growing weeds that are sure to get a lion's share of nutrients and water. In some experiments in ornamental plants, chemical control of weeds that harbor parasitic nematodes also has decreased the nematode populations. The net result of chemical weed control, then, can be measured in increased plant vigor and growth, often 50% better than plants hoed periodically as in normal nursery practice.

As one might expect, there is no one herbicide that controls all weeds safely in every ornamental situation. The herbicide must be chosen for both the crop and the weed involved. The big problem in ornamentals is that there are numerous species, varieties, and sizes of ornamentals Herbicides for ornamentals are discussed in this article under three categories: (a) herbicides for preemergence weed control; (b) herbicides for postemergence weed control; and (c) herbicides for problem weeds. In general, preemergence treatments prevent weeds from becoming established and postemergence treatments kill weeds after they are established. Some herbicides have pre- and postemergence activity.

Herbicides for Preemergence Weed Control

The herbicides most useful in ornamental plantings are the soil-applied preemergence herbicides—compounds that kill weeds in their early stages of

Present and Future Uses of Herbicides in Ornamentals



can reduce costs of maintenance by 50% or more.

The injury ornamental plants sustain from mechanical or hand methods of weed control may be ignored but nevertheless adds greatly to the cost of producing ornamental plants. Field examinations of saleable woody nursery stock have indicated that few plants escape eventual barking from the hoe or cultivator. The right herbicides properly used greatly decrease the hazard of plant injury and mortality.

Still other benefits can derive from chemical weed control in ornamental plants. Better utilization of fertilizer by ornamental plants occurs where weeds are prevented with herbicides. Since most ornamentals are by nature slow growing, they offer little competition to the

By DR. J. F. AHRENS Associate Plant Physiologist The Connecticut Agricultural Experiment Station Valley Laboratory, Windsor, Connecticut

that vary greatly in their tolerance of herbicides. Without trial evaluations, it is dangerous to assume that a plant is tolerant of a particular herbicide. Although, generally speaking, woody plants are more tolerant of soil-applied herbicides than are herbaceous plants, and larger, better established plants are more tolerant than are smaller or newly set plants of the same species, it still is wise to use any herbicide on a trial basis the first time it is used in a particular planting. This includes leaving an untreated comparison, even though the herbicide may be labelled for the particular plant type.

germination and growth but usually do not kill established plants or weeds. To be effective they must be applied and become activated before weed seeds germinate. Many preemergence herbicides that are used in other crops could be useful in ornamentals but the most promising are those possessing long residual activity in the soil.

Simazine (2-chloro-4,6-bisethylamino-s-triazine, available as wettable powder or granules), currently is the most widely used herbicide in ornamental plantings. One of the reasons for its wide use is that it can be applied in either the wettable powder or granular form during any season of the year. Fall or winter applications of simazine at 2 to 4 lbs. per acre can be expected to pay the greatest dividends to nurserymen because established chickweed (Stellaria media) is killed, and most weed growth is prevented until June or later. In the Northeast, fall or winter applications at these rates do not usually affect the growing of an oat cover crop the following September, an added advantage where winter erosion is a problem. Cultivation slightly reduces the effectiveness of simazine for annual weed control, but may be essential if a dry period follows application and weeds escape injury.

As well as controlling most annual weeds, with the possible exception of crabgrass (*Digitaria spp.*), at low rates of application, simazine also controls many perzia gracilis, Rosa rugosa, Philadelphus, Ligustrum, and Hypericum. Unlike Rosa rugosa, most of the rose family appears to be highly tolerant of simazine. Since tolerance depends somewhat upon soil type and plant size, several of the above plants have tolerated low rates of simazine without ill effects. Woody plants showing mild discoloration by simazine have made better growth than untreated weedfree plants in some experiments.

Several narrow-leaved evergreens have demonstrated very high tolerance to simazine and newly set field liners often are treated by nurserymen in the Northeast. Exceptions to this rule are hemlocks (*Tsuga cana*-



A permanent nursery where herbicides may be tested for effectiveness in ornamental plantings is a feature of the Connecticut Agricultural Experiment Station. Photo was made about 9 weeks after 6th annual application.

ennial weeds including quackgrass (Agropyron repens) at higher rates of application. This is especially true where simazine is applied prior to quackgrass emergence and is combined with cultivation. Annual weed control with simazine may last from 2 months to a season, depending upon the rate of application.

Simazine has been safely used on most established field-grown woody plants (those planted for 6 months or more before application) and certain deep-rooted perennials or bulbs such as peonies and tulips and ground covers such as Vinca and Pachysandra. Woody plants that have been injured by simazine include Azalea, Euonymus, Forsythia, Salix, Spirea, Lonicera, Syringa, Deutdensis) and Taxus cuspidata capitata. Best results can be expected where the plants are well set and have received a good rain or irrigation before treatment. In smaller plants or newly set plants, the low rates of application ($1\frac{1}{2}$ to 2 lbs. per acre) used often provide acceptable weed control for 2 to 3 months.

Other preemergence herbicides labeled for ornamental and nursery plantings, some of which are not tolerant of simazine, include neburon, CIPC, DCPA, dichlobenil, and trifluralin.

Neburon (1-*n*-butyl-3-(3,4-dichlorophenyl)-1 methyl urea, available under trade name "Kloben" as wettable powder), can be safely applied on most of the woody nursery species tolerant of simazine and on a few that are susceptible to injury from simazine if sprays are directed to avoid hitting the plant foliage. With overhead sprays of neburon, discoloration has occurred in deciduous species such as *Forsythia*, *Philadelphus* and *Spirea* and the evergreen *Tsuga canadensis*. However, dormant overhead applications of neburon are much safer.

At 4 to 6 lbs. per acre, neburon controls many annual weeds and grasses for 2 to 4 months and also is effective against established chickweed in the fall or spring. Applied on the same nursery areas for 6 years, neburon has caused no injury to newly planted or established Taxus spp., Euonymus sarcoxie or Picea glauca.

CIPC [isopropyl N-(3-chlorophenyl) carbamate] has been used in nurseries for many years. It is safe for use in many species of woody ornamentals and some perennials when applied at 4 to 8 lbs. per acre in granular form or as a directed spray. CIPC is at its best during the cool seasons and can be used to kill established chickweed in azaleas, for example. Warm-season weed control often lasts only 4 to 6 weeks with CIPC and repeated applications are required for longer weed control. Soil disturbance after application decreases the effectiveness of CIPC. It's available as chloro IPC in emulsifiable or granular form.

DCPA [2,3,5,6-tetrachloroterepthalate] first emerged a few years ago as a crabgrass killer for lawn turf, and now is labeled for use in a wide variety of herbaceous and woody ornamental species, including some newly seeded or newly planted annuals and perennials. Owing to its wide tolerance among ornamentals as well as its proven effectiveness for crabgrass control in turfgrass, DCPA should prove to be a boon to custom applicators and to landscape nurserymen who often grow a mixed variety of ornamentals in the same field. At rates of 9 to 12 lbs. per acre, DCPA is most effective against annual grasses but also controls a number of annual broad-leaved weeds including purslane, lambs-



A dormant application of granular simazine controls weeds for several months, author Ahrens says.

quarters, and chickweed. Like simazine, DCPA can be sprayed directly over plants or applied in granular form. One of the promising treatments of the future for ornamental plantings may well include a combination of DCPA with simazine or some other broad-spectrum weed killer. Applicators may obtain DCPA under trade name of "Dacthal," as wettable powder or in granules.

Dichlobenil [2,6-dichlorobenzonitrile] and trifluralin [a,a,atrifluoro-2,6-dinitro-N,N-dipropyl-p-toluidine] are relatively new preemergence herbicides that are now labeled for use in ornamental plantings. Both have little foliage activity and can be sprayed directly over growing plants, and both have longer residual activity in the soil when incorporated. Dichlobenil promises to be useful primarily during the cool season because it is somewhat volatile under higher temperatures. Dormant applications of dichlobenil at 4 to 6 lbs. per acre control established sods including quackgrass. During the growing season dichlobenil appears to be effective against several annual weeds and some perennials including nutsedge (Cyperus spp.) for 2 months or more. Incorporation of dichlobenil may be required for best results on nutsedge. Commercially, the compound is known as Casoron, and is available as wettable powder or in granular form.

Trifluralin is effective at rates of ½ to 2 lbs. per acre when incorporated into the soil, or 3 to 6 lbs. per acre when used as a surface spray. It has long residual activity especially against grassy weeds and has been used safely over certain established annual and perennial flowers as well as woody plants. Trifluralin, called "Treflan," is available in emulsifiable form.

Since no single herbicide controls all weeds in all ornamental crops it is inevitable that herbicide combinations will be used to a greater extent in the future. Since simazine has long residual activity against broad-leaved weeds at low rates of application, it could be combined with herbi-



In deciduous plantings, such as these maples, a directed application of amitrole plus simazine kills established weeds and prevents further weed infestation for very long periods.

cides such as DCPA or trifluralin that have long residual activity against grasses. Other preemergence herbicides are currently being tested in ornamental plants, and one of these new materials (diphenamid) looks very promising alone or in combination with low rates of simazine. Since the writing of this article diphenamid has been labeled for use on nursery stock. Diphenamid, called "Dymid" and "Enide," comes as a wettable powder or in granular form.

Herbicides for Postemergence Weed Control

To control most established weeds, it is necessary to use a foliage-active herbicide. The one that has found the most usage in ornamental plantings is a combination of amitrole [3-amino-1,-2,4-triazole] and simazine, applied as a directed spray around the base or between the rows of woody plants (Amitrole is available as a powder or liquid under several trade names). A combination of 1 lb. of amitrole plus 3 lbs. of simazine usually produces rapid kill of actively growing weeds and prevents most weed growth for a growing season. This combination kills faster than either amitrole or simazine alone and also provides long residual weed control. The combination, known as Amizine, can be used only where a directed spray is feasible and only around established species that tolerate simazine.

Solan [3-chloro-2-methyl-pvalerotoluidide] is safe and effective as an overhead spray during the dormant season on many species of deciduous nursery stock or as a directed spray during the growing season. Solan at 4 lbs. per acre is effective against seedling grasses less than 1 inch high and seedling broadleaved weeds 2 inches high including established chickweed. Since it has no residual activity in the soil, repeated applications of solan are required during the growing season. Solan is cleared for use as a directed spray in greenhouse-grown carnations and roses as well as in woody ornamentals outdoors. Its trade (Continued on page 29)



A 12.5-Ib. bag of Azak wettable powder covers one acre. One application lasts through crabgrass germination period.

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ST. AUGUSTINEGRASS, Stenotaphrum secundatum, is a rarity among turfgrasses, being, as far as we know, a native to subtropical America, where it has been most used. All other grasses reviewed in our Portrait series have been naturalized from Old World continents or islands.

Stenotaphrum is a small genus, currently thought to embrace but three species, two of them found in southern Asia, and S. secundatum along the southern Atlantic and Gulf Coasts in America (introduced into Arizona and California). All are fairly low, creeping grasses, spreading well by stolons. Their preferred habitat is moist climate and mucky soil. St. augustinegrass has been one of the better performing southern turfgrasses near seashores.

Adapted as it is to humid conditions, st. augustine is a "natural" for lawns of the low-lying Coastal Plain, Florida especially. Its comparative hardiness near salt spray, and its ability to recover quickly in the nearly yearround growing weather there, help, too. Although st. augustine will survive in the higher, drier, colder environments north to the Piedmont, Little Rock and Dallas, its uncontested domain has long been the more tropical environments farther south.

Appearance And Growth

St. augustine is not what would be called an elegant turfgrass, being too coarse and of too loose texture for that. Leaf blades may be as much as 1/2 inch wide, though newer selections have finer texture much like centipede. The leaves exhibit a curious constriction and "half twist" where the blade joins the sheath, a distinguishing feature in telling st. augustine from similar turfgrasses such as centipede or bahia. The leaf blades are smooth except for a cluster of hairs at juncture of the sheath, blunt tipped, in most selections attractively dark green. Leaves (and side branches) occur in groups at the nodes, overlapping the relatively bare internodes. Stems (stolons) are flat, thickish.

Compared to bahia and most bermudas, even zoysia and centipede, st. augustine produces relatively few seedheads, often a mowing nuisance in turfgrasses. The seedheads themselves are rather thick, with the individual flowers (spikelets) embedded in a corky, sinuous rachis, actually the source of the name Stenotaphrum (from the Greek meaning "narrow trench," referring to the cavities in the rachis in which the spikelets are embedded). The low frequency of seedheads, combined with apparent sterility of many spikelets, and no established means for collecting seed, limits propagation of st. augustine to live starts.

St. augustinegrass grows with fair rapidity, and is easily established from sod, plugs of rooted grass, or sprigs (individual stolons of several-node length). With fertilization and some weed control it is not difficult to knit a lawn from starts approximately a foot apart in a matter of a few months of suitable growing weather.

Probably the most notable attribute of st. augustinegrass is its ability to grow well in shade. Perhaps more so than any other southern grass, st. augustine is shade-tolerant. In most other respects st. augustine is a moderate, ranking neither best nor poorest.

St. augustine is widely tolerant of soils and pH (usually a pH near neutral is recommended). It is vigorous, and the leaves of lawn varieties lie low to the ground, making mowing easier than might be supposed for such coarse vegetation. In southern Florida it is green nearly year-round, and is off color only briefly in winter in northern Florida.

The ease with which st. augustine is propagated on the immense sod farms of the muck lands near Lake Okeechobee makes this species one of the least expensive turfgrasses of the South.

Difficulties

However, the economy of starting a st. augustine lawn is overbalanced these days by the expense of maintaining it. Not too many years ago st. augustine was considered relatively undemanding. With wider use and better fertilization (yielding "softer" grass), problems arose.

Most serious has been chinch bugs, species of Blissus, which have a predilection for st. augustine. They have wiped out many a st. augustine lawn in Florida, and now seem moving westward into Texas. Chinch bugs are small sucking insects, which, if not quickly controlled, "bleed the turf white" in irregular patches, causing it to brown and die. Unfortunately, these southern chinch bugs are a mean lot; no sooner is a good insecticide discovered, than they breed populations resistant to the chemical. Early control with DDT, chlordane and other chlorinated hydrocarbons now fails in most areas, and even some of the newer phosphatic insecticides find chinch bug populations building resistance to them. Recent recommendations by the University of Florida for chinch bug control are sprays of Trithion, Ethion, and Aspon (at 7-10 lbs./A), Diazinon (at 4-8 lbs./A), and V7-C 13 (17-35 lbs./A), every 6-8 weeks. Such sprays will also control webworm, armyworm, and other insects often a problem. Nematodes, too, may bother st. augustine, dwarfing the root system; if present, a nematocide should yield greener grass.

Not only has the "chinch bug problem" made repeated spraying of insecticide necessary, but diseases, too, have made serious inroads in recent years. Brown patch has wiped out a lot of st. augustine in Texas (where PCNB-Terraclor at 3/4 lb./M is said to arrest the disease best). and farther east brown patch is reported controlled with mercurials, Thiram and Kromad as well as PCNB. At least two sprayings about 14 days apart are suggested. Other diseases, such as gray leafspot, make serious inroads, too, and though most are preventable with regular fungicidal sprays, adding disease spray bother to the chinch bug burden is enough to encourage many a homeowner to switch from st. augustine to some more self-reliant grass such as bahia.

A final problem with st. augustine is not uncommon with any luxuriant tropical ground cover — the buildup of spongy thatch that insulates growing parts from the soil. In older, unthinned turfs, such thatch may be several inches thick, the grass shallow rooted and tending to wilt easily. The thatch may harbor various weeds and pests (including chinch bug), to contribute to st. augustine's delinquency; it surely impedes penetration of water and pest remedies.

Care

Obviously, from the foregoing, st. augustine cannot be considered a low-maintenance grass. To protect it properly against pests requires equipment, chemicals, and know-how usually beyond the capacity of the average homeowner. As a result there has arisen in Florida a technical lawn service industry more voluminous than in any other part of the nation.

Otherwise, st. augustine is not

St. augustinegrass tends to be coarse bladed although newer selections show finer texture. a difficult grass. It mows rather well with reel mowers (a heavy machine is suggested, for light ones "ride" high on the thatch); it is moderately fast growing, but not so rampant as bermuda; it flourishes in both shade and sun; and it is moderate in its fertility requirements. Of course it wants its fair share of moisture, by irrigation if rain long defaults.

Regular feeding of st. augustine heightens its deep green color. A fertilization schedule suggested by the University of Florida calls for a complete fertilizer spring and autumn, organic nitrogen in summer, as the minimum, about 1 lb./M rate each time. Better kept swards may have two or three additional one-pound fertilizations spread through the year. Tests have shown that organic fertilizers (which don't stimulate so sudden a surge of "soft" growth as do soluble nitrogen sources) may reduce chinch bug damage.

Although lawn varieties of st. augustine may be mowed as close as 1 inch, a tighter, more weed-resistant cover occurs when mowed about two inches. Mowing should be approximately weekly, any time growth reaches twice customary mowing height. A scalping (and raking) in spring, when recovery will be quick, is said to hold down thatch. Clipping removal should also help.

St. augustine is not tolerant of many familiar weed killers, such as 2,4-D and related phenoxys. But it will withstand Simazine and Atrazine. These are usually suggested for new plantings, to control weeds while the st. augustine spreads to what is usually a relatively weed-resistant turf. Of course new plantings do best in a cultivated, fertilized seedbed, watered consistently until thoroughly rooted. Favored planting season is spring or early summer.

Varieties and Selections

As with centipede, there have been relatively few commercial varieties of st. augustine developed. A flourishing sod industry still produces "common," and the tall-growing pasture variety "Roselawn," both coarse and comparatively open (few branches, lengthy internodes).

An early lawn selection was "Bitter Blue," relatively dense, low, dark colored, and reportedly well adapted to coastal environments. Although Bitter Blue is still offered, identity is not always certain, and it sometimes becomes difficult to distinguish pure Bitter Blue from the general run of st. augustine offered in the trade.

More recently the University of Florida has released "Floratine," grown under certification, now widely handled by major sod growers. This selection is even denser and somewhat finer textured than Bitter Blue. It tolerates low mowing well.

In addition to these releases, scores of different-appearing st. augustine clones have been isolated, some dwarf, others exceptionally vigorous, in many shades of color. While some selections have looked quite promising, more testing is needed to confirm performance under a wide range of field conditions.



Turf Specialists Focus on Water Needs, Practices, At 36th Int'l Turf-Grass Conference in Cleveland

How water affects turfgrass health and soil conditions, and how it should be applied, was a prevailing theme of the educational sessions during the 36th International Turf-Grass Conference and Show February 7-10 at the Sheraton-Cleveland Hotel, Cleveland, Ohio.

Technical lectures on turfgrass science were interspersed with talks on general golf course management, and "free" periods allowed delegates to view the annual trade exhibition, termed "The Greatest Show on Turf." This year saw a record number of exhibitors present, and conference officials, at presstime, expected the final tally of registrants to surpass last year's 2700 attendance in Philadelphia.

"What watering techniques produce the best turf?" Harry J. McSloy, Superintendent of Wilmington Country Club, Wilmington, Del., asked as a springboard to the answers which were the meat of his talk.

"Constant wetness of turf is not the reason for watering grass," McSloy explained. "Alternate wetting and drying is beneficial because it promotes less compaction, roots penetrate more deeply for available water, denser turf is produced, and fewer weeds have a chance to sprout. Such healthy dense turf will bounce back quickly after a bout with disease.

"Change your watering schedule only in the spring" McSloy advised. "Let the turf dry almost to the wilting point, then water it deeply with a nozzle which will prevent puddling and runoff.

"Water to a depth of 6 inches, and test this depth periodically with a soil probe," the Superintendent continued. "Water should be applied slowly to prevent crusting.

"Then hold off watering until the turf loses resilience, or appears just about to wilt," McSloy went on. "Grasses vary in their water requirements; some bermudagrasses will do well if watered only once every 7 days."

The experiences of this superintendent were expanded and substantiated later by Dr. Ralph



Host member, Malcolm McLaren (left), vicepresident of the Northern Ohio GCSA greeted visiting superintendent James Haynes, Denver (Colo.) Country Club. McLaren is a former GCSAA president.

Engel, Agronomist, Rutgers University, New Brunswick, N. J., who presented some research results from academic studies.

"A good program of watering will include the following points: (1) apply water only when needed; (2) apply it slowly; (3) make certain application is uniform; (4) use fine droplets; (5) apply the proper amounts to avoid runoff, (6) and time application according to weather and rainfall," the turf expert enumerated.

Know Grass Water Needs

Dr. Engel advised superintendents to be familiar with individual grasses and the water requirements of each. "Bentgrass has a high water need, whereas bluegrass and the fescues are not favored by generous

"Winter injury can be worse than vandalism," Dr. C. Richard Skogley, Univ. of Rhode Island agronomist told the educational assembly at 36th Int'l. Turf-Grass Conference.



watering," he said. This knowledge is important because watering can regulate species balance or dominance. Dr. Engel showed a slide of a bluegrass plot which was receiving too much water and sustained an invasion of bentgrass.

"Thatch prevents proper water penetration, and often comes about because turf has been given too much light watering which increases the amount of shallow surface rooting," Dr. Engel asserted. Other factors which can prevent proper water penetration are algae and slime, and compaction of soil particles.

Guard Against Winter Injury

A second agronomist followed on the GCSAA program to explain winter injury, damage related to water problems, and how to prevent it. The agronomist, Dr. C. Richard Skogley, University of Rhode Island, Kingston, said that many times winter injury in its various forms can be worse for the golf course superintendent than vandalism.

"Winter and spring are critical times for grasses," Dr. Skogley said. "Summer for cultivated turf is no problem, if it can survive winter.

"Winter injury is a complex subject," he continued. "There are two basic types: mechanical, caused by man, and physiological, caused by diseases and other maladies which kill grass."

The Rhode Island expert told how mechanical injury can result from walking over frosted grass and bruising the grass plants. Beneath the turf the soil water may freeze and heave; if disturbed by traffic while heaved, permanent ruts may result.

On the physiological side, winter injury may be manifest in winterkill, disease, scald, suffocation, or desiccation.

"Actually frost action on soil can be an advantage, because it relieves compaction and will improve play on greens in season," Dr. Skogley said.

He indicated that the two most dangerous times for prize turf are late fall and early spring (late fall because of possible

(Continued on page 24)



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Californians Aflame With New Weed Control Notions At Biggest Conference Ever, Jan. 19-21 in Fresno

A record-breaking attendance of 660 at this year's California Weed Conference in Fresno leaves no doubt at all that weed control in the nation's most populous state is big business indeed.

Nor did the dedication and enthusiasm of conference members belie the seriousness accorded weed science on the West Coast.

On the program for delegates gathered at the Fresno Hacienda Motel, Jan. 19-21, were revelations of daring new concepts in weed control: speakers foretold the increased use of herbicides in rights-of-way and other crop and noncrop areas; close scrutiny was focused on more viscous formulations (both invert emulsions and "particulate" sprays); and an entire afternoon was surprisingly given over to a thorough analysis of flame weed control, including a demonstration of equipment.

And time after time weed specialists announced from the podium the ever-increasing importance of industrial and urban vegetation maintenance and control.

Of the importance of herbicides in general, it was predicted early in the conference that the sale of weedkillers will outstrip insecticides and fungicides in the not too distant future.

This prediction came from Dr. E. M. Gifford, a weed scientist from the University of California's Davis campus, who remarked that now truly agriculture has come to the city, and that increasing urbanization, with its attendant demand for recreation and residence certainly augurs well for those who pursue weed control. Dr. Gifford pleaded for increased attention to educating the weed control experts of tomorrow.

The Davis scientist preceded a trio of engineering-oriented weed controllers who examined basic application concepts, the problems of drift, and the use of aircraft in weed control.

"The use of agricultural aircraft has become a necessity in certain areas," Dr. Wesley E. Yates commented in his address, "Coverage and Drift Problems Related to Aerial Application." A noted authority on his subject, Dr. Yates is also at the University of California at Davis.

"Sixty-four million acres were treated by agricultural aircraft in 1962," Dr. Yates said, "and



Defining the basics in weed control was California researcher Dr. Boysie Day (left) who reminisced with John Deere representative David W. Cayton during a coffeebreak.

that represents only one-sixth of the total pertinent acreage in the U.S."

Problems associated with aerial techniques grow more complicated as time goes on, and of course the hazards of drift are foremost in most applicators' minds. Whereas in the beginning, the concern was for visible damage to adjacent desirable vegetation, which could frequently be readily perceived through such manifestations as "browning," now the chief fear is that residues from sprays will contaminate forage lands and then be taken up into livestock grazing on the fields.

What is to be done to control drift possibilities? Dr. Yates first enumerated the factors which affect the uniformity of distribution of aerial sprays. They are (1) influence of the aircraft itself; (2) size of particles in the spray; (3) the chemical formulation; and (4) climatic conditions.

Dr. Yates explained that a fixed-wing aircraft creates its own turbulence which may in turn cause irregularities in distribution patterns of sprays. One way to avoid this problem is through use of helicopters, which create no concentrated disturbance and which achieve a more uniform pattern.

The particle size also exerts tremendous influence on how sprays are laid on the land. Dr. Yates pointed out that larger particle sizes are not affected by aircraft turbulence as much as small particle sizes.

Contract applicators and others who wish to test the configuration of their sprays may use Dr. Yates' method. He adds a dye to the spray solution and then places white paper strips perpendicular to the flight pattern, which then shows graphically where the spray has gone.

Seek to Reduce Drift

Studies of drift reduction through improved or altered application techniques are being carried out at Davis by Dr. Charles R. Kaupke.

Among the factors which determine spray patterns are nozzle type, pressure, height of release of material (from the ground), a variety of meteorological conditions, and properties of the fluid itself.

Fluid properties were singled out by the California agricultural engineer as a primary steppingstone to improved sprays. Density, surface tension, and viscosity characterize the fluids under study, and Kaupke said, "we are more or less left with the viscosity factor" since it is difficult to alter significantly the other two qualities.

In order to produce larger



Kaupke: "More helicopters in use tomorrow."

droplets which in turn will help reduce drift, weed controllers have, in recent years, turned to the possibility of increasing viscosity; first and most familiar were the invert emulsions; now science has given us the "particulate" spray, such as Dow's Norbac. Kaupke defined particulate sprays as mixtures composed of many "swollen discreet particles," in which there are theoretically no free spray mixture, and consequently no fine droplets to drift.

Kaupke too joined his voice to the chorus which predicts greater use of helicopters. He said most of those manufacturers who formulate invert emulsions do not recommend application by fixed-wing aircraft. While helicopters and inverts won't completely eliminate drift, it is substantially reduced, he added.

Invert emulsions and particulate sprays are currently in wider use in noncrop areas such as rights-of-way, Kaupke concluded.

Bring Equipment Mfg. In

The third of the engineering trio to share his know-how with the gathered Californians and their out-of-state guests was lowan Walter G. Lovely who's with the U.S. Department of Agriculture in Ames.

Lovely believes that agricultural engineers and equipment producers should be admitted early to the processes attending the tests, experiments, and other development procedures strewing the path to ultimate registration. Frequently the critical factors which decide what effects, good or bad, a herbicide will have are irrevocably intertwined with the application method.

"We will in the future be making much more accurate applications," the USDA man opined. He said in the weedkilling world of tomorrow we shall probably have "prescription type" compounds, chemicals so specific and so suitable to the particular species that it will take a trained professional to prescribe them.

This view of the future has been voiced elsewhere, of course.

What Happens to Residues?

Another USDA researcher, Dr. T. J. Sheets from Beltsville, Md., detailed for the avid conventioneers the paths taken by herbicide residues in soils.

First he stated unequivocably that soil residues are not necessarily undesirable, and that the accumulation of residues is not always to be termed a problem.

There are many factors at work on chemical traces in the earth, which Dr. Sheets listed as: microbial action, volatilization, adsorption, leaching, photodecomposition, dilution, and chemical reaction.

"The longer a herbicide persists, the greater the number of these processes which come into play," the Beltsville technician mused.

He cautioned his audience to remember that not all herbicides are acted upon by soil microorganisms. Fenac, for example, is not, he said. Removal of undesired vegetation from crops and from noncropland by flame is not really a new process, having been in use for some 25 years. But it is a technique which receives scant attention, compared to chemical methods, so the entire half day devoted by Californians to flame weed control and cultivation elicited hearty enthusiasm from the group.

Whether one endorses the process or not, it was obvious that delegates wanted to learn what weedkilling by fire is all about.

Program planners had scheduled an address by J. W. Gotcher, president of Gotcher Engineering and Manufacturing Company in Clarksdale, Miss.

Gotcher, whose firm manufactures weed flaming equipment, is considered the "father of flame cultivation." Unfortunately he could not attend, and his address was presented by John C. Taylor of California Liquid Gas Company.

"Flame cultivation in its true sense is selective weed control," Taylor read. "The difference in resistance to heat among various plants enables this selectivity."

What occurs is not the literal consummation of a plant in flames, but an altering, through heat, of the plant's cell structure so that it does not survive.

In his prepared paper Gotcher advised applicators that it may be necessary to increase fuel pressure and velocity of flame in denser growths of vegetation; and the same adjustments may be necessary to drive heat through the protective coatings of hardier plants.

To discuss equipment for flame weed control, conference leaders brought Darrel Reifschneider to

Proud of past, hopeful for future of the California Weed Conference, outgoing president James Devlin of A mchem (left) exchanged ideas for future growth with Dr. Norman Akesson, new prexy. He's from the U of Cal's Davis campus.





Student and teacher. Flame weed control expert Howard Rhoads (right) paused with one of his students from Cal Poly during the afternoon exhibit of available flaming equipment. Student is Paul Lasker.

the podium. He's sales manager for Manchester Tank & Equipment Company in Lynwood.

Manchester manufactures flame weed control rigs.

Reifschneider said that in 1960 a new self-vaporizing liquid head burner was introduced, and this replaced the pipe burners originally used. These new flareshaped burners are set on 12" centers, and produce a flat, highvelocity flame and operate at almost twice the pressure as the old-type burners.

There are four types of flame devices, Reifschneider said. These are the hand burner, the field burner (which may be up to 18 ft. wide), the boom-type burner (for ditches, fencerows, roadsides), and the flame cultivator (for agricultural use).

Noncrop Flaming

A partisan of weed control by fire whose bailiwick is noncrop areas is Robert Meyers, Coberly & Plumb, Bakersfield. Coberly & Plumb is an agricultural chemical supply house which also deals in flaming equipment and services.

Meyers said liquid petroleum gas has helped speed flaming along because it is self-pressurized, concentrated, and portable. Meyers said that heat from flame guns coagulates protoplasm in plant cells, killing the organism. "Green growth" flaming, he added, is more effective on young weeds which are less resistant to heat because they haven't formed the thick protective covering characteristic of older plants.

Large weeds should be mowed, stacked, and then burned, Meyers said, because if they are merely flamed, the stalks will be left standing.

He also recommended that contract applicators and others concerned with non-ag weed control burn off areas before applying a soil sterilant. This enhances chemical effectiveness.

Side benefits to weed control by fire include a certain amount of insect and disease control. Insects and eggs overwinter in weeds and crop residues, and burning of course reduces breeding and harboring areas.

While most observers feel the process is just another of many techniques in the increasingly complicated job of curbing weeds, and recognize that the method will never replace chemical modes, one researcher spoke of the flaming concept in glowing terms.

He was Jack H. Parks of the High Plains Research Foundation, Plainview, Texas, whose research has been strictly agricultural. Parks said flaming offers selective weed control with: (1) no drift during or after treatment; (2) no residue in soil or plant; (3) no special weather requirements, other than comparative dryness; (4) no problems with compatibility with pesticides or fertilizer; (5) immediate results; (6) a process which can be repeated as often as desired; (7) no need for soil incorporation; and (8) a process



Conducting equipment tour were farm advisor Vincent Schweers (left) of Visalia and flaming authority Robert Meyers, who explained the rigs.

unaffected by soil type, sunlight.

But the Texan admits he sometimes favors incorporating a herbicide into the process, because it's sometimes necessary to kill weeds in certain crops while the desirable plants are themselves too small to withstand the heat.

Parade of Prestige

On the Conference's final day, a roster of weed experts took the assembly on a guided tour through the past and towards the future of weed control in California. Speakers included some of the best known names in the industry in the West, such as brush control expert O. A. Leonard; surfactant authority and conference publicity man Dr. Dave Bayer; and popular and genial past Conference president W. A. (Bill) Harvey, extension weed specialist. All the foregoing are from the University of California, Davis. With them was Dr. Boysie Day, a plant pathologist from the Riv-

(Continued on page 32)

Well-known westerners found time during the California conference to discuss new techniques and changing needs of control. E. J. Bowles (left), active weedman with Pennsalt, chatted with Dr. O. A. Leonard, speaker on brush control.





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Know Your Species



Prostrate spurge (6) is an annual which reproduces by seed only. It is sometimes called milk purslane and spotted spurge. Common throughout the eastern and middle western states, it is found less frequently along the Pacific Coast.

Growth of prostrate spurge in lawns, gardens, fields, and waste places causes the plant to form dense mats of branches radiating from the central taproot. One plant can cover a square foot.

Stems are succulent, slightly reddish, and somewhat hairy. Stems have a milky sap. This sap causes a rash reaction if brought in contact with skin of sensitive persons.

Leaves are opposite on the stem, simple, and oblique (each leaf margin is not the same length). There is usually a reddish-brown spot on the leaf surface.

Small inconspicuous flowers (7) borne in the leaf axils produce many tiny black seeds (8).

The root is a taproot and can be pulled up easily when the soil is wet.

Prostrate spurge will grow well under trampling where foot traffic has destroyed other grasses. As long as there is healthy vigorous turf, prostrate spurge will not have a chance to invade.

Disodium monomethyl arsonate (DMA) and silvex applied to turf 2 to 3 times when spurge is actively growing will control it.

Prepared in cooperation with Crops Research Division, Agricultural Research Service, United States Department of Agriculture, Beltsville, Maryland.

[DRAWING FROM NORTH CENTRAL REGIONAL PUBLICATION NO. 36, USDA EXTENSION SERVICE]

Int'l Turf-Grass Conference Examines Water Needs

(from page 18)

mechanical damage to frosted turf; early spring because of melted water trapped on the surface by frozen soil layers beneath). "Frosted turf can be corrected by light irrigation before play, but when frost is bad and danger is great in fall, or when soil is waterlogged in spring, the grounds should be closed off," Dr. Skogley suggested.

A panel of superintendents who had had experience with automatic irrigation systems offered some words of advice to others who wished to develop systems of their own. Donald Wright, Camargo Club, Cincinnati, Ohio, feels irrigation equipment is a luxury for a golf course, but moneysaving in the long run.

Measure More Than Greens

"Measure the area you want watered, not just the green surface, and be certain the irrigation heads are positioned in the center of fairways," Wright advised.

"Poor distribution has been a problem in the West," Walter Boysen, Sequoyah Country Club, Oakland, Calif., offered, "because too many sprinkler heads are attached to too few control valves. Also, we've had complaints that there were too few quick-coupler hose attachments around greens for hand watering."

"It's very important to make certain the contractor for digging the trenches is on the job when the pipe is ready to be laid," Thomas Topp, Bellevue Country Club, Syracuse, N. Y. advised. He indicated that those who let the bids should feel assured that the company which gets the contract to dig trenches is adequately equipped to fulfill the job.

"Put soil back on top of the pipe and tamp it in," Wright suggested. "It will make a bed for the electrical wire and make certain that the ground will not sink."

"We found that we interrupt some natural drainage channels underground when we dig trenches for piping," Boysen revealed, "and we've gotten some water pockets which we can't explain any other way."



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ular Tritac is packed in 25-lb. bags. For more information, please write Agricultural Chemicals, Hooker Chemical Corporation, 403 Buffalo Avenue, Niagara Falls, N. Y. 14302.

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Aquatic Weed Controllers Review Herbicides, Examine Nonchemical Methods at Fifth Annual Affair in Chicago

"People are gradually realizing that water is our most important resource," Dr. Duncan McLarty, first vice president of the Aquatic Weed Control Society, told the fifth gathering of that group in Chicago's LaSalle Hotel February 9-10.

Dr. McLarty, a professor in the Department of Botany at the University of Western Ontario, London, Ontario, Canada, took over the gavel at the business meeting in the unpreventable absence of the newly installed president, E. Victor Scholl, Modern Weed Control Service, Grand Rapids, Mich.

In addition to presentations of new chemicals and ways to use older ones, the Society devoted part of its program to results of work with nonchemical controls.

Use of a mechanical weed cutter to harvest aquatic plants was examined by Harold Elser, fishery biologist with the Department of Chesapeake Affairs, Annapolis, Md.

"Maryland restricts the use of herbicides such as 2,4-D within a mile of oyster and clam beds in the Bay area because of the possibility of contamination of these aquatic organisms," Elser began. Also, use of broad-spectrum herbicides is frowned upon because certain susceptible plants are considered desirable as food for waterfowl which use the Bay, it was pointed out.

Since Maryland has a serious watermilfoil problem and ways are needed to keep lakes and bays open, the Department of Chesapeake Affairs purchased a weed cutter and harvester, Elser revealed.

Elser showed a film produced by his department which illustrated the cutter-harvester in action. The machine is produced by Aquatic Controls Corporation, Hartland, Wis.

Cutter Harvests Weeds

Elser's film showed the large amphibious barge equipped with sideboard paddle wheels moving through infested areas to remove 4-5 tons of vegetation per hour from the water. Close-up shots showed how the continuous saw cutter severed plants from their roots and directed them onto a chain link conveyor, then to a hopper on the rear of the harvesting machine. The model which Elser's department purchased also came with a tender barge which removes cut material from the harvesting barge and transfers it to shore.

Diquat Is Control Tool

"Diquat is an aquatic herbicide which most operators have been aware of as a tool since it was first registered in 1962," according to John Mackenzie, aquatic herbicide technical specialist, California Chemical Co., Ortho Div., Richmond, Calif. "What advantages does Diquat

"What advantages does Diquat offer?" Mackenzie asked in his address. "It is versatile; it can be used in a high-capacity spray gun for coverage of floating weeds or can be poured or injected directly into water in concentrated form.

"Secondly, it is effective on a

Safety to aquatic life and local restrictions show need for increased discussion of nonchemical methods. Harold Elser (right), who talked about mechanical aquatic weed cutting shows Carl Schenk a photo of the rig he uses. Schenk talked on black plastic sheets to control weeds. (A special feature on Schenk's work will appear later in the year in Weeds Trees and Turf.)

wide variety of weed species and has shown adaptability to various water types all over the country," he added.

Mackenzie related that the accepted dosage is usually between 1 to 2 gallons per surface acre

Applicators congratulated new secretary, Gene Bass (center), Indiana Conservation Biologist. Left is Bernard Koll, applicator from Wayzata, Minn. Right is Dave Sheridan, Dover, New Jersey.







"**Troika**" representation of members in the Society is a strong point. Three groups included are applicators, research and regulatory, and manufacturers. Seen here are leaders (I to r) James Flanagan, Geigy; Director Roy Younger, Pennsalt Applicating Service; and Dr. Duncan McLarty, Univ. of Western Ontario, an active researcher.

or 1 to 2 ppm if the dosage is figured on a volume basis.

The Ortho specialist further disclosed that tests in the Midwest have shown Diquat is effective as a shoreline spot treatment when applied as a concentrate to small areas at a calculated rate of 1 gallon per surface acre.

Following Mackenzie on the short but varied formal program was Dr. Robert C. Hiltibran, biochemist with the Illinois Natural History Survey, Urbana, Ill.

He added his own remarks to Mackenzie's on the use of Diquat, then discussed some of the newer compounds he is testing. For the sake of brevity, we will interject those comments of interest to WTT readers which were presented by suppliers in a "new products from industry" program the previous day, when these comments can expand Dr. Hiltibran's remarks.

"We've also found spot treatments along pond banks with Diquat to be effective," the active Midwest researcher began. "We've had success in small 20foot plots with a 1-ppm concentration, but we find we can distribute material better if we make a 2:1 dilution."

Fenac Registered For Soil

Amchem's Fenac, designed to be applied to bottom soil, is registered for use on exposed soil during a drawdown; it is not labelled for application to water yet.

"We tested Fenac applied to water in a $2\frac{1}{2}$ -acre lake at 20 lbs. per acre; we estimate this application gave a concentration of Fenac of $1\frac{1}{2}$ ppm," Dr. Hiltibran said of his tests with this material. "This treatment removed both small and leafy pondweeds (*Potomogeton* spp.)."

For registered treatments of soil bottoms, according to the manufacturer, the effect of treatment is not seen immediately because Fenac is not a contact herbicide; instead, it acts through the soil and roots of aquatic plants.

Most terrestrial herbicides, if applied to an exposed pond bottom, would be washed away when water is reintroduced.

The manufacturer also reveals that the effect of Fenac is not seen until the next season, but then control is claimed for 2 complete seasons or roughly 22 months thereafter.

"We tested Casoron (dichlobenil) in 20' x 20' plots of pond soil bottom," Dr. Hiltibran continued. "Casoron is a rootabsorbed material. We've seen effects at 10 lbs. per acre and we're going to try to go to lower rates."

During the previous day's program, Dr. C. Allan Shadbolt, Field Research Director for Thompson-Hayward Chemical Co., Kansas City, Mo., informed delegates, "Casoron is designed to be applied before germination of submersed weeds. It will not work if applied after weed growth."

Dr. Shadbolt said recommended rates for Casoron, when it is registered, will be 5-15 lbs. per acre. Rates will vary with conditions, according to the research director.

"Most effective test results have come from a 5-lbs.-per-acre application to exposed soil during a lake drawdown," Dr. Shadbolt revealed. "Higher dosages of 10-15 lbs. per acre have been applied in tests with granules dispersed onto water. These sink to the bottom and act through the soil.

"We've achieved good control of chara with a 4-lbs.-per-acre experimental rate on exposed bottom soil," Dr. Shadbolt concluded.

Dr. Hiltibran said tests with Simazine for algae show that operators can achieve good control by applying a total amount of only 0.6 ppm spread over 4 applications in a 2-month period.

This information corroborated what James Flanagan, researcher for Geigy Agricultural Chemicals, Ardsley, N. Y., related in the "new products" session. He described Simazine as "the most promising of the triazine compounds we have screened for aquatic weed control."

"Simazine is classed as not toxic since its LD_{50} to rats is 5000 mg. per kg.," Flanagan explained. "It is not like any other herbicide, since it is used as a preemergence material which is absorbed into plants and blocks photosynthesis.

"Simazine's use in water will depend on its rate of solution," the Geigy researcher continued. He showed how Simazine will dissolve in water only up to 5 (Continued on page 35)





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Present and Future Uses of

Herbicides in Ornamentals

(from page 14)

name is also Solan, and it comes in emulsifiable form.

Herbicides for Problem Weeds

Mugwort (Artemesia vulgaris) and quackgrass are two of the most serious perennial weeds of ornamentals. Where high value crops are to be grown in soil infested by these weeds, eradication with soil fumigants such as methyl bromide, SMDC (Vapam or VPM, [sodium-N-methyldithiocarbamate]), DMTT (Mylone [3,5-dimethyltetrahydro-1.3.5.2H-thiadiazine-2-thione]), or methyl isothiocyanate (Vorlex) should be considered. However, many infestations are in established plantings where this is not feasible. Directed sprays of amitrole at 6 to 8 lbs. per acre repeated after 2 or more months have been somewhat effective against mugwort. More recent work indicates that EPTC (ethyl N,N-di-n-propylthiolcarbamate) at 4 to 6 lbs. per acre incorporated into the soil and reapplied after 2 months also can be effective against both species. EPTC is safe for use on many of the ornamentals not tolerating simazine and also controls nutsedge, another problem weed in some areas. Known as Eptam, EPTC comes in granular or emulsifiable form.

Dormant application of granular dichlobenil also has appeared promising for the control of quackgrass and mugwort in nursery plantings.

On simazine-tolerant species, quackgrass can be controlled by increasing the rates of simazine application to 4 to 6 lbs. per acre and cultivating occasionally. Dormant applications of simazine appear to be more effective against quackgrass than applications during the growing season.

Several preplanting herbicide treatments have been very promising in Connecticut tests and could be used in fields infested with quackgrass where the expense of fumigation is not justified. In fields to be planted to narrow-leaved evergreens or other simazine-tolerant plants, excellent results have been obtained with fall applications of atrazine at 2 lbs. per acre or simazine at 3 lbs. per acre, followed by spring plowing and planting and a subsequent application of 2 to 3 lbs. of granular simazine. This treatment provides excellent control of annual weeds as well as quackgrass.

Some Considerations in Using Herbicides in Ornamentals

More than with fungicides and insecticides, it is important with herbicides to obtain uniform and accurate applications. This is so mainly because dosages of herbi-



An application of simazine at 3 lbs. per acre in March kept the area in the foreground weed free well into June.

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cides are more critical for satisfactory weed control without injury to valued plants. Weed seeds do not move in the soil, and the correct dosage of herbicide must contact the roots of a seedling as it germinates; a severe overdosage may kill or injure the ornamental plant. Calibration of equipment, therefore, is a must. Using nozzles equipped with a check valve also can prevent injury to plants when the sprayer is stopped in the field or moving across a lawn area.

It is impossible to state accurately the herbicide dosage that will be needed to control weeds at all locations. However, instructions on the herbicide label usually indicate the range of dosages for given conditions. Soil organic matter and clay colloids that adsorb herbicides and render them nontoxic to weeds vary greatly from one area to another. Therefore, lighter soils low in organic matter generally require lower rates of herbicides than heavier soils higher in organic matter. On light sandy soils, the danger of herbicides leaching to the root zone of ornamental plants also is greater; therefore, herbicide dosages should be lower.

Erosion can sometimes be a problem where herbicides are used to control weeds on slopes. This can result in rundown of the herbicide and injury to turf and other plantings downhill. One of the ways to prevent erosion, of course, is to use a mulch. The use of preemergence herbicides under light mulches looks very promising and may be quite valuable in the establishment of ground covers, for example. Weed control often is improved when mulches are used over preemergence herbicides. In one experiment in 1-year-old apple whips, growth also was increased up to 75% by using a combination of a hay or plastic mulch and simazine at 3 lbs. per acre.

Mulches also have their place in the sales vard or under container-grown stock. Simazine has been used with good success to control weeds under containergrown stock, although an occasional branch is discolored when a root grows down into simazine treated soil. Placing a light organic mulch over the simazine prevents splash erosion of the herbicide and slows contact between plant roots and the herbicide. Using mulches over preemergence herbicides still is in the experimental stage, however, and some caution is advised. Some organic mulches can bind up herbicides and actually decrease effectiveness.

Several questions arise where herbicides are used year in and year out in ornamental plantings. One is obvious—will the soil eventually be sterilized? To answer this we must look at the individual herbicide. Except for simazine, and to a lesser extent trifluralin and neburon, none of the other herbicides widely used in ornamental plantings last for more than a few months in the



Chickweed control in the spring. Control results at right of plot could be obtained with neburon, CIPC, Solan, or the wettable-powder form of simazine.

costs; depreciation; correspondence and record keeping; and other administrative expenses.

Bidrin in DED War

A new weapon which may help arborists wage successful war against dreaded Dutch elm disease is an organic phosphate compound, from Shell Chemical Company, called Bidrin. The new chemical was examined in detail by Dr. Hugh E. Thompson of Kansas State University in Manhattan.

Dr. Thompson said only expertly trained and experienced people are qualified to apply the new chemical, and that the correct dosage for trees is a critical one. Too little may fail to achieve control but too much may harm the tree, the KSU researcher maintained. Bidrin has a residual effect of four weeks, so timing is also crucial. Proper application time is when elms are in flower, Dr. Thompson said.

The material is packaged in specially designed capsules, color coded for different strengths, which can be attached to tree trunks for injection.

Dr. Thompson said the promising new material has received limited label approval and that Shell has printed recommendations for using the product. Use of Bidrin is limited to persons who have become qualified by examination, the Kansan said in conclusion.

Maple Ills Delineated

A variety of ailments which afflict maples in many areas, referred to variously as decline, blight, dieback, etc., were more specifically described by Dr. George H. Hepting, Principal Research Scientist, U. S. Forest Service, Asheville, N.C. Dr. Hepting said the problems are in fact: (1) New England roadside maple decline; (2) General maple decline in the Northeast; (3) Pathology of the sugarbush maples; (4) Insect-induced maple blight of northern Wisconsin; and (5) Sapstreak disease of North Carolina and the Lake States.

Factors related to the New England ailment are road salt application, road widening, asphalt applications, and snow plow damage, Dr. Hepting said. In Wisconsin, an epidemic of maple webworm was intensified by a simultaneous infestation of leaf roller. Defoliation and its side effects contributed to a general decline.

The sapstreak disease was shown to be concurrent with extended drought conditions. An overlying problem associated with decline of maples and other northern hardwoods is that of general attrition due to a succession of years with below-normal precipitation and abovenormal temperature. Accumulated moisture deficits brought about a chain of adverse happenings which cause decline.

What the Utilities Want

A lecture of avowed interest to arborists, who traditionally reap much of their present income from utility work, was presented by P. C. O'Shee, Superintendent of Distribution, Alabama Power Company, Birmingham. O'Shee said fair prices, economical tree trimming, good public and customer relations, financial considerations about expensive equipment, and good line clearing supervisors are necessary to fulfill utility work. But he hastened to point out that it is indeed a "two-way street," and that the utility should have a supervisor who's trained in line work so he can work with the contractor; that the utility should realize the contractor must make a profit and pay for expensive equipment; and that personalities of foremen, owners, and utility personnel should be compatible.

He reminded the arborists that when they're out doing work for the utility, they are in effect working for the utility itself, and must be careful to create good impressions for the power company.

NAA officials told Weeds Trees and Turf that dates for next year's meeting will be announced on these pages at a later date. The NAA also meets jointly August 15-20 in Washington, D.C., with the International Shade Tree Conference.

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California Weed Conference Is Largest Ever Held

(from page 22)

erside campus of the sprawling state institution.

Dr. Leonard described his recent experiments with brush control, saying he had obtained outstanding results in poison oak control using silvex applied by mistblower.

He also said he had better results in blue oak control using Tordon, new from Dow, instead of amine forms of 2,4-D.

Dr. Bayer said surfactants (surface active agents) can't be used in very hard water. And certain herbicides may react with the surfactant.

Since surfactants that work in one instance may fail in another, applicators must treat each application as unique and formulate accordingly.

Bill Harvey asked where the Californians are going in weed control. He suggested using the term "vegetation control" instead of weed control because so

New Gandy Broadcaster Spreads in Small Quantities

A new 3-point-hitch granular chemical applicator can apply as little as 5 lbs. material per acre on a broadcast basis, according to the Gandy Co., Owatonna, Minn.

A patented five-blade rotor assures that material will not leak out the openings in the hopper bottom when the rotor is not turning. much more is really involved. He also boldly underscored the importance of noncrop vegetation maintenance and control as a rapidly growing portion of the industry.

Dr. Boysie Day attempted to summarize by defining the "basic principles of weed control." He cited such statements from the literature as "Prevention is better than cure; control is more feasible than eradication; and eradication is normally impossible" as true "basics" in weed science.

The California Weed Conference is an efficiently run, wellattended affair that attracts more delegates than any other state weed meeting. There is a definite sense of tradition, an esprit de corps, and an obvious dedication to the serious pursuit of weed science. The growing attendance is evidence of the importance of vegetation maintenance in California, and of the benefits accorded the practicioners of weed control by the Conference program.

Another feature, Gandy says, is that the applicator has been designed to be easily cleaned and maintained. The hinged rate-control slide can be dropped down, away from the bottom, in a matter of seconds for overnight "freeze-proof" storage.

For more details on the chemical applicator, or the agricultural model of this same machine, interested applicators may write to the Gandy Co., Owatonna, Minn.



A granular chemical applicator said to apply as little as 5 pounds material per acre is manufactured by the Gandy Co., Owatonna, Minn. The applicator is made in 4 sizes from 8 to 14 ft.



into a \$200,000,000 nonfarm market in Texas for the fertilizer and limestone industry, delegates were told at the annual Fertilizer and Limestone Conference held at Texas A&M University, January 4-6.

Dr. G. G. McBee, turf specialist at Texas A&M University, added that this amount includes grassed areas for home lawns, golf courses, ball fields, parks, cemeteries and landscaped business and government buildings.

Small Homeowner Contracts May Grow to Be Big Business For Arborists, Felix Tells 15th Annual N.Y. Tree Group

By PROF. A. M. S. PRIDHAM, New York State College of Agriculture, Ithaca

"Homeowners may become acquainted with arborist services from observation and their needs can be a source of present and often future business as young families move up the economic ladder," according to Robert Felix, Harder Tree Service, Hempstead, L.I., N.Y.

Felix addressed his remarks to the 15th annual meeting of New York State Arborists at Statler Hall, Cornell University, Ithaca, Jan. 17-19.

Arborists gathered for the annual New York meeting heard a varied program which embraced fertilization, brush control, marketing, and equipment demonstrations.

Professional tree work, Felix pointed out, began on the estates of Long Island; while few of these large holdings remain, the small 2- or 3-acre homesite offers arborists on the Island, and throughout the nation, a growing and lucrative market for professional tree care.

Use of MH-30T, the growth regulator from U. S. Rubber, was discussed by Paul R. Bohne, research physiologist for the manufacturer, who said proper spring application of the compound will retard, prevent, or suppress shoot growth on many woody ornamentals.

Since ornamental plantings may not be able to utilize fertilizers applied in the spring when they need nutrients most for rapid growth, observations on fall feeding of woody ornamentals was a welcome addition to the 15th annual NYA program.

Professor H. B. Tukey, of the New York State College of Agritulture, said plant roots grow during the dormant season and, unless frozen, absorb nutrients. Further investigation has shown these nutrients are moved to the tops of dormant plants, Tukey said. However, the researchers found soil temperatures may be



Changing of the Guard. George H. Callaway, Llenroc Tree Experts, Argyle, (left) presented a maple gavel to president-elect Arthur C. Sandstrom, Lewis Tree Expert Co., Jordan, while secretary-treasurer Dr. John A. Weidhaas of N.Y. State College of Agriculture looked on.

so low in spring the roots cannot absorb the spring-applied fertilizer before spring growth begins. Fertilizers applied in the fall after the plants were fully dormant were utilized by the plant for spring growth, Professor Tukey indicated.

Fall application of nutrients offers several advantages over spring application, Tukey concluded. However, since there is some belief late summer applications increase tender shoot growth that may be winter killed, he warns that fertilizer should not be applied until plants are fully dormant in the fall.

How should arborists dispose of waste wood which results from Dutch elm sanitation or regular trimming? According to Fred Donovan of Donovan Tree Service in Mechanicsville, burning of wood presents local problems of smoke and fire, but permits to establish brush and wood disposal can be obtained. Public objection to garbage dumps is understandable because of disease, smoke, and rat problems, Donovan maintains.

Alternate possibilities include formation of a forest products company that might run any of several operations including woodchips or woodchip-chicken manure compost, or such artfancier items as driftwood or gnarled branches for patio or garden.

The use of woodchips in roadside construction specifications can be a good conservation measure providing the forest products company with a good market, Donovan concluded.

Dr. A. A. Johnson, Director of Extension, spoke at the final luncheon and emphasized the fact the suburban sprawl will require roads and sewage on what is now poor land for agriculture, Johnson said. Information on soils, drainage, and water is limited to present agricultural data.

Arborists engaged in tree removal and tree planting are aware of the value of such information from bidding and planting landscape jobs in new communities or the expansion of small communities. For this reason, Johnson expects arborist services will become increasingly important in the future economy of New York State and the nation.

Turf Tips, Arborist's Advice, and More— All on Agenda for 36th Ohio Hort. Course

With horticultural conferences in general attracting recordbreaking attendance this year, it's no surprise to find a whopping 850 delegates registered for the 36th Annual Ohio Short Course for Arborists, Turf Management Specialists, Landscape Contractors, Garden Center Operators, and Nurserymen.

Meeting Jan. 25-28 at the Columbus Plaza Hotel, delegates found themselves in company of fellow industrymen from 20 states and the District of Columbia as they heard three days of top-level talks on virtually every phase of vegetation maintenance and control.

One of the highlights of the meeting was an address by Dr. James Watson, agronomist for Toro Manufacturing Co., Inc., in Minneapolis, who filled delegates in with a general background of good turf management practices.

Watson said that obviously judicious use of water is mandatory for efficient and economical turf maintenance. Water used improperly, he said, contributes to weed infestation, disease incidence, loss of nutrients (especially nitrogen), and weak, easily damaged turf in general.

A sound watering program must be based on the plant's requirements, applied as needed and not necessarily on a predetermined schedule. As a matter of fact, Dr. Watson cautioned, it is almost impossible to determine when and how to water the golf course where he himself plays.

Aeration is the only practical means of alleviating soil compaction, the Toro man continued in his listing of basic management procedures for turf professionals.

Aeration helps control and reduce thatch and improves water infiltration as well; it also permits deep placement of mineral fertilizer elements which do not move downward in solution as does nitrogen.

Earthworms, sod webworms, cutworms, and sometimes grubs, cause damage to turf, Dr. Watson advised the Ohioans and their out-of-state guests. Chlordane, dieldrin, and heptachlor are all effective against these insects, he added. And addition of pyrethrum to the sprays will cause the insects to become agitated, thus bringing them in contact with the long-lasting materials.

In one of the treemen's sessions, Winston E. Parker, a certified tree expert from Moorestown, N.J., told his audience that arborists can claim the honor of having the oldest profession in the world. He said that records show arboriculture was practiced in 2,000 B.C. In 1400 B.C., grafting and tree-wound healing were practiced, and in the early 16th Century, the first book on tree care was written.



This new dual pump can supply up to 30 gallons per minute with pressures up to 300 psi, says Century Engineering Corp.

Dual Pump Offered By Century

A new dual pump, Model 1581-DP, that provides a freeflow volume up to 30 gallons per minute and pressures up to 300 psi, is now offered vegetation managers by Century Engineering Corp.

The unit has two 8-nylonroller pumps mounted in line with a 1³/₈" PTO adapter. Adapter can be removed and pump unit operated by other power sources.

One pump can be used to provide tank agitation while the other is used to operate a sprayer, or both pumps can be utilized to operate a sprayer if high gallonage per acre is required.

Complete data on this product is available from Century Engineering Corp., Cedar Rapids, Iowa 52401.

Musk Thistle Sheet Out

Chemical control of musk thistle in pasture lands is the subject of the new Weedone LV 4 Agribulletin No. 2 published by Amchem Products, Inc., Ambler, Pa.



Aquatic Weedmen Review

Nonchemical Controls

(from page 27)

ppm. After reaching that point, no more chemical will go into solution.

"To be effective, Simazine will have to be applied as an overall treatment; this is partly why our first experimental registration will be for farm ponds and hatcheries only," Flanagan disclosed.

"A hatchery has two possible treatment times," Flanagan pointed out. "Simazine can be applied to the exposed bottom at 10 lbs. per acre to control submersed weeds. Or one can apply the material directly to water, just before algal "blooms" occur, at the rate of 2 ppm per 3 acre feet (20 lbs. per acre) and achieve algae and submersed weed control."

At its annual business meeting the Society elected E. Victor Scholl, Modern Weed Control Service, Grand Rapids, Mich., as president for the coming year. Dr. Duncan McLarty, Department of Botany, University of Western Ontario, London, On-



Over the 1,000 mark! Entomologist H. B. Petty (left) and agronomist Ellery Knake (right) discussed the program for the 17th annual Custom Spray Operators Training School which this year drew over 1,000 delegates to the University of Illinois Urbana campus, Jan. 20-21. Applicator Harold Allen of Findlay, Ill., (center) offered his advice on the program.

tario, Canada, is the first vicepresident representing the research phase of aquatic weed control. James Flanagan is the second vice-president who represents the suppliers and manufacturers. Secretary-Treasurer for the coming year is R. Eugene Bass, District Biologist, Avoca, Ind.

It was voted that the Aquatic

Weed Society should cooperate with the Weed Society of America Aquatic Section to produce a joint program in 1966 in St. Louis, Mo. This meeting is scheduled to be held in the Sheraton Jefferson Hotel, Feb. 6-11, 1966.

Northern California Plans First Turfgrass Exposition

An exposition which will include a symposium on methods, materials, and equipment for professional and amateur turf and garden enthusiasts, is planned for April 1-3 at the Santa Clara County Fairgrounds, San Jose, Cal.

Sponsored by the Northern California Turfgrass Council, the exposition will be held annually. This show is expected to offer something for everyone, ranging from the backyard gardener to the golf course superintendent, nurseryman, contract applicator, and the landscape architect. The latest equipment, plant materials, and chemicals will be on display.



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- Custom application of fertilizers, weed killers, fungicides and specialized renovation services. (Available only in the Midwest during 1965 season.)
- 6. Personal, on-the-spot, surveys and problem solving can be done by our staff, followed with written detailed laboratory analysis, diagnosis, and recommendations; or advice and recommendations can be given by mailing soil, and plant tissue samples to our laboratory for diagnosis and recommendations.

For more details, either write or phone Dept. W.T., Green Lawn Labs.

Classifieds_

When answering ads where box number only is given, please address as follows: Box num-ber, c/o Weeds Trees and Turf, 1900 Euclid Avenue, Cleveland, Ohio 44115. Rates: "Position Wanted" 5c per word, minimum \$2.00. All other classifications, 10c per word, minimum \$2.00. All classified ads must be received by Publisher the 10th of the month preceding publication date and be ac-companied by cash or money order covering full payment. full payment.

HELP WANTED

FOREMAN OR SUPERVISOR needed by rapidly expanding tree surgery and weed control company in New York State. Experience in private work and utility work preferred but not required. Write Box 7, Weeds Trees and Turf magazine.

MANUFACTURER of a unique lawn care tool with four models that fit trac-tors from 7 to 50 h.p., is looking for sales representatives to sell dealers in certain territories. Write Viking in certain territories. Write Viking Mfg. Co., Manhattan, Kansas 66503.

BRANCH MANAGERS, Connecticut through Virginia. To head operations for progressive national corporation specializing in professional management of turf, shrubs and ornamentals. Education, experience and/or interest in turf, horticulture or related fields desirable. Expert sales and technical training by top men in the field. Extraordinary opportunity for advancement. Excellent starting salary plus substantial commissions. Must be willing to relocate if necessary. Send resumé to: Charles W. Ridinger, Director of Personnel and Training, Turf Kings, Inc., 46 John St., Yonkers, N.Y. 10702.

Alco Introduces "Weed Out"

A new granular soil sterilant said to effectively prevent regrowth of weeds and grass for several years, is the newest product of Alco Chemical Co., Artesia, Cal.

Called "Weed Out," the product can be applied either in its granular form or dissolved in water and used as a spray. In either case, rain or sprinkling is necessary to carry the sterilant to the root zone for final killing action.

Interested readers may obtain further details by writing the company.

Weeds Trees and Turf **Classified Ads Get Results.** Use Them.

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NOW JARI WHIPS WEEDS ON LAND AND UNDER WATER

Pesky weeds have marred the beauty of lakeshore homes and spoiled the swimming and boating. With the new Underwater Mower, Jari can beat the weeds wherever they are. This Underwater model mows 'em from the sur-face to a depth of 42". Now, any beach can be fun. And on land, the heavy duty Monarch Sickle Bar Mower knocks weeds down even on rough, rocky ground or steep slopes.

New Underwater Weed Mower

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- ★ Adjustable cutting depth
- **Monarch Sickle Bar Mower** ★ Self propelled, 3 H.P. Model
 ★ 36" or 44" sickle bars
- Won't throw stones, glass
- For more information write:

ari PRODUCTS, INC. 2995 Pillsbury Avenue Minneapolis 8, Minnesota



Poison Plant Guide Published

A 23-page, quick-identification guide of common poisonous plants of the Northeast was issued recently by the Public Health Service, U. S. Department of Health, Education and Welfare.

Titled "Common Poisonous Plants of New England," the booklet is illustrated with color photographs to help identify poisonous plants that grow in many gardens and countrysides. Most of the plants also grow in areas other than New England.

The guide includes basic information for physicians on how to treat the toxic effects of the plants illustrated. It also lists Poison Control Centers in the New England area and their telephone numbers.

"Common Poisonous Plants of New England," Public Service Publication No. 1220, is available for 35 cents from the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402.



This automatic loader sharply reduces time required to load Hydro-Mulcher. It also eliminates need of additional men for this work.

Bowie Has Automatic Loader

A new automatic loader to speed Hydro-Mulcher loading time has been perfected by Bowie Machine Works, Inc. This unit, called Swif•Lift, may be specified on all new HydroMulchers as auxiliary equipment, or it may be added to present Hydro-Mulchers.

The loader is driven from a power takeoff and is built for continuous service. One size Swif•Lift fits all models. With this new unit, operation of Hydro-Mulchers can easily be accomplished with two men, Bowie maintains.

Illustrations and other details may be obtained by writing for Bowie Swif•Lift Bulletin, Bowie Machine Works, P.O. Box 630, Bowie, Texas.

Weed Studies Available

A series of studies on nutgrass, yellow foxtail, giant foxtail, quackgrass, and horse nettle are available from the Agricultural Experiment Station, University of Rhode Island, Kingston, R. I.

Each of the weeds is represented as a complete study published under the general title "Life History Studies as Related to Weed Control in the Northeast."



When Writing to Advertisers Please Mention WEEDS TREES AND TURF



The J-4 Jr. Dial-a-matic fertilizer spreader features a highly accurate metering and spreading mechanism, says Tyler Mfg. Co., Benson, Minn. Said to be ideally suited for use in orchards, on truck farms, sod plantings, golf courses, and parkways, this unit features a ground-driven, stainless-steel conveyor to assure uniform spreading regardless of speed.

Tyler Introduces New Fertilizer Spreader

A new 2-wheel trailer spreader with 1-ton load capacity has been introduced by Tyler Manufacturing Co., Inc. Capacity can be increased to 2 tons with box extensions.

Named the J-4 Jr. Dial-amatic, the PTO-drive spreader features a highly accurate metering and spreading mechanism used for the well-known Tyler 4-ton pull-type spreader.

Relatively light weight on fullsize tires provides superior flotation, the company says. Low profile and short coupling give tight turning radius, making it easy to apply fertilizer where it is needed in areas which are normally hard to reach with bulk spreading equipment.

The patented metering dial is easy to set for exact pounds of fertilizer per acre to meet soil requirements, it is reported. Twin 12-inch angled distributors deliver a uniform 30-foot spread pattern. The stainless-steel, heavy-duty conveyor is ground driven to assure uniform distribution regardless of speed. Field operating speeds range up to 12 mph.

The company adds that this unit is ruggedly built for general-purpose service wherever a compact, high-performance spreader is needed. Solid axle and Timken bearings with heavy-duty hubs is another feature of the J-4 Jr. It is capable of high-speed highway travel.

Further information about the Tyler J-4 Jr. Dial-a-matic is obtainable from the company by writing to Sherman Kavanaugh, sales manager, Tyler Mfg. Co., Inc., Benson, Minn. 56215.

Kosesan Heads Ore. Weedmen

Delegates to the Oregon Weed Conference, held recently at Salem, elected Bill Kosesan president for 1965. Kosesan is associated with the Oregon State Department of Agriculture, Salem.

Assisting him in future guidance of the organization are: Paulene Kaseberg, grower, Wasco, vice president; Rex Warren, Oregon State University, Corvallis, secretary; and Clark Amen, American Cyanamid Co., Corvallis, treasurer.

Diamond Adds Phenoxy Plant

Expanded facilities for the production of phenoxy herbicides at Diamond Alkali Company's Newark, N. J. plant are nearing completion, according to John S. Cort, Jr., general manager, Agricultural Chemicals Division, Cleveland, Ohio. -Trimmings—

Arborist Acton Retires. After 27 years with the Asplundh Companies, Daric Acton has retired. He was regional manager of Asplundh's Pittsburgh office, from which he directed Asplundh activities in the entire Western Pennsylvania Division. A family man through and through, Daric was assisted in recent years by his son, Gareth, who for the past several years was chief of field operations, and who now takes over as regional manager! Daric, at the time of his retirement last June, was Asplundh's senior vice president. His wife Sally, long a staunch supporter in her husband's career, will share the retirement days with her husband. We congratulate the entire family on their many years of service!

Paving the Way! A versatile weed controller in Diablo, Calif., Mac D. Osburn, is a well-known contract applicator in West Coast circles who's been in the business for a long time. In addition to his industrial and commercial weed control jobs, Mac also offers prepavement control to prevent weeds from disrupting the roadways and parking lots of the nation's fastest growing state. Our reporters had a chance to benefit from veteran Osburn's comments during the recent California Weed Conference in Fresno.

Flying High. Anyone who's had any frightening experiences with airplane trips recently should talk with John Vawter, sales engineer for the R. H. Bogle Co. in Alexandria, Virginia. John was reactivated during the Korean conflict a number of years ago and tells how he and his flight crew kept running out of gas over the same spot while flying practice missions. Actually a crewman tended to forget to switch tanks in time, but the interim aloft with sputtering engines tops most of our tales of trouble in the air!

Water Wonder. On hand for the recent Aquatic Weed Control Society Meeting in Chicago was Dave Sheridan, who, with his father Robert, runs an aquatic weed abatement service in Dover, N.J. In addition to out-and-out contract jobs, Dave and his Dad offer consulting services for people with water weed problems. Unusual to find a father and son team in such a relatively new business? We would think so, although readers may know of similar instances??!

Neighbor from the North. Delegates to the recent International Turf-Grass Conference and Show in Cleveland included at least one contract applicator from Canada. He's Jack Cliff, of General Lawn Spray, Ltd., in Downsview, Ont. Good to have a chance to welcome our good neighbors to this side of the Great Lakes!



deadly to all types of weeds and grasses ... one simple application gives full-season control!

New TERRA-VAR is a dry, granular soil sterilant that destroys all types of vegetation — even tough-to-kill Johnson and Bermuda grasses!

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On those industrial weed control jobs, your profits depend on weed killers that *clear out* weeds and grasses—thoroughly, reliably, the first time around.

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There's a Urox weed killer for almost every industrial contract application requirement... for every area of the country. Regular Urox grades handle most jobs. The following special formulations zero in on the really tough weed problems:

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Urox-B is a completely water-soluble new concentrate that *stays* in solution, even in hard water. Because it requires little tank agitation (unlike wettable powders), it's economical to apply with simple spraying equipment. Urox-B is ideal for non-crop areas where quick kill of weeds and long-term residual action are vital—it's a major breakthrough in non-selective weed control!



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LONG-LASTING CONTROL

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