

How To Buy
An Irrigation
System for
A Sod Farm
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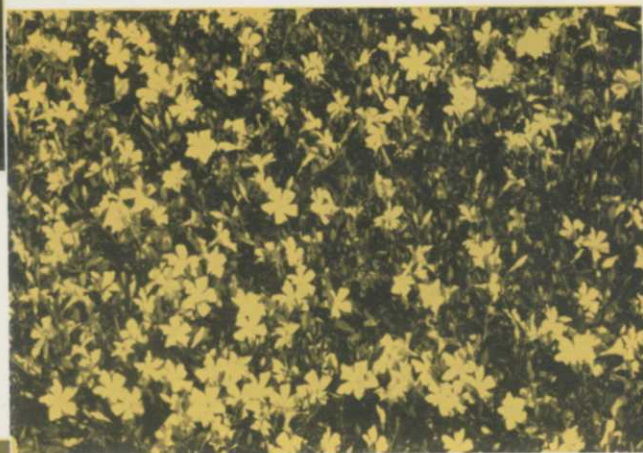
WEEDS TREES and TURF

A TRADE MAGAZINES, INC. PUBLICATION

September 1966



How Georgia Power
Developed Systemwide
Brush Control . . . 8



Turfgrasses and Ground
Covers for Parks and
Recreation Areas . . . 12



Why and How To
Use Dormant Oil
Sprays . . . 16

Monthly magazine of methods, chemicals and
equipment for vegetation maintenance and control

Cold facts about a hot new line of weed killers!

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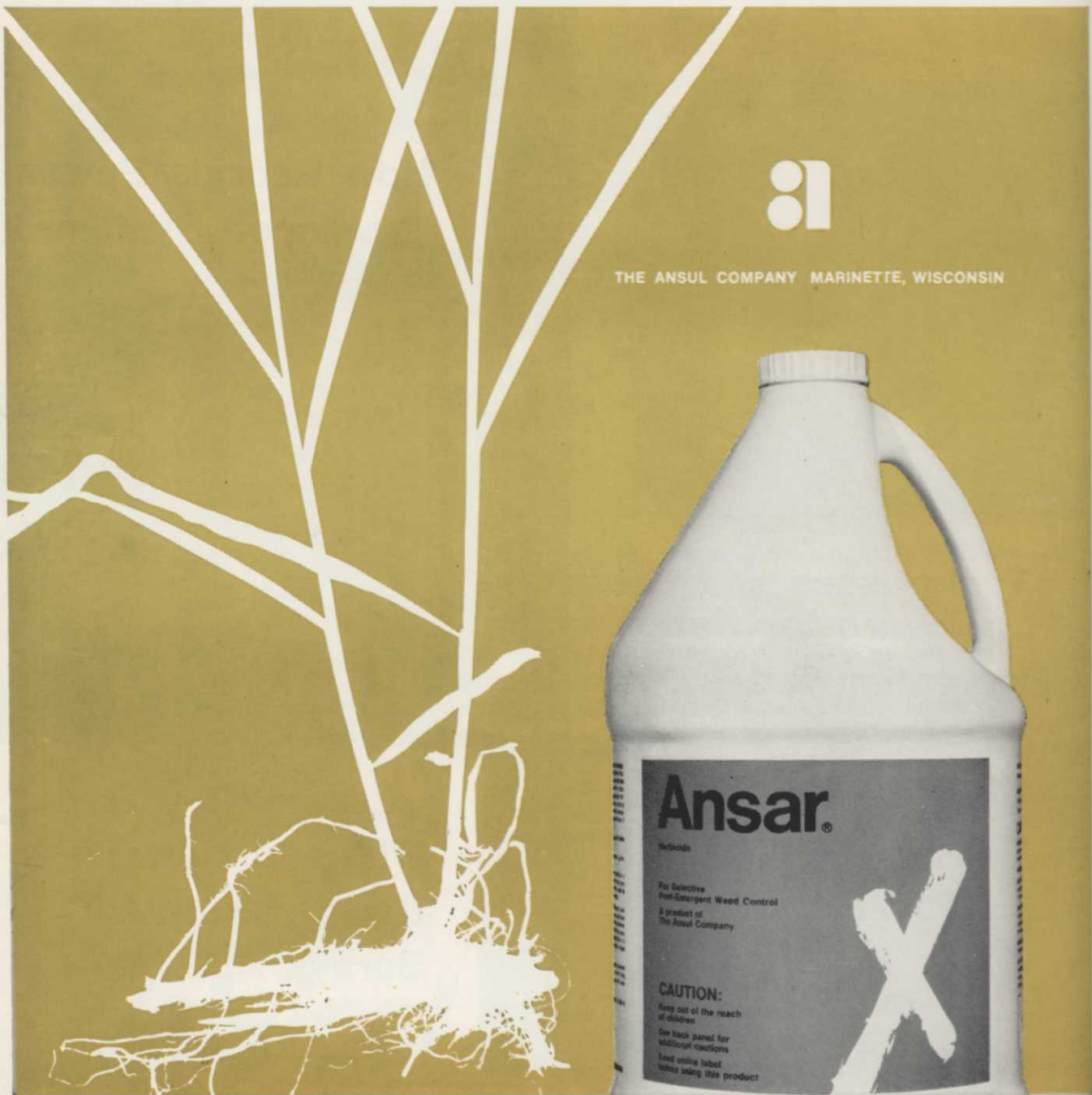
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control of soil or surface insects are on every package label.

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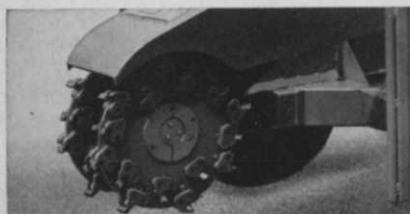
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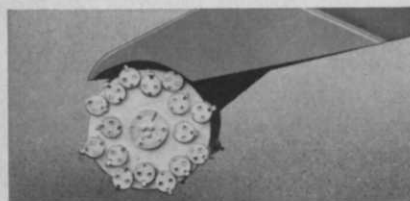
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WEEDS TREES and TURF

FORMERLY WEEDS AND TURF

September 1966
Volume 5, No. 9

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JAMES A. NELSON
Editor and Publisher

MICHAEL I. LAH, JR.
Production Manager

D. BUNKIN
Circulation Supervisor

Chicago 60601
Peck & Billingslea, Inc.
185 North Wabash Ave., Suite 1809
Phone: 312+DEarborn 2-0292-93

New York City 10017
Billingslea & Ficke
420 Lexington Avenue
Phone: 212+532-1632

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Law Aids Sod Certification

At a dinner meeting of the Cultivated Sod Association of New Jersey we recently attended, Bill Cranston, chief of the Bureau of Seed Certification, New Jersey Department of Agriculture, announced that use of the term, "New Jersey Certified Sod," is now protected by state law.

Seems that a few growers (a small minority to be sure) and a few hotshot merchandisers had very lightly dismissed the hard-earned qualifications for certified turf. One supplier made the remark that "New Jersey Certified Sod" meant absolutely nothing, and that anyone could dispense sod, with or without the official blue label, and call it certified.

Quite understandably, this contention was not accepted by the people who have spent so much time and effort setting up the certification program, including personnel at Rutgers University, at the New Jersey Department of Agriculture (the official certifying agency), and members of the CSANJ. Consequently, the matter was referred to the state legislature some time ago, and now it's the law: there is only one certified sod in the state, that which is officially approved.

What does this mean to the certified sod grower? It means his extra efforts to produce a superior product and to upgrade the sod industry will be legally respected. He deserves this much; for there is no mistake about it, certification standards and inspections are meaningful and enforced.

What about the sodman who, for one reason or the other, does not grow for certification? This should help him, too, by weeding out the unfair competitor who pretends, usually somewhat mystically, his sod is "certified," or "approved," or "recommended."

The New Jersey sod program has had many benefits: it has made it easier for the purchaser to be sure he is getting quality sod; it has made the grower more conscious of good production methods, and has provided a form of recognition for the quality grower. Its impact has extended to the seed producer, because he is aware of the high-quality seed required to meet the sod standards.

Other states have adopted or are considering sod certification programs. We think such programs will benefit the entire sod industry. But sod certification can do more harm than good unless its provisions are legally protected and its official identification labels "good as gold."

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, sod growers, 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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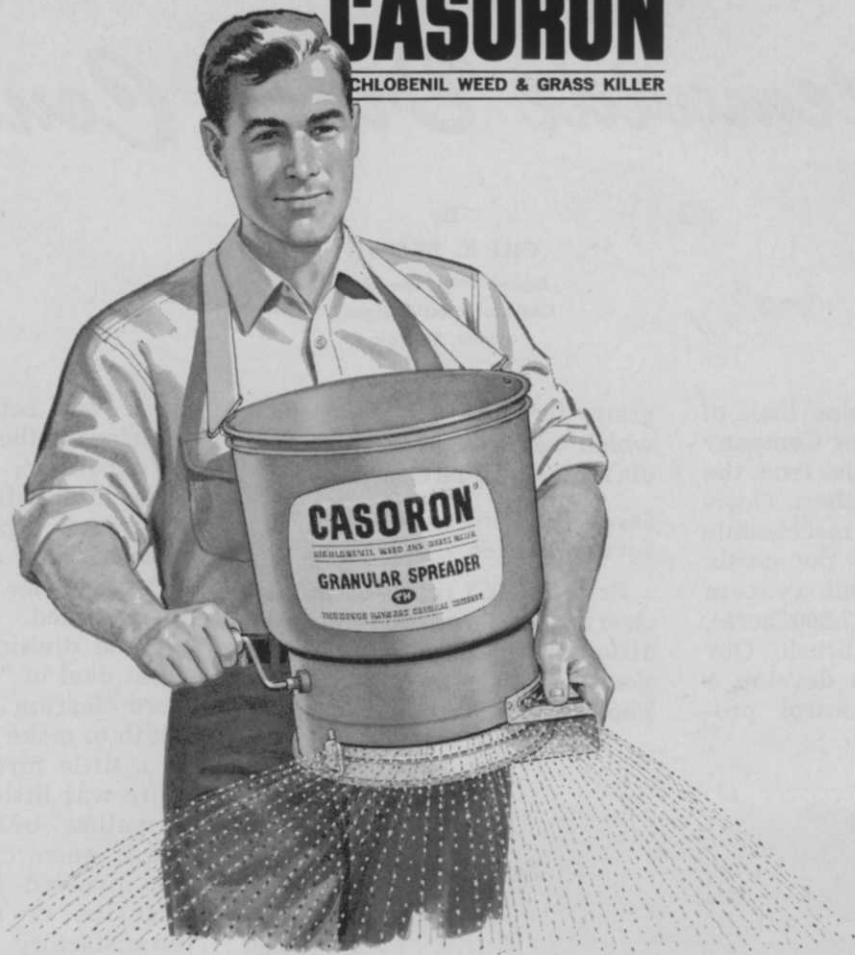
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How Georgia Power Developed *Systemwide Brush Control*

By

GILL K. BROWN

Right-of-Way Specialist
Georgia Power Company
Atlanta, Georgia

POWER transmission lines of the Georgia Power Company stretch some 9,200 miles from the large swamps of southern Georgia to the rough, inaccessible mountain terrain of the north. Rights-of-way for this system cover more than 111,500 acres, of which 75,000 are brush. Our task in 1963 was to develop a systematic brush control pro-

gram for the entire system, which services 57,000 of Georgia's 59,000 square miles.

Seven Divisions; Seven Methods

Prior to 1963 rights-of-way reclearing was handled in seven different ways by the seven divisions that make up our company. Though effective and low-cost

work was being done by two divisions, others were engaged in expensive, and at the same time unsatisfactory, reclearing programs. This generally unplanned and uncoordinated effort cost more and achieved less than needed.

Some divisions were doing a great deal of "spot cutting" and were clearing less than the full width to make reclearing dollars go a little further. In addition, there was little exchange of information between divisions, and frequent changes of personnel involved in the work. A practice or contractor found unsatisfactory in one division would often be employed by another. Though there were more than enough contractors available for the work, some were performing under conditions that provided little competitive incentive and, as a result, were not producing as much as they might. On the other hand, contractors doing an excellent job in one area had difficulty establishing themselves in others.

Taking the cue from its successful Columbus and Valdosta Divisions, the company began, in 1963, to evolve a right-of-way maintenance plan for the entire system, division by division. The program, aimed at both reasonable cost and accessible, trouble-free rights-of-way, was to be put into effect as soon as possible,



Two views of Georgia Power's brush control. Bird's-eye view (top left) was taken from contractor's whirlybird preparing to spray right-of-way. Hand clearing (bottom) has been greatly reduced under the new program.

with the approval and support of the seven divisions.

At the outset, the company studied its brush control methods, its terrain problems, and the people involved in the work. Then, using the techniques that had been successful, and trying those that other companies were using, the continuing process of trial, evaluation, and implementation began. Initially, the Georgia Power Company found that its hand-cutting costs were high and getting higher. In 1962, nearly one-half of the acreage cleared had been done by hand. We also found that mechanical clearing costs varied considerably, and that chemical work (a small portion of 1962 clearing) had run the gamut from very good to very poor.

First Step: Complete Clearing

To bring its rights-of-way into proper condition for low-cost maintenance, the first step was to clear them to their full width and then keep them clear. To keep rights-of-way under control from the time they are first cleared, the divisions have worked closely with the construction department to secure rights-of-way initially cleared, and to contract for a thorough stump spraying so that areas are accessible to maintenance vehicles.

At the first reclearing of existing rights-of-way, high brush and stumps were cut low enough to permit access by maintenance crews. Next a program of short cycle mechanical clearing was selected for locations where terrain and growth make mechanical clearing costs low. This is generally true of the coastal plain and piedmont sections of Georgia, which are characterized by gently rolling to flat terrain.

However, there are maintenance obstacles that rank with the precipitous slopes of the northern mountains. No equipment available will penetrate the extensive swamps of southern Georgia and do a satisfactory clearing job at low cost. Hand labor, used in the past for swamp clearing, is still more expensive.

Unless they are small and ad-

Helicopters are now widely used to clear brush in hard-to-reach areas. Unthickened 2,4,5-T does the job on mountain sides.



Contractor applies Tordon to right-of-way. This year, 1,600 acres are being chemically treated from the ground. All work is contracted.



Rubber-tired tractors with 5-ft. rotary mowers clear upland areas. Low cost results from mechanical clearing on a 3-year cycle.



Heavy tractor goes in to eliminate thick brush in low-lying area. Over half of Georgia Power's clearing is performed mechanically.





Author, G. K. Brown, surveys right-of-way through Georgia swamp. Helicopters have increased effectiveness of swamp brush control.

adjacent to susceptible crops, the swamps are ideally suited to helicopter applications of herbicides. Using this technique, the Georgia Power Company is able to kill or control most growth satisfactorily, and at reasonable cost. The one species difficult to control in this coastal area is cypress.

Upland areas are cleared on a three-year cycle by rubber-tired tractors equipped with 5-ft. rotary mowers. This, coupled with helicopter spraying of the swamps initially when the brush is in its second year of growth and thereafter at about three-year intervals, gives us the lowest cost per acre each year for acceptable maintenance.

Helicopter spraying is also extensively used on rights-of-way in the northern part of the state, where it has proved effective for controlling brush in inaccessible mountain regions. This spraying is done with 2,4,5-T, used primarily at rates of 6 lbs. in 9 gals. total volume, and 8 lbs. in 12 gals. volume. This is applied as a "conventional," unthickened mixture, which the company has used quite successfully in recent years.

The rate to be used is determined by species, density, and height of the brush to be treated. Most has been applied at 6 lbs. per acre for hardwood control. Pine is still cut by hand. Through close cooperation of management and the divisions, helicopter spraying is contracted for on a systemwide basis.

In addition to its brush control program, Georgia Power also has an active, systemwide weed control program, directed by the

company's general office. For the past two years, a 4% bromacil compound has been used at 400 lbs. per acre to remove established perennial grasses and weeds. This year, an 8% diuron compound is being applied at the same rate per acre to maintain weed-free conditions. The herbicide is used in a dry, granular form, applied with a cyclone spreader or similar device. It is nontoxic to animal life and no special handling or application techniques are necessary.

All Reclearing Done By Contract Crews

A standard master contract setting forth insurance requirements and work specifications has been developed by Georgia Power so that the 15 contractors, who do all of the reclearing work, are subject to the same provisions. This contract is kept current by the purchasing department; a work order to the contractor is all that is necessary to initiate a job. Contractors are no longer widely employed on a cost-plus basis. Most mechanical clearing is now bid, a procedure that has not resulted in a lowering of standards, but has produced lower costs and a much more competitive environment.

Supervision of this work is the responsibility of division transmission engineers in five of the company's seven divisions. In the other two, clearing supervisors are now in charge of all work related to line clearing.

This expanded program of correcting rights-of-way in an unsatisfactory condition, and at the same time maintaining the others

already under control, required a greater initial budget allocation. Before making the money available, management required detailed information on the changes planned, wasteful practices eliminated, and costs involved. Divisions now submit their budget requests on a line by line basis, including the number of brush acres, the desired treatment, and the estimated cost for each. These requests are reviewed by the general office and the total request is then submitted for approval.

This approach provides management with the backup data necessary for the expenditure of additional funds. When money is allocated for the proposed work, divisions can then contract for its execution. The result of the changes is a companywide program, supervised by the divisions and the general office working together.

Program Costs And Results

The cost during the period of overcoming past maintenance conditions will not exceed \$81 per structure mile. This will be substantially reduced after our 1966 reclearing program is completed. The 1966 program is designed to bring some 26,000 acres up to good maintenance standards. As part of this extensive reclearing job, 16,000 acres are being mechanically cleared; 8,000 acres are receiving helicopter spraying; 1,600 acres are being chemically treated by other means; and only 400 acres are being cleared by hand.

Compare this with the 1962 clearing program, in which over 7,400 acres were cleared by hand; 7,000 acres were mechanically cleared; and only 700 acres were chemically treated. Rights-of-way were then being treated on a four- to five-year, or longer, cycle.

When the 1966 program is complete, brush will be cleared mechanically on a three-year cycle, and spraying will be done on two and three year-old brush. Costs per acre will be below those of 10 years ago, and Georgia Power rights-of-way will be in much better condition.

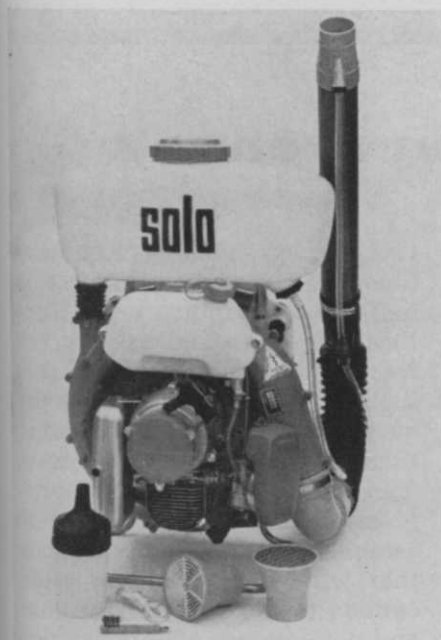


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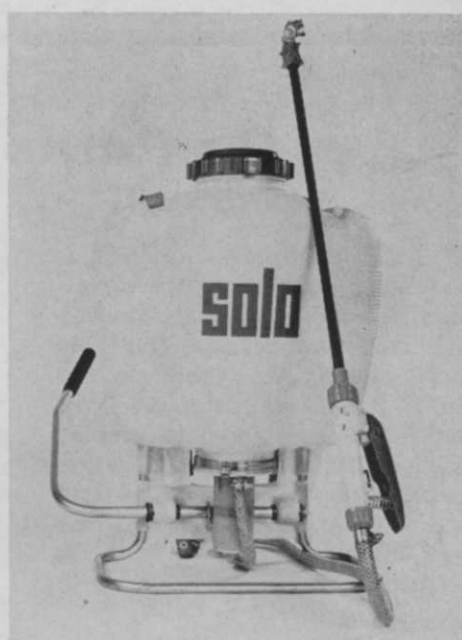


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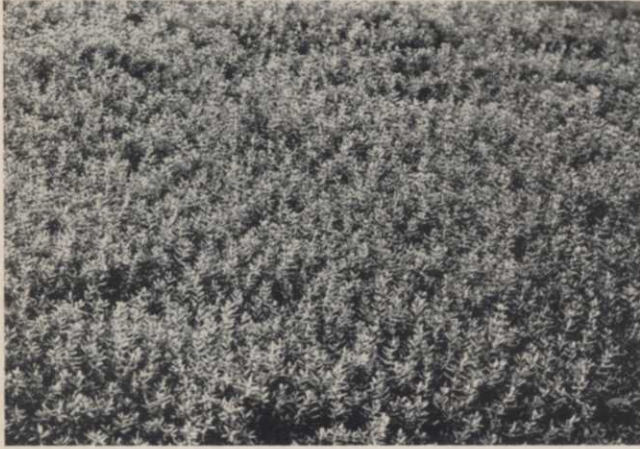
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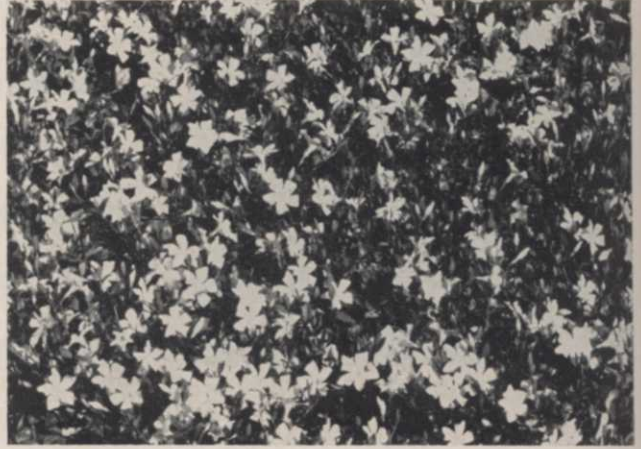
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Turfgrasses and

Ground Covers



Pachistima canbyi (Courtesy of The Arnold Arboretum)



Vinca minor (Courtesy of The Wayside Gardens Co.)

for Parks and Recreation Areas

BECAUSE more emphasis is being devoted to the development of parks and recreation facilities, and because they are more heavily used than in the past, the establishment and maintenance of good turfgrasses and ground covers are of prime importance. Proper planting and care of grasses and covers can make recreation facilities attractive and more enjoyable to the users.

Plan Turf Areas Early

The establishment of turfgrasses should be planned in the early stages of park or recreation area development. Once a facility is in use by the public, it is much more difficult to establish a good turfgrass lawn. Planning should encompass proper site grading, proper soil preparation (including the liberal use of commercial fertilizers), and selection of the best turfgrass species.

Quality of the soil will influence the amount and kind of commercial fertilizer required and also selection of grass

By
A. E. COTT

Extension Horticulture Turfgrass Specialist
Iowa State University, Ames, Iowa

species. Another major factor determining grass selection is the planned usage of the area.

"End Use" Recommendations

For a general playground, a turf mixture of bluegrass and creeping red fescue, or a straight seeding of Alta or Kentucky-31 tall fescue can be used. If the soil is reasonably good, and in an open area, a bluegrass and red fescue mixture will provide a beautiful turf. However, if the soil is a heavy clay or is extremely sandy, such a mixture will be difficult to establish, and straight seedings of Alta or Kentucky-31 fescue might be considered.

For picnic and limited-use areas in open, wooded spaces, Alta or Kentucky-31 fescue will not establish a good stand of grass. Neither can a good, full

turf be expected of Kentucky bluegrass. For these spaces, a half-and-half mixture of Kentucky bluegrass and creeping red fescue is recommended. In many little-used wooded areas, the use of ground cover plants rather than turfgrasses might be better.

In the more heavily used turfgrass areas, it is important to establish a maintenance program that will include annual applications of commercial fertilizer and possible use of turf aeration equipment to help relieve soil compaction.

Many of the most usable park areas may be subject to floods. This must be considered when planning for turfgrasses. What happens to a good stand of tall fescue if floods deposit a layer of silt over all or part of the area? In most cases, the stand of grass, whether tall fescue or bluegrass, will be lost if 2" to 3" of sand or silt are deposited. Most grasses, though, can recuperate from deposits of 1/2" to 1" of sand or silt.

Do not use cheaper mixtures

that include timothy, brome-grass, or legumes for seeding and establishing turfgrasses for parks and recreation facilities. Such mixtures result in rough, clumpy turfs, which can be dangerous in heavily used playgrounds.

Kentucky Bluegrass Best

To summarize procedures for establishing turfgrasses, when drawing up the original plans for development of the facility and its plantings: (1) include an item in the budget specifically for turfgrass establishment; (2) allow for adequate site and soil preparation; (3) be sure specifications include provision for a liberal quantity of a complete commercial fertilizer to be thoroughly incorporated into the seedbed before planting; and (4), consider how each area is to be used, and select the species of grass most suited to conditions. Remember that Kentucky bluegrass is still the best all-around permanent turfgrass throughout much of the country. Since bluegrass does not develop well in shaded areas, creeping red fescue can be added to these seedings. For the more heavily used areas, consider a heavy seeding of Alta or Kentucky-31 fescue. No other species of grass need be used along with tall fescue. Develop an annual maintenance program for turf areas, particularly those used most heavily, including the use of commercial fertilizer, possible use of turf aerification equipment, and overseeding where necessary.

Best Ground Covers

Though turfgrasses make the best and most solid ground plantings, there are many areas where turfgrasses cannot be used and where the use of other ground cover plants will add to the attractiveness of park and recreation facilities. In addition to more than 30 years of turfgrass research, Iowa State University has established plots to observe various herbaceous and woody plants that may have a place as ground covers under Midwest conditions. In the most recent plots, established slightly

more than 10 years ago, these plants are tested for winter hardiness, drought resistance, effectiveness as ground covers and general adaptability to Midwest situations. Some plots are in open sunny locations; others are partially shaded and have tree root competition.

There are several annual plants that have the distinct advantage, for a ground cover, of giving a show of bloom during a good part of the growing season. The annual known as the Dahlberg daisy (*Thymophylla tenuiloba*) performs best in the open sun, on a bank, or in similar areas. Once it starts to bloom in late spring, it will produce a profusion of yellow flowers until frost. It is best to start these plants indoors and set them out after danger of severe frost is over.

Annuals Provide Color

Another annual ground cover is the marigold *Tagetes signata pumila ursula*. This dwarf annual gives excellent color all during the growing season. It is easily started from seeds, and quickly develops into a good cover.

Alyssum is also a good ground cover. The variety, Carpet-of-Snow, has showy, white flowers. The variety, Royal Carpet, has equally attractive red flowers. Another annual, alyssum, *Alyssum maritimum*, is one of the best of this genus for reseeding itself.

We are all familiar with pen-tunias. These annuals do very well as a ground cover when set out early in the spring. If given a good start, they will bloom and grow profusely all summer long and will often bloom until after the first two or three heavy frosts.

A creeping form of zinnia also works very nicely as a ground cover plant. This is the genus *Sanvitalia*.

Still another familiar plant is the rose moss, genus *Portulaca*. Once established, it seems to reseed readily. This plant will perform very well in hot, dry soils and even appears to be able to grow in partial shade.

These annuals that readily reseed themselves are well adapted to park areas having steep banks that are difficult to mow and of little use. If they are started from plants and given a little extra care during the first year to establish them, many will reseed with little or no further care.

Herbaceous Perennials

Prostrate thyme (*Thymus serpyllum*) is one of the herbaceous perennials that provides a good ground cover. This is a very low grower and is excellent for planting between paving blocks, along rock walls, or on rock ledges. It can also be used in sunny areas for a ground cover. Prostrate thyme is occasionally injured by low temperatures during the winter, so it might be reserved for the more sheltered areas and for use in the southern Midwest. Some winter injury has been observed in Iowa trial plantings.

An old favorite among the herbaceous perennial ground covers, but one that is still widely used, is ajuga. This plant, like prostrate thyme, is on the climate borderline in central Iowa. *Ajuga reptans* has, however, survived most winter seasons without a great deal of injury.

Another herbaceous perennial that has long been well known as a ground cover is *Vinca minor*, also known as periwinkle or creeping myrtle. It prefers dense or partial shade and reasonably good soil. It will remain green if placed in a location that receives winter shade and will probably perform best in sheltered areas of the central and southern Midwest. It may be subject to some winter injury unless it is in a protected area or covered for the winter by snows or mulches. This ground cover, which produces lavender-blue flowers in May and June, is especially sensitive to winter injury if grown in the sunlight.

Moss pink (*Phlox subulata*) has also performed very well in Iowa State's ground cover plots. This plant prefers full sunlight and grows in almost any soil. Moss pink grows about 6" tall and produces masses of pink

flowers in late April or early May. The plants, which form small mounds of foliage that grow together into a solid carpet, can be used on banks, rock hills, and similar locations. Some persons may object to moss pink, because the cover occasionally looks slightly ragged after it blooms.

The herbaceous perennial, lily-of-the-valley (*Convallaria majalis*) is a plant that deserves consideration where there is a rich humus soil and dense or partial shade. Wooded bottom land areas are suitable. Once established, plants form a solid mass of broad, upright leaves that bear white, bell-shaped, fragrant flowers in the spring or early summer.

The violets, genus *Viola*, are found in many different species that perform well as ground cover plants. A number of species grow wild in the woods, and some spread so quickly that they could become weed problems. They are excellent, though, for wooded areas where there is no concern about their spreading into the finer turfgrass areas. They are completely hardy under Iowa conditions.

Fleece Flower Is Aggressive

The fleece flower (*Polygonum Reynoutria*) is quite vigorous and makes a fine ground cover if planted in an area where it can be contained. This species grows 12" to 14" high, so it cannot be called a low ground cover plant. The fleece flower grows best in full sun. It is quite aggressive and can invade flower beds and lawn areas unless it is restricted. It can be used to provide a solid cover for a bank or other out-of-the-way spot, where there is not too much worry about its spreading.

There are two sedums that have performed very well in the ground cover plots. One is *Sedum spurium*, which withstands hot, dry locations in full sun. The other is *Sedum acre*, a plant that grows about 1" tall and is covered with yellow flowers in the spring. Like the other sedums, it should have full sun.

A very rugged ground cover

plant that has been used extensively on highway embankments and road cuts in recent years is crown vetch (*Coronilla varia*). One selection, developed at Iowa State University and quite hardy for local conditions, is Emerald crown vetch. It has the ability to grow on steep banks in poor soil, clay soil, and other types of soil commonly found on road cuts and embankments. It is a legume and likes full sun, but is a little slow in becoming established. Once established, this plant will compete with all weeds and form a solid, dense cover. With showy, lavender flowers in the spring, the plant grows 18" to 24" tall and is propagated primarily by seeds.

Woody Plants As Ground Covers

There are several woody plants, mostly evergreens, that perform very well as ground covers. *Euonymus fortunei coloratus*, known as wintercreeper, seems to be hardy in the trial plots. It is fairly well adapted to full sun, but if planted in sunny locations, will turn quite brown during the winter months and lose most of its leaves much earlier than if it is planted in semishady or shady locations.

Two low-growing evergreen junipers make good ground covers. Andorra juniper forms an ample cover in full sun. Some persons object to the purplish color that it develops during winter months, though others find this winter coloring attractive.

Prostrate juniper (*Juniperus horizontalis*) is the second low-growing evergreen juniper. There are some selections or varieties of this plant that retain their green color during the winter months. These, too, are low growing, with a height of about 12".

Another evergreen that looks very promising in the trial plantings is *Pachistima canbyi*. *Pachistima* is a fine, low-growing, broadleaf evergreen that should be used more widely as a ground cover than it is. It performs in full sun, partial shade, or full shade. In central Iowa, it is sometimes subjected to slight

winter damage at the tips of new shoots, but damaged areas can be sheared or pruned off in early spring and the plants quickly recover. Damage does not occur every winter. Once established, *pachistima* forms a solid mass that eliminates weed problems.

Rock spray (*Cotoneaster horizontalis*) is a deciduous shrub that deserves serious consideration for sunny or partially shady locations where the soil is reasonably rich. A fine shrub for bank covers or open spaces, it grows about 2 ft. tall. Leaves are small, shiny, and green, and after the plant blooms, red berries last until after freezing, attracting birds.

Two other woody plants suited for ground cover use on steep banks or out-of-the-way locations are Japanese honeysuckle (*Lonicera japonica*) and Hall's climbing honeysuckle (*Lonicera japonica halliana*). Both plants could become weed problems if placed in areas where they cannot be controlled if they start growing too vigorously.

Wise Selection Paramount

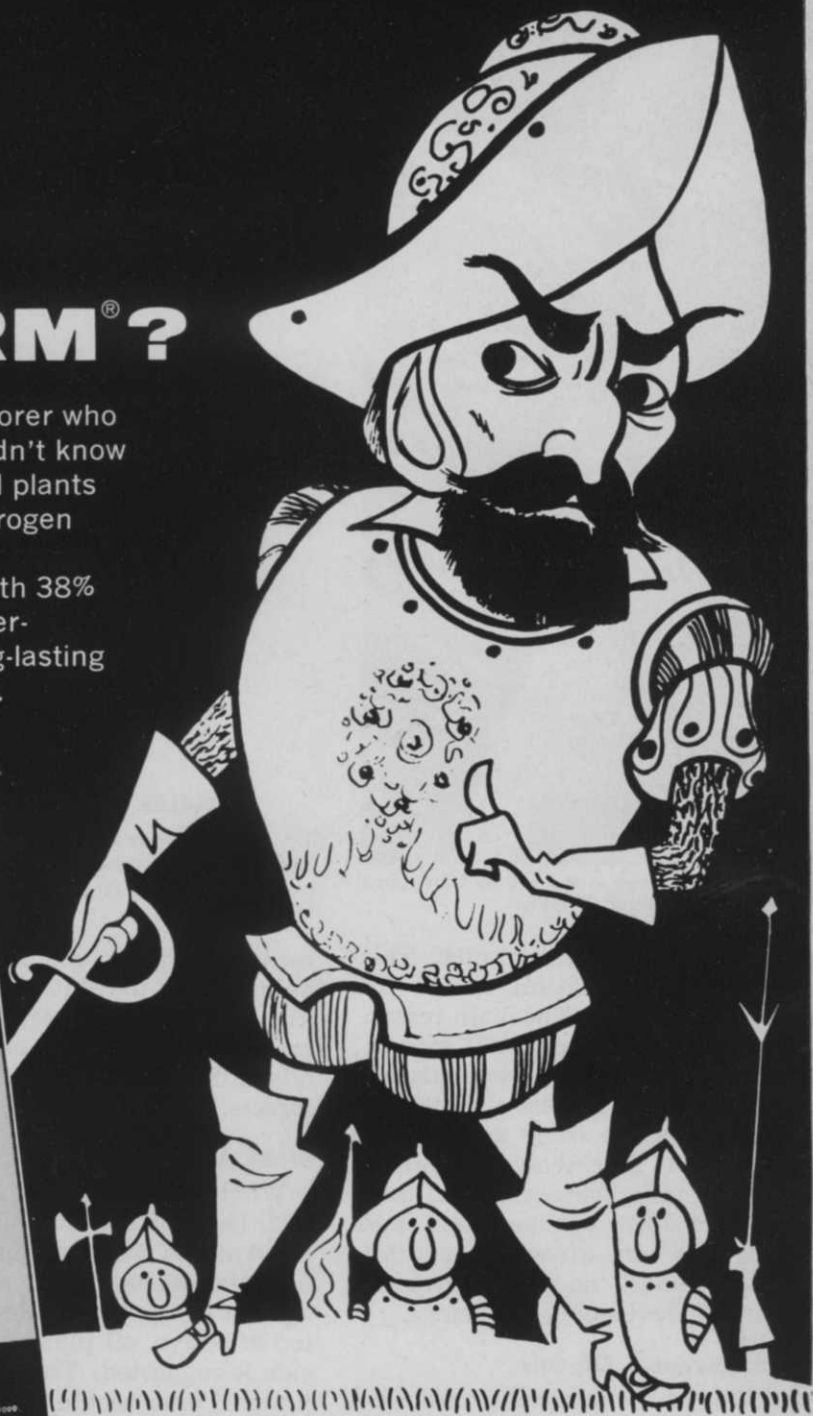
As we develop plans for our parks and recreation areas, serious consideration should be given to the use of ground cover plants in locations that will not be heavily used, and where it would not be convenient or possible to establish good turfgrass. By wise selection of ground cover plants, we can add large splashes of color to parks and cover some blighted areas with plants that will provide an attractive appearance, making these spots more enjoyable. On some steep roadbanks or hill-sides, where nothing but weeds and brush grow, or where the soil is bare, we can plant ground covers that produce a thing of beauty, particularly when flowers are in bloom.

Plan ahead for the establishment of ground covers in places where they will be most helpful and useful. Select the plants suited for the situation, give them a little extra care for the first year or two, and then these areas can become low maintenance ones.

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Aphids: nip them in the bud by killing their eggs with dormant oil sprays.

Why and How To Use Dormant Oils

By

CHARLES F. SCHEER, Jr.

Cooperative Extension Agent
Suffolk County Cooperative Extension Service
Long Island, New York

WHY use dormant oils? This is a question asked by many arborists. The main reason is to control hard-to-kill insects. In the early spring, when oils are applied, such insects are just becoming active (they are breathing). Oils effectively kill insects at this time because the oil covers and suffocates them, and thus provides an effective control with almost no possibility of insects developing resistance.

Effectiveness Of Oils

One of the questions most frequently asked about oils is: "Why can't we use summer sprays during the growing season to get as effective control of the same insects?"

Summer sprays are not as effective because, when oils are applied in the early spring, the insects are stationary.

Trees can also be treated in spring without interference from foliage; the oil can get through to do the job. The alternative is to make applications at the right time, and at higher pressures, during the growing season. This

means taking the chance of damaging trees to control hard-to-kill insects, which are actually easier to control with oils. Also, oils kill a higher percentage of insects.

What An Oil Is

What constitutes a dormant oil? Dormant oils are highly refined oils to which an insecticide may be added. For problems against which the oil alone is not too effective, oil plus an insecticide is suggested. This is true of juniper, pine needle, oystershell, and euonymus scales. The first step in selecting an oil is to make sure of its purity, which is measured in terms of U.R. rating. Oils purchased should have a U.R.

This is the first of two articles on the use of oils for insect sprays. Next month, D. H. Moore, of Niagara Chemical Div., FMC Corp., will discuss "Oil and Insecticide Combination Sprays for Ornamentals." Be sure to watch for this October feature.

rating of 92% or higher. At a 92% to 97% rating, oils will be quite pure and safe to apply to plant materials.

Many treemen have asked what "100 second" or "70 second" on the label of the can means. This notation stands for the viscosity, or general "flowability," of the oil. The smaller the "second" rating, the lighter the oil. A 100 second oil is heavy, and a 70 second oil much lighter. For effective control of many dormant insect problems, it's best to buy a 70 second oil with a U.R. rating of 92% or higher.

Do Oils Damage Trees?

Treemen often ask if dormant oils will damage trees. We have had reports of damage to some varieties. This may have occurred because of improper use of oils, or may have been because the plant was sensitive to oils. Trees such as sugar maple, Japanese maple, beech, hickory, walnut, and douglas fir have been known to be sensitive to dormant oil sprays. Information on oil damage to certain plants



Oystershell scale, shown on apple twigs, can be controlled with oil and insecticide.

is not well understood. Therefore, if there are any questions on application, it may be better to be on the safe side and not apply the oil.

What causes oil to burn a tree? This is hard to say, but two factors that may contribute to burn on sensitive plants are the sun (because sunlight is magnified by the oil while passing through it), and the use of extremely high pressures with a very fine spray. After all, plant material can be burned even with a fine spray of water under very high pressure, if spraying is done at close enough range.

When might oil damage trees? Oil may cause problems if very high pressure is used, and the oil spray is blasted into the foliage; if oils are not pure enough; or, if oil freezes on the foliage during the night. But, in general, we know that oils are one of the most effective sprays for controlling hard-to-kill insects. If the user is cautious, and carefully follows the maker's directions and the recommendations of his local agricultural extension service, he will have little problem applying dormant oils for maximum effectiveness.

Good Coverage Important

To kill insects, thorough coverage of the material being sprayed is necessary. All branches must be covered with the oil to suffocate any overwintering insects and their eggs. To do this, the applicator must

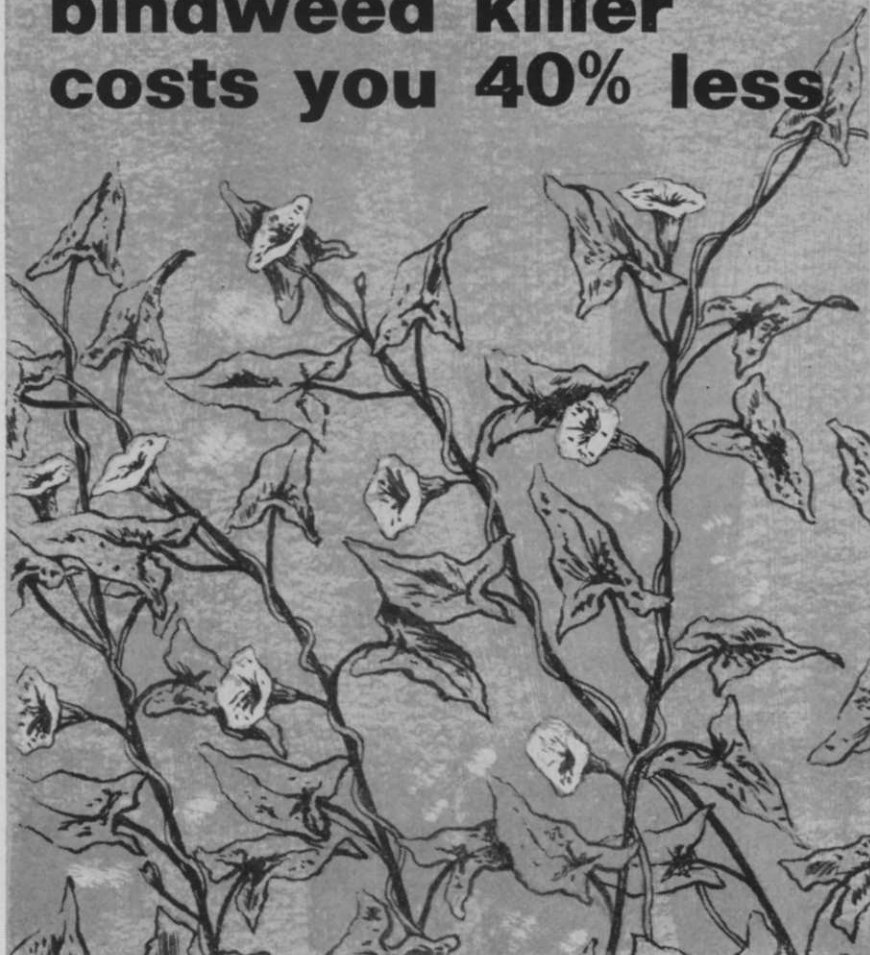
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move around the tree, applying sufficient spray from all sides. He should be careful not to use excessive pressure; just enough pressure to do the job is necessary.

Scout trees to be treated before spraying. If there are no pressing problems of overwintering insects or their eggs, it may not be necessary to apply an oil that year. And, note any overwintering problems on sensitive materials in the spring, so that plans can be made to treat them later in the year with a summer spray. On sensitive trees, for which oil has not been recommended, do not use it. But again, when dormant oil sprays are used, it is essential to thoroughly cover the plant material.

What Oils Control

Dormant oil sprays will control hard scales, soft scales, mite eggs, aphid eggs, and may, with good coverage, control overwintering caterpillar eggs on the bark.

For juniper, pine needle, oystershell, and euonymus scales, oil plus ethion insecticide will do the job. Other dormant sprays, such as lime sulphur and the

dinitro compounds, can also be used on these problem pests. Lime sulphur has been used primarily for pine needle and juniper scales. The dinitros have been effective against oystershell and euonymus scales. These sprays should be applied with care. The dinitros are very poisonous and may cause a yellowing on some evergreens. One problem with lime sulphur is that it will discolor paint, and should not be used close to houses or other buildings.

Summary

Remember that overwintering insects have not built up a resistance to oil. With good oil coverage, the insect problems listed above should be brought under control. Also, remember that it is better to wait until the insects start to become active (breathe) before applying dormant oils. In many cases, oils can be applied up to the time leaves begin to break and buds begin to open. Apple trees, in particular can be treated with a "delayed dormant spray" when the buds are showing $\frac{1}{4}$ " to $\frac{1}{2}$ " of green.

Spray-O-Rama '66 To Have Symposium, Equipment Show

Four of the Northwest's leading spraymen will take part in a symposium, when members of the Pacific Northwest Spraymen's Association meet at the Thunderbird Motel in Portland, Ore., Sept. 23-24, for their 1966 Spray-O-Rama.

Symposium speakers will be Donald Mock, Shamrock Spray Service, Seattle, Wash.; Ray Collier, Collier Spray Service, Portland, Ore.; L. F. "Lew" Sefton, Sefton Spray Service, Portland; and Erle Parker, Jr., Chemical Spray Co., Dayton, Ore. All have either built or are planning to build spray rigs, and will share their equipment experience with others at the confab. Bill Owen, president of the spraymen's group, will moderate the symposium and conduct a question and answer period afterward.

An equipment show is to give spraymen a look at unusual types of spray rigs, including a 1,000 gal. rig with 9 separate tanks and several pumps that was designed for one-man operation. Manufacturers will also display their spray equipment at the show.

With its theme, "People, Pesticides, and Professionalism," the program will provide spraymen with information both unusual and entertaining. "We are trying," Owen says, "not to duplicate technical information that spraymen can get in their own area." Emphasis will be on public relations for spraymen, though specialists from Oregon State University will also address the gathering.

Robert E. Averill, from Merritt Davis Schools, Inc., of Salem, Ore., will boost public relations as the banquet speaker. Other talks are to include a printer speaking on "the imaginative use of paper in the small business," and "public relations on the telephone," to be given by a consultant from the Pacific Northwest Bell Telephone Co. A humorous, feminine touch will be provided by a Northwest garden writer. Yet another feature of the two-day program will be a



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WTT Monthly Insect Report

Every month, WEEDS TREES AND TURF will report on insects causing problems in turfgrasses, trees, and ornamentals throughout the country. Reports will be compiled from information furnished by the U. S. Department of Agriculture, university staffs, and WTT readers. CA's and turf and tree specialists are urged to send reports of insect problems in their areas to:

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talk by J. D. Vertrees, county agricultural agent from Roseburg, Ore., and one of Oregon's outstanding entomologists, who will show some remarkable color slides while discussing the insect aspects of spraying.

The business meeting of the Northwest Spraymen's Association and election of officers will round out the meet. A. J. Overton, of Portland, is directing arrangements for the '66 Spray-O-Rama. He can be contacted at 7737 N.E. Killingsworth, for eleventh-hour registration.

Oct. 4-5 Fla. Turf Meet to Stress Soils, Fertilizers

Recommendations for improving soils and using fertilizers are to open this year's University of Florida Turfgrass Management Conference, Oct. 4-6, at the Ramada Inn, Gainesville.

Four professional workshop sessions will discuss problems in special areas of turf management on the second day. Participants will tour University of Florida research plots and the final technical session will discuss practical applications of research findings. Nearly 500 registrants are anticipated. Walter Anderson, FTGA executive secretary, can be contacted for further information at the FTGA Offices, 4065 University Blvd., North, Jacksonville, Fla. 32211.

Dow Cautions Tordon Users

Users of the recently introduced Tordon are cautioned by its maker, The Dow Chemical Co., to follow label instructions carefully when applying the herbicide. Misapplication can kill desirable plants, Dow emphasizes.

While the manufacturer reports excellent control of most deep-rooted perennial weeds, it warns that Tordon sprays should not be allowed to drift onto cropland or into irrigation water or ditches. Tordon should not be used by inexperienced applicators, nor should users deviate from label recommendations. Tordon is said to be 20 times as powerful as 2,4-D. Dow adds, "if it is used incorrectly, a lot more damage can be done."



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How to Buy an Irrigation System for a Sod Farm

Sod growers planning to purchase and install an irrigation system for their sod farm should ask about two important facets of the system: performance and cost of the equipment. But, to select the right equipment at the right price, the purchaser must first determine just what he wants the system to do. To establish these specifications, he should consider these points:

1. Area to be covered
2. Hours available for watering
3. Amount of water to be applied
4. Type of system
5. Use of system to aid seed germination
6. Use of system for applying fertilizers and herbicides
7. Maximum wind under which system must operate
8. Maximum precipitation rate
9. Uniformity of precipitation
10. Service life of system components

Area To Be Covered

The first step is to determine the area to be covered by the irrigation system and to specify this on an accurate plot plan. Areas that cannot be watered, as well as watered areas, should be shown since both will play an important part in selecting the type of heads best suited to the job.

Watering Hours

For large areas, the cost of an irrigation system is affected to a considerable extent by the time available to apply a specified amount of water. For example, watering 100 acres at the rate of 1½" per week requires 4,085,000 gals. of water per week, or 572,640 gals. per day. If watering must be accomplished in a six-hour period, the flow required will be 95,440 gals. per hour, or 1,590 gals. per minute. This means that the mains and pump will have to be big enough to deliver this volume of water. If, on the other hand, 12 instead of 6 hours can be allowed for watering, the flow required is

Based on Information from

A. W. FRY

Rain Bird Sprinkler Manufacturing Corp.,
Glendora, California

and

E. J. HUNTER

Moist O'Matic, Inc., Riverside, California

cut in half to 795 gals. per minute. This could make a difference of as much as \$14,000 to \$18,000 in material costs alone.

Amount Of Water

A sod farm irrigation system should be designed to take care of peak-moisture-use periods. Weather conditions determine how much water has to be applied. Temperature, air movement, and humidity determine the amount of water extracted from the soil, and consequently the amount that should be applied to maintain satisfactory growing conditions. Periods of peak use may require the application of 1" of water every three or four days.

Type Of System

Should the sod farmer purchase a portable system or a solid-set system? The quick-coupler system with impact sprinklers costs less initially but more to operate than the fully automatic system with pop-up rotor sprinklers. However, the operating cost of the solid-set system is sufficiently lower to quickly compensate for the higher first cost.

Sod growers should select a system that shows the highest dollar return for the frequency of irrigation and the cost of labor for their area. If a portable system is being considered, the cost of moving the system for an expected irrigation frequency should not be greater than the annual cost of a solid-set system. Varying factors are involved for each sod farm, but generally where frequent, light irrigations

are required, a solid-set system is most economical.

The choice between buried or surface irrigation systems also involves a compromise between labor costs and pipe interference with sod harvesting. A buried system will interfere with harvesting operations, whereas the surface system can be removed. Also, the surface system always has the possibility of being used in other locations. Each grower has problems that are individual, and his irrigation system must be designed to answer his particular needs.

Use Of System For Seed Germination

One of the most important considerations in selecting irrigation equipment is its use on germinating seed, for the sod crop will never be any better than the initial stand. A solid-set system, which does not require pipe to be rotated from field to field, is most desirable from this standpoint, since irrigation may be required several times a day during germination, depending on weather and soil conditions. Once the soil surface is wet, it must be kept damp to prevent crusting of the soil and dehydration of sprouted seeds. Also, to prevent compaction of the soil surface, water drops should be kept small. This requires a fairly high pressure for a given nozzle size.

Keep in mind that it is necessary to have a higher pump capacity for germination than is required for normal irrigation of sod.

Use For Fertilizer And Herbicide Application

For maximum efficiency, a sod farm sprinkler system should be used to apply chemicals, fertilizers, and herbicides or pesticides. This requires the incorporation of some type of injector into the system. When he selects the injector, the sod grower

Table 1. Effect of Wind Velocity on Sprinkler Spacing

Wind	Maximum Triangular Spacing
0 to 3 miles per hour.....	60% of the diameter
3 to 5 miles per hour.....	50% of the diameter
5 to 7 miles per hour.....	40% of the diameter
8 to 10 miles per hour.....	30% of the diameter

should keep in mind the amount of chemical to be injected; this should be in proportion to the flow rate of water through the system. Only in this way can he be sure of avoiding the danger of applying excessive amounts of chemicals. Chemicals should go only where the water goes. Thus, the need for uniform application of water is apparent. The sprinkler system should also apply water at a rate that precludes runoff and insures an adequate amount of water at each irrigation.

Wind Conditions

It takes very little wind to affect the performance of large sprinkler systems, but many do not realize how great this effect is. Since there is only a slight difference in the effect of wind on various pop-up sprinkler heads, Table 1. can be used as a guide to head spacing required for several different wind velocities.

The effect is greater than it seems at first glance, because the number of heads required increases in inverse proportion to the square of the spacing. Therefore, four times as many heads are required to operate successfully in an 8- to 10-mile-per-hour wind as are required in a zero to 3-mile-per-hour wind.

Whenever possible, most growers prefer to schedule watering times for periods of the day or night when wind velocity is low, rather than to pay the much greater cost involved in installing a system that will provide good water coverage in the wind. However, the prospective buyer must thoroughly understand the effect of local wind conditions before he sets out to purchase an irrigation system.

Precipitation rate is the average rate, in inches per hour, at which sprinklers deliver water.

A low rate is considered to be under .30" per hour; a medium rate is around .45" per hour; and a high rate is anything over .50" per hour.

Good soil conditions on flat ground can successfully use a high rate of application. Heavy soil, soil compaction, sloping areas, or any other condition that results in a low infiltration rate, indicate the need for a lower rate of water application. Sometimes it is difficult to tell in advance how high a precipitation rate can be used successfully on all parts of the sod area, so it is usually best to specify the lower rates of precipitation, which will give the least trouble with runoff in problem areas.

Uniformity of Precipitation

This is a measure of the efficiency of the system, and there is considerable difference between a good and a poor system in this respect. Sod farm irrigation requires a uniform application of water since most grass varieties are shallow-rooted. For this same reason, frequent irrigation is needed during periods of high moisture use. Thus, sprinklers selected should be from a quality manufacturer and should be designed for scientific uniformity of water application.

Service Life

There is also a considerable difference in the life expectancy of the various components used in sprinkler systems, even under ideal conditions. Adverse conditions can cause further shortening of life expectancy. For example, water hammer, or associated high pressure, can cause premature failure of pipe and fittings. Abrasive or corrosive water can shorten the life of rotor heads, especially where the mechanism is exposed to the water stream. On rotor heads, the total effect of these variables

can result in an operating life from as low as 50 hours to as high as 5,000 hours.

It thus becomes very important for the prospective buyer of irrigation equipment to specify durability of system components. It should be possible to obtain five-year usage of heads, controls, and valves, and 15-year usage of pipes and fittings.

The sod grower planning a new irrigation system should know and specify just what it is he expects of the system. Then, if he wishes, he can leave to responsible experts the job of designing the system that will meet his specifications. In this way, the grower can be more sure of getting a system that will meet his own needs and problems.

Fall Turf Care Important

Bluegrass should be mowed, fed, and watered as long as it continues to grow, Colorado State University extension horticulturist, C. M. Drage, says. He explains that fall conditions are favorable for the growth of cool-season grasses, which should be fertilized at this time, even though results will not be as obvious as in spring fertilization.

The grass responds by increasing its root system and storing extra plant food for new top growth in the spring. Fall fertilization also stimulates tillering, which takes place when new plants rise from rhizomes near the mother plant and contributes to a dense stand of grass. Nitrogen, generally the most important element in turf fertilizer, should be provided at 1 to 2 lbs. per 1,000 sq. ft., Drage recommends. For conditions of average fertility, lawns will require 3 to 4 lbs. of available nitrogen per 1,000 sq. ft. each year. This can be applied half in spring and half in fall; but if grass is fertilized only once a year, fall is probably the best time.

Recommending against over-fertilization as unnecessary and impractical, Drage adds that lawns should be mowed in fall at the regular height of 1½ to 2½ in. Grass will need less water in the fall, but soil should not be allowed to dry out.

Lausche Tells 42nd ISTC Convention: Man's Indifference Is Creating an Ugly America

"Man and man alone is primarily responsible for making a rich and lovely land, once covered with vegetation, into an ugly sight," Ohio Senator Frank J. Lausche, told the keynote luncheon of the 42nd International Shade Tree Conference Convention, held at the Cleveland-Sheraton Hotel, Aug. 28 to Sept. 2. Deploring the defoliation of America, the senator cited the destruction of trees by home construction, road building, and strip mining in particular.

What can be done about this vast waste of natural beauty? Lausche's resounding reply: Plant Trees. Recalling his years as Ohio's governor, the white-haired statesman pointed with pride to Ohio's sesquicentennial year of 1953 and the "Plant a Tree" program he initiated. Twenty-five million trees were reported planted under the program. What has happened to this impetus? he asked. The senator seemed hopeful that an audience of over 800 arborists was prepared to implement its convention theme: "Beautify with Trees."

Following the keynote luncheon, delegates returned with a purpose to the educational sessions that had been in progress since Monday morning. Beautification does not result from digging a hole and throwing in a tree, but from well-planned planting programs, from knowing how to maintain the tree, and from knowing how to save the tree from its own environment if necessary, delegates were told.

Beginning with an investigation of the complex of interacting factors that cause decline of hardwood trees in urban conditions by Dr. Wayne Sinclair, plant pathologist from Cornell University, Ithaca, N. Y., delegates heard and discussed a wealth of techniques for planting and preserving trees. Soil fertilization and aeration, treatment for soil fills, and the use of soil wetting agents for saving trees and promoting growth were described; municipal and industrial planting programs were brought



Shovel wielders for tree planting ceremony on Cleveland's mall are (left to right): John Michalko, Shade Tree Commissioner of Cleveland and general chairman for the convention; Dr. Richard Campana, ISTC's '66-'67 president from Orono, Maine; O. J. Andersen, '65-'66 ISTC president from Houston, Tex.; and Ohio Senator Frank J. Lausche, who delivered the keynote luncheon speech. William P. Lanphear, III (far left) was meet co-chairman.

into focus; special areas, such as tree evaluation, growth retardation, and personnel problems and management were discussed. All with an eye to helping the arbor industry do a better job.

Wetter Water Slakes Soil

To make water wetter, to make it penetrate soil faster and wet more uniformly, Robert A. Moore, of Aquatrols Corp. of America, Camden, N. J., recommends adding soil wetting agents to water. Explaining that the tension forces of plain water inhibit penetration of small (capillary) pores in soil, he counseled that "only a few thousandths of one percent of wetting agent is needed to reduce tension forces by 60% or more."

"A soil treated with wetting agent also holds water at lower tensions," he continued, "thereby increasing the availability of water and nutrients, and enabling plants to go up to twice as long between waterings." Moore recommended use of soil wetting agents in street tree plantings and in shopping mall plantings where treatment allows water to penetrate dense balls to the plant

root zones. Wetting agents can be added to mulches to help keep them in place, drain more readily and uniformly, and to increase plant response from improved water supply.

When balled nursery stock is treated before shipment, watering is more effective and stock arrives and keeps fresher, Moore stated. He also emphasized the benefits of "puddling-in" with wetter water. "The complete wetting and rapid penetration of soil and tree ball eliminates air pockets and allows the tree to be set at final grade. No settling occurs." How much do wetting agents increase soil penetration? According to the man from Aquatrols, wetter water moves through the soil profile in about 2 hours as opposed to 24 to 48 hours for untreated soils. "Wetter water assures the most desirable type of soil moisture condition: good penetration into dry areas, rapid drainage of excess moisture in wet areas."

How To Treat Soil Fills

"Roots buried under soil fills by contractors cannot receive the normal supply of oxygen and



The gavel is passed as ISTC officers look to the year ahead. Officers (left to right) are Dr. Lewis C. Chadwick, executive secretary, from Columbus, Ohio; Freeman L. Parr, vice president, Hicksville, L. I., N. Y.; Dr. Richard Campana, '66-'67 president, University of Maine, Orono; C. Elmer Lee, president-elect, of Los Angeles, Calif.; O. J. Andersen, '65-'66 president, from Houston, Tex., and Dr. Paul Tilford, ISTC editor, from Wooster, Ohio.



Tree dedicated to the late veteran treeman Charles Irish is planted at Holden Arboretum, where commercial equipment demonstrations were held. At the shovels (left to right) are Dr. Richard Campana, Dr. L. C. Chadwick, Dr. Paul Tilford, and O. J. Andersen.



National Arborist Assn. officers confer. From left to right, '65-'66 president Edwin E. Irish, of Warren, Mich.; '66-'67 president, Harry A. Morrison, of Wilmette, Ill.; and NAA executive secretary, Clarke W. Davis, of Washington, D. C.

Candids Snapped at this year's ISTC Convention



Delegates sign in for the six-day long Shade Tree Convention.



Municipal arborists Albert Ayling (left) and Brian Fewer (center) get set for their talks as chairman Carl Schiff looks on.



Above: Conventioneers pass through lunch line at Holden Arboretum barbeque. Below: Overall view of commercial exhibit area in convention headquarters hotel.



Monday afternoon speakers, John Z. Duling (right) and Ralph G. Carmichael (center) pause to discuss their talks with session chairman, Dr. Richard Campana.



Opening session speakers, Dr. Wayne Sinclair (right) and Robert A. Moore (left) compare notes with ISTC president Andersen.



BLUE VERVAIN

(*Verbena hastata*)



Blue vervain, also called wild hyssop and purvain, is a perennial plant that reproduces by seed and short rootstocks (rhizomes).

Native to the United States, blue vervain is found throughout the Mississippi Valley and eastern states. The plant grows in pastures and meadows, along roadsides and fence rows, and in waste places. It is most commonly found on low, moist ground with gravelly or heavy loam soils.

Leaves (1) are opposite, 3 to 6 inches long. They are pointed, saw-toothed, rough textured, and prominently veined. Dark green above, leaves are a grayish-green below.

Blue vervain grows 2 to 4 feet tall. Upright stems are 4-sided and slightly hairy. Branches occur near the top of the plant (2).

Small, blue flowers appear in compact spikes that are 2 to 6 inches long. Flowers begin to bloom and mature from the base of the spike. They are less than $\frac{1}{4}$ inch across.

Reddish-brown seeds (3) are borne four in a pod. Seeds are about $\frac{3}{32}$ in. long. They are oblong with an oval side and two flat sides, and have a white scar at the base. Oval seed surface is ridged.

Blue vervain is a shallow-rooted plant that becomes hard and coarse as it matures. Annual mowing will help to control the plant. Application of 2,4-D at 1 pound per acre will usually provide good control.

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

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water to maintain a healthy tree condition," John Z. Duling, Muncie, Ind., tree expert indicated. "When we find a fill or grade exceeding 6 in. over most of the root area of established trees, we recommend that plans be made to allow air and water to reach the roots in the original grade."

Where 6 in. to 18 in. of fill is in place, holes are drilled through the fill, which is then loosened with air pressure before blowing in fertilizer and sand and filling with pea gravel. "In places where the fill will be of greater depth, we recommend that an aeration system be installed," the Indiana arborist said. If the fill is already in place, it must be removed in the tree area to the original grade. "A system of field tile is laid on the grade in the pattern of a wheel with the spokes running into the base of the tree, where a tapered base of stone is laid around the tree trunk." The area is vented to the surface, filled with 6 in. to 12 in. of stones, covered with burlap or straw, and then soil fill installed. After installation, fertilizer can be applied through the vent pipes.

Duling added that there may be a lesson to be learned from trees that have survived soil fills by developing a second root system for the new conditions. Charles Schmaltz of Rochester, N. Y., has successfully induced new root growth "by wounding the trunk or major roots just prior to applying the fill. Exposing the cambium by a notch or cut and then covering the wound with a moist medium, such as sand or moss, results in root growth from the wound." The treeman described this as an interesting new possibility for arborists.

How To Plant Curbside Trees

"The trend toward planting in curbside excavations in business areas is obviously on the increase," Edward J. Brarmann, Jr., Supervisor of Forestry for the Jersey Central Power & Light Co., Morristown, N. J., commented. "I believe the underlying motive is a desire for added color afforded by fruit, green foliage, and attractive blooms, rather than shade."

Underlying the new concept of street tree planting, he termed creation of the typical old tree-shaded thoroughfare "neither desirable nor practical." Business area conditions are not suitable



Dr. Paul Tilford (left), former NAA executive secretary congratulates commercial arboriculture panelists on their presentations. Others shown (left to right) are Ed Irish, panel moderator; Wayne C. Morgan; Dr. Eugene B. Himelick; and Jack Wikle.

for large trees. "A tree must grow naturally to fit the space available or be contained within the space limitations by frequent pruning."

Recounting his own experience with the business area planting project in Englewood, N. J., Brarmann stressed the importance of advance planning. "The desire for early results shouldn't prompt premature planting activity," he warned. Site locations, intervals (a minimum of 60 ft. to 70 ft. was recommended), and careful tree selection to assure diversified plantings should be determined well in advance for an entire project area. Use a minimum of 4 ft. by 4 ft. for sidewalk cutout size. This increases cutting and repaving costs, but reduces root interference by sidewalks. Brick was found unsatisfactory for surfacing the excavated areas; concrete blocks are relatively satisfactory; the use of Belgian block seems to work well.

"Any business area planting project is, by its very nature, a 'show place' and must be so maintained," Brarmann stressed. "Municipalities unaware or unwilling to accept the maintenance aspects of the business planting project, should not undertake such a program in the first place."

Industrial Landscaping Push

Working seven days a week,

through sub-zero winter weather, against an "impossible-to-meet" deadline, Davey Tree of Bettendorf, Iowa, landscaped the better part of 300 acres in nine months, Ralph G. Carmichael, Davey treeman, told an afternoon general session. Mobilizing all its resources, Davey finished on schedule, though sod was laid and a tree planting ceremony held on frozen ground.

Haste did not create a lack of care, Carmichael emphasized. For example, though more than 2,700 trees were removed from the land (new home of the Deere & Co. administrative center), he related that "trees outside the construction area were removed only after a complete review was made of each situation and unanimous agreement was reached." Extensive measures were taken to protect desirable trees. "All construction contracts contained tree-protection clauses and provided for penalties in the event of tree damage," a procedure that Carmichael notes has paid off handsomely.

During construction, trees were pruned, braced, cabled, and sprayed for insects and diseases. Land was treated with equal care, as 75,000 cu. yds. of topsoil were added and 50 acres of damaged land surface recontoured. Of these acres, 35 were machine graded, fertilized, and planted with 22 different seed mixtures, depending on sun, shade, soil,

Meeting Dates



Mountain Lake Right-of-Way Maintenance Conference, Annual Meeting, Tinker Mountain Motor Lodge, Roanoke, Va., Sept. 12-15.

Mississippi Turfgrass Assn., Annual Fall Meeting, Jackson Country Club, Jackson, Sept. 13.

Northern Michigan Turfgrass Conference, Traverse City Country Club, Traverse City, Sept. 13.

Northwest Nurserymen's Indian Summer Session, Salishan Lodge, Gleneden Beach, Ore., Sept. 16-18.

California Assn. of Nurserymen, 56th Annual Convention, Yosemite National Park, Calif., Sept. 20-22.

Rocky Mountain Regional Turfgrass Assn., 12th Annual Equipment Exposition, City Park, 23rd Ave., Denver, Colo., Sept. 21.

University of Minnesota Annual Shade Tree Maintenance Short Course, St. Paul campus, Sept. 21.

Pacific Northwest Spraymen's Assn. Spray-O-Rama, Thunderbird Motel, Portland, Oregon, Sept. 23-24.

Oklahoma Nurserymen's Assn., Annual Convention, Western Hills Lodge, Wagoner, Sept. 26-27.

Arizona Nurserymen's Assn., Annual Convention, Nogales, Sept. 26-27.

Missouri Lawn and Turf Conference; Missouri Valley Turfgrass Assn. Annual Meeting, University of Missouri, Columbia, Sept. 28-29.

Montana-Wyoming Turf and Nursery Assn., Convention, Montana State University, Bozeman, Oct. 3-4.

Ohio 25th Short Course on Roadside Development, Departments of State Bldg., Columbus, Oct. 3-7.

University of Florida 14th Annual Turfgrass Management Conference, Ramada Inn, Gainesville, Oct. 4-6.

National Recreation and Park Assn. Congress, Washington-Hilton Hotel, Washington, D.C., Oct. 9-13.

Florida Nurserymen and Growers Assn. Trade Meet and Short Course, George Washington Hotel, Jacksonville, Oct. 14-16.

National Conference on State Parks, 46th Annual Meeting, Kentucky Dam Village State Park, Ky., Oct. 16-21.

and other factors. More than 15 acres of bluegrass sod was laid after hand finishing and fertilizing the land. Carmichael commented wistfully that he didn't think this landscaping achievement would be surpassed in his career.

Westward Wind Woes

Biggest problem facing tree growers in San Francisco, sometimes known as the "treeless city," are the strong westerly winds up to 25 miles per hour during all seasons of the year. Frisco's supervisor of landscaping and street tree planting, Brian Fewer, came to the Cleveland shade tree meet to report his planting program for the peninsular city.

His two-pronged attack to erase the tree-bare reputation includes a municipally run landscaping effort on boulevards, traffic islands, freeway interchanges, hospital grounds, and planting of street trees with city funds. The second phase encourages property owners and merchants to plant and maintain their own street trees.

A pilot tree program during the last 10 years is revealing species which will withstand the rigors of Frisco's shifting fogs, cool weather, and the Pacific's air-conditioning winds, Fewer explained. And, thanks to an active public relations campaign, the initial disinterested public attitude towards a planting program has been reversed. More than 50,000 trees have been planted in the last six years by this "do it yourself" program, Brian Fewer boasted.

A Tree for Every House

A tree ordinance in Warren, Mich., requires each builder to pay the city to plant a tree in front of each new house he builds. Enactment of this law was one of the first tasks Albert T. Ayling, Warren's city forester, accomplished when he was hired six years ago to set up the town's forestry department. Money a builder pays is extracted when he takes out the building permit and then is deposited in a fund which helps finance an annual planting of over 4,000 trees.

A stumbling block to be surmounted by forester Ayling was where to locate the trees to supply this voluminous demand. "Trees are in great demand and short supply. In order to insure



Tree evaluation was the discussion topic for municipal arborists (left to right): Wilbur Garmhausen, Jr., Harold Groth, and George Creed.

a steady supply of desirable species, something unusual had to be done," Ayling recounted. Answer? City Council was asked to approve the bidding of a five-year contract for 4,000 trees per year. Cottage Gardens Nursery, in Warren, was the original successful bidder in 1962 and another contract has just been let to run for five years more.

Warren's forestry chief sees these advantages of such a long-term arrangement: assured dependable supply of specified species and sizes, scheduled and coordinated delivery, and lower unit cost.

Panel Airs Tree Needs

"Trees are no different from other plants in their basic nutritional requirements," Dr. Eugene B. Himelick, of the Illinois Natural History Survey, Urbana, instructed. Opening speaker on the fertilization and aeration panel arranged by the National Arborist Assn., the tree expert went on to describe results of fertilization studies in progress for four years at the Morton Arboretum, Lisle, Ill.

In tests conducted with Dr. Dan Neely, five types of fertilizers were applied to pin oak, white ash, and honeylocust by four different methods: surface application, dry in holes, solution injection, and foliar spray. Trees responded equally well to all methods but foliar application, where little benefit resulted. Trees were measured for circumference growth and also rated for deepness of color, found to correlate closely with growth response.

Fertilizers used were ammonium nitrate, urea, P-K combination, N-P-K balanced fertilizer, and N-P-K with minor elements

added. "Where nitrogen was included in the fertilizer," the plant pathologist summarized, "similar benefits in growth were obtained, while phosphorus and potassium alone gave no significant increase over the check."

In other tests conducted at Oregon, Ill., 6 lbs. of urea per 1,000 sq. ft. have been applied to four species. First year results show treatment increased growth 190% in walnut, 95% in sycamore, 51% in green ash, and 5% in red pine. Six pounds of N per 1,000 sq. ft. is about the optimum amount for good growth response, Dr. Himelick said.

The arborist offered these suggestions for fertilizing trees: measure accurately the area in sq. ft. to be covered, using a square or rectangular grid for ease of computation; apply N at 6 lbs. per 1,000 sq. ft. by surface, hole, or injection methods; apply P and K in a balanced mix every three to five years or when tests indicate a need; when applying dry in holes, drill 12 in. to 15 in. deep at 2 ft. intervals, and beware of using too much fertilizer; for soluble injections, apply 18 in. deep at 2½ ft. intervals.

Vertical Mulching Airs Soil

Wayne C. Morgan, of the Agricultural Extension Service, University of California, second speaker on this symposium, advised that poor irrigation practices, too-rapid water runoff, and grass competition often work to the detriment of trees planted in turfgrass areas. What will help correct this problem? Vertical mulching, the extensioner answered, enthusiastically.

Drill 18 in. deep holes with a 2 in. or 3 in. auger, one per sq. ft. within the drip line, and fill with sawdust, shavings, and fertilizer. Results have been apparent within two weeks, Morgan reported. Vertical mulching provides channels for water and nutrients to enter the soil, allows for a more favorable rooting medium, and adds moisture holding capacity.

The practice benefits not only established trees but also newly planted balled trees. For these, he recommends slanting the hole across existing soil into the ball of the transplanted tree. The Californian added this caution: unless there is a real need for water, air, and nutrients, there is no need for vertical mulching. Not much, if any, improvement



Progress reports on a new growth retardant were presented by members of this utility arborist panel. Panelists (left to right) included moderator Fred A. Ashbaugh, Gill K. Brown, Ralph C. Ratcliff, R. R. Bruns, and B. W. Bergstrom.

will result when trees are normally healthy.

Anchor man on the panel, Jack Wikle, horticulturist with the Davey Tree Co., Kent, Ohio, traced the evolution of Davey practices from complete cultivating of soil around trees, through the trenching technique, to the current widely-employed practice of "perforation feeding" Davey's term for vertical mulching.

How Much Is a Tree Worth?

The value of a tree depends upon a number of factors, not the least of which is whether it's a park tree or an individual shade tree. It depends on the tree, on who is evaluating it, on what evaluation system (or combination of systems) is used, and on the feelings of the evaluator. Whatever can be said about tree values, the three Ohioans who addressed the question in a municipal arborist panel, moderated by New Yorker Carl Schiff, agree that tree value guides are much needed and that there is currently considerable difference of opinion on the subject.

Harold Groth, Director of Cleveland Metropolitan Parks, examined the question from the position of the park expert faced with increasing encroachment from highways, utilities, and other public and private agencies. How much is a tree worth? Where parks are concerned, Groth lamented, a tree is too

often considered merely a fixture of the land with no special value at all.

Wilbur Garmhausen, Chief Landscape Architect for the Ohio Department of Highways, directed his talk to the roadside tree program. How much is a tree worth? To Garmhausen, a tree is worth its contribution to roadside beauty, to highway safety, and to maintenance reduction (he cited reduced snow removal costs where woodlands are adjacent to highways.)

George Creed, landscape architect from Cleveland, offered several factors that determine the value of a shade tree, including size, form, ornamental qualities, condition, longevity, adaptability, disease susceptibility, condition, location, and species. How much is a tree worth? A complex question, which depends on numerous factors that Creed feels cannot be reduced to a hard and fast formula. Yet a formula would be a good starting point for appraisers, he adds. If it can be determined, the best basis for valuing a tree is its replacement cost. When he evaluates trees, he has used several different guidelines, and much personal judgment.

Municipal Labor Source

"How can we maintain crew strength, and where can we get new men?" This was the perplexing question a panel of four municipal arborists attempted to

answer. Each agreed the market for capable young men is "tight", that salary levels must be raised to compete with those being offered by unions and the federal government; and that there should be a standardized selection method for hiring treemen.

Exchanging opinions on the arid labor pool were James T. Oakes, city arborist for Richmond, Va.; Robert R. Metz, assistant director of the Toledo (Ohio) Metropolitan Park System; Jack A. Kimmel, director of parks for the city of Toronto, Canada; and George S. Stadler, Denver, Colo. city forester. Wrap-up panel opinion was that the industry must do more to improve its public image to attract young men to it. This long-haul objective is not an easy, inexpensive one.

Trees and Proximics

B. W. Bergstrom, arborist for the New England Power Service Co., Lynn, Mass., opened his report to the utility arborist panel on tree growth retardants with a definition of proximics: the scientific study of space and how people react to it. He suggested a similarity between the unfavorable reaction of people to close spaces and the reaction of trees to utility lines, which are often uncomfortably close for both line and tree. Among the newest of tools for circumventing the tree-line relationship is the growth retardant B-164, an ethyl ester of Naphthaleneacetic acid developed by the Battelle Memorial Institute. B-164 is applied after pruning in an asphalt wound dressing carrier.

Favorable results in field tests were reported by panelists Bergstrom; Gill K. Brown, Right-of-Way Specialist for the Georgia Power Co.; R. R. Bruns, forester for the Union Electric Co., St. Louis, Mo.; and Ralph Ratcliff, forester for the Consumers Power Co., Jackson, Mich. Capsulizing panel reports, moderator Fred Ashbaugh called the chemical extremely promising, perhaps not the "ultimate" growth retardant, but a good beginning toward a much-needed item.

As for proximics, it was much in evidence in Cleveland, as the more than 800 arborists jostled for post position in the parade of convention activities. Next year's convention has been set for August 27 to 31 at the Marriott Motor Hotel, in Philadelphia, Pa.

Nurserymen at AAN Convention Told To Modernize Business Practices, Continue Beautification Work

Suggestions and pleas for sophisticated business management practices surrounded 1500 registrants who gathered for the American Association of Nurserymen's 91st annual convention in mid-July at Chicago's Palmer House. Bolstered by news of improved Association budgets and a revitalized executive staff, AAN delegates heard half a dozen top management experts and later completed a full roster of Association business during their three-day operations-oriented conclave.

Congratulations and inspiration greeted nurserymen at the first general session, a luncheon keyed by Mrs. Henry H. Fowler, wife of the Secretary of the Treasury and Chairman of the White House Beautification Speakers Bureau. Bearing thanks from Lady Bird Johnson for the AAN's "Plant America" campaign, Mrs. Fowler urged nurserymen to continue work to educate the public and to enhance America's natural splendor.

"We need horticulturists to change our urban image from honky-tonk to beauty," she implored. The longtime proponent of natural beautification suggested industry members tap the Job Corps for a potential labor source as nurserymen continue their important work in a manpower-short market.

Mrs. Fowler's talk followed the reading of a personal telegram from President Lyndon B. Johnson who also thanked AAN members for their "Plant America" efforts.

Formalities of past successes were set aside, though, as nurserymen settled down to a day-and-a-half "Management Opportunities Program" which included six speakers who explored various facets of business operations.

Insurance drew concerned attention from Warren G. Brockmeier, manager, client services,



New AAN Board of Directors (left to right from front): Martin W. Usrey, director at large, Monrovia Nursery Co., Azusa, Calif.; J. E. "Ted" Korves, vice president and regional director, Plumfield Nurseries, Inc., Fremont, Nebr.; Thomas B. Kyle, Sr., president, Spring Hill Nurseries Co., Tipp City, Ohio; Hoskins A. Shadow, regional director, Tennessee Valley Nursery, Winchester, Tenn.; Joseph H. Klupenger, regional director, Klupengers Nursery & Greenhouses, Inc., Portland, Ore.; Harold R. Nickel, regional director, Greenleaf Nursery Co., Muskogee, Okla.; William Flemer, III, regional director, Princeton Nurseries, Princeton, N.J.; John H. Powell, allied associate, Economy Label Sales Co., Daytona Beach, Fla.; and Kenneth J. Altorfer, regional director, McKay Nursery Co., Waterloo, Wis.

insurance department of E. B. S. Management Consultants, Inc. His admonition, "It's Your Business, Protect It Now," reminded growers of the insurability of products cultivated indoors and outdoors. "It may behoove owners to carry windstorm insurance on what they can, at reasonable expense, realizing that greatest losses may be to stock grown outside buildings. At least loss will be mitigated by having insurance on part of it, should a major windstorm hit growers' properties."

Pesticiders Need Insurance

Brockmeier outlined insurance programs beneficial to growers or handlers who apply insecticides. He recommended product liability coverage which "protects you against claims for injury to someone or for property damage to somebody's property caused by a defect in products you sold."

Turning to liability insurance for application of pesticides, the

insurance consultant suggested, "If you ever charter a plane or use a flying crop dusting service, buy nonownership aircraft insurance." Brockmeier also pointed out the need for employe bonding, insurance on nursery and growing equipment and facilities, and complete auto protection. He noted, too, the pitfall of overinsuring, observing, "Risks which can reasonably be borne by the business enterprise without danger to financial stability or to the general profit picture should not be the subject of insurance coverage."

"Consumer Satisfaction Depends on Good Management," horticulturist Hiram J. Johnson, vice president and sales manager of Conard-Pyle Co., West Grove, Pa., told delegates. Functions of management consist of five areas: planning, organizing, controlling, coordinating, and motivating, he said. Nurserymen must effectively handle these five tools, Johnson insisted, for their industry rests on accept-

ance by a public which "shares with us two of its most prized possessions, leisure time and luxury dollar."

Jack McLay, McLay Florist and Garden Center, North Andover, Mass., called for heightened industry standards. "A garden center should try to maintain a full yard of 'plantable material,'" he idealized. "End of season sales are harmful to the industry unless it is truly the end of a planting season for a particular collection of plant."

Credit Selling: "Ideal Terms"

Factors of "Credit Selling" were explored by Dr. John J. Brosky, associate professor of finance at the University of Washington. To develop a concept of the "ideal terms of sale," Brosky described ways to protect the intended profitability margin of the seller firm and to neutralize the effects of changes in the pattern of customer payment habits. His complex evolution of accounting procedure concluded with the advice that since accounts receivable rank first or second as major assets of most firms, investment in accounting improvement is essential to safeguard and control its economies.

Other AAN speakers included Ira M. Hayes, director of retail sales training for National Cash Register Co., and Donald Drane, Advanced Consultant, John Hancock Mutual Life Insurance Co. Hayes urged nurserymen to endorse enthusiastically "conformity, repetition, and identity" in their drive to "Get Out and Sell." These sales methods make people buy nursery products because others in their neighborhood have them (conformity), because the firm is a well-known one (repetitive advertising), and because it has a good public image (identity), Hayes capsulized.

Drane delved into the unpleasantness of business dissolution upon death of an owner or partner. In "It's Your Business, Let's Measure and Preserve Its Value," he listed steps to help nurserymen protect business interests for their families in case of death: determine disposition of

goods, make sure family has access to funds, evaluate business assets. The problems involved in estate clearance demand attention and planning, he summarized.

New Direction For AAN

Attention was not limited to promoting business efficiency, though, as delegates spent considerable time reviewing the organizational setup of their Association and honoring outstanding industry members.

At the first general business session on Monday, July 18, conventioners heard members of the AAN's Washington executive staff recount significant steps made by the Association during the previous year. 1965-66 saw the AAN come under complete management change, an "umbrella concept" by which the Association can better serve its members, as Executive Vice President Robert F. Lederer put it. Two other associations, the Horticultural Research Institute and the Wholesale Nursery Growers of America, Inc., will be managed by AAN executive personnel while maintaining strict autonomy in governing procedures.

Outgoing AAN President Martin W. Usrey, Monrovia Nursery Co., Azusa, Calif., announced the Association had recouped financial setbacks of previous years. Thomas B. Kyle, Sr., AAN vice

president and treasurer, Spring Hill Nurseries Co., Tipp City, Ohio, unveiled a new budget. Included in this lengthy proposal was an allowance which permits AAN staff and members to call in a firm of traffic consultants who will study transportation problems of the industry. "In my estimation, this AAN service will save everyone of us many times our annual dues each year," Kyle opined. Indirectly, this move is an outgrowth of what executive staffers considered one of the Association's most important efforts during the past year. AAN protests prompted an Interstate Commerce Commission hearing to investigate proposed REA Express rate increases on horticultural shipments. "This investment of slightly over \$1,000 (for the hearing) has already resulted in savings of tens of thousands of dollars in transportation charges to us all," Kyle added.

"Associate Members" Begun

Born at this 91st annual conclave was an Associate Members Division of the AAN. The new group is composed of AAN members who are not in the nursery business; it will act as spokesman of all associate members dealing with the AAN and other nurserymen organizations. John H. Powell, Economy Label Sales Co., was elected president of the Associate Members Division; Donald J. Murray, Stoffel Seals



Mrs. Henry H. Fowler, wife of the Secretary of the Treasury and keynote speaker for the 91st annual AAN convention, pauses to chat with Robert F. Lederer, AAN executive vice president.

Corp., became treasurer; and Donald S. Mayer, Premier Peat Moss Corp., took the secretary post.

Elections for officers of the 1400-member AAN saw Thomas B. Kyle, Sr., move into the presidency after 4 years on the AAN Board of Directors. J. E. "Ted" Korves, Plumfield Nurseries, Inc., Fremont, Nebr., was elected to the vice presidency. Walter M. Ritchie, Ritchie's Garden Center, Colonia, N. J., was returned as an AAN trustee.

Directors for new two-year terms are William Flemer, III, Princeton Nurseries, Princeton, N. J.; Kenneth Altorfer, McKay Nursery Co., Waterloo, Wis.; and Martin W. Usrey, Monrovia Nursery Co., Azusa, Calif.

Howard P. Quadland, retiring AAN director of public relations, was honored for his long service to the Association. Hugh Stevenson, Forest Keeling Nurseries, Ellsberry, Mo., represented the Association during a ceremonial presentation to the pioneering publicist. Wayne H. Dickson has been named as Quadland's successor and assumed duties in July as AAN's public relations director, moving the PR office from New York to Association headquarters in Washington, D. C.

AAN Garden Writer's Award went to Victor H. Ries, garden editor of the Columbus, Ohio, *Citizen Journal* and author of numerous horticultural books and articles.

Dr. Paul Betjer, research plant physiologist at the U. S. Department of Agriculture's regional laboratory at Wenatchee, Wash., won the Norman Jay Colman Award. The plaque, presented annually to an individual who has made an outstanding contribution to horticultural progress through research, is named for the first U. S. Secretary of Agriculture, Norman Jay Colman, often called "The Father of the Experiment Stations."

Dr. Richard P. White, who has directed the Horticultural Research Institute since its inception in 1962, was honored upon his retirement for outstanding contributions to HRI.

Elmer Palmgren, Palmgren Nursery Supply, Chicago, served as General Chairman for this year's AAN meeting.

Vice Chairman was Alfred L. Fiore, Charles Fiore Nurseries, Inc., Prairie View, Ill. Besides the business and educational sessions, the convention featured a trade show which included 110 exhibitors and active ladies and "junior nurserymen" programs. Supplementing official sessions were tours to outstanding horticultural establishments and fine residential plantings in the Chicago area.

Northwest Turfmen Meet at Oregon Coast, Oct. 26-28

Oregon's seacoast and sand dunes serve as the background for the 20th Annual Northwest Turfgrass Conference to be held Oct. 26-28, at the Salishan Lodge in Gleneden Beach, Ore.

Program arrangements are nearly complete and will include talks on "Frost Protection for Turfgrasses," by Dr. Jim Watson, Turf and Toro Co., Milwaukee, Wis.; "Public Relations for Turf Managers," by Warren Nunn, assistant to Oregon's governor; "Winter Injury to Turfgrasses Caused by Low Temperature," by Dr. V. C. Brink and associates, of the University of British Columbia, Vancouver, B. C., Canada; "Weed Control in Turfgrasses," by Dr. A. J. Renney, University of British Columbia; "The Action of Herbicides in the Control of Weeds," by Dr. Appleby of Oregon State University, Corvallis, Ore.; "The Effects of Salts on Turfgrasses," by Charles G. Wilson, Milwaukee Sewerage Commission; "Ornamental Weed Control," by Arthur Myhre, Western Washington Research Center, Puyallup, Wash.; and "Research Progress Reports," from staff researchers of Washington State University.

Panel discussions will include "The Control of Turfgrass Diseases," and "Establishing New Turfgrass Areas." Dr. Roy Goss, executive secretary of the Northwest Turfgrass Foundation, at Washington State University, Western Washington Research

and Extension Center, Puyallup, Wash. 98371, has further registration details.

Mich. State University Begins New Turf Course

A special 18-month course in turf management, beginning Sept. 29 at Michigan State University in East Lansing, will study the identification, establishment, and maintenance of turfgrasses for various uses. Other topics include soils and fertilizers, landscape construction, drainage and irrigation, operation and maintenance of mowers and power tools, and insects and diseases of turfgrasses. Courses in written and spoken communications, business records, and personnel management are also on the program.

Including two quarters of on-the-job training in the spring and summer of 1967, the course will run from Sept. 29, 1966 to March 22, 1968, with four quarters of on-campus study. Additional information and application forms are available from the Short Course Department, Michigan State University, East Lansing, Mich. 48823.

Right-of-Way Group Sees Spray Gear, Sept. 12-15

All types of right-of-way spray equipment will be demonstrated when members of the Mountain Lake Right-of-Way Maintenance Conference gather at the Tinker Mountain Motor Lodge in Roanoke, Va., for their Sept. 12-15 annual meeting.

Included in the Sept. 13 equipment show will be hydraulic rigs, mist blowers, and other ground items, as well as representative helicopter-mounted spray gear. Results of commercial applications for brush control, tree inhibition, and soil sterilization will also be shown. Formal presentations on some problems of right-of-way maintenance, and a tour of experimental brush control plots at the Virginia Polytechnic Institute will close the technical portion of the meeting.



Artemisia, or chrysanthemum weed, draws the attention of weed workshop participants, as Dr. A. M. S. Pridham (left), discusses a sample. Others (left to right) are William R. Titus, Nassau County, N.Y., extension service; Dr. Arthur Bing, head of Cornell Ornamentals Research Laboratory; Professor Peter Hyypio, Bailey Hortorium and Cornell weed specialist; and Charles F. Scheer, Jr., Suffolk County, N.Y., cooperative extension agent.

Delegates to '66 Cornell Conference Study Ornamentals, Turfgrasses; See New Sprayer

Problems and management of ornamentals and turfgrasses were the key interest of more than 100 specialists who gathered at the New York State College of Agriculture, Cornell University, Ithaca, N. Y., July 6 to 8. Representing nine states plus New York, delegates to the 1966 Cornell Conference of nurserymen, arborists, landscape contractors, and garden center operators kept up a busy round of skull sessions and workshops.

A new type of sprayer, from Amchem Products, Inc., Ambler, Pa., was a highlight of the turfgrass workshop's equipment display. The new applicator is said to provide uniform distribution of spray from a rotating disk. Cornell professor John F. Cornman told the workshop "it is an excellent item of grounds-keeping equipment for schools, parks, and similar areas." Participants in the turfgrass session also reviewed grass varieties on a tour of Cornell's research plots.

Thatch formation in Merion bluegrass was among the topics discussed by the workshop, chaired by James E. Ashton, cooperative extension agent, Oneida County, N. Y. Grass cutting height, nitrogen fertilization, use of wetting agents, and clippings removal were related to thatch buildup and other conditions.

Present test results indicate there is less dollar spot disease in turf if clippings are left on the grass. This was attributed to the added fertility from the clippings.

Another workshop concentrated on weed control in ornamentals. Charles F. Scheer, Jr., cooperative extension agent, Suffolk County, N. Y., and Dr. Arthur Bing, head of Cornell Ornamentals Research Laboratory, Farmingdale, Long Island, directed this session. Artemisia, quackgrass, and other stoloniferous perennials were described

Workshop leaders for the Cornell Conference (shown left to right) were Dr. John A. Weidhaas, ornamental entomologist at Cornell; Professor Daniel Dowd, head of arboriculture at the State University of New York, Farmingdale, Long Island; Robert J. Dwelle, Cornell lecturer in landscape design; Professor Robert J. Scannell, Cornell landscape design contractor; and Professor Robert G. Mower, woody plant specialist at Cornell.



as major problems in ornamental landscape maintenance.

Fertilizer applied in fall may make seedling weeds more succulent, but is also taken up by woody ornamentals and stored for rapid new growth in the early spring. It was pointed out, however, that both fertilizers and herbicides can be successfully applied in fall. Granular dichlobenil, applied to the base of woody ornamentals at that time, will kill many grasses and herbaceous weeds, leaving the area weed free until midsummer or later, unless the soil is cultivated. Covering treated areas with mulches, such as peat or sawdust, is another way to increase the effectiveness of weed control in woody ornamentals.

Other sessions included two workshops devoted to insects and diseases, a landscape design workshop, principles of tree and shrub growth, woody plant identification, a business management workshop, a sales and marketing workshop, and a session on the national beautification program. In his remarks on "public landscape planting," Cornell professor Robert G. Mower said selection of specific tree varieties has been overemphasized. More important is the selection of trees adapted to the environment, including such soil factors as drainage, fertility, and water-holding capacity, and such aboveground influences as temperature range, shade, and wind.

USDA Plans 3-Year Program For Training Applicators

A series of 12 or 13 regional training sessions for pesticide applicators is being planned by the Federal Extension Service of the U. S. Department of Agriculture under its new Pesticide Safety Program. Northeastern, Western, and Southern regions will each host the full series during the next three years at various sites to allow applicators within a region to attend a school at a place convenient to their homes.

Dr. L. C. Gibbs, agricultural chemicals coordinator at the Federal Extension Service, hopes the three-year federal impetus will prompt a continuation of these schools by regional associations. Curriculum for each session will include uses of fungicides and herbicides, aerial application, equipment, toxicity determinations, safe handling of pesticides, and subjects of ground applications as well as structural pest control.

Schools are open to aerial ap-

plicators, arborists, turfmen, pest control operators, chemical company representatives, and others interested in pesticide operations. USDA officials have budgeted sums ranging from \$100,000 to \$125,000 to each region for instructors and materials to be used in these training sessions.

Information about the pesticide training schools, including dates for sessions at various sites within each region, is available from coordinators in each district. Those interested in the schools can contact the extension pesticide coordinator at their state university or one of these appropriate regional directors: Northeastern: Dr. James E. Dewey, Extension Program Leader, Cornell University, Ithaca, N. Y. 14850; Southern: Dr. Jack D. Price, Agricultural Chemicals Leader, Texas A&M University, College Station, Texas 77841; Western: Dr. John E. Swift, State Coordinator, Pesticides, Agricultural Extension Service, University of California, Berkeley, Calif. 94720.

Missouri Turfmen to Confer, Sept. 28-29

All phases of turf management for general interests and golf course operations are on tap for the Seventh Annual Missouri Lawn and Turf Conference, set for Sept. 28-29, in Memorial Union on the campus of the University of Missouri, Columbia. The Missouri Valley Turfgrass Association, organized last year to support a more active and vital turf program in Missouri, will hold its first annual meeting in connection with the conference.

Program emphasis will be on bringing up-to-date information to the common problems of turfmen. Open to anyone interested in turf, this year's meeting carries a \$10 registration fee, which includes the evening banquet on Sept. 28 and lunch on Sept. 29. For further information, write Dr. Delbert Hemphill, professor of horticulture, University of Missouri, Columbia, Mo. 65201.



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Literature you'll want

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

Garden Pest Control. C-261, Rev. 1965, Kansas State University Extension Service, Manhattan, Kans.

Fertilizer and Lime for Lawns. Circular P-27, Auburn University Extension Service, Auburn, Ala.

Centipede Grasses. Circular 610, 4 pp. ill., Auburn University Extension Service, Auburn, Ala.

St. Augustine Grass. Circular 609, 4 pp., Auburn University Extension Service, Auburn, Ala.

Bermudagrass for Alabama. Circular 612, Auburn University Extension Service, Auburn, Ala.

Elm Bark Beetles. Catalog No. A 1.35:185/5, Rev. 1966, 8 pp. ill., 5¢, Supt. of Documents, U. S. Government Printing Office, Washington, D. C. 20402.

Equipment for Applying Soil Pesticides. Catalog No. A 1.76:297, 1966, 37 pp. ill., 20¢, Supt. of Documents, U. S. Government Printing Office, Washington, D. C. 20402.

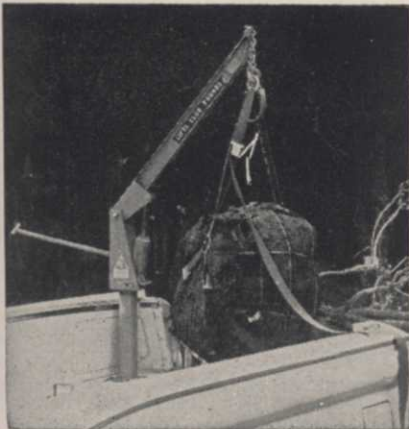
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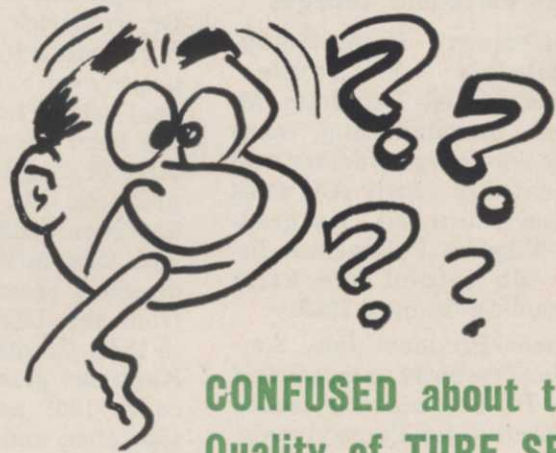
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Bryant Offers Fall Turf Tips for S.W.

Now is the time to plant bluegrass in the Southwest, according to Douglas Bryant, horticulturist with the New Mexico State University Extension Service. Because Merion and Newport are more tolerant to heat than common bluegrass, he suggests planting these varieties in the more southern areas.

On the average, 3 to 5 lbs. of good seed should be used for each 1,000 sq. ft. of land, and the soil should be thoroughly prepared before planting since errors at this time are very difficult to correct. Bryant also recommends fall overplanting of bermudagrass lawns with 6 to 10 lbs. of annual ryegrass seed per 1,000 sq. ft. If the rye is planted in an area that has no bermudagrass, 10 to 15 lbs. per 1,000 sq. ft. is needed, he adds.

Fertilize through October or until frost with 1½ to 2 lbs. of nitrogen per 1,000 sq. ft. of blue-

grass, and 1 lb. per 1,000 sq. ft. of bermudagrass, Bryant says. Nitrogen applied now keeps bermudagrass green longer into the fall, whereas an insufficiency will often cause it to turn brown before the first frost.

By controlling weeds and annual grasses now, while they are producing seed, next year's weed crop can be reduced. The number of weeds appearing in fall is no indication of next year's problem, according to Bryant, who suggests such sprays as 2,4-D or silvex to kill broadleaf weeds and such chemicals as DSMA to kill annual grasses.

Mowers should be raised ¼ in. from the spring cutting height for bermudagrass. This helps to combat fall weeds and permits a more dense turf for winter protection. The extension specialist also recommends regular fall watering, stating that "A healthy stand of bermudagrass should stay green right up to frost if it has the water and fertilizer to keep it growing."

Suppliers Personnel Changes

Allis-Chalmers Farm Equipment Division, Milwaukee, Wis., has named Benjamin M. Cornwell merchandising manager for industrial tractors and equipment. Previously A-C sales supervisor, Cornwell is a graduate of Virginia Polytechnic Institute. He joined the Farm Equipment Division in 1959.

Amchem Products Inc., Ambler, Pa., recently appointed Donald B. Loutzenhiser sales representative for Pennsylvania, Maryland, and Delaware. Loutzenhiser is a graduate of Penn State University and a member of the Northeastern Weed Control Conference, National Shade Tree Conference, and Allegheny Mountain Turfgrass Association.

Bowie Machine Works, Bowie, Tex., announces that Rex S. Harper is its new southeastern sales representative. His branch headquarters will be in Atlanta, Ga.

Elanco Products Co., division of Eli Lilly and Co., Indianapolis, Ind., reports two executive

changes and a new appointment. Dr. Frederick R. Van Abeele has been named to the newly created position of executive vice president, and Thomas C. Zininger has been advanced to executive director, agricultural chemical products. Dr. Van Abeele, who has been with Lilly since 1940, and was formerly its research director, received his doctorate from the University of Illinois in 1948. Zininger, University of Kentucky graduate, joined Elanco in 1961 as a crop chemical specialist, and is responsible for marketing of the agricultural chemical line. Richard S. Aro has joined the Lilly division as a plant science representative. He will provide field technical service for Elanco's agricultural chemicals in Iowa. A University of Wyoming graduate, Aro was formerly with the U. S. Geological Survey, Denver, Colo.

Root-Lowell Corp., Lowell, Mich., has added to its field sales organization. Jack Whitman of North Muskegon, Mich., will be assigned, after training, to the Upper Midwest territory.

Trimmings

Solid Sod. In the summer '66 issue of O. M. Scott & Sons "Lawn Care" magazine, recently sent us by editor Dr. Joseph E. Howland, there's a picture article about a lawn sodded atop a solid layer of concrete. An experiment it was, intended to dramatize how little a good sod lawn depends upon the topsoil. After a year, the lawn is performing beautifully. Of course no one expects this technique to become popular, but Scott's research has been sodding over difficult spots to show it can be done. We wonder if sod merchandisers are taking every opportunity to promote the many applications of the "carpet-of-grass." We also wonder about some of the more difficult sod installations that have been made, and hereby invite sodmen, landscapers, and anyone else in the field to send us information on the toughest sodding jobs they have performed or know of. WTT would like to publicize the many uses of ever-so-versatile sod.

* * *

K. C. Hits Weeds. We've been reading about a recent Kansas City, Mo., weed control ordinance that subjects property owners to fines for harboring noxious weeds more than 18" tall and for other vegetation that may invite debris or pests. It seems that every summer the city receives hundreds of weed complaints from pollen sufferers and others concerned about their city's appearance. Sounds like a heyday for K. C. weed controllers. But why 18"? Is a 17" weed any more attractive, or its pollen any less irritating?

* * *

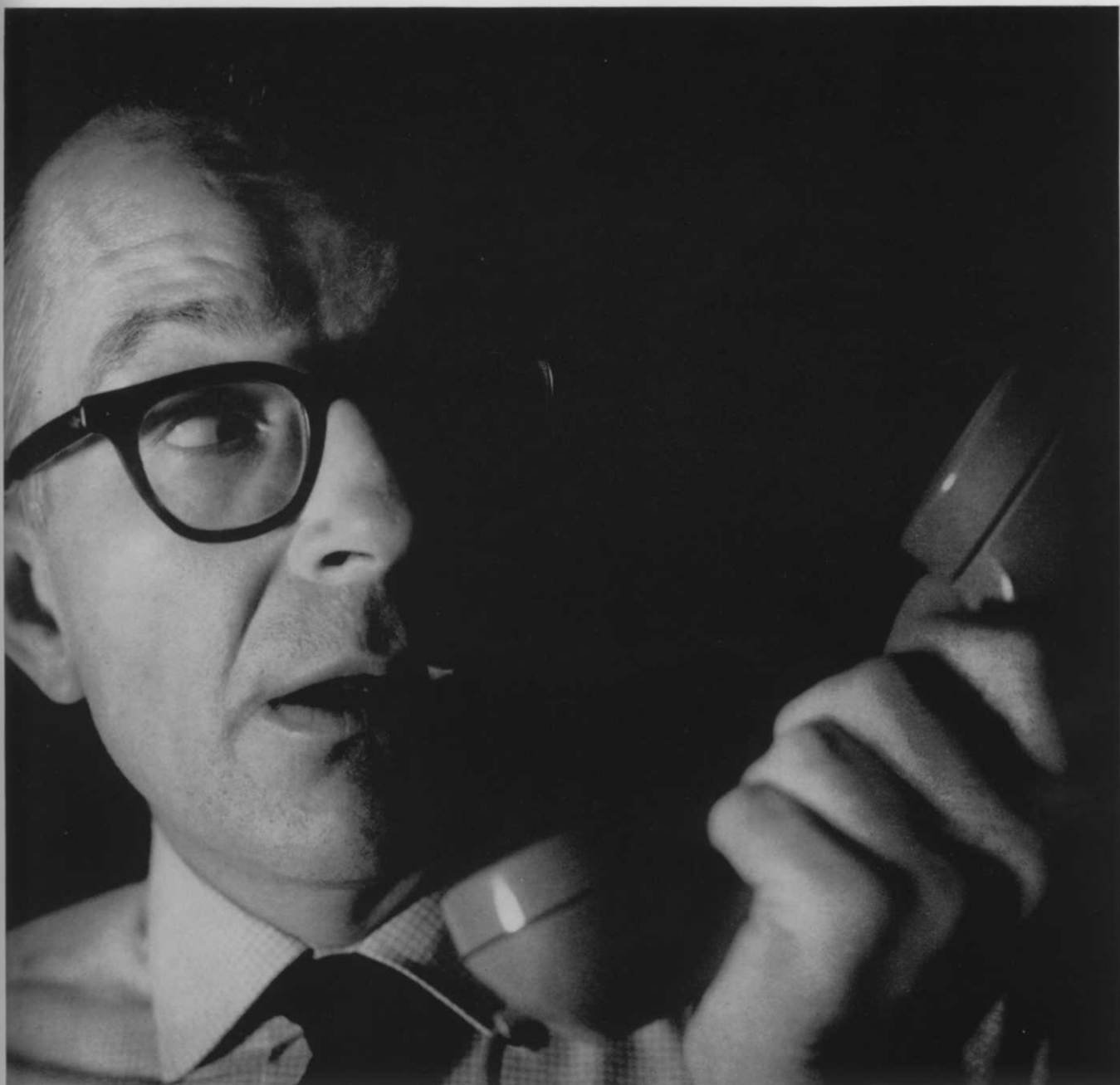
About That Nail. The Pacific Northwest Spraymen's '66 Spray-O-Rama, set for Sept. 23 and 24 in Portland, Ore., promises to be their biggest show to date. To publicize it, they've been mailing out nails. "Use it right now," the promotion reads, "to NAIL down the dates." We were thinking of doing just that, but our publisher objects to nail holes in WTT's Calendar of Events. Then we thought of taking the nail home and tossing it under the chlorotic shrubs in front of our apartment, until we received the following from professor Chuck Drage of Colorado State University: "Adding rusty nails or scrap iron to the soil does not provide iron in a form that plants can use (for iron chlorosis), just as the body cannot use iron in the metal form." Guess we'll just leave the shiny, new nail in our desk drawer. Meantime, best wishes to Bill Owen and the Northwest Spraymen for the success of their coming meet.

* * *

Canada's Flying Sodmen. Members of the Nursery Sod Growers Assn. of Ontario recently chartered a plane for a two-day trip to St. Paul and Minneapolis to study new sod production methods and equipment.

* * *

Turfman Dies. We recently learned of the death of O. J. Noer of Milwaukee. One of the developers of Milorganite fertilizer, he was a long-standing soil expert for the city and consultant to golf courses throughout the country.



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